

6<sup>TH</sup> INTERNATIONAL SCIENTIFIC-BUSINESS CONFERENCE  
LEADERSHIP, INNOVATION, MANAGEMENT AND ECONOMICS:  
INTEGRATED POLITICS OF RESEARCH



**LIMEN 2020**



November 26, 2020

Online-Virtual

[www.limen-conference.com](http://www.limen-conference.com)



# CONFERENCE PROCEEDINGS



Association of Economists  
and Managers of the Balkans  
**UdEkoM Balkan**



**SIXTH INTERNATIONAL SCIENTIFIC-BUSINESS CONFERENCE  
LIMEN 2020**

*Leadership, Innovation, Management and Economics:  
Integrated Politics of Research*

**CONFERENCE PROCEEDINGS**

**Online-Virtual  
November 26, 2020**

**Sixth International Scientific-Business Conference LIMEN**  
**Leadership, Innovation, Management and Economics: Integrated Politics of Research**  
**ISSN 2683-6149**  
**Conference Proceedings (part of LIMEN conference collection)**

**Editor:**

**Vuk BEVANDA**, PhD, Associate Professor, Faculty of Social Sciences, Belgrade, Serbia

**Scientific Committee:**

1. **Jasmina Starc**, PhD, Full Time Professor, Dean, Faculty of Business and Management Sciences, Novo Mesto, Slovenia
2. **Čedomir Ljubojević**, PhD, Full Time Professor, Director, Modern Business School Belgrade, Serbia
3. **Cvetko Smilevski**, PhD, Full Time Professor, President of Teaching and Scientific Council, BAS Institute of Management Bitola, Macedonia
4. **Vlado Radić**, PhD, Full Time Professor, Faculty of Business Economics and Entrepreneurship, Belgrade, Serbia
5. **Kanita Imamović-Čizmić**, PhD, assistant professor, Faculty of Law, University of Sarajevo, Bosnia and Herzegovina
6. **Tatjana Cvetkovski**, PhD, Full Time Professor, Ministry of Education, Science and Technological Development of Republic of Serbia
7. **Drago Pupavac**, PhD, Professor, Polytechnic of Rijeka, Polytechnic „Nikola Tesla“ Gospić, Croatia
8. **Ana Langović Milićević**, PhD, Full Time Professor, Ministry of Education, Science and Technological Development of Republic of Serbia, Faculty of Hotel Management and Tourism in Vrnjaka Banja, University of Kragujevac, Serbia
9. **Snežana Kirin**, PhD, Associate Professor, Innovation Centre of Mechanical Engineering Faculty in Belgrade, the Head of the Branch Office in Novi Sad, Serbia
10. **Mirjana Šekarić**, PhD, Associate Professor, Business Faculty, Singidunum University, Belgrade, Serbia
11. **Malči Grivec**, PhD, Lecturer, Dean, Faculty of Business, Management and Informatics Novo Mesto, Slovenia
12. **Bojan Krstić**, PhD, Associate Professor, Faculty of Economics, University of Niš, Serbia
13. **Lidija Stefanovska**, PhD, Assistant Professor, Director, BAS Institute of Management Bitola, Macedonia
14. **Duško Tomić**, PhD, Full Time Professor, College of Security and Global Studies, American University in the Emirates
15. **Saša Virijević Jovanović**, PhD, Associate Professor, Faculty of Applied Management, Economics and Finance, Belgrade, Serbia
16. **Srdan Tomić**, PhD, Associate Professor, Faculty of Engineering Management, Belgrade, Serbia
17. **Toni Soklevski**, PhD, Assistant Professor, Business Academy Smilevski BAS, Skopje, Macedonia
18. **Tatjana Ilić-Kosanović**, PhD, Assistant Professor, Faculty of Engineering Management, Belgrade, Serbia
19. **Aleksandara Brakus**, PhD, Assistant Professor, Modern Business School, Belgrade, Serbia
20. **Sonja Cindori**, PhD, Assistant Professor, Department of Financial Law and Financial Science, Faculty of Law, University of Zagreb, Croatia
21. **Sergej Gričar**, PhD, Lecturer, School of Business and Management Novo Mesto, Slovenia
22. **Dragana Nešović**, PhD, Assistant Professor, Faculty of Law, Security and Management “Konstantin Veliki”, Nis, University Union “Nikola Tesla”, Belgrade, Serbia
23. **Zoran Janevski**, PhD, Assistant Professor, Institute of Economics – “Ss. Cyril and Methodius” University Skopje, North Macedonia
24. **Slobodan Bracanović**, PhD, Assistant Professor, Faculty of Economics, Priština, Kosovska Mitrovica, Serbia
25. **Dragana Trifunović**, PhD, Associate Professor, Faculty of Social Sciences, Belgrade, Serbia
26. **Anton Vorina**, PhD, Senior Lecturer, Vocational College, Celje, Slovenia
27. **Ana Jurčić**, PhD, Associate Professor, Modern College of Business & Science, Muscat, Oman
28. **Denis Tomše**, PhD, Assistant Professor, Faculty of Commercial and Business Sciences, Celje, Slovenia
29. **Tatjana Boshkov**, PhD, Assistant Professor, Faculty of Tourism and Business Logistics – Gevgelija, “Goce Delcev” University Stip, North Macedonia
30. **Filip Đoković**, PhD, Assistant Professor, Business Faculty Valjevo, Singidunum University, Belgrade, Serbia
31. **Biljana Petrevska**, PhD, Associate Professor, “Iustinianus Primus School of Law”, University “Ss. Cyril and Methodius”, Skopje, North Macedonia
32. **Tanja Stanišić**, PhD, Assistant Professor, Faculty of Hotel Management and Tourism in Vrnjaka Banja, University of Kragujevac, Serbia
33. **Milenko Đeletović**, PhD, Associate Professor, Educons University, Belgrade, Serbia
34. **Momčilo Živković**, PhD, Full Professor, Faculty of Business Studies, Megatrend University, Belgrade, Serbia
35. **Brankica Pažun**, PhD, Associate Professor, Faculty of Engineering Management, Belgrade, Serbia
36. **Zlatko Langović**, PhD, Associate Professor, Faculty of Hotel Management and Tourism, Vrnjaka banja, Serbia

**Organizational Committee:**

**Anton Vorina**, PhD, Professor  
**Nikolina Vrcelj**, PhD candidate  
**Nevena Bevanda**, PhD student  
**Ivana Mirčević**, BSc  
**Uroš Mirčević**, Ing.  
**Goran Stevanović**, BSc

**Published by:**

Association of Economists and Managers of the Balkans,  
Ustanicka 179/2 St. 11000 Belgrade, Serbia  
office@udekom.org.rs  
+381 62 8125 779

**Printed by:** SKRIPTA International, Belgrade  
**Belgrade, 2020**

**ISBN 978-86-80194-39-4**

**ISSN 2683-6149**

**DOI:** <https://doi.org/10.31410/LIMEN.2020>

**Disclaimer:** The author(s) of each paper appearing in this publication is/are solely responsible for the content thereof; the findings, interpretations and conclusions expressed in the papers are those of the authors and do not reflect the view of the editor, reviewers, scientific committee members, the publisher, conference partners or anyone else involved in creating, producing or delivering this publication.



This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License.

CIP - Katalogizacija u publikaciji  
Narodna biblioteka Srbije, Beograd  
005(082)  
336(082)  
001.895(082)  
330(082)

**INTERNATIONAL Scientific-Business Conference LIMEN**  
**Leadership, Innovation, Management and Economics: Integrated**  
**Politics of Research (6; 2020)**

Conference Proceedings / Sixth International Scientific-Business  
Conference LIMEN Leadership, Innovation, Management and  
Economics: Integrated Politics of Research, Online-virtual November  
26, 2020 ; [organizer Association of Economists and Managers of the  
Balkans [et al.] ; editor Vuk Bevanda]. - Belgrade : Association of  
Economists and Managers of the Balkans, 2021 (Belgrade : Skripta  
International). - XIV, 409 str. : graf. prikazi, tabele ; 30 cm. -  
(International Scientific Business Conference LIMEN Leadership,  
Innovation, Management, Economics: Integrated Politics of Research,  
ISSN 2683-6149)

Tiraž 100. - Napomene i bibliografske reference uz tekst. -  
Bibliografija uz svaki rad. - Registri.

ISBN 978-86-80194-39-4

a) Menadžment -- Zbornici b) Finansije -- Zbornici v) Inovacije --  
Zbornici g) Ekonomija -- Zbornici d) Marketing -- Zbornici

COBISS.SR-ID 42129673

## CONTENTS

<b>INDEX OF AUTHORS .....</b>	<b>VII</b>
<b>INDEX.....</b>	<b>IX</b>
<b>PREFACE.....</b>	<b>XI</b>
<b>AUTHORS' AFFILIATION.....</b>	<b>XIII</b>
<b>THE IMPACT OF COVID-19 ON EUROPEAN FINANCIAL MARKETS: AN EMPIRICAL ANALYSIS .....</b>	<b>1</b>
Margarida Bagão	
Rui Dias	
Paula Heliodoro	
Paulo Alexandre	
<b>THE IMPACT OF COVID-19 ON THE SECURITIES AND EQUITY MARKETS OF PORTUGAL AND EDP: AN ECONOPHYSICS APPROACH .....</b>	<b>13</b>
Maria Manuel	
Paula Heliodoro	
Rui Dias	
Paulo Alexandre	
<b>STOCK MARKET EFFICIENCY IN AFRICA: EVIDENCE FROM RANDOM WALK HYPOTHESIS.....</b>	<b>25</b>
Rui Dias	
Hortense Santos	
<b>THE IMPACT OF COVID-19 ON EXCHANGE RATE VOLATILITY: AN ECONOPHYSICS APPROACH .....</b>	<b>39</b>
Rui Dias	
Hortense Santos	
<b>THE IMPACT OF THE COVID-19 PANDEMIC ON SUPPLY CHAINS IN THE AUTOMOTIVE INDUSTRY.....</b>	<b>51</b>
Goran Milovanovic	
Tamara Stankovic	
<b>RISK MANAGEMENT CHALLENGES IN THE COVID-19 PANDEMIC.....</b>	<b>57</b>
Vlado Radić	
Nikola Radić	
<b>WORKPLACE SAFETY CHALLENGES OF COVID-19 PANDEMICS: CASE OF SLOVAKIA .....</b>	<b>65</b>
Silvia Capíková	
Mária Nováková	
<b>ANALYSIS OF THE IMPACT OF OCCUPATIONAL HEALTH AND SAFETY RISKS ON THE SUSTAINABILITY OF ROMANIAN ORGANIZATIONS UNDER THE SARS-COV-2 PANDEMIC.....</b>	<b>75</b>
Mihaela Cornelia Sandu	
Valentin Mihai Leoveanu	
<b>THE CORONAVIRUS PANDEMIC AND ITS IMPACT ON BIHOR COUNTY EXPORT ORIENTED COMPANIES.....</b>	<b>85</b>
Adrian Negrea	
Ciprian Beniamin Benea	
Csaba Bekesi	
<b>ONLINE IDENTITY IN A PANDEMIC – FROM INNOVATION PRACTICE TO COMPETITIVE ADVANTAGE THROUGH THE LEARNING PROCESS .....</b>	<b>91</b>
Michaela Mihaylova	
<b>THE DENTAL MEDICINE SECTOR IN THE AGE OF THE COVID-19 PANDEMIC – RECOVERY BETWEEN RISKS AND CHALLENGES.....</b>	<b>101</b>
Andra-Teodora Porumb	
Adina Săcara-Onița	
Cristian Porumb	

<b>DEVELOPMENT OF CEFTA 2006 – MINI SCHENGEN -ECONOMICS VERSUS POLITICS.....</b>	<b>113</b>
Dijana Grahovac	
Senad Softić	
<b>SMART REGIONAL SPECIALIZATION - OPPORTUNITY OR OXYMORON OF THE DEVELOPMENT OF SMALL AND MEDIUM ENTERPRISES.....</b>	<b>121</b>
Desislava Botseva	
Georgi Tsolov	
Nikola Tanakov	
<b>CAUSES OF DIFFERENTIATED DEVELOPMENT OF REGIONAL STRUCTURES IN THE SLOVAK REPUBLIC .....</b>	<b>133</b>
Katarína Kráľová	
Jana Sochuľáková	
Dagmar Petrušová	
<b>INFORMATION AND CONSULTANCY CENTRES IN SLOVAKIA – PROMOTING PARTNERSHIP IN COHESION POLICY .....</b>	<b>141</b>
Igor Jašurek	
<b>A REVIEW OF PLATFORM CORPORATE GOVERNANCE IN THE DIGITAL ECONOMY AGE .....</b>	<b>151</b>
Jianxin Ge	
Cong Li	
<b>ADVANTAGES AND DISADVANTAGES OF QR CODE IN TAX INVOICES IN PORTUGAL .....</b>	<b>167</b>
Anabela Marques	
Leonilde Reis	
<b>EXPANSION OF E-PAYMENT .....</b>	<b>175</b>
Vladimir Mladenović	
Milica Krulj-Mladenović	
Danilo Obradović	
<b>MULTIDISCIPLINARY SUSTAINABILITY - THE MULTIPLE PERSPECTIVES OF A SOCIAL ORGANIZATION .....</b>	<b>179</b>
Leonilde Reis	
Clara Silveira	
<b>SOCIAL ENGINEERING AND INFORMATION AND COMMUNICATION TECHNOLOGIES .....</b>	<b>185</b>
António Lopes	
Leonilde Reis	
<b>GROWTH AND DEVELOPMENT OF THE COMPANY AS A FACTOR IN IMPROVING BUSINESS EFFICIENCY .....</b>	<b>191</b>
Vuk Bevanda	
Aleksandra Živaljević	
Biljana Pejović	
<b>CHALLENGES AND PROBLEMS THAT FAMILY BUSINESSES FACE .....</b>	<b>201</b>
Lidija Stefanovska	
Taip Jakupi	
<b>SOME FACTORS OF CONTEMPORARY FINANCIAL BUSINESS OPERATIONS.....</b>	<b>207</b>
Slobodan N. Bracanović	
<b>DETERMINING FACTORS OF INNOVATIVE PERFORMANCE: MULTIPLE CASE STUDY .....</b>	<b>215</b>
Beatriz Corchuelo Martínez-Azúa	
Pedro E. López-Salazar	
Celia Sama-Berrocal	
<b>SITUATIONAL LEADERSHIP AND ORGANIZATIONAL BEHAVIOR.....</b>	<b>223</b>
Federico de Andreis	
Federico Leopardi	

<b>INNOVATIVE DESIGN CONCEPTS FOR QUALITY HPO ORGANIZATIONS.....</b>	<b>231</b>
Srdjan Tomic	
Jelena Rajković	
<b>A SYSTEMATIC REVIEW: SOFTWARE SOLUTIONS FOR TIME-MANAGEMENT IN REMOTE WORK SETTINGS .....</b>	<b>239</b>
Ivan Gjorgjievski	
Daniela Karadakov	
<b>MODEL FOR ASSESSMENT OF THE COMPETENCE OF PRODUCTION MANAGERS .....</b>	<b>245</b>
Krasimira Dimitrova	
Tanya Panayotova	
Neli Veleva	
<b>REGIONAL HUMAN CAPITAL MANAGEMENT – ASPECTS OF INTERACTION WITH THE ECONOMIC DEVELOPMENT OF THE TERRITORY.....</b>	<b>253</b>
Georgi Nikolov	
Elka Vasileva	
Veselina Lyubomirova	
<b>IMPLEMENTATION OF MANAGERIAL INNOVATIONS IN RUSSIA: DECISIONS' BACKGROUND, MAJOR AREAS AND FREQUENCY .....</b>	<b>261</b>
Natalia Guseva	
Yaroslav Sovetkin	
<b>(AB)USE OF GOLDEN PARACHUTES IN STATE-OWNED COMPANIES IN THE FORMER YUGOSLAVIA .....</b>	<b>271</b>
Nebojša R. Mitić	
Slaviša M. Đorđević	
<b>FORMAL AND NON-FORMAL EDUCATION IMPACT ON DEVELOPING MARKETING MANAGER COMPETENCE IN THE DIGITAL AGE.....</b>	<b>279</b>
Gordana Tasevska	
Dijana Ivanovska Przo	
<b>SOCIALLY RESPONSIBLE MARKETING IN THE "NEW NORMAL" .....</b>	<b>285</b>
Marina Guzovski	
<b>IMPACT OF METAPROGRAMS ON THE PURCHASE DECISION-MAKING PROCESS.....</b>	<b>293</b>
Biljana Galovska	
Maja Kochoska	
<b>THE IMPORTANCE OF BUSINESS CULTURE FOR INTERNATIONAL BUSINESS .....</b>	<b>301</b>
Dijana Grahovac	
Biljana Rađenović-Kozić	
<b>J. A. SCHUMPETER, A THEORIST OF INNOVATION AND A HISTORIAN OF ECONOMIC SCIENCE .....</b>	<b>315</b>
Petr Jiříček	
Zdeňka Dostálová	
<b>CHALLENGES IN DEVELOPMENT OF SMART CITIES IN WESTERN BALKANS .....</b>	<b>323</b>
Vladimir Tomašević	
Luka Latinović	
<b>ROMANIA: THE EFFICIENCY AND PERSPECTIVE FOR TRANSPORT OF PASSENGERS ON RAILWAYS .....</b>	<b>329</b>
Clara Elena Muț	
Ciprian Benjamin Benea	
Adrian Negrea	
Săcară-Onita Adina	
Catargi Andra	

<b>FINANCIAL MANAGEMENT ELEMENTS SPECIFIC TO INVESTMENTS APPLICABLE IN EDUCATIONAL SYSTEMS.....</b>	<b>337</b>
Daniela Alice Luta (Manolescu)	
Adrian Ioana	
Daniela Tufeanu	
Daniela Ionela Juganaru	
Bianca Cezarina Ene	
<b>FINANCIAL MANAGEMENT ELEMENTS SPECIFIC TO THE EVALUATION OF RESEARCH-DEVELOPMENT-INNOVATION (RDI) ACTIVITIES.....</b>	<b>343</b>
Bianca Cezarina Ene	
Adrian Ioana	
Daniela Tufeanu	
Daniela Ionela Juganaru	
Daniela Alice Luta (Manolescu)	
<b>LIBRARY MANAGEMENT SYSTEM: HOW TO AUTOMATE AND PUT A SMALL LIBRARY ONLINE .....</b>	<b>349</b>
Tiago Lourenço	
Clara Silveira	
<b>QUANTITATIVE ANALYSIS OF DOCTORAL DISSERTATIONS IN SERBIA AT THE END OF 2019 ON THE TOPIC ARTIFICIAL INTELLIGENCE.....</b>	<b>357</b>
Olga Mirković Maksimović	
<b>THE FUNDAMENTAL FUNCTIONS OF PUBLIC SECTOR ORGANIZATION ON THE EXAMPLE OF SUBOTICA LOCAL SELF-GOVERNMENT .....</b>	<b>363</b>
Slavko Tomašković	
Julka Sremac	
<b>DANGEROUS LIAISONS: CORRUPTION AND MONEY LAUNDERING IN CONTEMPORARY SOCIETY.....</b>	<b>371</b>
Georgi Petrunov	
<b>INVESTIGATION OF PLATE WASTE IN UNIVERSITY REFECTORY .....</b>	<b>379</b>
Melisa Ozbiltekin-Pala	
Gülmüş Börühan	
<b>AGRICULTURAL EXTENSION SERVICE IN SERBIA – ATTITUDES OF FARMERS ....</b>	<b>389</b>
Marija Nikolić	
Tamara Paunović	
Milena B. Stevović	
<b>SUSTAINABLE VILLAGES.....</b>	<b>399</b>
Nada Kosanovic	
Suncica Vjestica	



## INDEX OF AUTHORS

### A

Adina Săcara-Onița, 101  
Adrian Ioana, 337, 343  
Adrian Negrea, 85, 329  
Aleksandra Živaljević, 191  
Anabela Marques, 167  
Andra-Teodora Porumb, 101  
António Lopes, 185

### B

Beatriz Corchuelo Martínez  
Azúa, 215  
Bianca Cezarina Ene, 337, 343  
Biljana Galovska, 293  
Biljana Pejović, 191  
Biljana Rađenović-Kozić, 301

### C

Catarig Andra, 329  
Celia Sama-Berrocal, 215  
Ciprian Beniamin Benea, 85, 329  
Clara Elena Muș, 329  
Clara Silveira, 179, 349  
Cong Li, 151  
Cristian Porumb, 101  
Csaba Bekesi, 85

### D

Dagmar Petrušová, 133  
Daniela Alice Luta  
(Manolescu), 337, 343  
Daniela Ionela Juganaru, 337, 343  
Daniela Karadakov, 239  
Daniela Tufeanu, 337, 343  
Danilo Obradović, 175  
Desislava Botseva, 121  
Dijana Grahovac, 113, 301  
Dijana Ivanovska Przo, 279

### E

Elka Vasileva, 253

### F

Federico de Andreis, 223  
Federico Leopardi, 223

### G

Georgi Nikolov, 253  
Georgi Petrunov, 371  
Georgi Tsolov, 121  
Goran Milovanovic, 51  
Gordana Tasevska, 279  
Gülmüş Börühan, 379

### H

Hortense Santos, 25, 39

### I

Igor Jašurek, 141  
Ivan Gjorgjievski, 239

### J

Jana Sochuľáková, 133  
Jelena Rajković, 231  
Jianxin Ge, 151  
Julka Sremac, 363

### K

Katarína Kráľová, 133  
Krasimira Dimitrova, 245

### L

Leonilde Reis, 167, 179, 185  
Lidija Stefanovska, 201  
Luka Latinović, 323

### M

Maja Kochoska, 293  
Margarida Bagão, 1  
Maria Manuel, 13  
Mária Nováková, 65  
Marija Nikolić, 389  
Marina Guзовski, 285  
Melisa Ozbiltekin-Pala, 379  
Michaela Mihaylova, 91  
Mihaela Cornelia Sandu, 75  
Milena B. Stevović, 389  
Milica Krulj-Mladenović, 175

### N

Nada Kosanovic, 399  
Natalia Guseva, 261  
Nebojša R. Mitić, 271  
Neli Veleva, 245

Nikola Radić, 57  
Nikola Tanakov, 121

### O

Olga Mirković Maksimović, 357

### P

Paula Heliodoro, 1, 13  
Paulo Alexandre, 1, 13  
Pedro E. López-Salazar, 215  
Petr Jiříček, 315

### R

Rui Dias, 1, 13, 25, 39

### S

Săcară-Onita Adina, 329  
Senad Softić, 113  
Silvia Capíková, 65  
Slaviša M. Đorđević, 271  
Slavko Tomašković, 363  
Slobodan N. Bracanović, 207  
Srdjan Tomic, 231  
Suncica Vjestica, 399

### T

Taip Jakupi, 201  
Tamara Paunović, 389  
Tamara Stankovic, 51  
Tanya Panayotova, 245  
Tiago Lourenço, 349

### V

Valentin Mihai Leoveanu, 75  
Veselina Lyubomirova, 253  
Vladimir Mladenović, 175  
Vladimir Tomašević, 323  
Vlado Radić, 57  
Vuk Bevanda, 191

### Y

Yaroslav Sovetkin, 261

### Z

Zdeňka Dostálová



## INDEX

### A

(Ab)use, 271  
Africa stock markets, 25  
Agent, 141  
Agile, 349  
Agri-food industry, 215  
Antitakeover defences, 271  
Apple, 175  
Approach, 167  
Arbitration, 39  
Artificial intelligence, 357  
Automotive industry, 51, 57  
Aviation, 57

### B

Bank, 175  
Business sustainability, 75  
Business, 191  
Buying, 293

### C

Capital, 207  
Card, 175  
CEFTA 2006, 113  
Ceremonialism, 141  
Challenges, 323  
Company, 191  
Competence, 279  
Competency assessment model, 245  
Competency assessment, 245  
Competition, 231  
Competitive advantage, 91  
Consumer behavior, 293  
Coronavirus, 85  
Corruption, 371  
Countries of Western Balkan, 113  
Covid-19 Coronavirus, 1  
COVID-19 pandemic, 102  
Covid-19, 13, 39, 51  
Crisis management, 102

### D

Decentralization governance, 151  
Delphi method, 245  
Dental medicine, 102

Dental tourism, 102  
Development policy, 399  
Development, 191, 343  
Digital economy, 151  
Digital marketing, 279  
Doctoral dissertations, 357

### E

E-business, 57  
Economics, 113  
Educational systems, 337  
Efficiency, 39  
Enterprises, 85  
Epidemic, 1  
Exchange rates, 39  
Extension service, 389  
External trade, 113  
Extremadura, 215

### F

Factors, 191  
Farmers, 389  
Finance, 207  
Financial integration, 13  
Financial management, 337, 343  
Food Waste, 379  
Foreign trade, 85

### G

Global economic relations, 301  
Globalization, 231  
Golden parachutes, 271  
Growth, 191

### H

Health law, 65  
Historical approach, 315  
(HPO) organization, 231  
Human capital, 253

### I

ICC, 141  
Implementation of managerial innovations, 261  
Implementation process, 261  
Importance of different business cultures and values, 301

Improving the quality of work, 389  
Information and communication technologies, 179, 185  
Information security, 185  
Information systems, 179, 185  
Infrastructure, 323  
Innovation theory, 315  
Innovation, 91, 121, 167, 343  
Innovative performance, 215  
Integrated territorial strategy, 253  
International business, 301  
Internet, 175  
Investments, 337  
Invoice, 167

### J

J. A. Schumpeter, 315

### K

Key aspects of managerial innovations, 261

### L

Labour law, 65  
Land transport, 329  
Leadership, 223  
Learning, 91  
Library management, 349  
Local communities, 399  
Local Self-Government Subotica, 363  
Local self-government, 399  
Long memories. 13

### M

Main indicators, 245  
Management innovations, 261  
Management, 201, 203  
Manager, 279  
Managerial innovations process, 261  
Managers. 207  
Market, 191, 207, 231  
Marketing communication, 285  
Mass Consumption, 379

Mechanisms, 207  
Meta-programs, 293  
Mini Schengen, 113  
Money laundering, 371  
Multinational companies, 261

## N

"New normal", 285

## O

Observation, 379  
Observational equivalence, 141  
Occupational health and  
safety risks, 75  
Online identity, 91  
Organization, 363  
Organizational behaviour, 223

## P

Pandemic, 91  
Planning regions, 253  
Platform corporate, 151  
Platform governance, 151  
Policy, 207  
Politically exposed persons, 371  
Politics, 113  
Portfolio diversification, 13, 25,  
39  
Preventive measures, 271  
Principal, 141  
Production levels, 51  
Public sector, 363

## Q

QR-code, 167  
Quality, 231

## R

Railway transport, 329  
Random walk, 25  
Region, 133  
Regional competitiveness, 121  
Regional disparities, 133  
Regional specialization, 121  
Regional structure, 133  
Regular polarization, 133  
Remote work, 239  
Research, 343  
Responsible behaviour, 285  
Risk, 102  
Russian companies, 261

## S

Safety leadership, 65  
SARS CoV-2 pandemic, 75  
Secondary indicators, 245  
Smart cities, 323  
Smart specialization, 121  
SMEs, 121  
Social engineering, 185  
Social responsibility, 285  
Software development, 179  
Software solution, 239  
Specifics, 201  
Standpoints, 389

Status, 399  
Stock markets, 1  
Strategies, 207  
Strategy for the development  
of artificial intelligence, 357  
Supply chain, 27  
Supply chains, 51  
Sustainability, 179  
Sustainable future, 329  
Sustainable village, 399  
System of indicators, 245

## T

Time-management, 239  
Tourism, 57

## U

Uncertainty costs, 141  
Universities in Serbia, 357  
Urban development, 323  
User story, 349

## W

Web programming, 349  
Western Balkans, 323  
Working remotely, 75

## PREFACE

Organizing is an evolutionary phenomenon, distinctive because of laws of existence and maintaining all structures in all processes of their functioning. As such, it is a civilizational phenomenon also that occurs as a component of human, individual and social activities and as a factor in the overall development of man and society. On the other hand, as a deliberate human activity, organizing involves seeking solutions to problems that occur on the way to achieving specific goals. No goal can be achieved without appropriate or necessary, or at least minimal organization of conditions, factors, and processes needed for goal achievement. However, the new era requires new types of leaders and managers, and new forms of organization; demands those who are willing and able to lead the company/corporation/state, in a distinct competitive environment, with all the good and bad sides brought by the globalization of world economy.

Association of Economists and Managers of the Balkans headquartered in Belgrade – Serbia along with the partner institutions, namely the Faculty of Engineering Management - Belgrade, Serbia; Modern Business School - Belgrade, Serbia; the University of Novo Mesto, Faculty of Business and Management Sciences, Slovenia; the University of Novo Mesto, Faculty of Economics and Informatics, Slovenia; Business Academy Smilevski - BAS, Skopje, North Macedonia; and BAS Institute of Management, Bitola, North Macedonia organized 6th International Scientific-Business Conference titled: Leadership, Innovation, Management and Economics: Integrated Politics of Research – LIMEN 2020 on November 26, 2020. The conference was held online/virtually due to the COVID-19 pandemic.

Bearing in mind the challenges of a dynamic engagement in contemporary organizations, it is clear that within the analysis of these important subjects should be applied interdisciplinary approach. For this reason, the main theme of the conference LIMEN 2020 was processed through the following key topics:

- Leaders and Leadership
- Entrepreneurship
- Innovation
- Creativity
- Management of Small and Medium-sized Enterprises
- Contemporary Strategic Management
- Financial Management and Banking
- Marketing Management
- Project Management
- GREEN Management
- Natural Resource Management
- Quality Management
- Management of New Technologies
- Management Information Systems
- Education Management
- Intercultural Management
- Public Sector Management
- Human Resources Management
- Organizational Behavior
- Business Ethics
- Macroeconomics
- Microeconomics
- Finance
- Marketing
- Labour Law
- Business Law

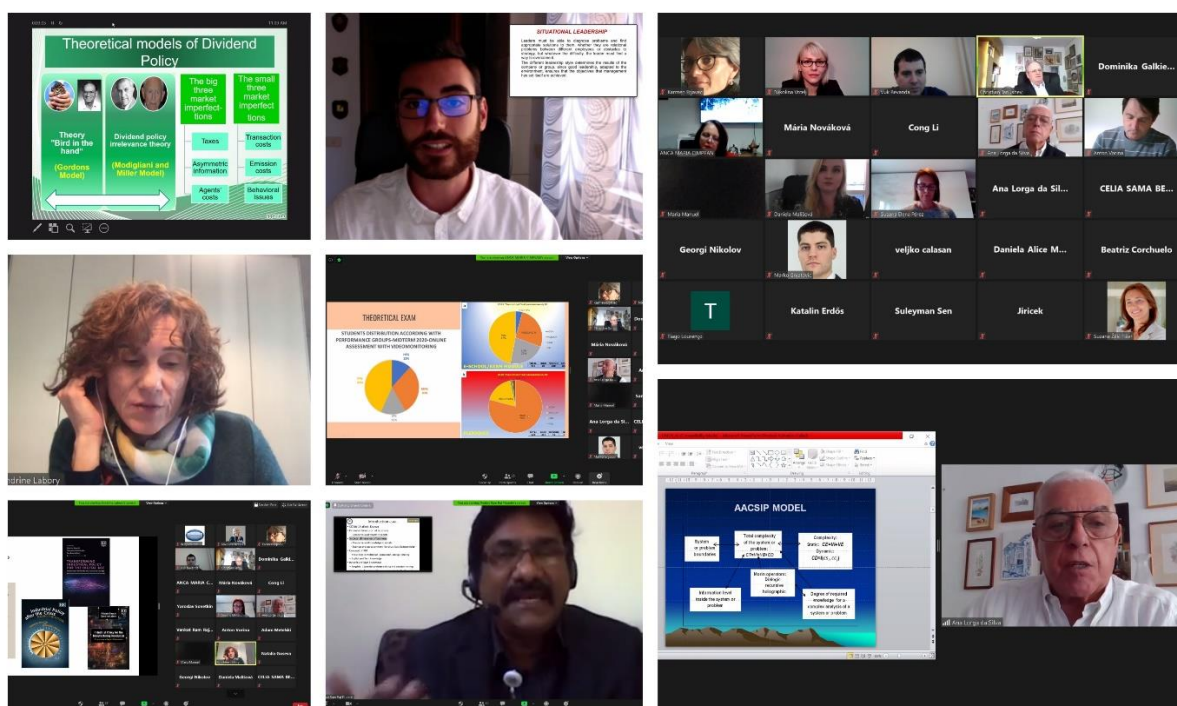
The aim of this year's conference is also achieved – bring together the academic community of the Balkans region and other countries and publication of their papers with the purpose of popularization of science and their personal and collective affirmation. The unique program combined presentation of the latest scientific developments in these areas, interactive discussions and other forms of interpersonal exchange of experiences.

Within publications from **LIMEN 2020** conference:

- 13 double peer-reviewed papers have been published in the **Selected Papers** - International Scientific-Business Conference LIMEN 2020,
- 47 double peer-reviewed papers have been published in the **Conference Proceedings** - International Scientific-Business Conference LIMEN 2020,
- 91 abstracts have been published in the **Book of Abstracts** - International Scientific-Business Conference LIMEN 2020.

LIMEN 2020 publications have nearly **700 pages**. All full papers have been scanned with the Crosscheck (powered by Turnitin) and have Orcid iD integration.

Participation in the conference took **159 researchers** with the paper representing **26 different countries** (Albania, Austria, Bosnia and Herzegovina, Brazil, Bulgaria, China, Croatia, Czech Republic, Germany, Hungary, India, Italy, Netherlands, North Macedonia, Oman, Poland, Portugal, Romania, Russia, Serbia, Slovakia, Slovenia, Spain, Turkey, Ukraine and United Arab Emirates), different universities, eminent faculties, scientific institutes, colleges, etc



## AUTHORS' AFFILIATION

### Albania

- University of Tirana, Faculty of Social Sciences, Bulevardi "Gjergj Fishta", Tirana

### Austria

- University of Applied Sciences Kufstein Tirol, Finance, Accounting & Auditing, Andreas Hofer-Str. 7, 6330 Kufstein

### Bosnia and Herzegovina

- Central Bank of Bosnia and Herzegovina
- Faculty of Economics in Sarajevo
- University of Business Studies, Banja Luka

### Brazil

- Santa Úrsula University, Rio de Janeiro

### Bulgaria

- Technical University of Varna, Faculty of Mechanical Engineering, Department of Industrial Management, Studentska str. 1, Varna
- University of National and World Economy, Student Town, 1170 Sofia
- VUZF University, Gusla 1 str., 1618 Sofia

### China

- Central University of Finance and Economics, 100081 Beijing
- Wuhan University, 299 Luojia Hill, Wuhan

### Croatia

- Faculty of Tourism and Hospitality Management, Primorska 42, p.p. 97, 51410 Opatija
- Libertas International University, Trg J. F. Kennedy 6b, Zagreb

### Czech Republic

- College of Polytechnics Jihlava, Tolsteho 16, 58601 Jihlava
- Faculty of Forestry and Wood Technology, Department of Landscape Management, Brno
- Jan Evangelista Purkyně University, Faculty of Social and Economic Studies, Department of Economy and Management, 400 96 Ústí nad Labem
- Masaryk University Brno, Faculty of Law, Veveří 158/70, 611 80 Brno

### Germany

- MGW Geld- und Wertpapiervermittlung, Raiffeisenallee 16, 82041 Oberhaching

### Hungary

- Budapest Business School, Institute of Quantitative Methods, Alkotmány utca 9-11. H - 1054 Budapest
- Budapest Business School, More Innovation Talent Orientation Research Group, Alkotmány utca 9-11, H - 1054 Budapest
- University of Pécs, Faculty of Business and Economics, Rákóczi Str. 80, 7622 Pécs

### India

- Amity University Noida, Amity School of Communication

### Italy

- Telematic University Giustino Fortunato, V. Raffaele Delcogliano n 12, 82100 Benevento
- University For Foreigners "Dante Alighieri", Via del Torrione 95, Reggio Calabria
- University of Ferrara, Via Voltapaletto 11, 44100 Ferrara

### Netherlands

- University of Groningen, Groningen

### North Macedonia

- BAS Institute of Management Bitola, Herceg Novi 6, Bitola
- Business Academy Smilevski – BAS, Jane Sandanski 111/2, Skopje

### Oman

- Faculty of Business & Economics, Modern College of Business & Science, Muscat

### Poland

- Cracow University of Economics, Cracow
- Poznań University of Economics and Business, al. Niepodległości 10, 61-875 Poznań

### Portugal

- Escola Superior de Ciências Empresariais - Instituto Politécnico de Setúbal, Setúbal
- Instituto Politécnico da Guarda - ESTG, Avenida Dr. Francisco Sá Carneiro, 50; 6300-559 Guarda
- Lusófona University, CIPES
- University of Évora, CEFAGE-UE, IIFA

### Romania

- Babes-Bolyai University of Cluj-Napoca, Faculty of Business
- Babes-Bolyai University of Cluj-Napoca, Faculty of Economics and Business Administration,



Teodor Mihali Street, no.58-60, 400591 Cluj-Napoca

- Bihor County Employment Agency (AJOFM), Oradea
- SC Interregional SRL - (private railway transport operator)
- University of Bucharest, 4-12, Blvd. Regina Elisabeta, etaj 1, sector 3, Bucharest
- University of Oradea, Faculty of Economic Sciences, Department of International Business, 1 Universităţii Street, Oradea, 410087 Bihor
- University of Oradea, Faculty of Law
- University of Oradea, Faculty of Medicine and Pharmacy, Department of Dental Medicine, 10 - 1 Decembrie Square, Oradea, 410073 Bihor
- University Politehnica of Bucharest, Spl. Independentei 313 Bucharest
- Victor Babes University of Medicine and Pharmacy Timisoara, Piata Eftimie Murgu 2, 300041 Timisoara

#### **Russia**

- National Research University Higher School of Economics, 20 Myasnitskaya ulitsa, 101000 Moscow

#### **Serbia**

- Academy of Vocational Studies South Serbia-Department of Business Studies Blace, 7 Partizanska Street, Leskovac
- ALFA BK University, Belgrade
- Center for Strategic National Security Research, Cesna B
- Faculty for Applied Ecology – Futura, Pozeska 83a, 11000 Belgrade
- Faculty of Business Economics and Entrepreneurship, Mitropolita Petra 8, Belgrade
- Faculty of Economics in Priština, Kosovska Mitrovica
- Faculty of Economics, Trg kralja Aleksandra Ujedinitelja 11, Niš
- Faculty of Social Sciences, Bulevar umetnosti 2a, Belgrade
- Prima Lupus doo Subotica
- Subotica City Administration, Secretariat for General Administration and Common Affairs - Tavankut Local Office
- Union University, Faculty of Law, Belgrade
- University „Union - Nikola Tesla“, School of Engineering Management, Bulevar vojvode Misica 43, 11000 Belgrade
- University of Belgrade, Faculty of Agriculture, Nemanjina 6, 11080 Belgrade
- University of Belgrade, Faculty of Organizational Sciences, Jove Ilića 154, Belgrade
- Videobolt, Bulevar Mihajla Pupina 10a, Belgrade

#### **Slovakia**

- Alexander Dubček University in Trenčín, Faculty of Social and Economic Relations, Študentská 3, 91150 Trenčín
- Comenius University in Bratislava, Faculty of Law, Šafárikovo nám. č. 6, 810 00 Bratislava
- Comenius University in Bratislava, Faculty of Medicine, Špitálska 24, 813 72 Bratislava
- Matej Bel University, Faculty of Economics, Tajovského 10 975 90 Banská Bystrica
- Pan-European University in Bratislava, Faculty of Economics and Business, Tematínska 10, 851 05 Bratislava
- Technical University of Košice, Faculty of Economics, Department of Finance, Nemcovej 32, 042 00 Košice
- University of Economics in Bratislava Faculty of National Economy, Dolnozemska cesta 1 852 35 Bratislava
- University of Economics in Bratislava, Faculty of Commerce, Department of International Trade, Dolnozemska cesta 1, 852 35 Bratislava

#### **Slovenia**

- University of Maribor, Institute of Media communications, FERi, Koroška cesta 46, 2000 Maribor
- University of Novo Mesto, Faculty of Business and Management Sciences, Na Loko 2, 8000 Novo mesto
- University of Novo mesto, Faculty of Economics and Informatics, Na Loko 2, 8000 Novo mesto

#### **Spain**

- Universidad Loyola, C/ Energía Solar, 1. 41014 Sevilla, Andalusia
- University of Extremadura

#### **Turkey**

- Burdur Mehmet Akif Ersoy University, Adem Tolunay Yerleşkesi, 15300
- Galatasaray University, Çırağan Cad., Ortaköy, 34349
- Yaşar University

#### **Ukraine**

- Kyiv National Economic University named after Vadym Hetman, Management Department

#### **United Arab Emirates**

- Higher Colleges of Technology, Department of Business



# THE IMPACT OF COVID-19 ON EUROPEAN FINANCIAL MARKETS: AN EMPIRICAL ANALYSIS

Margarida Bagão<sup>1</sup> 

Rui Dias<sup>2</sup> 

Paula Heliodoro<sup>3</sup> 

Paulo Alexandre<sup>4</sup> 

DOI: <https://doi.org/10.31410/LIMEN.2020.1>

**Abstract:** *The fast spread of coronavirus (COVID-19) had negative impacts on financial markets worldwide. It created uncertainty and a lack of confidence, causing unprecedented levels of risk, causing sharp losses to investors in a very short period. In view of these events, this essay aims to investigate the relationship between Covid-19 (confirmed cases and deaths), and the stock market indexes of Greece (ATG), France (CAC40), Germany (DAX 30), United Kingdom (FTSE 100), Italy (FTSE MID), Spain (IBEX 35), Ireland (ISEQ), and Portugal (PSI 20), from December 31st, 2019 to July 23rd, 2020. In order to achieve such an analysis, we want to validate if: the increase in cases and deaths resulting from Covid-19 have any connection with the financial markets under analysis? If so, do these connections cause shocks in European financial markets? The results suggest structure breaks, mostly, in March 2020. Covid-19 data (confirmed cases) integrate with the Covid-19 data series (deaths), with the Spanish market (IBEX 35), Greece (ATG), and Italy (FTSE MID). However, the Covid-19 data series (deaths), is synchronized with the Covid-19 data (confirmed cases), with the markets of Germany (DAX 30), France (CAC 40), Ireland (ISEQ), Italy ( FTSE MID), United Kingdom (FTSE 100) and Portugal (PSI 20), just does not synchronize with the Greek market (ATG). We can easily see that the Covid-19 data series (deaths) has a major impact on Europe's financial markets. The results of the VAR Granger Causality / Block Exogeneity Wald Tests model suggest 2 bidirectional causal relationships between confirmed cases and deaths from the Covid-19 virus. However, there were no shocks between Covid-19 data (confirmed cases and deaths) and the financial markets under analysis. As a final discussion, we consider that investors should avoid investments in the stock exchange, at least while this pandemic lasts, and rebalance their portfolios in hedging and/or sovereign debt assets, to mitigate risk and improve the efficiency of their portfolios.*

**Keywords:** Covid-19 Coronavirus, Stock markets, Epidemic.

## 1. INTRODUCTION

Coronavirus Covid-19 is a type of outbreak that first appeared in December 2019 in the city of Wuhan, Hubei province, China. It was declared a pandemic by the World Health Organization (WHO) on March 12, 2020. According to the World Health Organization,

<sup>1</sup> Escola Superior de Ciências Empresarias, Instituto Politécnico de Setubal, Portugal

<sup>2</sup> Escola Superior de Ciências Empresarias, Instituto Politécnico de Setubal & CEFAGE, Universidade de Évora, Portugal

<sup>3</sup> Escola Superior de Ciências Empresarias, Instituto Politécnico de Setubal, Portugal

<sup>4</sup> Escola Superior de Ciências Empresarias, Instituto Politécnico de Setubal, Portugal

the number of people infected by Covid-19 worldwide, since the beginning of the pandemic, has already exceeded, on 23rd July 2020, 15.3 million (cases), and 627,000 deaths.

The Covid-19 pandemic negatively affects the global economy, as well as social and cultural life on a global scale. Rating agencies such as Moody's and Standard & Poors have restricted China's growth forecast for 2020. In line with all these negative effects, it seems inevitable that economic growth and financial markets have also been affected equally (Liu, Manzoor, Wang, Zhang and Manzoor, 2020).

Financial instability is a very important factor for society since a financial crisis or stock market crash can affect, directly or indirectly, the level of the economic well-being of the inhabitants of a country. If a given stock market is strongly linked to the stock market of another country, the financial stability of the first depends, in part, on the financial stability of the second. Thus, the occurrence of integration between markets can have significant implications for the international diversification of risk (Alexandre, Dias, and Heliodoro, 2020a, 2020b; Alexandre, Heliodoro, and Dias, 2019; Dias et al., 2020; Dias and Carvalho, 2020; Dias, Heliodoro, and Alexandre, 2020, 2019; Dias, Heliodoro, Alexandre, Santos, and Farinha, 2021; Dias, Heliodoro, Alexandre, and Vasco, 2020b, 2020a; Dias, Heliodoro, Teixeira, and Godinho, 2020; Dias, Pardal, Teixeira, and Machová, 2020; Dias and Pereira, 2021; Heliodoro, Dias, and Alexandre, 2020; Pardal, P., Dias, R., Šuleř, P., Teixeira, N., and Krulický, 2020).

This study aims to analyze the relationship between Covid-19 (cases and deaths), and stock market indexes in Greece (ATG), France (CAC40), Germany (DAX 30), United Kingdom (FTSE 100), Italy (FTSE MID), Spain (IBEX 35), Ireland (ISEQ), and Portugal (PSI 20), in the period from December 31st, 2019 to July 23rd, 2020. In order to achieve such an analysis, it is intended to verify whether: do the increase in cases and deaths resulting from Covid-19 have any connection with the financial markets under analysis? If so, do these connections cause a stir in Europe's financial markets? The results suggest the existence of synchronizations between the increase in confirmed cases and deaths resulting from the Covid-19 virus, and between these, and the financial markets. However, when we analyze the shocks, we see the absence of unidirectional or bidirectional causalities between the evolution of Covid-19, and the financial markets of Europe.

This investigation differs from studies carried out so far on the impact of the global pandemic on financial markets, as far as is known; the authors Ali, Alam, and Rizvi (2020), Ashraf (2020), Liu, Manzoor, Wang, Zhang and Manzoor (2020), Zeren and Hizarci (2020) analyzed the pandemic shocks, but the research questions, the markets analyzed, and the approach was essentially different from the one followed in this article.

In terms of structure, this article is organized into 5 sections. In addition to the current introduction, section 2 presents a Literature Review with regard to articles on the impact of the global pandemic on international financial markets, section 3 describes the methodology and data, section 4 contains the results. Section 5 presents the general discussions of the work.

## **2. LITERATURE REVIEW**

The understanding of international connections between financial markets in periods of the financial crisis is relevant for investors, fund managers and academics, in different aspects, namely in the theme of portfolio diversification (Lee, 2017).

Özer, Kamışlı and Kamışlı (2016), Jawadi, Chlibi and Cheffou (2019) Moagar-Poladian, Clichici and Stanciu (2019), Salisu, Ndako, Adediran and Swaray (2020) analyzed the movements and the integration between several international markets. Özer, Kamışlı e Kamışlı (2016) analyzed the movements between the markets of Germany, Austria, Czech Republic, Croatia, Lithuania and Greece, the authors show mixed results when failing to show movements. These findings have relevant implications for international investors, portfolio managers and policy makers. Jawadi, Chlibi e Cheffou (2019) studied the movements between the US market and the G-6, BRIC's and MENA markets. The authors show that the MENA and BRIC's markets are segmented with the North American market, while the G-6 markets show integration with the USA. Moagar-Poladian, Clichici and Stanciu (2019) demonstrate that Central and Eastern European markets have robust levels of integration during the European financial crisis. Salisu, Ndako, Adediran and Swaray (2020) analyzed integration into Islamic markets and show that markets are integrated and that this behavior can be influenced by global economic conditions.

Ali, Alam, and Rizvi (2020), Ashraf (2020), Liu, Manzoor, Wang, Zhang and Manzoor (2020), Zeren and Hizarci (2020) analyzed the impact of the global pandemic (Covid-19) on financial markets. Ali, Alam, and Rizvi (2020) investigated the reaction of financial markets as the Coronavirus epicenter moved from China to Europe and then to the USA. The results suggest that China's (initial) epicenter tends towards stabilization, while global markets have entered a free fall, especially in the contagion phase (later). Ashraf (2020) examined the stock markets' response to the Covid-19 pandemic, for this purpose used the daily data from COVID-19 (confirmed cases and deaths) and the profitability of 64 markets, from January 22nd, 2020 to April 17th, 2020. The author shows that the stock markets reacted negatively to the growth of confirmed cases of COVID-19. It means that the returns on the stock markets decreased as the number of confirmed cases increased. Liu, Manzoor, Wang, Zhang and Manzoor (2020) studied the impact of the coronavirus outbreak on 21 stock market indices. The authors show significant structural breaks resulting from the COVID-19 outbreak. Zeren and Hizarci (2020) analyzed the effects of the Covid-19 epidemic on the stock markets in the period from 23rd January 2020 to 13th March 2020. The authors show that the global cases of the outbreak have cointegration relations with the SSE, KOSPI and IBEX35 markets, but not with the FTSE MIB, CAC40, DAX30 markets.

To summarize, this work aims to contribute to the provision of information to investors and regulators in Europe's stock markets, where individual and institutional investors seek diversification benefits, as well as helping to promote the implementation of policies that contribute to the efficiency of these markets. Therefore, the objective of this work is to examine, the synchronizations, and the unidirectional and bidirectional causalities, between the Covid-19 data series (confirmed cases and deaths), and the European financial markets.

### **3. METHODOLOGY**

#### **DATA**

The analyzed data are related to the Covid-19 data series (confirmed cases and deaths), and to the stock market indexes of Greece (ATG), France (CAC40), Germany (DAX 30), United Kingdom (FTSE 100), Italy (FTSE MID), Spain (IBEX 35), Ireland (ISEQ) and Portugal (PSI 20), from December 31st, 2019 to July 23rd, 2020. The time series have daily scales and were obtained from the Thomson Reuters platform, with regard to the prices index of the financial markets, they are in local currency, to mitigate distortions in exchange rates.

**Table 1.** The name of countries and their indices used in this paper

Index	Country
ATG	Greece
CAC 40	France
DAX 30	Germany
FTSE 100	United Kingdom (UK)
FTSE MID	Italy
IBEX 35	Spain
ISEQ	Ireland
PSI 20	Portugal

Source: Own elaboration

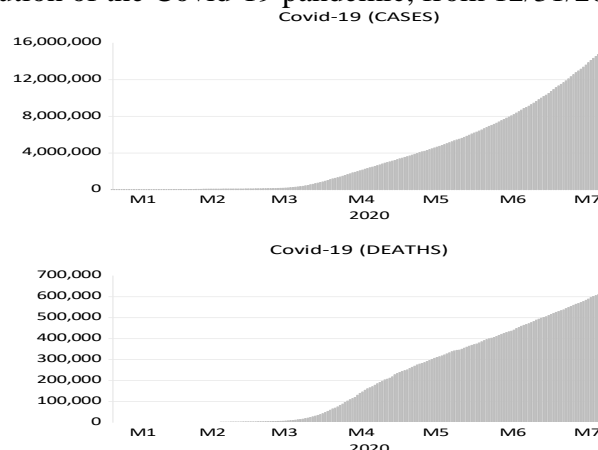
## METHODOLOGY

The development of the research took place over several stages. The characterization of the sample used was carried out through descriptive statistics, from the adherence test of Jarque and Bera (1980), as well as graphics of stability to the residues. To estimate the structural breaks in the financial markets, we used the unit root test of Clemente et al. (1998). To assess the integration between the Covid-19 data series (confirmed cases and deaths), and the financial markets in Europe, we use the Gregory and Hansen (1996) that identifies structure breaks. To examine the significance of the causal relationships between the Covid-19 data series, and the financial markets, in analysis, we used the VAR Granger Causality / Block Exogeneity Wald Tests model, which uses Wald's statistic, which tests whether the null hypothesis that the coefficients of the lagged endogenous variables of the variable "cause" are null or not "cause" in the Grangerian sense the dependent variable. However, it should be noted that the result of this test is highly sensitive to the number of lags considered in the model, so the first concern is to properly estimate this value, in order to arrive at robust evidence (Gujarati, 2004). Besides, and to determine the number of lags to include in the causality tests, we use the HQ (Hannan-Quinn information criterion) criterion, and to assess the robustness of the model we apply the VAR Residual Serial Correlation LM Tests.

## 4. RESULTS

Figure 1 shows the evolution of the Covid-19 pandemic in the number of confirmed cases, as well as deaths, in a global context. As of July 23, 2020, confirmed cases had already exceeded 15.3 million, and deaths had already exceeded 627,000.

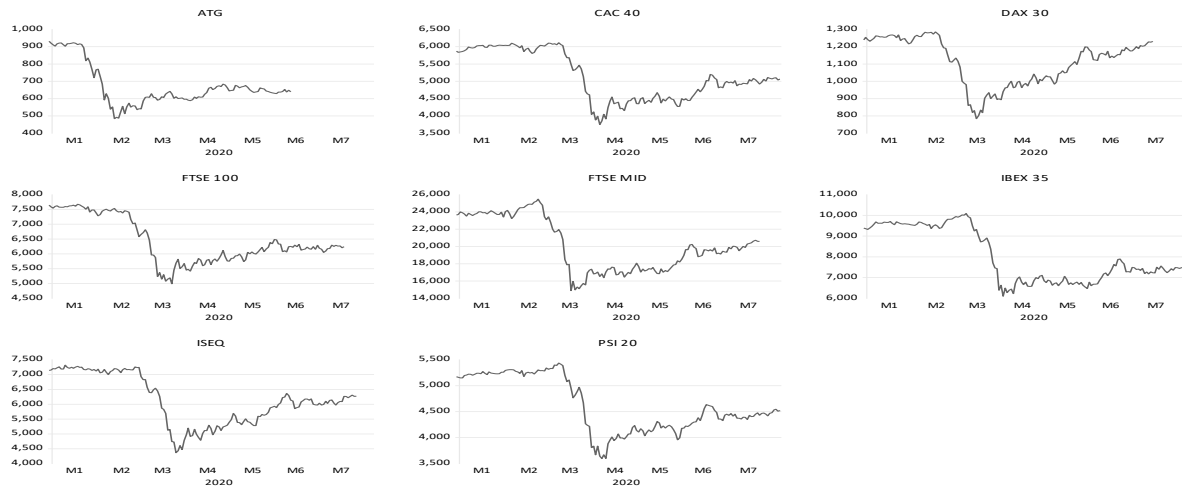
**Figure 1.** Evolution of the Covid-19 pandemic, from 12/31/2019 to 7/23/2020.



Source: Own elaboration

Figure 2 shows the evolution of European markets, in levels, in the period from December 31st, 2019 to July 23rd, 2020, which is a period of considerable complexity, due to understanding the outbreak of the global pandemic (Covid-19). Most markets show structure breaks in February and March 2020. These results are validated by the authors Heliodoro et al. (2020), Dias, Pardal, et al. (2020), Dias, Heliodoro, Alexandre, et al., (2020a), Dias, Heliodoro, and Alexandre (2020), Dias et al. (2020), that show significant structural breaks in financial markets due to the impact of the 2020 global pandemic.

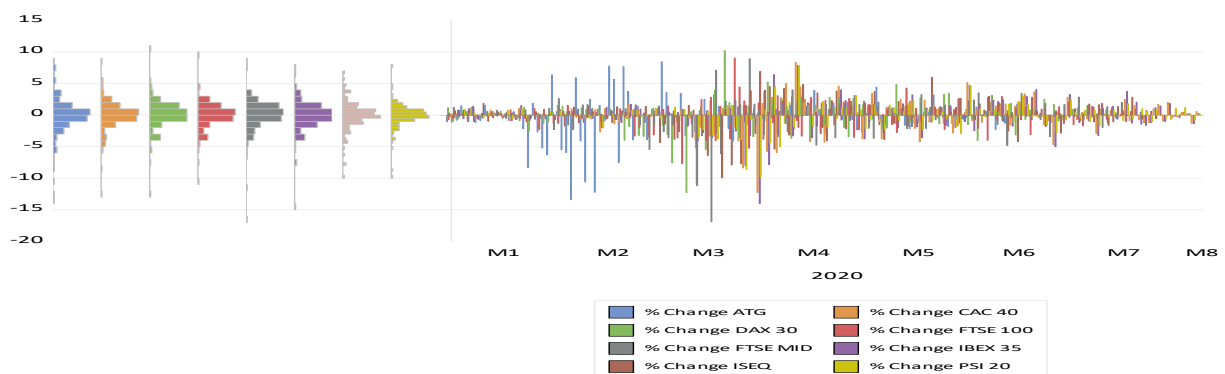
**Figure 2.** Evolution, in levels, of the 8 financial markets, in the period from 12/31/2019 to 7/23/2020



Source: Own elaboration

Figure 3 shows the evolution, in returns, of Europe's 8 financial markets. In all series, there is a relatively high dispersion around the average, as well as a relatively synchronized behavior between the data series. Graphical analysis shows the existence of high volatility, especially in February, March and April 2020.

**Figure 3.** Evolution, in % of the differences, of the 8 financial markets, in the period from 12/31/2019 to 7/23/2020



Source: Own elaboration.

Table 2 shows the main descriptive statistics on the returns of the eight European financial markets, as well as the Jarque-Bera adherence test. Analyses of descriptive statistics show that profitability shows negative daily averages, except for the German (DAX 30) and Ireland (ISEQ) markets. The Greek market has the largest standard deviation, while the Italian market

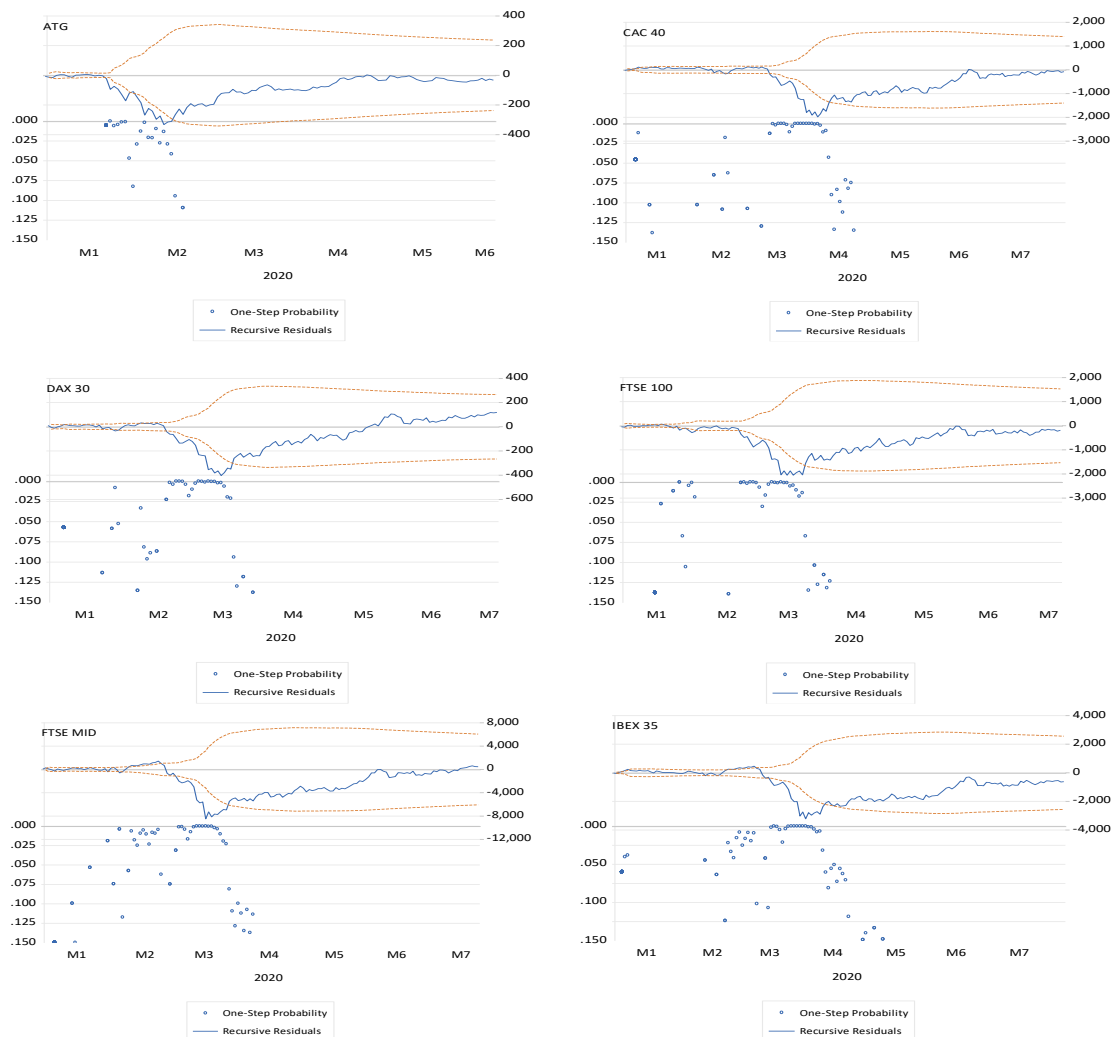
has the highest levels of kurtosis and asymmetry. Additionally, the coefficients of asymmetry and kurtosis are statistically different from those of a normal distribution.

**Table 2.** Descriptive statistics, on returns, of the 8 financial markets in Europe, in the Complete period

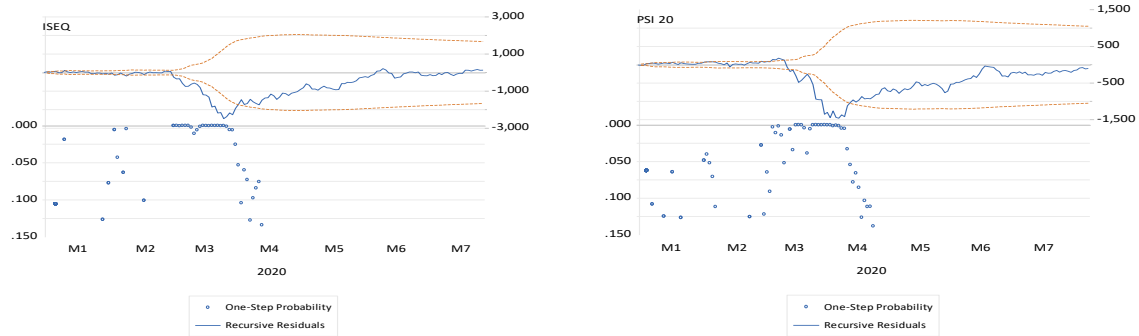
	ATG	CAC 40	DAX 30	FTSE 100	FTSE MID	IBEX 35	ISEQ	PSI 20
Mean	-0.001538	-0.000477	0.000467	-0.000692	-0.000197	-0.001036	4.30E-05	-0.000452
Std. Dev.	0.027084	0.021336	0.020510	0.019336	0.023779	0.022028	0.021069	0.017225
Skewness	-1.521235	-1.456190	-1.299364	-1.177540	-2.900081	-1.828632	-1.076405	-1.521948
Kurtosis	10.92967	11.74239	14.13378	11.50055	24.02861	15.09658	8.213614	13.94787
Jarque-Bera	598.1297***	704.0564***	1083.840***	645.1387***	3945.543***	1324.203***	263.8107***	1070.629***
Sum	-0.306004	-0.094967	0.093023	-0.137761	-0.039151	-0.206089	0.008563	-0.089869
Sum Sq. Dev.	0.145238	0.090134	0.083291	0.074025	0.111956	0.096072	0.087891	0.058748
Observations	199	199	199	199	199	199	199	199

Source: Own elaboration.

**Figure 4.** Stability tests carried out on the residues of the 8 financial markets in Europe, in the Complete period







**Source:** Own elaboration

Figure 4 shows the stability tests carried out on the residues of the European stock markets, to corroborate the presence of structural breaks. The determination of the structural break is relevant, as it affects potentially like that of the unit-roots. Through graphical analysis, we can assess the existence of disturbances in variance. Additionally, when examining the graphs and the 95% probability limits, we verified the existence of a violation of the probability limits, thus, the time series show unstable behavior.

Table 3 shows the results of Clemente et al. (1998) which identifies structural breaks, mostly in March 2020, resulting from the global pandemic (Covid-19). However, when we evaluate the synchronizations between the Covid-19 data series and the financial markets in Europe, we find that the structure breakdowns mostly occur in April 2020, it means, different from the breakdown of the market itself; this shows, that the pandemic has a very significant impact on these financial markets. These findings are corroborated by the authors Liu, Manzoor, Wang, Zhang and Manzoor (2020) that show significant structural breaks resulting from the Covid-19 outbreak.

**Table 3.** Unit root tests with structural breaks of Clemente et al. (1998), in returns, referring to the 8 financial markets in Europe, Complete period

Index	t-stat	Break Date
ATG	-12.57(0)***	05/02/2020
CAC 40	-13.53(0)***	31/03/2020
DAX 30	-12.82(0)***	10/03/2020
FTSE 100	-13.91(0)***	12/03/2020
FTSE MID	-14.61(0)***	17/03/2020
IBEX 35	-13.12(0)***	02/04/2020
ISEQ	-12.46(0)***	19/03/2020
PSI 20	-13.19(0)***	26/03/2020

Note: Lag Length (Automatic Length based on SIC). Break Selection: Minimize Dickey-Fuller t-statistic. The lateral values in parentheses refer to lags. \*\*\*, \*\*, \*. represent significance at 1%, 5% and 10%, respectively.

**Source:** Own elaboration.

The results of the Gregory-Hansen test can be seen in Table 4, which shows the synchronizations between the Covid-19 (confirmed cases), Covid-19 (deaths) data and the European financial markets. Covid-19 data (confirmed cases) integrate with the Covid-19 data series (deaths), with the Spanish market (IBEX 35), Greece (ATG), and Italy (FTSE MID). However, the Covid-19 data series (deaths) is synchronized with the Covid-19 data (confirmed cases), with the markets of Germany (DAX 30), France (CAC 40), Ireland (ISEQ), Italy (FTSE MID), United Kingdom (FTSE 100) and Portugal (PSI 20), just does not synchronize with the Greek market (ATG). We can easily see that the Covid-19 data series (deaths) have a major

impact on the financial markets in Europe, and we also find that most of the structural breakdowns in integration occur, mostly, in April 2020, differently from breaking of the market itself (March 2020). These results are partially confirmed with the authors' Zeren and Hizarci (2020) that show that the global cases of the outbreak have cointegration relations with the SSE, KOSPI and IBEX35 markets, but not with the FTSE MIB, CAC40, DAX30 markets.

**Table 4.** Gregory-Hansen tests, period Covid (31/12/2019 to 23/07/2020)

Markets	t-statistic	Method	Lags	Break Date	Results
Covid-19 (cases) / Covid-19	-5.06**	Regime	5	30/05/2020	Integration
Covid-19 (cases) / IBEX 35	-5.49***	Trend	0	21/06/2020	Integration
Covid-19 (cases) / ATG	-5.21**	Trend	0	21/06/2020	Integration
Covid-19 (cases) / FTSE MID	-5.55***	Regime	0	17/04/2020	Integration
Covid-19 (deaths) / Covid-19 (cases)	-6.78***	Trend	0	21/04/2020	Integration
Covid-19 (deaths) / DAX 30	-5.45***	Trend	0	18/04/2020	Integration
Covid-19 (deaths) / CAC 40	-5.23**	Regime	0	17/04/2020	Integration
Covid-19 (deaths) / ISEQ	-5.47***	Regime	0	18/04/2020	Integration
Covid-19 (deaths) / FTSE MID	-5.89***	Regime	0	17/04/2020	Integration
Covid-19 (deaths) / FTSE 100	-5.16**	Regime	0	18/04/2020	Integration
Covid-19 (deaths) / PSI 20	-5.19**	Regime	0	17/04/2020	Integration

Notes: The asterisks \*\*\*, \*\*, \* indicate statistical significance at 1%, 5% and 10%, respectively.

**Source:** Own elaboration.

To analyze the significance of the causal relationships between the financial markets under analysis, the VAR Granger Causality / Block Exogeneity Wald Tests model was applied. To determine the number of lags to include in the causality tests, we used the HQ criterion (Hannan-Quinn information criterion) which suggests 2 lags (see table 5).

**Table 5.** VAR Lag Order Selection Criteria

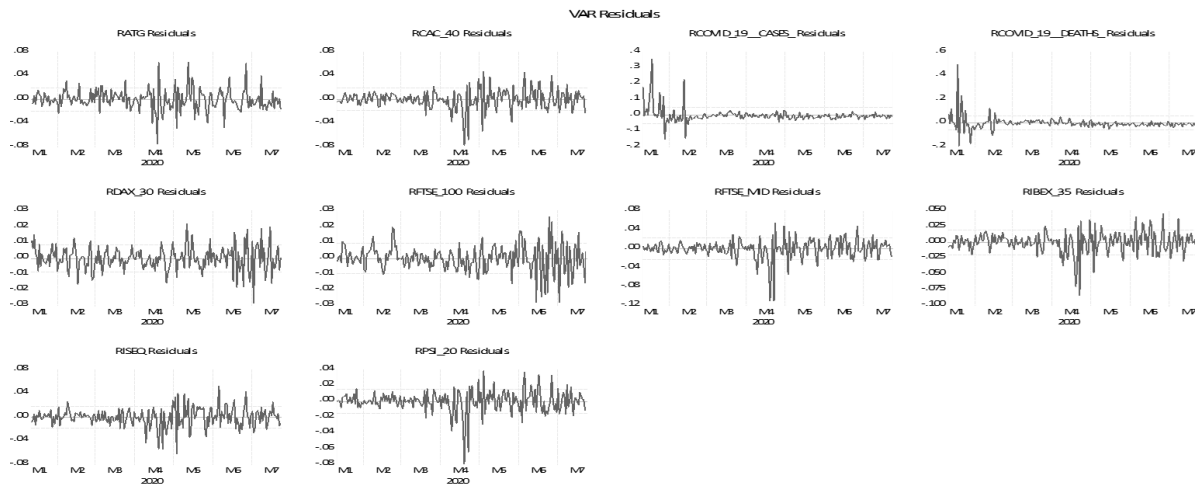
Lag	LogL	LR	FPE	AIC	SC	HQ
<b>2</b>	5552.948	423.7915	2.41e-37	-55.94710	-52.37130	<b>-54.49874*</b>

**Source:** Own elaboration

In figure 5 we can see the autocorrelation in the residues with 2 lags in the financial markets, however, in the Covid-19 data series (confirmed cases and deaths) this is not the case. A smaller number of lags increases the degrees of freedom, a greater number of lags decreases the problems of autocorrelation, given that we estimate a VAR with 4 lags for the data series of the European financial markets.

In Table 6 we can verify the results of the VAR Residual Serial Correlation LM Tests; we performed a VAR estimation with 4 lags, and then we performed the autocorrelation test at 5 lags; the null hypothesis was not rejected, which proves that the model does not present autocorrelation in residues, which indicates that the model presents a robust estimation.



**Figure 5. VAR Residuals Test**

Source: Own elaboration

**Table 6. VAR Residual Serial Correlation LM Tests**

Lag	LRE* stat	df	Prob.	Rao F-stat	df	Prob.
1	205.3774	100	0.0000	2.165009	(100, 978.4)	0.0000
2	132.8881	100	0.0155	1.350990	(100, 978.4)	0.0158
3	165.5520	100	0.0000	1.710690	(100, 978.4)	0.0000
4	134.4604	100	0.0123	1.368044	(100, 978.4)	0.0125
<b>5</b>	<b>103.2714</b>	<b>100</b>	<b>0.3913</b>	<b>1.034586</b>	<b>(100, 978.4)</b>	<b>0.3935</b>

Source: Own elaboration

The results of Granger's causality tests are shown in table 7, referring to Covid-19 data (confirmed cases and deaths), and the financial markets under analysis. The causality tests show 2 bidirectional causal relationships between confirmed cases and deaths from the Covid-19 virus. However, there were no clashes between Covid-19 data (cases and deaths) and the financial markets.

**Table 7. Granger / Block Exogeneity Wald Tests, in the Full Period**

	Covid-19 (cases)	Covid-19 (deaths)
Covid-19 (cases)	*****	3.84(4)***
Covid-19 (deaths)	16.02(4)***	*****
ATG	0.02(4)	0.06(4)
CAC 40	0.11(4)	0.10(4)
DAX 30	0.08(4)	0.04(4)
FTSE 100	0.13(4)	0.09(4)
FTSE MID	0.10(4)	0.02(4)
IBEX 35	0.12(4)	0.04(4)
ISEQ	0.28(4)	0.17(4)
PSI 20	0.34(4)	0.18(4)

Note: Column markets "cause" online markets. The lateral values in parentheses refer to lags. \*\*\*, \*\*, \*. represent significance at 1%, 5% and 10% respectively.

Source: Own elaboration.

## 5. CONCLUSION

The general conclusion to be retained and sustained by the results obtained, through tests carried out with econometric models, demonstrates that the global pandemic has a significant

impact on the memory properties of the analyzed financial markets. The results indicate that the covid-19 data (confirmed cases and deaths) are mostly integrated with the financial markets analyzed. The causality tests show 2 bidirectional causal relationships between confirmed cases and deaths from the Covid-19 virus. However, there were no shocks between Covid-19 data (cases and deaths) and the financial markets. As a final discussion, we consider that investors should rebalance their portfolios, at least while this pandemic lasts, and adjust their portfolios in hedging and/or sovereign debt assets, to mitigate risk and improve the efficiency of their wallets.



## REFERENCES

- Alexandre, P., Dias, R., & Heliodoro, P. (2020a). EUROPEAN FINANCIAL MARKET INTEGRATION: A CLOSER LOOK AT GOVERNMENT BONDS IN EUROZONE COUNTRIES. *Balkans Journal of Emerging Trends in Social Sciences*, 3(1), 78–86. <https://doi.org/10.31410/balkans.jetss.2020.3.1.78-86>
- Alexandre, P., Dias, R., & Heliodoro, P. (2020b). HOW LONG IS THE MEMORY OF THE REGION LAC STOCK MARKET? *Balkans Journal of Emerging Trends in Social Sciences*, 3(2). <https://doi.org/10.31410/balkans.jetss.2020.3.2.131-137>
- Alexandre, P., Heliodoro, P., & Dias, R. (2019). THE CONTAGION EFFECT IN EUROPE: A DCC GARH APPROACH. In *5th LIMEN Conference Proceedings (part of LIMEN conference collection)* (pp. 73–79). <https://doi.org/10.31410/limen.2019.73>
- Ali, M., Alam, N., & Rizvi, S. A. R. (2020). Coronavirus (COVID-19) — An epidemic or pandemic for financial markets. *Journal of Behavioral and Experimental Finance*. <https://doi.org/10.1016/j.jbef.2020.100341>
- Ashraf, B. N. (2020). Stock markets' reaction to COVID-19: Cases or fatalities? *Research in International Business and Finance*. <https://doi.org/10.1016/j.ribaf.2020.101249>
- Clemente, J., Montañés, A., & Reyes, M. (1998). Testing for a unit root in variables with a double change in the mean. *Economics Letters*, 59(2), 175–182. [https://doi.org/10.1016/S0165-1765\(98\)00052-4](https://doi.org/10.1016/S0165-1765(98)00052-4)
- Dias, R., da Silva, J. V., & Dionísio, A. (2019). Financial markets of the LAC region: Does the crisis influence the financial integration? *International Review of Financial Analysis*, 63(February), 160–173. <https://doi.org/10.1016/j.irfa.2019.02.008>
- Dias, R., Teixeira, N., Machova, V., Pardal, P., Horak, J., & Vochozka, M. (2020). Random walks and market efficiency tests: Evidence on US, Chinese and European capital markets within the context of the global Covid-19 pandemic. *Oeconomia Copernicana*, 11(4). <https://doi.org/10.24136/OC.2020.024>
- Dias, R., & Carvalho, L. C. (2020). Hedges and safe havens: An examination of stocks, gold and silver in Latin America's stock market. *Revista de Administração Da UFSM*, 13(5), 1114–1132. <https://doi.org/10.5902/1983465961307>
- Dias, R., Heliodoro, P., & Alexandre, P. (2019). Risk transmission among stock markets in LAC Region: financial crises impact, 91–97.
- Dias, R., Heliodoro, P., & Alexandre, P. (2020). Efficiency of Asean-5 Markets: An Detrended Fluctuation Analysis. *Mednarodno Inovativno Poslovanje = Journal of Innovative Business and Management*, 12(2), 13–19. <https://doi.org/10.32015/jibm.2020.12.2.13-19>
- Dias, R., Heliodoro, P., Alexandre, P., Santos, H., & Farinha, A. (2021). Long memory in stock returns: Evidence from the Eastern European markets. *SHS Web of Conferences*, 91. <https://doi.org/10.1051/shsconf/20219101029>
- Dias, R., Heliodoro, P., Alexandre, P., & Vasco, C. (2020a). FINANCIAL MARKET INTEGRATION OF ASEAN-5 WITH CHINA: AN ECONOPHYSICS APPROACH. In *4th EMAN Conference Proceedings (part of EMAN conference collection)* (pp. 17–23).

- <https://doi.org/10.31410/eman.2020.17>
- Dias, R., Heliodoro, P., Alexandre, P., & Vasco, C. (2020b). The shocks between oil market to the bric stock markets: A generalized VAR approach, 25–31.
- Dias, R., Heliodoro, P., Teixeira, N., & Godinho, T. (2020). Testing the Weak Form of Efficient Market Hypothesis: Empirical Evidence from Equity Markets. *International Journal of Accounting, Finance and Risk Management*, 5(1), 40. <https://doi.org/10.11648/j.ijafmr.20200501.14>
- Dias, R., Pardal, P., Teixeira, N., & Machová, V. (2020). Financial Market Integration of ASEAN-5 with China. *Littera Scripta*, 13(1). [https://doi.org/10.36708/littera\\_scripta2020/1/4](https://doi.org/10.36708/littera_scripta2020/1/4)
- Dias, R., & Pereira, J. M. (2021). The Impact of the COVID-19 Pandemic on Stock Markets. *International Journal of Entrepreneurship and Governance in Cognitive Cities*, 1(2), 57–70. <https://doi.org/10.4018/ijegcc.2020070105>
- Gregory, A. W., & Hansen, B. E. (1996). Residual-based tests for cointegration in models with regime shifts. *Journal of Econometrics*, 70(1), 99–126. [https://doi.org/10.1016/0304-4076\(99\)00168-7](https://doi.org/10.1016/0304-4076(99)00168-7)
- Gujarati, D. N. (2004). *Basic Econometrics*. New York. <https://doi.org/10.1126/science.1186874>
- Heliodoro, P., Dias, R., & Alexandre, P. (2020). Financial Contagion Between the Us and Emerging Markets: Covid-19 Pandemic Case. *4th EMAN Selected Papers (Part of EMAN Conference Collection)*, 1–9. <https://doi.org/10.31410/eman.s.p.2020.1>
- Jarque, C. M., & Bera, A. K. (1980). Efficient tests for normality, homoscedasticity and serial independence of regression residuals. *Economics Letters*, 6(3), 255–259. [https://doi.org/10.1016/0165-1765\(80\)90024-5](https://doi.org/10.1016/0165-1765(80)90024-5)
- Jawadi, F., Chlibi, S., & Cheffou, A. I. (2019). Computing stock price comovements with a three-regime panel smooth transition error correction model. *Annals of Operations Research*. <https://doi.org/10.1007/s10479-018-2805-3>
- Lee, E.-J. (2017). Intra- and inter-regional portfolio diversification strategies under regional market integration: Evidence from U.S. global banks. *International Review of Financial Analysis*. <https://doi.org/10.1016/j.irfa.2017.08.001>
- Liu, H., Manzoor, A., Wang, C., Zhang, L., & Manzoor, Z. (2020). The COVID-19 outbreak and affected countries stock markets response. *International Journal of Environmental Research and Public Health*. <https://doi.org/10.3390/ijerph17082800>
- Pardal, P., Dias, R., Šuleř, P., Teixeira, N., & Krulický, T. (2020). Integration in Central European capital markets in the context of the global COVID-19 pandemic, 15(4). <https://doi.org/10.24136/eq.2020.027>
- Moagar-Poladian, S., Clichici, D., & Stanciu, C. V. (2019). The comovement of exchange rates and stock markets in Central and Eastern Europe. *Sustainability (Switzerland)*. <https://doi.org/10.3390/su11143985>
- Özer, M., Kamlı, M., & Kamlı, S. (2016). The Analysis of Volatility Spillovers between the German and Central and Eastern European (CEE) Stock Markets by Using Frequency Domain Causality Test. In *Europe and Asia: Economic Integration Prospects*.
- Salisu, A. A., Ndako, U. B., Adediran, I. A., & Swaray, R. (2020). A fractional cointegration VAR analysis of Islamic stocks: A global perspective. *North American Journal of Economics and Finance*. <https://doi.org/10.1016/j.najef.2019.101056>
- Zeren, F., & Hizarci, a. (2020). The Impact of Covid-19 Coronavirus on Stock Markets: Evidence From Selected Countries. *Muhasebe ve Finans İncelemeleri Dergisi*. <https://doi.org/10.32951/mufider.706159>



# THE IMPACT OF COVID-19 ON THE SECURITIES AND EQUITY MARKETS OF PORTUGAL AND EDP: AN ECONOPHYSICS APPROACH

Maria Manuel<sup>1</sup>   
Paula Heliodoro<sup>2</sup>   
Rui Dias<sup>3</sup>   
Paulo Alexandre<sup>4</sup> 

DOI: <https://doi.org/10.31410/LIMEN.2020.13>

**Abstract:** *The Efficient Market Hypothesis (EMH), is one of the most important hypotheses in the financial economy, which argues that yields have no memory (correlation), which implies that agents cannot have abnormal returns in the financial markets, base arbitration operations. This essay intends to investigate the efficiency, in its weak form, in the stock and bond markets of Portugal and EDP, in the period from December 31, 2019, to August 10, 2020. With the purpose of achieving such an analysis, whether: (i) with the evolution of the global pandemic (Covid-19) the Portuguese and EDP stock and bond markets show signs of (in) efficiency? (ii) Does the increased integration between the Portuguese and EDP stock and bond markets result in risk transmission? The model DFA shows the existence of long memories in these markets, suggesting that they are not efficient, which validates the first research question. This situation has implications for investors, since some returns can be expected, creating opportunities for arbitrage and abnormal earnings. However, to confirm the inefficiency of these markets, based on our results, we must prove the existence of anomalous returns. In order to answer the second investigation question, we carried out the integration test that shows that these markets are mostly integrated. To validate whether financial integration results in risk transmission between the analyzed markets, we estimate the trendless cross-correlation coefficients ( $\lambda_{DCCA}$ ), which shows 4 pairs of markets showing risk transmission (4 out of 10 possible). In conclusion, the authors suggest that these results are of interest, among others, to international investors interested in expanding the geographical scope, regarding the implementation of portfolio diversification strategies.*

**Keywords:** *Covid-19, Long memories, Financial integration, Portfolio diversification.*

## 1. INTRODUCTION

Globalization has reduced barriers to trade and increased international investment exponentially, which has created numerous opportunities for investors to invest in different markets. The stock, bond, and foreign exchange markets are the relevant sources for investing and maximizing investor profitability (Rehan, Zehra, Chhapra, and Makhija, 2019).

<sup>1</sup> Escola Superior de Ciências Empresarias - Instituto Politécnico de Setúbal, Portugal

<sup>2</sup> Escola Superior de Ciências Empresarias – Instituto Politécnico de Setúbal, Portugal

<sup>3</sup> Escola Superior de Ciências Empresarias - Instituto Politécnico de Setúbal, Portugal & CEFAGE, Universidade de Évora, Portugal

<sup>4</sup> Escola Superior de Ciências Empresarias – Instituto Politécnico de Setúbal, Portugal

Financial instability is a very important factor for society since a financial crisis or stock market crash can affect, directly or indirectly, the level of the economic well-being of the inhabitants of a country. If a given stock market is strongly linked to the stock market of another country, the financial stability of the first depends, in part, on the financial stability of the second. Thus, the occurrence of integration between markets can have significant implications for the international diversification of risk (Dias, da Silva and Dionísio, 2019).

The Market Efficiency Hypothesis is an important concept for investors to maintain their diversified portfolios efficiently. With the increase in investments, due to the globalization of the economy, there was a marked integration of world economies, in view of this understanding the synchronizations between companies and the financial markets have gained international relevance (Gupta and Basu, 2011).

This investigation differs from studies carried out so far on the impact of the global pandemic on financial markets, as far as is known; the authors He, Liu, Wang, and Yu (2020), Kanno (2020) Wang and Enilov (2020) analyzed the Covid-19 pandemic shocks, but the research questions, the markets analyzed, and the approach was essentially different from that followed in this essay.

In terms of structure, this essay is organized into 5 sections. In addition to the current introduction, section 2 presents a Literature Review on market efficiency, in its weak form, section 3 describes the methodology and data, section 4 contains the results. Section 5 presents the general discussions of the work.

## **2. LITERATURE REVIEW**

The topic of the efficient market hypothesis (EMH) has motivated other studies to analyze the implications for the market efficiency hypothesis, according to which the current asset price reflects all the information available, at a given moment, and the price adjusts up quickly, as new and unforeseen information hits the market. The mean reversion hypothesis, also known as negative series correlation, has been interpreted as an efficient correction mechanism in developed markets and a sign of a speculative bubble in emerging financial markets (Summers, 1986; Fama and French, 1988).

Ferreira and Dionísio (2014), Sensoy and Tabak (2015), Ferreira and Dionísio (2016), Rounaghi and Nassir Zadeh (2016), analyzed the presence of long memories in the financial markets, testing the efficient market hypothesis. Ferreira and Dionísio (2014) analyzed the stock indexes of 10 markets, using the methodology, the authors show that the series of returns have long-term dependence, being more accentuated in the markets of Spain, Greece and Portugal. Sensoy and Tabak (2015) show that the 2008 global financial crisis caused persistent profitability in almost all EU equity markets. However, during the eurozone sovereign debt crisis, this long-term dependency was seen only in the markets of France, Spain and Greece. Ferreira and Dionísio (2016) tested the Efficient Market Hypothesis (HME) in Africa's stock markets; using the methodology, the authors show that the long-term correlation only ends at the 149th lag, which corresponds to about seven months. Does this result harm HME?

Rounaghi and Nassir Zadeh (2016), Shirvani and Delcours (2016), Mensi, Tiwari and Yoon (2017), Ali, Shahzad, Raza and Al-Yahyaee (2018), tested the random walk hypothesis in several financial markets. Rounaghi and Nassir Zadeh (2016) investigated the presence of long memory in the profitability of the S&P 500 and the London Stock Exchange (LSE). Recently,



multifractal analysis has evolved as an important way of explaining the complexity of financial markets that can hardly be described by linear methods of efficient market theory. A comparison between the S&P 500 and the London Stock Exchange shows that both markets are efficient and have financial stability during periods of high and low volatility. Shirvani and Delcours (2016) analyzed 16 OECD markets, the authors show that the markets are efficient, as the hypothesis of reversion to the mean was not rejected. Mensi Tiwari, and Yoon (2017) show high efficiency in the long term, but moderate in the short term, and that these markets became less efficient after the beginning of the global financial crisis. Ali, Shahzad, Raza and Al-Yahyaee (2018) demonstrate that developed markets are relatively more efficient, followed by the BRICS stock markets. The authors show that almost all Islamic stock markets, except for Russia, Jordan and Pakistan, are more efficient than their conventional peers.

Guedes, Ferreira, Dionísio and Zebende (2019), Bashir et al. (2019), da Silva, Guedes, Ferreira, Dionísio and Zebende (2019) tested the market efficiency, in its weak form, through the cross-correlation coefficient. Guedes, Ferreira, Dionísio and Zebende (2019) show a decrease in the cross-correlation coefficient which means that the United Kingdom is more segmented, in the post BREXIT. Bashir et al. (2019) show through the model that most European financial markets tend to be negatively correlated in the long run after the Brexit referendum. Da Silva, Guedes, Ferreira, Dionísio and Zebende (2019) analyzed the main indices in the World: North America, South America, Asia and Europe. The authors show a perfect long-term cross-correlation between opening and closing prices; however, in the short term, there are differences between the different stock markets.

In summary, this work aims to contribute to the provision of information to international investors interested in expanding, in the geographical scope, strategies for diversifying efficient portfolios.

### 3. METHODOLOGY

#### DATA

The data used for the preparation of the test were the prices index (daily) of the stock markets of EDP, PSI 20, and the Portuguese energy sector. The yields of EDP's 10-year bonds, and Portugal's 10-year sovereign bonds, from December 31, 2019 to August 10, 2020. The source of information used was the Thomson Reuters platform, with prices in local currency, to mitigate exchange rate distortions.

**Table 1.** The name of countries and their indices used in this paper

Index	Country
EDP (PRICE INDEX)	PORTUGAL
EDP (BOND 10YR)	PORTUGAL
PSI 20	PORTUGAL
PORTUGAL (BOND 10YR)	PORTUGAL
ENERGY SECTOR PORTUGAL	PORTUGAL

**Source:** Own elaboration

#### METHODOLOGY MODELS

The development of the research took place over several stages. The characterization of the sample used was carried out through descriptive statistics, the Jarque and Bera (1980) adherence

test, as well as the quantile graphs. To estimate the breakdowns in the financial markets, we used the unit root test by Clemente et al. (1998). In order to test efficiency, in its weak form, in the stock and bond markets under analysis, we will use the Detrended Fluctuation Analysis (DFA) methodology. DFA is an analysis method that examines time dependency on non-stationary data series. This technique, assuming that the time series are non-stationary, avoids spurious results when the analysis focuses on the relationships of the data series in the long run. The DFA has the following interpretation:  $0 < \alpha < 0,5$ : anti-persistent series;  $\alpha = 0,5$  series features random walk;  $0,5 < \alpha < 1$  persistent series. The function of this technique is to examine the relationship between values  $x_k$  and  $x_{k+t}$  at different times (Guedes et al., 2018). To test the integration between the financial markets we will use the methodology of Gregory and Hansen (1996). In this empirical study, the authors were concerned with a general test model, in which the cointegration vector varies with time. The method developed by Gregory and Hansen (1996) is considered a complement to the ADF test. Also, it can also be affirmed, in the econometric perspective, as a multivariate version of the model by Zivot and Andrews (1992). According to the authors, the existence of structural breaks can lead to erroneous conclusions regarding the acceptance of the null hypothesis of non-cointegration and, therefore, the absence of any type of long-term relationship between variables  $I(1)$ . In order to validate whether the integration causes risk between the stock and bond markets under analysis, we will use Zebende's (2011) cross-correlation coefficient without trend, being the same, a method to quantify the level of cross-correlation between two series non-stationary storms. The coefficient is based on the DFA methods of Peng et al. (1994) and the DCCA of Podobnik and Stanley (2008). The cross-correlation coefficient depends on the length of the box  $s$  (time scale). One of the advantages of this cross-correlation coefficient is centered on the possibility of measuring the correlations between two non-stationary time series at different time scales. The DCCA cross-correlation coefficient varies within the range  $-1 \leq \rho_{DCCA} \leq 1$  logically 1 means perfect cross-correlation, -1 means perfect anti-cross-correlation and 0 means that there is no correlation (Podobnik and Stanley, 2008).

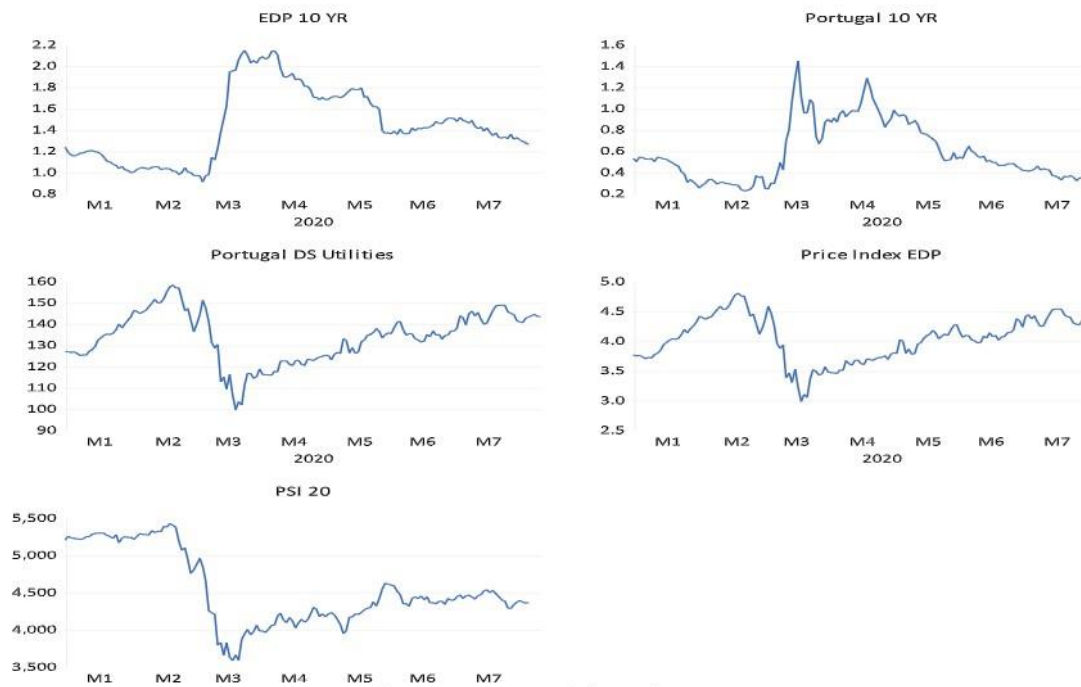
#### 4. RESULTS

Figure 1 shows the evolution of the Portuguese and EDP stock and bond markets, in levels, in the period from December 31, 2019 to August 10, 2020, being a very complex period, due to the understanding the outbreak of the global pandemic (Covid-19). Most markets show structure breaks in February and March 2020. These findings are corroborated by authors Dias, Heliodoro, Alexandre, and Vasco, (2020), Alexandre, Dias, and Heliodoro (2020b), Heliodoro, Dias, and Alexandre (2020), Dias, Teixeira, Machova, et al. (2020), Dias, Heliodoro, and Alexandre (2019), Dias, Heliodoro, Alexandre, and Vasco (2020b) who evidence that the 2020 global pandemic had significant impacts on international financial markets.

Figure 2 shows the evolution, in% of the differences, of the Portuguese and EDP stock and bond markets. In all series, there is a relatively high dispersion around the average, as well as a relatively synchronized behavior between the data series. Through graphical analysis, there is high volatility, especially in February and March 2020.

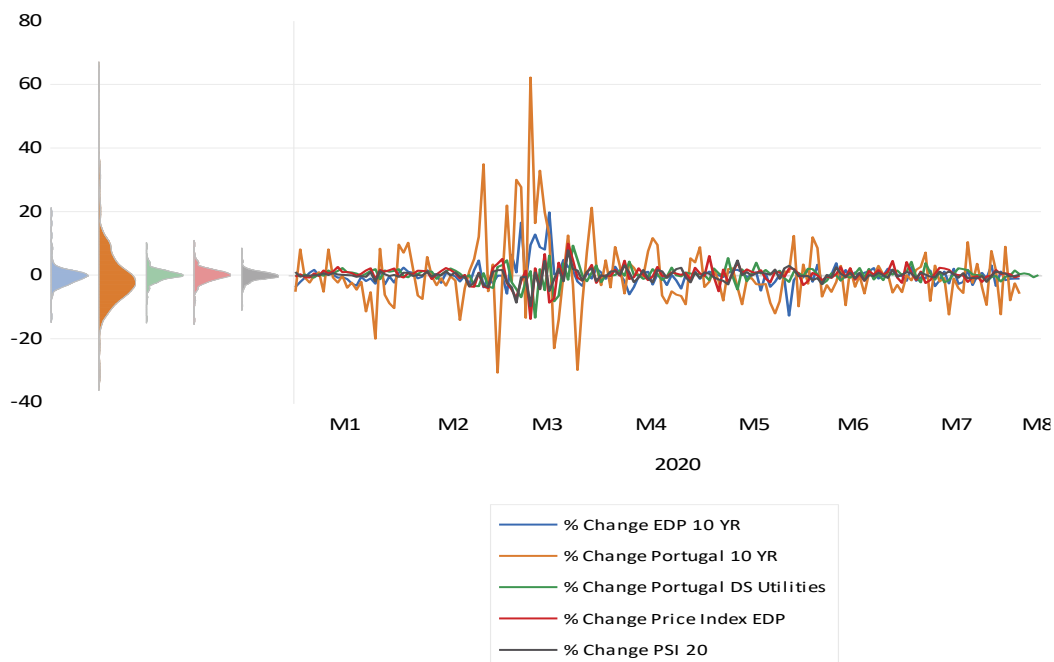


**Figure 1.** Evolution, in levels, of the 5 financial markets, in the period from 12/31/2019 to 10/08/2020



Source: Own elaboration

**Figure 2.** Evolution, in% of the differences, of the 5 financial markets, in the period from 12/31/2019 to 10/08/2020.



Source: Own elaboration

Table 2 shows the main descriptive statistics on the profitability of the five financial markets, as well as the Jarque-Bera adherence test. The analysis of descriptive statistics allows us to verify that the returns have positive daily averages, except for the stock market PSI 20 and the sovereign yields of Portugal. The Portuguese sovereign debt market has the largest standard

deviation, while EDP 10-year bonds have the highest level of kurtosis and asymmetry. Additionally, the coefficients of asymmetry and kurtosis are statistically different from those of a normal distribution, this evidence is corroborated by the Jarque-Bera test where the rejection of the null hypothesis is rejected with a significance of 1%. The authors Alexandre, Dias, and Heliodoro (2020), Heliodoro et al. (2020), Dias, Heliodoro, Alexandre, et al. (2020), Dias, Heliodoro, Teixeira, and Godinho (2020), Dias and Pereira (2021) also show that the financial series do not follow normal distributions.

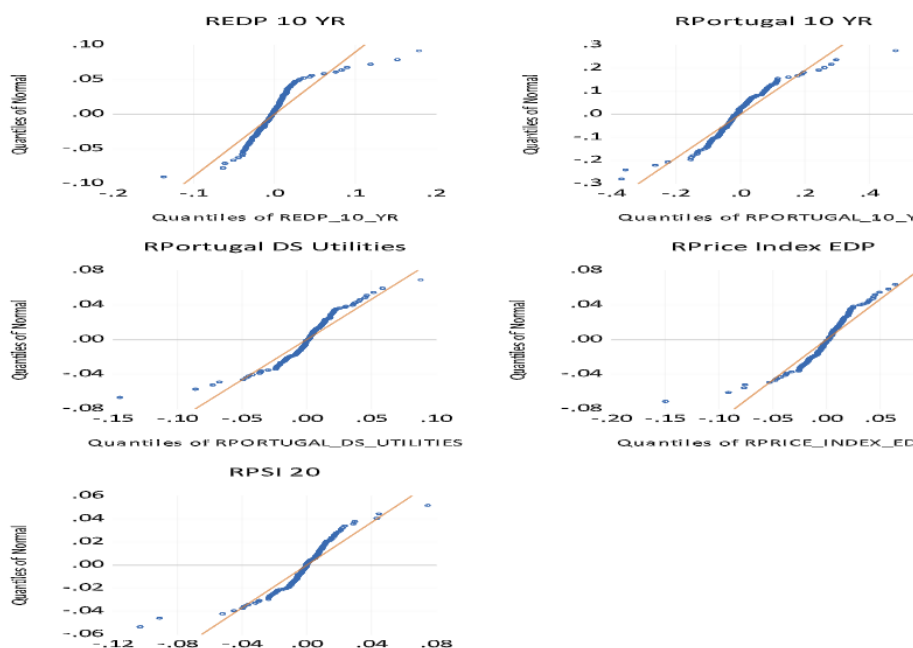
**Table 2.** Descriptive statistics, on returns, of the 5 financial markets, in the period from 12/31/2019 to 10/08/2020

	EDP 10YR	PORTUGAL 10YR	PORTUGAL DS UTILITIES	PRICE INDEX EDP	PSI 20
Mean	0.000135	-0.004008	0.000774	0.000940	-0.001132
Std. Dev.	0.033473	0.102220	0.025194	0.026729	0.019343
Skewness	1.669289	0.608094	-1.377193	-1.282833	-1.298431
Kurtosis	12.51146	7.801034	10.94610	10.37153	11.09842
Jarque-Bera	656.2572***	158.4168***	456.7794***	393.4557***	467.1192***
Sum	0.020954	-0.621174	0.119989	0.145749	-0.175456
Sum Sq. Dev.	0.172552	1.609121	0.097750	0.110023	0.057621
Observations	155	155	155	155	155

Source: Own elaboration

The quantile plots show that the profitability rate distribution is leptokurtic and asymmetric or skewed. The distribution is leptokurtic because the graph has the shape of "S", on the 45° line, and is asymmetric because the "S" is not symmetric on the line, showing the existence of non-linear relations (see figure 3).

**Figure 3.** Graphs of yield rate quantiles, from the 5 financial markets, in the period from 12/31/2019 to 10/08/2020



Source: Own elaboration

Table 3 shows the results of the unit root tests with structure breaks, by Clemente et al. (1998), and we can easily see that the financial markets showed structural breaks in February 2020, with the execution of the securities market in Portugal and EDP that broke in March and January 2020, respectively. The results are in line with the findings of the authors G.Sudha and V. Sornaganesh (2020), Lahmiri and Bekiros (2020), which indicate sharp declines in the international financial markets, resulting from the global pandemic (Covid-19). These findings are corroborated by authors Heliodoro, Dias, and Alexandre (2020), Dias, Heliodoro, Alexandre, and Vasco (2020), Dias, Heliodoro, Alexandre, Santos, and Farinha (2021), Dias and Pereira (2021) who evidence stock market crashes in the first quarter of 2020 due to the 2020 global pandemic.

**Table 3.** Unit root tests with structural breaks by Clemente et al. (1998), in returns, referring to the 5 financial markets, in the period from 12/31/2019 to 8/10/2020

Index	t-stat	Break Date
EDP (BOND 10 YR)	-9.77(0)***	09/01/2020
PORTUGAL (BOND 10 YR)	-11.13(0)***	07/03/2020
ENERGY SECTOR PT	-13.74(0)***	27/02/2020
EDP (PRICE INDEX)	-13.59(0)***	26/02/2020
PSI 20	-13.39(0)***	23/02/2020

Note: Lag Length (Automatic Length based on SIC). Break Selection: Minimize Dickey-Fuller t-statistic. The lateral values in parentheses refer to lags. \*\*\*, \*\*, \*. represent significance at 1%, 5% and 10%, respectively.

**Source:** Own elaboration.

The results of the exponents  $DFA$ , we can see in table 4, and verify that the securities markets: EDP (10YR), Portugal (10YR) and the stock markets: Portuguese energy sector, EDP and PSI 20 show long memories, or that is, they show signs of (in) market efficiency, in its weak form. These findings imply that prices do not fully reflect the information available and that changes in prices are not i.i.d. This situation has implications for investors, since some returns can be expected, creating opportunities for arbitrage and abnormal earnings. These findings are in line with the evidence suggested by the authors Aggarwal (2018), Rehman, Chhapra, Kashif, and Rehan (2018), which show accentuated levels of arbitrage which may create anomalous returns for investors, without incurring increased risk.

**Table 4.** DFA exponent for index and return. The values of the linear adjustments for  $\alpha DFA$  always had  $R2 > 0.99$ .

Stock market	DFA exponent (Covid-19 period)
EDP (BOND 10 YR)	$0.80 \pm 0.0011^{***}$
PORTUGAL (BOND 10 YR)	$0.61 \pm 0.0011^{***}$
ENERGY SECTOR PT	$0.57 \pm 0.0034^{***}$
EDP (PRICE INDEX)	$0.54 \pm 0.0039^{***}$
PSI 20	$0.67 \pm 0.0061^{***}$

Source: Own elaboration.

Note: The hypotheses are  $H_0: \alpha = 0.5$  and  $H_1: \alpha \neq 0.5$ . \*\*\*, \*\*, \*. represent significance at 1%, 5% and 10%, respectively.

**Source:** Own elaboration.

The results of the Gregory-Hansen test can be seen in Table 5 which shows the integrations between the stock, Portuguese securities and EDP markets and we verify that all markets are integrated, except for EDP (PRICE INDEX) / PSI 20, which causes us some surprise. These findings call into question the implementation of efficient portfolio diversification strategies,

with important implications for the individual, institutional investors, portfolio managers, and policy makers.

**Table 5.** Gregory-Hansen tests, Covid period (31/12/2019 to 10/08/2020)

Markets	t-statistic	Method	Lags	Break Date	Results
EDP (BOND 10 YR) / EDP (PRICE INDEX)	-5.07**	Regime	0	56	Integration
EDP (BOND 10 YR) / ENERGY SECTOR (PT)	-5.56***	Regime	0	56	Integration
EDP (BOND 10 YR) / PSI 20	-4.75*	Regime	0	56	Integration
EDP (BOND 10 YR) / PORTUGAL (10 YR)	-4.88**	Trend	5	49	Integration
EDP (PRICE INDEX) / EDP (BOND 10 YR)	-4.73*	Regime	0	55	Integration
EDP (PRICE INDEX) / ENERGY SECTOR (PT)	-8.96***	Regime	0	127	Integration
EDP (PRICE INDEX) / PORTUGAL (10 YR)	-5.18**	Trend	0	70	Integration
ENERGY SECTOR (PT) / EDP (BOND 10 YR)	-5.12**	Regime	0	56	Integration
ENERGY SECTOR (PT) / EDP (PRICE INDEX)	-8.51***	Regime	0	55	Integration
ENERGY SECTOR (PT) / PSI 20	-5.05**	Trend	0	24	Integration
ENERGY SECTOR (PT) / EDP (BOND 10 YR)	-5.14**	Trend	0	115	Integration
PSI 20 / EDP (BOND 10 YR)	-5.32**	Trend	1	44	Integration
PSI 20 / EDP (PRICE INDEX)	-5.18**	Regime	1	44	Integration
PSI 20 / ENERGY SECTOR (PT)	-6.29***	Regime	0	43	Integration
PSI 20 / PORTUGAL (10 YR)	-5.22**	Regime	1	43	Integration
PORTUGAL (10 YR) / EDP (BOND 10 YR)	-4.87*	Regime	5	110	Integration
PORTUGAL (10 YR) / EDP (PRICE INDEX)	-5.92**	Regime	1	70	Integration
PORTUGAL (10 YR) / ENERGY SECTOR (PT)	-6.14***	Regime	1	71	Integration
PORTUGAL (10 YR) / PSI 20	-6.16***	Trend	1	68	Integration

Notes: The asterisks \*\*\*, \*\*, \* indicate statistical significance at 1%, 5% and 10%, respectively.

**Source:** Own elaboration.

Table 6 shows the trendless cross-correlation coefficients ( $\lambda_{DCCA}$ ), referring to the Portuguese and EDP stock and bond markets, from December 31, 2019, to August 10, 2020. The EDP financial market pairs ( BOND 10 YR) / PORTUGAL (10 YR), EDP (PRICE INDEX) / ENERGY SECTOR (PT), EDP (PRICE INDEX) / PSI 20, ENERGY SECTOR (PT) / PSI 20 present the  $\lambda_{DCCA}$  strong coefficients, which indicates the presence of risk transmission. Regarding the remaining pairs, the  $\lambda_{DCCA}$  coefficients are anti-correlated, that is, there is no risk transmission between these markets. This evidence is relevant because the Gregory-Hansen integration test shows that these markets are integrated, however, the integration ratio is not equal to the identified risk. These findings are relevant for institutional investors, risk managers who seek to diversify their portfolios in these geographic markets.

**Table 6.** Summary table of the  $\lambda_{DCCA}$  coefficient peaks, in the financial markets under analysis, in the period from 12/31/2019 to 10/08/2020

Index	$\lambda_{DCCA}$	Time scale (days)	Trend
EDP (BOND 10 YR) / EDP (PRICE INDEX)	-0.51	n > 35 days	anti-correlation
EDP (BOND 10 YR) / ENERGY SECTOR (PT)	-0.60	n > 29 days	anti-correlation
EDP (BOND 10 YR) / PSI 20	-0.48	n > 35 days	anti-correlation
EDP (BOND 10 YR) / PORTUGAL (10 YR)	0.57	n > 35 days	<b>Strong correlation</b>

EDP (PRICE INDEX) / ENERGY SECTOR (PT)	0.76	n > 35 days	<b>Strong correlation</b>
EDP (PRICE INDEX) / PSI 20	0.87	n > 29 days	<b>Strong correlation</b>
EDP (PRICE INDEX) / PORTUGAL (10 YR)	-0.72	n > 35 days	anti-correlation
ENERGY SECTOR (PT) / PSI 20	0.71	n > 35 days	<b>Strong correlation</b>
ENERGY SECTOR (PT) / PORTUGAL (10 YR)	-0.63	n > 29 days	anti-correlation
PSI 20 / PORTUGAL (10 YR)	-0.73	n > 35 days	anti-correlation

**Source:** Own elaboration

## 5. CONCLUSION

The general conclusion to be kept and sustained by the results obtained, through tests carried out with econometric and mathematical models, suggests that the global pandemic has an adverse effect on the properties of memories in these financial markets. The model shows the existence of long memories in these markets, suggesting that they are not efficient, which validates the first research question. This situation has implications for investors, since some returns can be expected, creating opportunities for arbitrage and abnormal earnings, contrary to the assumptions of the random walk and information efficiency. However, to confirm the inefficiency of these markets, based on our results, we must prove the existence of anomalous returns. In order to answer the second investigation question, we carried out the integration test that shows that these markets are mostly integrated. To validate whether financial integration results in risk transmission between the analyzed markets, we estimate the trendless cross-correlation coefficients, which show 4 pairs of markets showing risk transmission (4 out of 10 possible). In conclusion, the authors suggest that the implementation of efficient portfolio diversification strategies in these regional markets may be questionable. These conclusions also open space for regulators in these regional markets to take steps to ensure better information between these markets and international markets.

## REFERENCES

- Alexandre, P., Dias, R., & Heliodoro, P. (2020a). EUROPEAN FINANCIAL MARKET INTEGRATION: A CLOSER LOOK AT GOVERNMENT BONDS IN EUROZONE COUNTRIES. *Balkans Journal of Emerging Trends in Social Sciences*, 3(1), 78–86. <https://doi.org/10.31410/balkans.jetss.2020.3.1.78-86>
- Alexandre, P., Dias, R., & Heliodoro, P. (2020b). HOW LONG IS THE MEMORY OF THE REGION LAC STOCK MARKET? *Balkans Journal of Emerging Trends in Social Sciences*, 3(2). <https://doi.org/10.31410/balkans.jetss.2020.3.2.131-137>
- Aggarwal, D. (2018). Random walk model and asymmetric effect in Korean composite stock price index. *Afro-Asian J. of Finance and Accounting*. <https://doi.org/10.1504/aajfa.2018.10009906>
- Ali, S., Shahzad, S. J. H., Raza, N., & Al-Yahyaee, K. H. (2018). Stock market efficiency: A comparative analysis of Islamic and conventional stock markets. *Physica A: Statistical Mechanics and Its Applications*. <https://doi.org/10.1016/j.physa.2018.02.169>
- Bashir, U., Zebende, G. F., Yu, Y., Hussain, M., Ali, A., & Abbas, G. (2019). Differential market reactions to pre and post Brexit referendum. *Physica A: Statistical Mechanics and Its Applications*. <https://doi.org/10.1016/j.physa.2018.09.182>
- Clemente, J., Montañés, A., & Reyes, M. (1998). Testing for a unit root in variables with a double change in the mean. *Economics Letters*, 59(2), 175–182.



- [https://doi.org/10.1016/S0165-1765\(98\)00052-4](https://doi.org/10.1016/S0165-1765(98)00052-4)
- da Silva, L. S. A., Guedes, E. F., Ferreira, P., Dionísio, A., & Zebende, G. F. (2019).  $\rho_{x,y}$  between open-close stock markets. *Physica A: Statistical Mechanics and Its Applications*. <https://doi.org/10.1016/j.physa.2019.122152>
- Dias, R., da Silva, J. V., & Dionísio, A. (2019). Financial markets of the LAC region: Does the crisis influence the financial integration? *International Review of Financial Analysis*, 63(February), 160–173. <https://doi.org/10.1016/j.irfa.2019.02.008>
- Dias, R., Teixeira, N., Machova, V., Pardal, P., Horak, J., & Vochozka, M. (2020). Random walks and market efficiency tests: Evidence on US, Chinese and European capital markets within the context of the global Covid-19 pandemic. *Oeconomia Copernicana*, 11(4). <https://doi.org/10.24136/OC.2020.024>
- Dias, Rui, Heliodoro, P., & Alexandre, P. (2019). Risk transmission among stock markets in LAC Region: financial crises impact, 91–97.
- Dias, Rui, Heliodoro, P., Alexandre, P., Santos, H., & Farinha, A. (2021). Long memory in stock returns: Evidence from the Eastern European markets. *SHS Web of Conferences*, 91. <https://doi.org/10.1051/shsconf/20219101029>
- Dias, Rui, Heliodoro, P., Alexandre, P., & Vasco, C. (2020a). FINANCIAL MARKET INTEGRATION OF ASEAN-5 WITH CHINA: AN ECONOPHYSICS APPROACH. In *4th EMAN Conference Proceedings (part of EMAN conference collection)* (pp. 17–23). <https://doi.org/10.31410/eman.2020.17>
- Dias, Rui, Heliodoro, P., Alexandre, P., & Vasco, C. (2020b). The shocks between oil market to the bric stock markets: A generalized VAR approach, 25–31.
- Dias, Rui, Heliodoro, P., Teixeira, N., & Godinho, T. (2020). Testing the Weak Form of Efficient Market Hypothesis: Empirical Evidence from Equity Markets. *International Journal of Accounting, Finance and Risk Management*, 5(1), 40. <https://doi.org/10.11648/j.ijafrm.20200501.14>
- Dias, Rui, & Pereira, J. M. (2021). The Impact of the COVID-19 Pandemic on Stock Markets. *International Journal of Entrepreneurship and Governance in Cognitive Cities*, 1(2), 57–70. <https://doi.org/10.4018/ijegcc.2020070105>
- Ferreira, P., & Dionísio, A. (2014). Revisiting serial dependence in the stock markets of the G7 countries, Portugal, Spain and Greece. *Applied Financial Economics*, 24(5), 319–331. <https://doi.org/10.1080/09603107.2013.875106>
- Ferreira, P., & Dionísio, A. (2016). How long is the memory of the US stock market? *Physica A: Statistical Mechanics and Its Applications*, 451, 502–506. <https://doi.org/10.1016/j.physa.2016.01.080>
- G.Sudha, V.Sornaganesh, M. T. S. (2020). *IMPACT OF INDIAN STOCK MARKET DUE TO CRISIS IN MARCH 2020*. *International Journal of Multidisciplinary Educational Research*.
- Gregory, A. W., & Hansen, B. E. (1996). Residual-based tests for cointegration in models with regime shifts. *Journal of Econometrics*, 70(1), 99–126. [https://doi.org/10.1016/0304-4076\(96\)01685-7](https://doi.org/10.1016/0304-4076(96)01685-7)
- Guedes, E. F., Brito, A. A., Oliveira Filho, F. M., Fernandez, B. F., de Castro, A. P. N., da Silva Filho, A. M., & Zebende, G. F. (2018). Statistical test for  $\Delta\rho$ DCCA: Methods and data. *Data in Brief*. <https://doi.org/10.1016/j.dib.2018.03.080>
- Guedes, E. F., Ferreira, P., Dionísio, A., & Zebende, G. F. (2019). An econophysics approach to study the effect of BREXIT referendum on European Union stock markets. *Physica A: Statistical Mechanics and Its Applications*. <https://doi.org/10.1016/j.physa.2019.04.132>
- Gupta, R., & Basu, P. K. (2011). Weak Form Efficiency In Indian Stock Markets. *International Business & Economics Research Journal (IBER)*. <https://doi.org/10.19030/iber.v6i3.3353>
- He, Q., Liu, J., Wang, S., & Yu, J. (2020). The impact of COVID-19 on stock markets.

- Economic and Political Studies*. <https://doi.org/10.1080/20954816.2020.1757570>
- Heliodoro, P., Dias, R., & Alexandre, P. (2020). Financial Contagion Between the Us and Emerging Markets: Covid-19 Pandemic Case. *4th EMAN Selected Papers (Part of EMAN Conference Collection)*, 1–9. <https://doi.org/10.31410/eman.s.p.2020.1>
- Jarque, C. M., & Bera, A. K. (1980). Efficient tests for normality, homoscedasticity and serial independence of regression residuals. *Economics Letters*, 6(3), 255–259. [https://doi.org/10.1016/0165-1765\(80\)90024-5](https://doi.org/10.1016/0165-1765(80)90024-5)
- Kanno, M. (2020). Risk Contagion of Covid-19 on Japanese Stock Market: A Network Approach. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3599609>
- Lahmiri, S., & Bekiros, S. (2020). The impact of COVID-19 pandemic upon stability and sequential irregularity of equity and cryptocurrency markets. *Chaos, Solitons and Fractals*. <https://doi.org/10.1016/j.chaos.2020.109936>
- Lawrence H. Summers. (1986). Does the stock market rationally reflect fundamental values? *The Journal of Finance*. <https://doi.org/10.2307/2328487>
- Mensi, W., Tiwari, A. K., & Yoon, S. M. (2017). Global financial crisis and weak-form efficiency of Islamic sectoral stock markets: An MF-DFA analysis. *Physica A: Statistical Mechanics and Its Applications*. <https://doi.org/10.1016/j.physa.2016.12.034>
- Peng, C. K., Buldyrev, S. V., Havlin, S., Simons, M., Stanley, H. E., & Goldberger, A. L. (1994). Mosaic organization of DNA nucleotides. *Physical Review E*, 49(2), 1685–1689. <https://doi.org/10.1103/PhysRevE.49.1685>
- Podobnik, B., & Stanley, H. E. (2008). Detrended cross-correlation analysis: A new method for analyzing two nonstationary time series. *Physical Review Letters*, 100(8). <https://doi.org/10.1103/PhysRevLett.100.084102>
- Rehan, R., Zehra, I., Chhapra, I. U., & Makhija, P. (2019). The relationship between exchange rate and stock prices in South Asian countries. *International Journal of Innovation, Creativity and Change*.
- Rehman, S., Chhapra, I. U., Kashif, M., & Rehan, R. (2018). Are Stock Prices a Random Walk? An Empirical Evidence of Asian Stock Markets. *ETIKONOMI*. <https://doi.org/10.15408/etk.v17i2.7102>
- Rounaghi, M. M., & Nassir Zadeh, F. (2016). Investigation of market efficiency and Financial Stability between S&P 500 and London Stock Exchange: Monthly and yearly Forecasting of Time Series Stock Returns using ARMA model. *Physica A: Statistical Mechanics and Its Applications*. <https://doi.org/10.1016/j.physa.2016.03.006>
- Sensoy, A., & Tabak, B. M. (2015). Time-varying long term memory in the European Union stock markets. *Physica A: Statistical Mechanics and Its Applications*. <https://doi.org/10.1016/j.physa.2015.05.034>
- Shirvani, H., & Delcoure, N. V. (2016). The random walk in the stock prices of 18 OECD countries: Some robust panel-based integration and cointegration tests. *Journal of Economic Studies*. <https://doi.org/10.1108/JES-03-2015-0053>
- Wang, W., & Enilov, M. (2020). The Global Impact of COVID-19 on Financial Markets. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3588021>
- Zebende, G. F. (2011). DCCA cross-correlation coefficient: Quantifying level of cross-correlation. *Physica A: Statistical Mechanics and Its Applications*, 390(4), 614–618. <https://doi.org/10.1016/j.physa.2010.10.022>
- Zivot, E., & Andrews, D. W. K. (1992). Further Evidence on the Great Crash, the Oil Price Shock, and the Unit Root Hypothesis. *Journal of Business & Economic Statistics*, 10(3), 251–270. <https://doi.org/10.1198/073500102753410372>





# STOCK MARKET EFFICIENCY IN AFRICA: EVIDENCE FROM RANDOM WALK HYPOTHESIS

Rui Dias<sup>1</sup>   
Hortense Santos<sup>2</sup> 

DOI: <https://doi.org/10.31410/LIMEN.2020.25>

---

**Abstract:** *This paper aims to test the efficient market hypothesis, in its weak form, in the stock markets of BOTSWANA, EGYPT, KENYA, MOROCCO, NIGERIA and SOUTH AFRICA, in the period from September 2, 2019 to September 2, 2020. In order to achieve this analysis, we intend to find out if: the global pandemic (Covid-19) has decreased the efficiency, in its weak form, of African stock markets? The results therefore support the evidence that the random walk hypothesis is not supported by the financial markets analyzed in this period of global pandemic. The values of variance ratios are lower than the unit, which implies that the yields are autocorrelated in time and, there is reversal to the mean, and no differences were identified between the stock markets analyzed. The authors consider that the results achieved are of interest to investors looking for opportunities for portfolio diversification in these regional stock markets.*

**Keywords:** *Random walk, Africa stock markets, Portfolio diversification.*

---

## 1. INTRODUCTION

In recent decades, the phenomenon of globalization has accentuated the synchronizations between international financial markets demonstrating that the correlation between international financial markets has increased. If a given stock market is strongly linked to another country's stock market, the financial stability of the former depends in part on the financial stability of the second. For this reason, a close or strong link between markets increases the levels of vulnerability to external shocks and, consequently, influences the economic conditions and welfare levels of their respective countries, as well as the efficiency of the market itself (Alexandre, Heliodoro and Dias, 2019; Dias, da Silva and Dionysus, 2019; Dias, Heliodoro and Alexandre, 2019, 2020; Alexandre, Dias and Heliodoro, 2020; Heliodoro *et al.* , 2020, 2020; Heliodoro, Dias and Alexandre, 2020; Dias, Alexandre and Heliodoro, 2020, 2020; Dias, Heliodoro, *et al.* , 2020, 2020a, 2020b; Dias, Sparrow, *et al.* , 2020) .

Stock markets in Africa are increasing interest among international investors, attracting significant private investment. There are currently more than twenty-nine (29) stock exchanges in Africa with significant disparities in market size, number of listed companies, volume of transactions, access to information. These institutional limitations together with the existence of information asymmetry, agency problems, regulatory limitations and the presence of financial institutions have implications for the efficient market hypothesis (HME) in these regional stock exchanges. (Hawaldar, Rohith, and Pinto, 2020; Lawal, Nwanji, Adama, and

---

<sup>1</sup> School of Business and Administration, Polytechnic Institute of Setúbal, Portugal and CEFAGE-UE, IIFA, University of Évora, Portugal

<sup>2</sup> School of Business and Administration, Polytechnic Institute of Setúbal, Portugal

Otekunrin, 2017; Lawal, Somoye, and Babajide, 2017; Tweneboah, Owusu, and Oseifuah, 2019).

Thus, the study aimed to test the efficient market hypothesis, in its weak form, in the stock markets of BOTSWANA, EGYPT, KENYA, MOROCCO, NIGERIA and SOUTH AFRICA, in the period from September 2, 2019 to September 2, 2020. In order to achieve this analysis, it is intended to find out if: the global pandemic (Covid-19) has decreased the efficiency, in its weak form, of the African financial markets? The results suggest that the random walk hypothesis is not supported by the financial markets analyzed in this period of global pandemic. These findings show that prices do not fully reflect the information available and that price changes are not i.i.d., in all markets. The high sensitivity of prices to the arrival of new information will be due to the climate of pessimism and uncertainty experienced by investors during this period of global pandemic.

In terms of contributions to the existing literature, this investigation is justified due to the gaps in the literature on the efficient market hypothesis (HME) in the stock exchanges of the African continent, being the same inconclusive with hybrid evidence. In view of these facts, this study is justified by the need to mitigate the empirical divergences in Africa's stock markets. In addition, as these stock exchanges develop in the presence of imperfect information, investors, regulators and other participants call for transparency on the efficiency or inefficiency of these stock markets to avoid sharp structural breakdowns, which could cause significant losses for domestic and international investors operating in these regional stock markets.

In terms of structure, this paper is organized into 5 sections. In addition to the current introduction, the section 2 presents a Literature Review with regard to articles on the random walk hypothesis in the African financial markets, in section 3 the methodology is described, and section 4 contains the data and results. Section 5 presents the general conclusions of the work.

## 2. LITERATURE REVIEW

A market is designated as efficient, when all relevant information about the stock price are reflected in the market price. The lack of consensus among economists and financial analysts regarding market efficiency requires the study of the efficient market hypothesis (HME). Another significant reason to study market efficiency is the role of stock markets acting as financial intermediaries between the saver and the borrower in the distribution of scarce resources via the price mechanism (Jain, 2020; Karasiński, 2020).

Smith, Jefferis, and Ryoo (2002), Simons and Laryea (2006), Obayagbona and Igbinsola (2015), Kelikume (2016), Abakah, Alagidede, Mensah, and Ohene-Asare (2018), Hawaldar, Rohith, and Pinto (2020) examined the random walk hypothesis in African markets by testing whether arbitrage levels are accentuated to the point where investors obtain anomalous profitability without incurring additional risk. Smith, Jefferis, and Ryoo (2002) show that stock markets in Egypt, Kenya, Morocco, Nigeria, Zimbabwe, Botswana and Mauritius show signs of (in) efficiency in its weak form. Simons and Laryea (2006) show that South Africa's stock market is efficient, in its weak form, while the stock markets of Ghana, Mauritius and Egypt do not have random walk properties. Obayagbona and Igbinsola (2015) show dependence on profitability series and, therefore, non-randomness, validating that the Nigerian market shows signs of (in) efficiency, in its weak form. Kelikume (2016) shows that the Nigerian stock market follows a *random walk behavior*, that is, stock prices fully reflect all the information

available in the market and investors are unable to obtain anomalous profitability with the same level of risk. Abakah, Alagidede, Mensah, and Ohene-Asare (2018) show that the stock markets of South Africa, Nigeria, Egypt, Ghana and Mauritius follow the random walk hypothesis, while the markets of Ghana and Mauritius show evidence of some (in)efficiency, in its weak form. Hawaldar, Rohith, and Pinto (2020) examined the predictability of 8 African stock markets; the authors show that investors fail to obtain incredible profitability, based on historical prices, that is, these markets are efficient, in their weak form.

In summary, this work aims to contribute to the provision of information to investors and regulators in African financial markets, where individual and institutional investors seek to efficiently diversify their portfolios, in a period of uncertainty and lack of confidence arising from the global pandemic (Covid-19).

### 3. METHODOLOGY

#### Data

The stock markets analyzed are from BOTSWANA, EGYPT, KENYA, MOROCCO, NIGERIA and SOUTH AFRICA, from September 2, 2019 to September 2, 2020. The prices index of the markets of BOTSWANA, KENYA and NIGERIA are in Euro currency, the rest are in local currency. The time scales are daily and were obtained from the *DataStream*.

#### Methodology

Research will develop throughout several stages. Market graphs were made, at levels, and in profitability, to estimate the evolution of the markets under study. The characterization of the sample will be performed using descriptive statistics in order to verify whether the data follow a normal distribution. To evaluate whether the time series follow a white noise (mean = 0; constant variance), the tests of unit roots in Levin, Lin, and Chu panel (2002), Breitung (2000) will be used, which postulate the same null hypotheses. To measure the structural breaks, graphs of stability to the residues will be performed, as well as the test by Clemente et al. (1998) that will determine the date of the structure break. To answer the question of investigation we will use the reason method of the variance proposed by Lo and MacKinlay (1988) in order to evaluate the autocorrelation between the series of profitability. This is being classified as a parametric test. The efficient market hypothesis in its weak form establishes that it is not possible to predict future prices based on historical prices. The author Rosenthal (1983) advocates whether a market is efficient in its weak form, then there should be no linear dependence between the profitability allocated both in the statistical sense (absence of autocorrelation) and in the economic sense (no positive profitability after considering transaction costs). The Lo and MacKinlay model (1988) defines how the  $P_t$  price of an asset in  $t$  and  $X_t$  as the natural logarithm of  $X_t$ , the random walk hypothesis is given by:

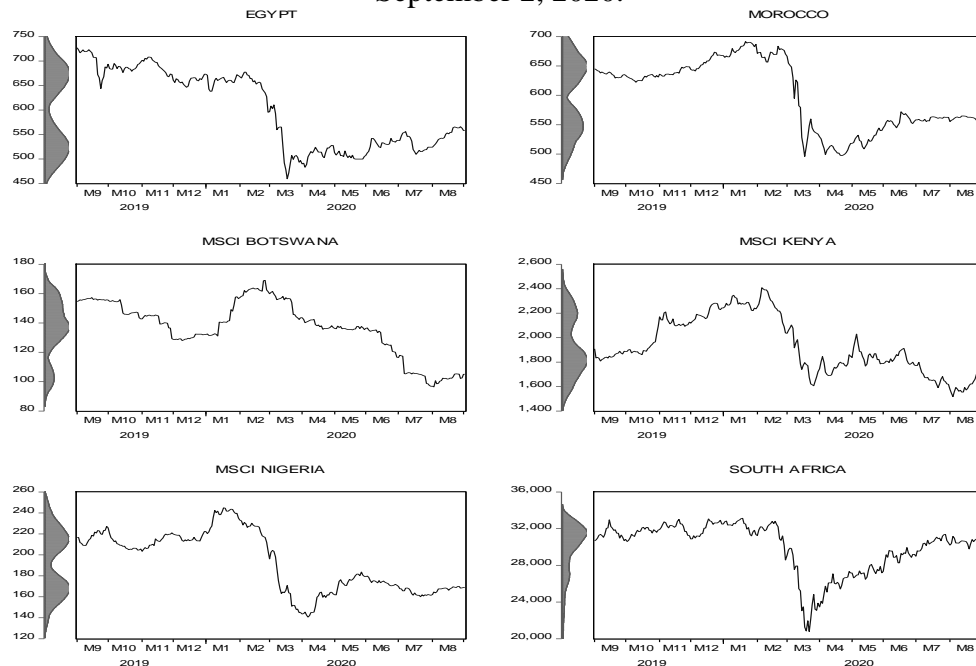
$$X_t = \mu + X_{t-1} + \epsilon_t \quad (1)$$

Where  $\mu$  is an arbitrary motion parameter and  $\epsilon_t$  is the random error term. The authors show that an important characteristic of the random walk process is that the variance of increments increases linearly according to the observation interval. That is, the variance of  $X_t - X_{t-2}$  is twice the variance of  $X_t - X_{t-1}$ . Thus, the validity of a random walk model can be tested by comparing profitability variance estimators at different frequencies. For example, the variance of the series of weekly yields should be five times greater than the variance of the daily yields. The model consists of testing whether the ratio of variance to different intervals weighted by their duration is equal to one.

## 4. RESULTS

Figure 1 shows the evolution of financial markets, at levels, in the period from September 2, 2019 to September 2, 2020, which is a period of high complexity, as it crosses the global pandemic outbreak (Covid-19). Most markets show structural breakdowns in February and March 2020.

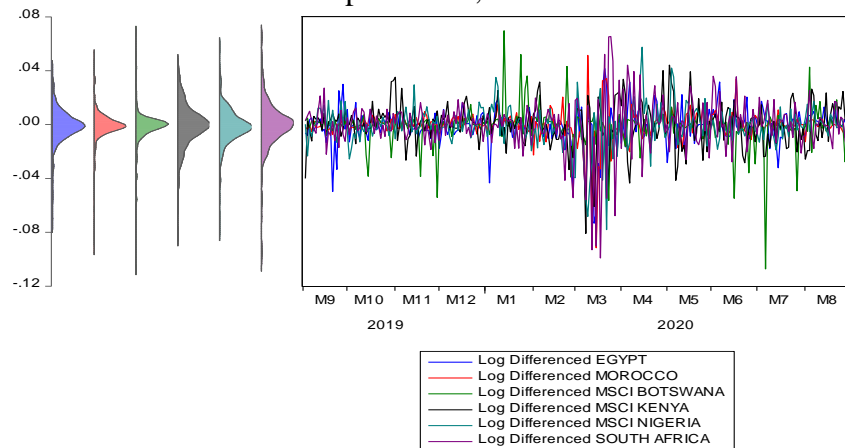
**Figure 1.** Evolution, in levels, of the 6 stock markets, in the period from September 2, 2019 to September 2, 2020.



Source: Own elaboration

Figure 2 shows the evolution in profitability of the 6 financial markets under review. The graphical representation allows you to visualize very similar behavior patterns during the sampling period. However, there is a period that stands out, as patterns have been manifestly affected by the global pandemic (Covid-19), corresponding to February and March 2020, corroborated by a sharp drop in financial markets.

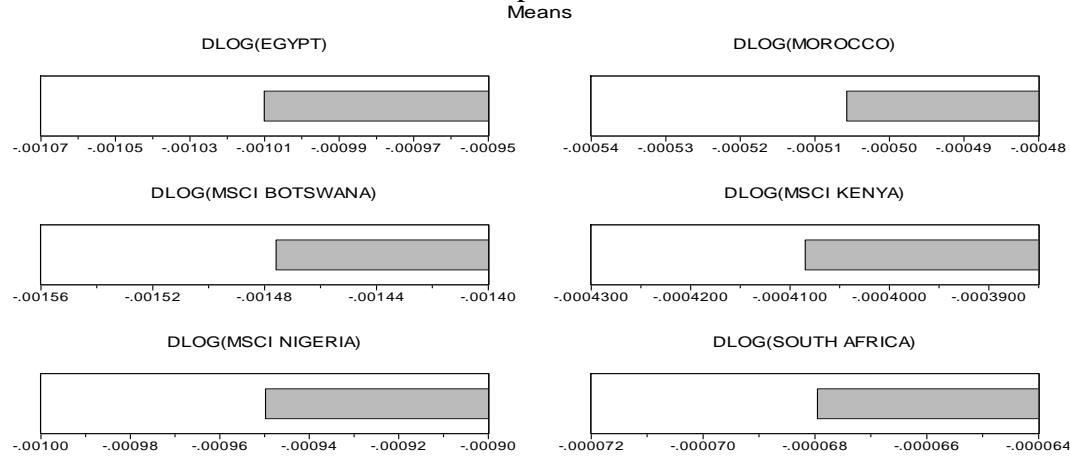
**Figure 2.** Evolution, return, of the 6 stock markets, in the period from September 2, 2019 to September 2, 2020



Source: Own elaboration

Figure 3 shows the averages of the 6 financial markets in an area, all of which have negative average yields, South Africa (-6.77E-05), Kenya (-0.000407), Morocco (-0.000504), Nigeria (-0.000946), Egypt (-0.001006) and Botswana (-0.001470).

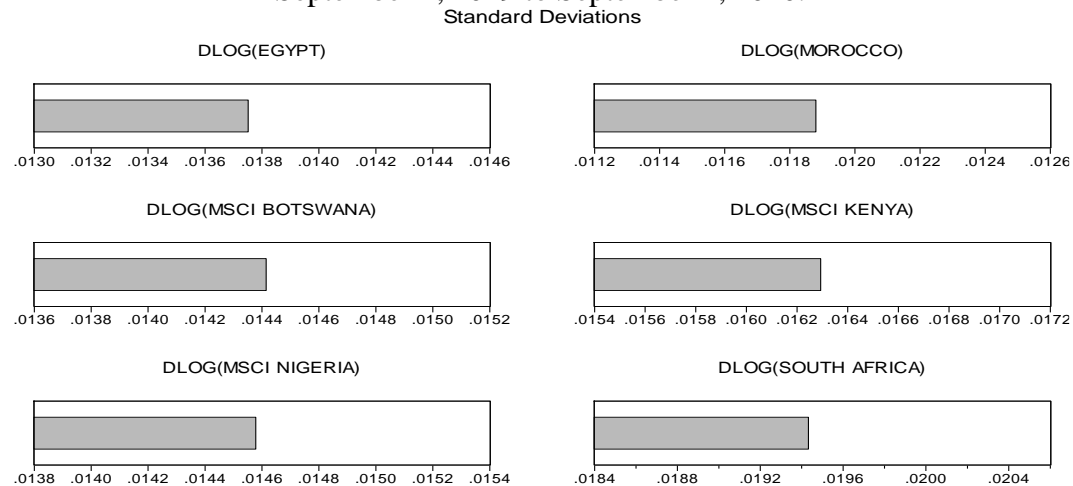
**Figure 3.** Evolution of the average yields of the 6 stock markets in the period from September 2, 2019 to September 2, 2020.



Source: Own elaboration

Figure 4 shows the standard deviations of the 6 stock markets in an area. As with averages, standard deviations also have very similar values in the financial markets under analysis: the market with the lowest standard deviation is Morocco (0.012), Egypt and Botswana (0.014), Nigeria (0.015), Kenya (0.016) and South Africa (0.019), concluding that Morocco is the financial market that shows the lowest risk when compared to the remaining markets.

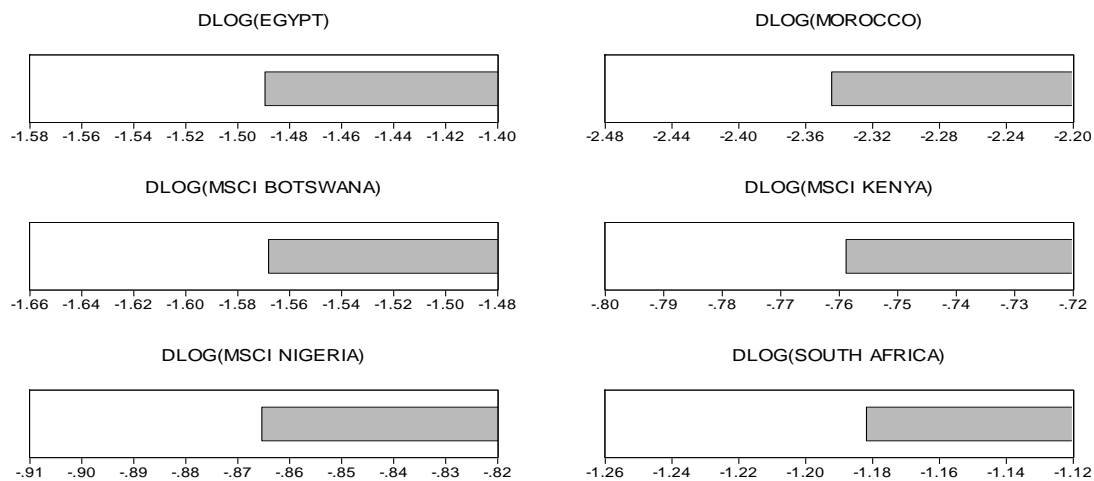
**Figure 4.** Evolution of standard deviations from the 6 stock markets in the period from September 2, 2019 to September 2, 2020.



Source: Own elaboration

Figure 5 shows the Skewness of the 6 financial markets under analysis and we can verify all the markets under analysis have negative asymmetries, The Morocco market (-2.349464) presents the most pronounced asymmetry, followed by Botswana (-1.572172), Egypt (-1.493110), South Africa (-1.184155), Nigeria (-0.867744) and Kenya (-0.760551). These findings indicate that the data do not follow a normal distribution (Skewness = 0).

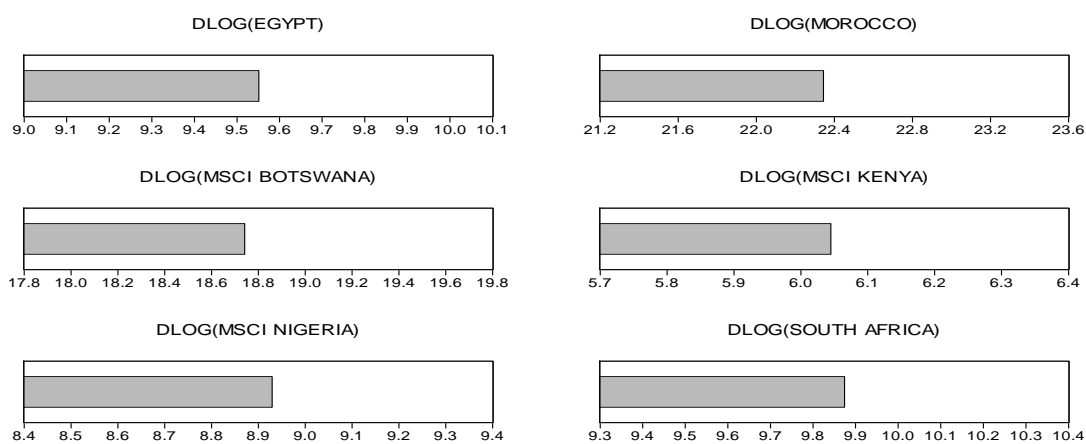
**Figure 5.** Evolution of the Skewness of the 6 stock markets September 2, 2019 to September 2, 2020



Source: Own elaboration

Figure 6 shows the Kurtosis of the 6 financial markets under analysis and we can see that the Morocco market has the sharpest kurtosis (22.43120), followed by Botswana (18.81400), South Africa (9.911942), Egypt (9.589017), Nigeria (8.963956) and Kenya (6.067979). These results confirm the assumptions that time series do not follow a normal distribution, because asymmetry is different from reference values (Skewness = 0; Kurtosis = 3).

**Figure 6.** Kurtosis evolution of the 6 stock markets in the period from September 2, 2019 to September 2, 2020.



Source: Own elaboration

Since we are in the presence of time successions, we should study the stationary nature of the series relating to the 6 financial markets under analysis. To do so, we use the tests of unitary roots in Levin panel, Lin, and Chu (2002), Breitung (2000) that postulate the same null hypotheses. The intersections of the unit root tests in panel show the temporality of the time series (return), that is, we are facing a white noise (mean = 0; constant variance) (see tables 1 and 2).

**Table 1.** Levin, Lin, and Chu parking test (2002), applied to the 6 stock markets, in the period from September 2, 2019 to September 2, 2020.

Method	Statistic				Prob.**		
Levin, Lin & Chu t*	-39.2723				0.0000		
Series	2nd stage Coefficient	Variance Of Reg	HAC of Dep.	Lag	Max Lag	Band-Width	Note
D(EGYPT)	-0.74461	57.897	0.8347	0	15	149.0	261
D(MOROCCO)	-0.83756	45.573	2.0336	0	15	48.0	261
D(MSCI BOTSWANA)	-0.95198	3.6135	0.1632	0	15	45.0	261
D( MSCI KENYA)	-0.80425	824.10	52.884	1	15	69.0	260
MSCI NIGERIA	-0.69499	6.6073	0.4447	0	15	34.0	261
D(SOUTH AFRICA)	-1.03102	263623	4262.7	0	15	131.0	261
	Coefficient	T-Stat	Reg SE	mu*	sig*	Note	
Pooled	-0.84198	-32.990	1.007	-0.508	0.740	1565	

Note: \*\* Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other test assumes asymptotic normality.

Source: Own elaboration

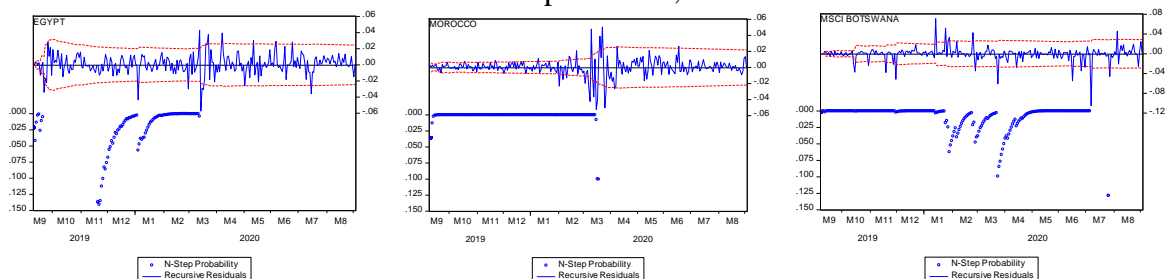
**Table 2.** Breitung stationary test (2000) applied to the 6 stock markets, in the period from September 2, 2019 to September 2, 2020.

Method	Statistic			Prob.**
Breitung t-stat	-27.6141			0.0000
Series	S.E. of Regression	Lag	Max Lag	Note
D(EGYPT)	9.62418	0	15	261
D(MOROCCO)	8.87201	0	15	261
D(MSCI BOTSWANA)	2.63127	0	15	261
D( MSCI KENYA)	35.1423	1	15	260
MSCI NIGERIA	3.18825	0	15	261
D(SOUTH AFRICA)	739.088	0	15	261
	Coefficient	T-Stat	Reg SE	Note
Pooled	-0.68642	-27.614	0.025	1559

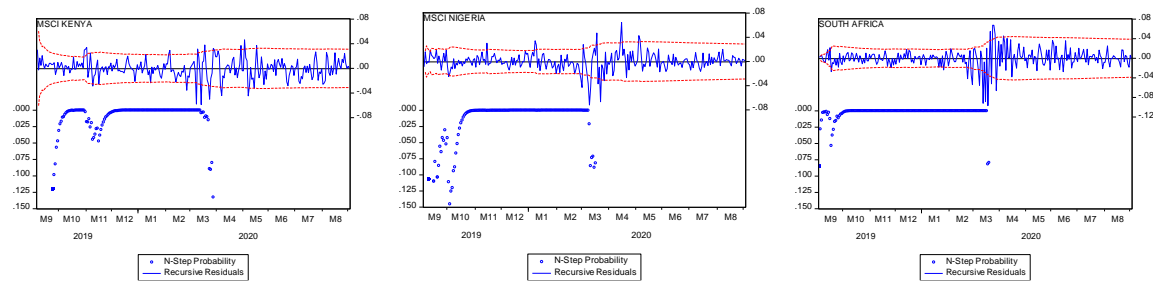
Note: \*\* Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

Source: Own elaboration

Figure 7 shows the stability tests performed on stock market residues, measuring the existence of disturbances in variance. Additionally, when examining the graphs and the probability limits of 95% we verified the existence of violation of probability limits, therefore, the time series show an unstable behavior.

**Figure 7.** Stability tests carried out on the residues of the 6 stock markets from September 2, 2019 to September 2, 2020.

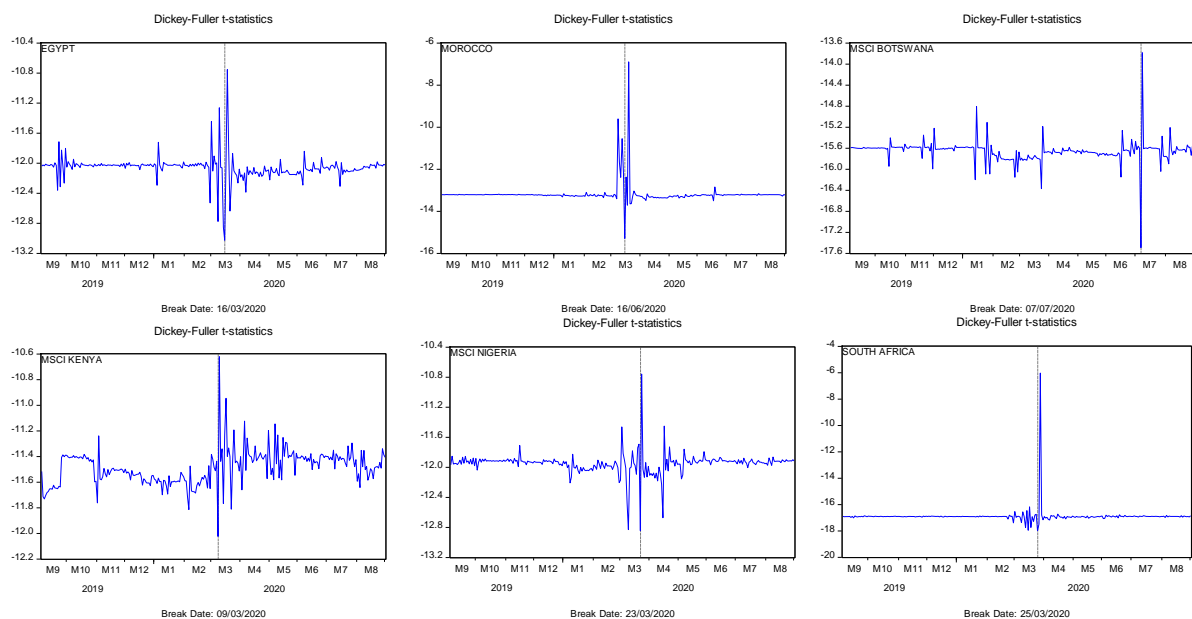




Source: Own elaboration

Figure 8 shows the results of unitary root tests, with structural breaks, by Clemente et al. (1998), highlighting the existence of structural breakdowns, mostly in March 2020, with the exception of BOTSWANA and MOROCCO's stock markets, which was expected due to the evolution of the global pandemic (Covid-19). These findings are corroborated by the authors Sansa (2020), He, Liu, Wang, and Yu (2020), who show structural breakdowns in financial markets resulting from the global pandemic (Covid-19).

**Figure 8.** Parking tests with structural breaks by Clemente et al. (1998), return, referring to the 6 stock markets, from September 2, 2019 to September 2, 2020.



Source: Own elaboration

Table 3 presents the results of the variance ratio methodology proposed by Lo and Mackinlay (1988) in order to evaluate the autocorrelation between the profitability series. In all cases, statistics were calculated for 2- 16-day lags, with intervals of 1 day. Given the results obtained from the variance test, the random walk hypothesis is rejected in all stock indexes. The results support the conclusion that the random walk hypothesis is not followed by the financial markets analyzed in this period of global pandemic. It is verified that profitability is autocorrelated in time, with reversal to the mean, because the values of variance ratios are lower than the unit. Given these assumptions, markets tend to react abruptly to information due to the uncertainty and pessimism experienced in the global economy arising from the global pandemic of 2020. In addition, the hypothesis of informational efficiency of financial markets may be called into question; these results are corroborated by the studies of the authors Aggarwal (2018), Sadat and Hasan (2019).

**Table 3.** Lo and Mackinlay Variance Ratio scans, return, referring to the 6 stock markets, from September 2, 2019 to September 2, 2020.

Null Hypothesis: EGYPT is a random walk

Joint Tests		Value	Df	Probability
Max  z  (at period 2)		5.908907	262	0.0000
Wald (Chi-Square)		58.26419	15	0.0000
Individual Tests				
Period	Var. Ratio	Std. Error	z-Statistic	Probability
2	0.634947	0.061780	-5.908907	0.0000
3	0.463401	0.092096	-5.826492	0.0000
4	0.318996	0.115580	-5.892052	0.0000
5	0.292183	0.135354	-5.229391	0.0000
6	0.273366	0.152725	-4.757804	0.0000
7	0.242114	0.168384	-4.500925	0.0000
8	0.208281	0.182748	-4.332289	0.0000
9	0.194891	0.196088	-4.105846	0.0000
10	0.171515	0.208594	-3.971757	0.0000
11	0.163539	0.220403	-3.795149	0.0000
12	0.156782	0.231619	-3.640545	0.0000
13	0.142511	0.242322	-3.538636	0.0000
14	0.146516	0.252577	-3.379107	0.0000
15	0.136941	0.262435	-3.288663	0.0010
16	0.137437	0.271938	-3.171908	0.0010

Null Hypothesis: MOROCCO is a random walk

Joint Tests		Value	Df	Probability
Max  z  (at period 2)		6.690107	262	0.0000
Wald (Chi-Square)		66.23451	15	0.0000
Individual Tests				
Period	Var. Ratio	Std. Error	z-Statistic	Probability
2	0.586684	0.061780	-6.690107	0.0000
3	0.460554	0.092096	-5.857401	0.0000
4	0.392349	0.115580	-5.257400	0.0000
5	0.342242	0.135354	-4.859554	0.0000
6	0.289909	0.152725	-4.649485	0.0000
7	0.278423	0.168384	-4.285292	0.0000
8	0.261057	0.182748	-4.043501	0.0000
9	0.247086	0.196088	-3.839667	0.0010
10	0.239097	0.208594	-3.647772	0.0020
11	0.240115	0.220403	-3.447709	0.0020
12	0.215799	0.231619	-3.385741	0.0020
13	0.209002	0.242322	-3.264243	0.0020
14	0.206806	0.252577	-3.140408	0.0020
15	0.186192	0.262435	-3.100992	0.0020
16	0.183582	0.271938	-3.002220	0.0020

Null Hypothesis: MSCI BOTSWANA is a random walk

Joint Tests		Value	Df	Probability
Max  z  (at period 2)		7.520763	262	0.0000
Wald (Chi-Square)		69.48825	15	0.0000
Individual Tests				
Period	Var. Ratio	Std. Error	z-Statistic	Probability
2	0.535366	0.061780	-7.520763	0.0000
3	0.382044	0.092096	-6.709874	0.0000
4	0.314353	0.115580	-5.932220	0.0000
5	0.232792	0.135354	-5.668172	0.0000
6	0.217761	0.152725	-5.121885	0.0000
7	0.196126	0.168384	-4.774039	0.0000
8	0.167817	0.182748	-4.553709	0.0000
9	0.167447	0.196088	-4.245806	0.0000

10	0.155706	0.208594	-4.047548	0.0000
11	0.152728	0.220403	-3.844198	0.0000
12	0.142877	0.231619	-3.700582	0.0000
13	0.139674	0.242322	-3.550342	0.0000
14	0.137687	0.252577	-3.414063	0.0010
15	0.132647	0.262435	-3.305025	0.0010
16	0.135084	0.271938	-3.180562	0.0020

Null Hypothesis: MSCI KENYA is a random walk

Joint Tests		Value	Df	Probability
Max  z  (at period 3)		5.277858	262	0.0000
Wald (Chi-Square)		39.32152	15	0.0020
Individual Tests				
Period	Var. Ratio	Std. Error	z-Statistic	Probability
2	0.735058	0.061780	-4.288466	0.0000
3	0.513928	0.092096	-5.277858	0.0000
4	0.403069	0.115580	-5.164648	0.0000
5	0.342786	0.135354	-4.855532	0.0000
6	0.319032	0.152725	-4.458795	0.0000
7	0.282944	0.168384	-4.258443	0.0000
8	0.238923	0.182748	-4.164619	0.0000
9	0.195251	0.196088	-4.104010	0.0000
10	0.163245	0.208594	-4.011405	0.0000
11	0.165467	0.220403	-3.786402	0.0000
12	0.162855	0.231619	-3.614325	0.0010
13	0.156251	0.242322	-3.481936	0.0020
14	0.150508	0.252577	-3.363303	0.0020
15	0.143493	0.262435	-3.263698	0.0020
16	0.139327	0.271938	-3.164959	0.0020

Null Hypothesis: MSCI NIGERIA is a random walk

Joint Tests		Value	Df	Probability
Max  z  (at period 2)		6.071336	262	0.0000
Wald (Chi-Square)		46.99429	15	0.0000
Individual Tests				
Period	Var. Ratio	Std. Error	z-Statistic	Probability
2	0.624912	0.061780	-6.071336	0.0000
3	0.500639	0.092096	-5.422151	0.0000
4	0.411376	0.115580	-5.092779	0.0000
5	0.327961	0.135354	-4.965062	0.0000
6	0.297397	0.152725	-4.600450	0.0000
7	0.270783	0.168384	-4.330669	0.0000
8	0.259779	0.182748	-4.050492	0.0000
9	0.250484	0.196088	-3.822339	0.0010
10	0.236718	0.208594	-3.659174	0.0010
11	0.214111	0.220403	-3.565696	0.0010
12	0.202486	0.231619	-3.443222	0.0020
13	0.184131	0.242322	-3.366882	0.0030
14	0.183598	0.252577	-3.232295	0.0040
15	0.177792	0.262435	-3.133000	0.0050
16	0.174375	0.271938	-3.036078	0.0060

Null Hypothesis: SOUTH AFRICA is a random walk

Joint Tests		Value	Df	Probability
Max  z  (at period 2)		7.221207	262	0.0000
Wald (Chi-Square)		72.85562	15	0.0000
Individual Tests				
Period	Var. Ratio	Std. Error	z-Statistic	Probability
2	0.553872	0.061780	-7.221207	0.0000

3	0.357850	0.092096	-6.972574	0.0000
4	0.283339	0.115580	-6.200557	0.0000
5	0.242820	0.135354	-5.594086	0.0000
6	0.235615	0.152725	-5.004983	0.0000
7	0.195174	0.168384	-4.779692	0.0000
8	0.181556	0.182748	-4.478529	0.0000
9	0.174921	0.196088	-4.207687	0.0000
10	0.149669	0.208594	-4.076489	0.0000
11	0.139269	0.220403	-3.905264	0.0000
12	0.131730	0.231619	-3.748706	0.0000
13	0.132851	0.242322	-3.578502	0.0000
14	0.114623	0.252577	-3.505380	0.0000
15	0.114850	0.262435	-3.372839	0.0000
16	0.116130	0.271938	-3.250261	0.0000

Source: Own elaboration

## 5. CONCLUSION

The general conclusion that we can retain, given the results obtained, through tests performed with econometric and mathematical models, that the indices of African markets do not follow the random walk hypothesis in this period of the global pandemic. The results suggest that the ratios of variances are lower than the unit, which implies that the yields are autocorrelated in time and, there is reversal to the mean. The authors show that the high sensitivity of prices to the arrival of new information will be due to the climate of pessimism and uncertainty experienced by investors during this period of global pandemic.

## REFERENCES

- Abakah, E. J.A. *et al.* (2018) 'Non-linear approach to Random Walk Test in selected African countries', *International Journal of Managerial Finance*. doi: 10.1108/IJMF-10-2017-0235.
- Aggarwal, D. (2018) 'Random walk model and asymmetric effect in Korean composite stock price index', *Afro-Asian J. of Finance and Accounting*. doi: 10.1504/aajfa.2018.10009906.
- Alexandre, P., Dias, R. and Heliodoro, P. (2020) 'EUROPEAN FINANCIAL MARKET INTEGRATION: A CLOSER LOOK AT GOVERNMENT BONDS IN EUROZONE COUNTRIES', *Balkans Journal of Emerging Trends in Social Sciences*. doi: 10.31410/balkans.jetss.2020.3.1.78-86.
- Alexandre, P., Heliodoro, P. and Dias, R. (2019) 'THE CONTAGION EFFECT IN EUROPE: A DCC GARH APPROACH', in *5th LIMEN Conference Proceedings (part of LIMEN conference collection)*. doi: 10.31410/limen.2019.73.
- Breitung, J. (2000) 'The local power of some unit root tests for panel data', *Advances in Econometrics*. doi: 10.1016/S0731-9053(00)15006-6.
- Clemente, J., Montañés, A. and Reyes, M. (1998) 'Testing for a unit root in variables with a double change in the mean', *Economics Letters*, 59(2), pp. 175–182. doi: 10.1016/S0165-1765(98)00052-4.
- Dias, R., Heliodoro, P., *et al.* (2020a) 'FINANCIAL MARKET INTEGRATION OF ASEAN-5 WITH CHINA: AN ECONOPHYSICS APPROACH', in *4th EMAN Conference Proceedings (part of EMAN conference collection)*. doi: 10.31410/eman.2020.17.
- Dias, R., Sparrow, P., *et al.* (2020) 'Financial Market Integration of ASEAN-5 with China', *Littera Scripta*. doi: 10.36708/littera\_scripta2020/1/4.
- Dias, R., Heliodoro, P., *et al.* (2020b) 'THE SHOCKS BETWEEN OIL MARKET TO THE BRIC STOCK MARKETS: A GENERALIZED VAR APPROACH', in *4th EMAN Conference Proceedings (part of EMAN conference collection)*.

- Dias, R., Alexandre, P. and Heliodoro, P. (2020) 'Contagion in the LAC Financial Markets: The Impact of Stock Crises of 2008 and 2010', *Littera Scripta*. doi: 10.36708/littera\_scripta2020/1/3.
- Dias, R., Heliodoro, P. and Alexandre, P. (2019) 'RISK TRANSMISSION AMONG STOCK MARKETS IN LAC REGION: FINANCIAL CRISES IMPACT', in *5th LIMEN Selected Papers (part of LIMEN conference collection)*. doi: 10.31410/limen.s.p.2019.91.
- Dias, R., Heliodoro, P. and Alexandre, P. (2020) 'Efficiency of Asean-5 Markets: An Detrended Fluctuation Analysis', *Mednarodno inovativno poslovanje = Journal of Innovative Business and Management*. doi: 10.32015/jibm.2020.12.2.13-19.
- Dias, R., da Silva, J. V. and Dionísio, A. (2019) 'Financial markets of the LAC region: Does the crisis influence the financial integration?', *International Review of Financial Analysis*. Elsevier, 63(January), pp. 160–173. doi: 10.1016/j.irfa.2019.02.008.
- Hawaldar, I. T., Rohith, B. and Pinto, P. (2020) 'Testing of Weak Form of Efficient Market Hypothesis: Evidence from the Bahrain Bourse', *SSRN Electronic Journal*. doi: 10.2139/ssrn.3504485.
- He, Q. et al. (2020) 'The impact of COVID-19 on stock markets', *Economic and Political Studies*. doi: 10.1080/20954816.2020.1757570.
- Heliodoro, P. et al. (2020) 'INTEGRATION IN BRIC STOCK MARKETS: AN EMPIRICAL ANALYSIS', in *4th EMAN Selected Papers (part of EMAN conference collection)*. doi: 10.31410/eman.s.p.2020.33.
- Heliodoro, P., Dias, R. and Alexandre, P. (2020) 'FINANCIAL CONTAGION BETWEEN THE US AND EMERGING MARKETS: COVID-19 PANDEMIC CASE', in *4th EMAN Selected Papers (part of EMAN conference collection)*. doi: 10.31410/eman.s.p.2020.1.
- Jain, E. (2020) 'Empirically testing weak form efficiency of Indian stock market: Pre and post demonetization', *International Journal of Scientific and Technology Research*.
- Karasiński, J. (2020) 'The Changing Efficiency of the European Stock Markets', *Annales Universitatis Mariae Curie-Skłodowska, sectio H – Oeconomia*. doi: 10.17951/h.2020.54.1.41-51.
- Kelikume, I. (2016) 'New evidence from the efficient market hypothesis for the Nigerian stock index using the wavelet unit root test approach', *The Journal of Developing Areas*. doi: 10.1353/jda.2016.0041.
- Lawal, A. I. et al. (2017) 'Examining the Nigerian stock market efficiency: Empirical evidence from wavelet unit root test approach', *Journal of Applied Economic Sciences*.
- Lawal, A. I., Somoye, R. O. and Babajide, A. A. (2017) 'Are African stock markets efficient? Evidence from wavelet unit root test for random walk', *Economics Bulletin*.
- Levin, A., Lin, C. F. and Chu, C. S. J. (2002) 'Unit root tests in panel data: Asymptotic and finite-sample properties', *Journal of Econometrics*. doi: 10.1016/S0304-4076(01)00098-7.
- Lo, A. W. and MacKinlay, A.C. (1988) 'Stock Market Prices Do Not Follow Random Walks: Evidence from a Simple Specification Test', *Review of Financial Studies*. doi: 10.1093/rfs/1.1.41.
- Obayagbona, J. and Igbinsosa, S. O. (2015) 'Test of Random Walk Hypothesis in the Nigerian Stock Market', *Current Research Journal of Social Sciences*. doi: 10.19026/crjss.7.5220.
- Rosenthal, L. (1983) 'An empirical test of the efficiency of the ADR market', *Journal of Banking & Finance*. North-Holland, 7(1), pp. 17–29. doi: 10.1016/0378-4266(83)90053-5.
- Sadat, A. R. and Hasan, M. E. (2019) 'Testing Weak Form of Market Efficiency of DSE Based on Random Walk Hypothesis Model: A Parametric Test Approach', *International Journal of Accounting and Financial Reporting*. doi: 10.5296/ijafr.v9i1.14454.
- Sansa, N. A. (2020) 'The Impact of the COVID-19 on the Financial Markets: Evidence from China and USA', *SSRN Electronic Journal*. doi: 10.2139/ssrn.3567901.

- Simons, D. and Laryea, S. (2006) 'Testing the Efficiency of Selected African Stock Markets', *Finance India*. doi: 10.1.467.7105.
- Smith, G., Jefferis, K. and Ryoo, H. J. (2002) 'African stock markets: Multiple variance ratio tests of random walks', *Applied Financial Economics*. doi: 10.1080/09603100010009957.
- Tweneboah, G., Owusu, P. and Oseifuah, E. K. (2019) 'Integration of major African stock markets: Evidence from multi-scale wavelets correlation', *Academy of Accounting and Financial Studies Journal*.





# THE IMPACT OF COVID-19 ON EXCHANGE RATE VOLATILITY: AN ECONOPHYSICS APPROACH

Rui Dias<sup>1</sup>   
Hortense Santos<sup>2</sup> 

DOI: <https://doi.org/10.31410/LIMEN.2020.39>

---

**Abstract:** *This paper aims to analyze the efficiency, in its weak form, between exchange rates, US-RMB, US-EUR, US-JPY, US-MYR, US-PHP, US-SGD, US-THB, US-CHF, US-GBP, in the period from July 1, 2019 to October 27, 2020. To perform this analysis, different approaches were undertaken to assess whether: (i) the impact of the global pandemic created long memories in international foreign exchange markets? The results of the exponents Detrended Fluctuation Analysis (DFA) show that the exchange rates US-THB (0.60), US-MYR (0.59), US-SGD (0.59), present long memories, to a lesser extent the exchange pairs US-GBP (0.56), US-EUR (0.53). On the other side, exchange rates US-RMB (0.47), US-JPY (0.43), US-CHF (0.46), US-PHP (0.38) show anti persistence, while the Detrended cross-correlation coefficient (pDCCA) results show 19 average correlation coefficients ( $\cong 0.333 \rightarrow \cong 0.666$ ), 10 weak correlation coefficient ( $\cong 0.000 \rightarrow \cong 0.333$ ), 7 strong non-trend cross correlation coefficients ( $0.666 \rightarrow \cong 1.000$ ). In conclusion, we show that the exchange pairs analyzed show some predictability, that is, there are levels of arbitrage that can be explored by investors; we also found that the exchange rates analyzed have characteristics of diversification, due to the low autocorrelation between markets. The objective of this study was not to analyze abnormal profitability by investors without incurring additional risk.*

**Keywords:** *Covid-19, Exchange rates, Efficiency, Arbitration, Portfolio diversification.*

---

## 1. INTRODUCTION

Globalization has accentuated the synchronization swells between international financial markets, demonstrating that the correlation between international financial markets has increased, particularly in times of extreme volatility. If a stock market in one country is integrated into another country's stock market, the financial stability of the former depends in part on the financial stability of the second. From the investor's point of view, knowledge of the form and intensity of interdependence between different financial markets is vital for efficient hedging decision-making, in order to minimize the adverse effect of uncertainty on expected return on investments. Likewise, the understanding of interdependence relations between international stock markets facilitates the identification of opportunities for diversification (Alexandre, Heliodoro and Dias, 2019; Dias, da Silva, and Dionysus, 2019; Dias, Heliodoro and Alexandre, 2019, 2020; Alexandre, Dias and Heliodoro, 2020; Heliodoro *et al.*, 2020, 2020; Heliodoro, Dias and Alexandre, 2020; Dias, Alexandre and Heliodoro, 2020, 2020; Dias, Heliodoro, *et al.*, 2020, 2020a, 2020b; Dias, Sparrow, *et al.*, 2020).

---

<sup>1</sup> School of Business and Administration, Polytechnic Institute of Setúbal, Portugal and CEFAGE-UE, IIFA, University of Évora, Portugal

<sup>2</sup> School of Business and Administration, Polytechnic Institute of Setúbal, Portugal

According to the authors Huang and Zhang (2019) the wealth that an entity has is usually composed of several assets or evaluated by different currencies, whose value depends on the fluctuation of exchange rates. The analysis of exchange rate dynamics concerns market agents, including individual investors, institutional investors, risk managers due to currency shocks, and their impact on the real value of assets.

Speculation in financial markets has been a process that aims to discover asset prices by investors in international financial markets. However, measures taken to mitigate this speculation have significantly reduced informational efficiency in foreign exchange markets. In view of these events this paper aims to test the efficiency, in its weak form, between the foreign exchange markets, US-RMB, US-EUR, US-JPY, US-MYR, US-PHP, US-SGD, US-THB, US-CHF, US-GBP. To perform this analysis, different approaches were undertaken to assess whether: (i) the global pandemic promoted in (efficiency) in international foreign exchange markets? The results suggest that many foreign exchange markets are integrated (63 out of 90 possible), which could question portfolio diversification. The results of the exponents *Detrended Fluctuation Analysis (DFA)* show that the foreign exchange markets reject, in most cases, the random walk hypothesis. These findings have implications for investors, as some profitability can be expected, creating opportunities for arbitration and abnormal income.

This research adds relevant contributions to the literature. The most relevant contribution is related to the study of the reversal of the average in the international exchange markets, aiming to understand the different predictability between them, in the context of the global pandemic (Covid-19). As far as we know the authors Ning, Wang, and Su (2017), Matebejana, Motlaleng, and Juana (2017), Njindan Iyke (2019), Chaudhry, Hanif, Hassan, and Chani (2019), analyzed the reversal to the average in the foreign exchange markets, testing the random walk and, efficient market hypotheses, in its weak form, but the research questions, the markets analyzed, the sampling period, and the estimation models were different from the following in this trial.

In terms of structure this paper is organized in 5 sections. Section 2 presents a Literature Review regarding articles on the random walk hypothesis in international foreign exchange markets. Section 3 describes the methodology and data. Section 4 contains the results. Section 5 concludes.

## 2. LITERATURE REVIEW

Different studies have addressed the issue of market efficiency, analyzing the hypothesis of predictability of profitability, through the analysis of patterns of reversal to the average of stock prices, inspired by the seminal works of Poterba and Summers (1988), stock markets, on time horizons of more than one year.

Chiang, Lee, Su, and Tzou (2010), Sheik and Banu (2015), Palma and Sartoris (2016) tested the efficient market hypothesis (HME) in international foreign exchange markets. Chiang, Lee, Su, and Tzou (2010) show that the foreign exchange markets of Japan, South Korea and the Philippines are efficient in their weak form, while in the Taiwan exchange market the random walk hypothesis is rejected. The authors Sheik and Banu (2015) tested market efficiency, in its weak form, in the exchange rates of China, Indonesia, and the U.S. in relation to the Indian rupee, showing that the exchange rates analyzed follow the random walk hypothesis, that is, investors will have many difficulties in obtaining anommic yields without incurring additional risk. The authors Palma and Sartoris (2016) examined the hypothesis of market efficiency, in

its weak form, in the Brazilian foreign exchange market, showing that the exchange rates analyzed do not follow the random walk hypothesis, that is, investors will be able to obtain abnormal yields if they adjust their trading strategies.

Olufemi et al. (2017), Chaudhry et al. (2019) examined the random walk hypothesis in the exchange rates of several countries. Olufemi et al. (2017) examined the efficiency, in its weak form, in the foreign exchange markets of 10 countries in sub-Saharan Africa against the US dollar. The authors show the presence of long memories, and that the random walk hypothesis is rejected at all exchange rates, evidencing that time series are not independent and identically distributed (i.i.d.). Chaudhry et al. (2019) tested the random walk hypothesis in the exchange rates JPY/PKR, CHF/PKR, GBP/PKR, USD/PKR; the authors show the market efficiency, i.e., investors may have difficulty obtaining abnormal yields due to the arbitrage levels being very low.

In summary, this work aims to contribute to the provision of information to investors and regulators in the international exchange markets, where individual and institutional investors seek to efficiently diversify their portfolios, in a period of uncertainty and lack of confidence arising from the global pandemic (Covid-19).

### 3. METHODOLOGY

#### Data

The data used for the preparation of this research were exchange rates, US-RMB (US-China), US-EUR (US-ZONE Europe), US-JPY (US-Japan), US-MYR (US-Malaysia) US-PHP (US-Philippines), US-SGD (US-Singapore), US-THB (US-THAILAND), US-CHF (US-Switzerland), US-GBP (US-UK). The sample comprises the period from December 1, 2019 to October 27, 2020, and the data were extracted from the *Thomson Reuters* platform.

#### Methodology

The development of the research took place through several stages. In a first phase we chart the evolution of exchange rates in levels and returns. The characterization of the sample used was made through descriptive statistics, the adherence test of Jarque and Bera (1980), as well as quantiles graphs. To answer the first research question, we will use the *Detrended Fluctuation Analysis (DFA)* methodology. *DFA* is an analysis method that examines temporal dependence on non-stationary data series. This technique by assuming that time series are non-stationary avoids spurious results when the analysis focuses on the relationships of the data series in the long term. This methodology was developed by Peng et al. (1994), having the same its origin in the study of the behavior of *DNA*. Later this method was used to examine the behavior of financial series. *DFA* has the following interpretation:  $0 < \alpha < 0,5$  : anti-persistent series;  $\alpha = 0,5$  series features *random walk*;  $0,5 < \alpha < 1$  persistent series. The function of this technique is to examine the relationship between values  $x_k$  and  $x_{k+t}$  in differentiated moments (Sukpitak and Hengpunya, 2016; Guedes, Dionysus, Ferreira, and Zebende, 2017). Contemplate the dataset  $x_k$  with  $k = 1, \dots, t$  equidistant observations. *DFA's* first step is the construction of a new series:

$$x(t) = \sum_{k=1}^t x_k \quad (1)$$

The second step is to obtain the trend,  $z(t)$  of each fraction through the least squares method, obtaining the subtracted series from the trend (detrended), i.e.

$$x_s(t) = x(t) - z(t) \quad (2)$$

The original application assumes that the trend present in each of the boxes is a linear trend,  $Z(t) = at + b$ . i.e. subsequent applications indicate that it is likely to contain other polynomial tendencies, (Kantelhardt, Koscielny-Bunde, Rego, Havlin, and Bunde, 2001). For each box, the value of the trend equation is obtained by the least squares method and later the root of the mean square deviation between the series is estimated  $x(t)$  and,  $Z(t)$  being given the *DFA function* by:

$$F(s) = \sqrt{\frac{1}{2N} \sum_{t=1}^{2N} [x_s(t)]^2} \quad (3)$$

Estimating the average  $F(s)$  for all centralized boxes in  $s$  generates the value of fluctuations  $\langle F(s) \rangle$  depending on  $s$ . This estimation will be repeated to all the distinct values of  $s$ , waiting for a process of a power-law, that is:

$$\langle F(s) \rangle \sim s\alpha^\alpha \quad (4)$$

To answer the second research question, we will use the Detrended cross-correlation coefficient models, *pDCCA*. The cross-correlation coefficient depends on the length of the box  $s$  (time scale). One of the advantages of this cross-correlation coefficient is centered on the possibility of measuring the correlations between two non-stationary time series at different time scales. The *DCCA* cross-correlation coefficient varies within the logical range  $-1 \leq \rho DCCA \leq 1$  where 1 means perfect cross correlation, -1 means perfect cross-correlation and 0 means that there is no correlation (Podobnik and Stanley, 2008). Table 1 shows the interpretation of the exponent. *pDCCA*

**Table 1.** Detrended cross-correlation coefficient, *pDCCA*.

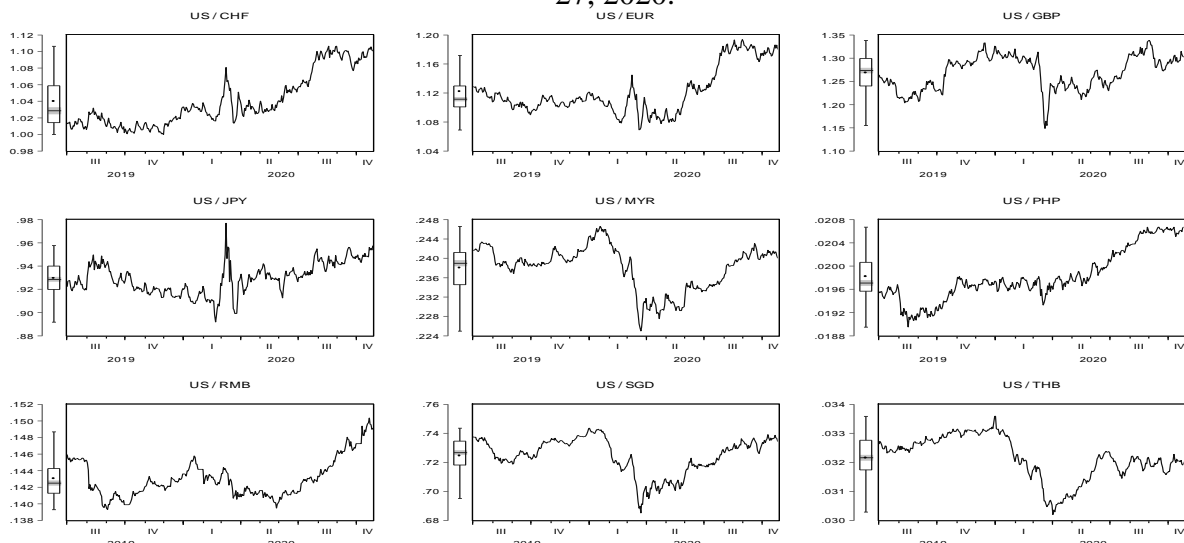
Weak	Medium	Strong
$\cong 0,000 \rightarrow \cong 0.333$	$\cong 0.333 \rightarrow \cong 0.666$	$\cong 0.666 \rightarrow \cong 1,000$

Source: Own elaboration

#### 4. RESULTS

Figure 1 shows the fluctuations, in levels, of the exchange markets, US-RMB (US-China), US-EUR (US-ZONE Europe), US-JPY (US-Japan), US-MYR(US-Malaysia), US-PHP (US-Philippines), US-SGD (US-Singapore), US-THB (US-THAILAND), US-CHF (US-Switzerland), US-GBP-GBP-(US-UK). The sample comprises the time horizon from July 1, 2019 to October 27, 2020, and it is a period of great complexity, due to understanding the global pandemic (Covid-19). The exchange rates analyzed clearly show the instability experienced in these markets in the first quarter of 2020.

**Figure 1.** Evolution, in levels, of exchange rates, in the period from July 1, 2019 to October 27, 2020.

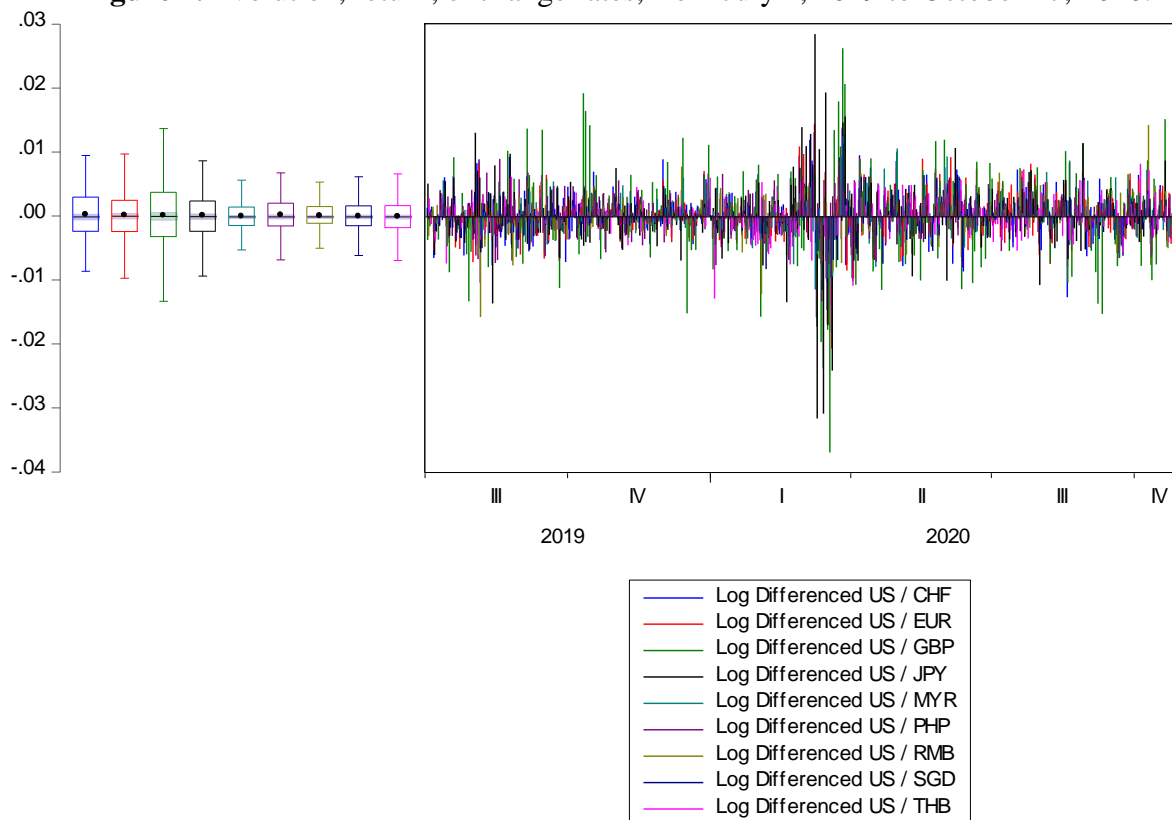


Note: Thomson Reuters, July 1, 2019, 348-point data.

Source: Own elaboration

Figure 2 shows the evolutions, return, of the exchange markets under analysis, and we can see that exchange rates have a relatively high dispersion around the average, as well as a relatively synchronized behavior between the data series. Through graphical analysis, high volatility is observed in the first quarter of 2020.

**Figure 2.** Evolution, return, exchange rates, from July 1, 2019 to October 27, 2020.



Note: Thomson Reuters: July 1, 2019, 347-point data.

Source: Own elaboration

Figure 3 shows the average exchange rate yields, and we can verify that exchange pairs US-RMB ( $6.21E-05$ ), US-EUR ( $0.000127$ ), US-JPY ( $0.000109$ ), US-PHP ( $0.000159$ ), US-CHF ( $0.000240$ ), US-GBP ( $9.08E-05$ ), have positive average yields, while exchange rates US-MYR ( $-1.81E-05$ ), US-SGD ( $-1.06E-05$ ), US-THB ( $-5.26E-05$ ) show negative averages.

**Figure 3.** Evolution of average exchange rate yields from July 1, 2019 to October 27, 2020.

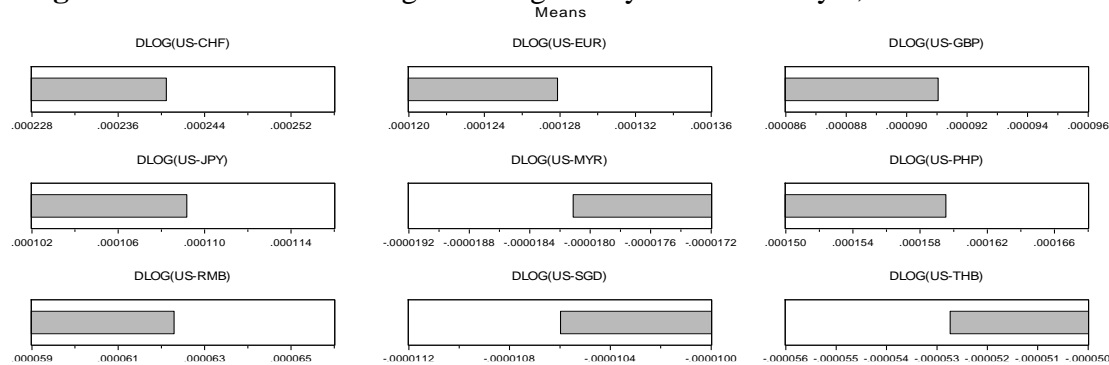


Figure 4 shows the standard deviations of the 9 exchange rates in analysis. As with averages, standard deviations also have very similar values, the exchange pairs that present the sharpest standard deviations are the US-GBP ( $0.006499$ ), US-JPY ( $0.005227$ ) rates. Exchange pairs US-CHF ( $0.004223$ ), US-EUR ( $0.004204$ ), US-PHP ( $0.003010$ ), US-THB ( $0.002999$ ), US-MYR ( $0.002903$ ), US-RMB ( $0.002750$ ) US-SGD ( $0.002698$ ) have less pronounced standard deviations.

**Figure 4.** Evolution of standard deviations in exchange rates from July 1, 2019 to October 27, 2020.

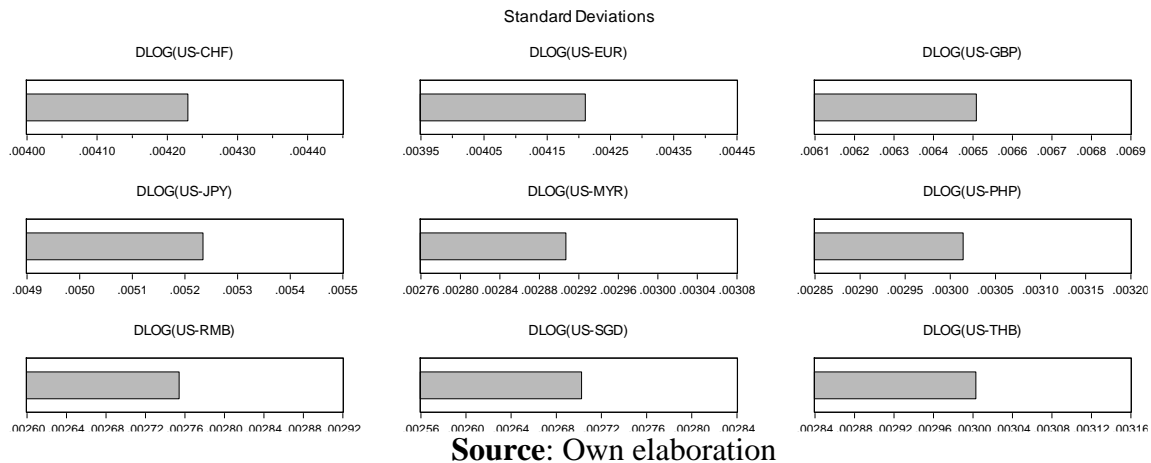


Figure 5 shows the Skewness of the 9 exchange pairs, and we can verify that most, exchange rates show negative asymmetries, US-JPY ( $-0.788139$ ), US-RMB ( $-0.644040$ ), US-THB ( $-0.627525$ ), US-PHP ( $-0.472917$ ), US-GBP ( $-0.441958$ ), US-SGD ( $-0.392762$ ), US-EUR ( $-0.282775$ ), US-CHF ( $-0.154701$ ), except for exchange pair US-MYR ( $0.088298$ ). These results indicate that the data do not follow a normal distribution (Skewness = 0).

**Figure 5.** Evolution of skewness of exchange rates from July 1, 2019 to October 27, 2020.

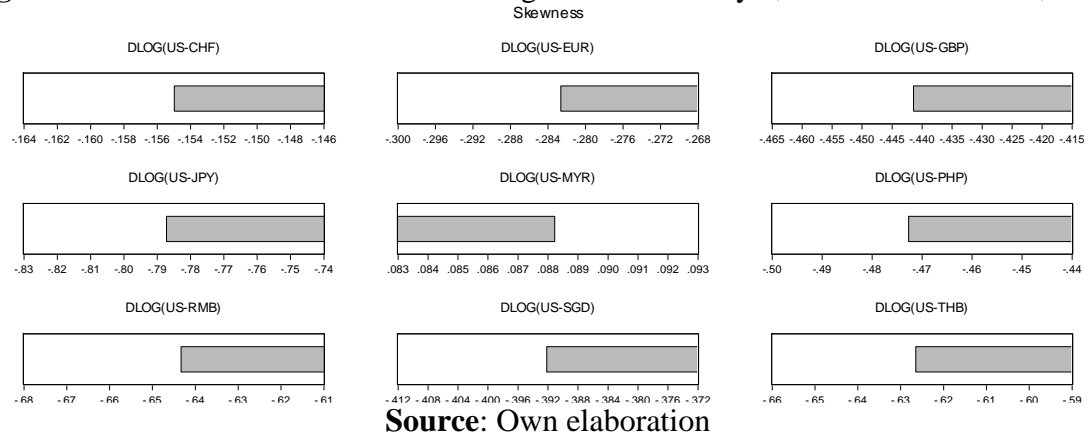
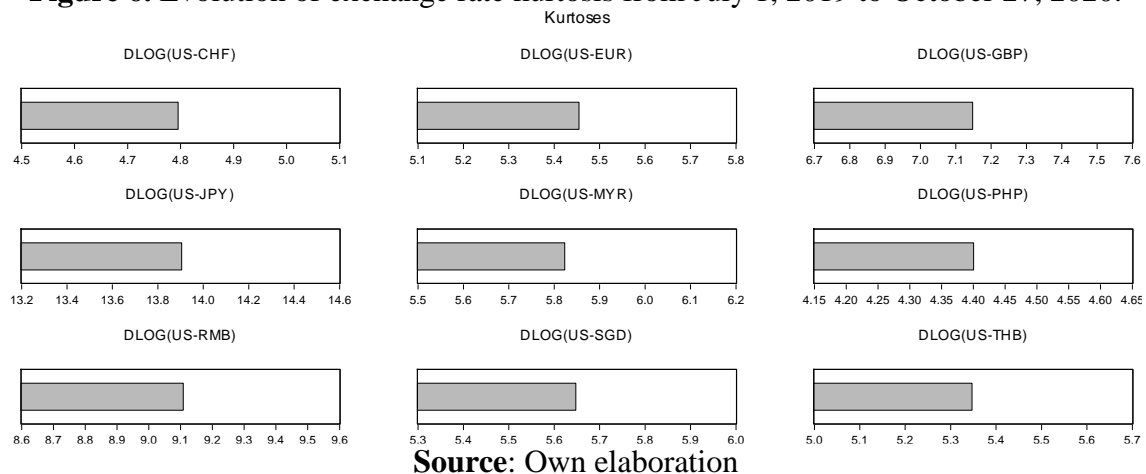


Figure 6 shows the Kurtosis of the US-RMB (US-China), US-EUR (US-EURO-Europe), US-JPY (US-Japan) exchange markets, US-MYR (US-MALAYSIA), US-PHP (US-Philippines), US-SGD (US-Singapore), US-THB (US-THAILAND), US-CHF (US-Switzerland), US-GBP (US-GBP). Based on the results the time series do not follow normal distributions, represented by US-JPY (13.94465), US-RMB (9.134370), US-GBP (7.168678), US-MYR (5.839833), US-SGD (5.5663754), US-EUR (5.469931), US-THB (5.362836), US-CHF (4.809015), US-PHP (4.412797). These results confirm the assumptions that time series do not follow a normal distribution, because asymmetry is different from reference values (Skewness = 0; Kurtosis = 3).

**Figure 6.** Evolution of exchange rate kurtosis from July 1, 2019 to October 27, 2020.



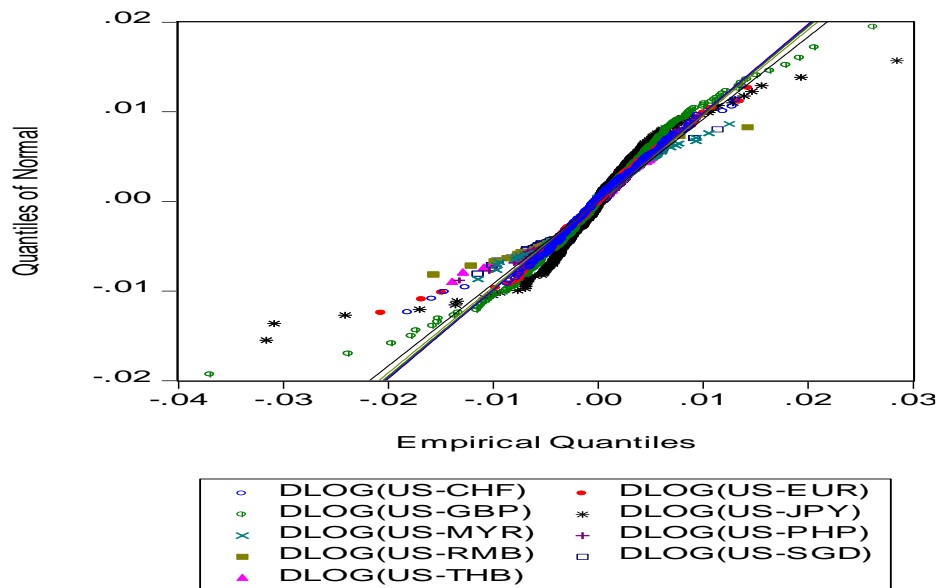
The graphs of quantiles show that the distribution of profitability rates are leptokurtic and asymmetric or biased. The distribution is leptokurtic because the graph is shaped like "S", on the 45° line, and is asymmetric because the "S" is not symmetrical on the line, evidencing the existence of nonlinear relationships (see figure 7).

Table 2 shows the results of the exponents *Detrended Fluctuation Analysis (DFA)*, and we found that the exchange rates US-THB (0.60), US-MYR (0.59), US-SGD (0.59), present long memories, and to a lesser extent the exchange pairs US-GBP (0.56), US-EUR (0.53). On the other side, exchange rates US-RMB (0.47), US-JPY (0.43), US-CHF (0.46), US-PHP (0.38) show anti persistence. These findings show that foreign exchange markets have some predictability, i.e., investors may have abnormal gains without incurring additional risk. These results are partially corroborated by the authors (Palma & Sartoris, 2016), Olufemi et al. (2017)



who tested the hypothesis of market efficiency (HME) in several foreign exchange markets, evidencing that the hypothesis of *random walk* and informational efficiency is rejected.

**Figure 7.** Graphs of the 9 exchange rates from July 1, 2019 to October 27, 2020.



**Source:** Own elaboration

**Table 2.** DFA exponent for return. The values of the linear adjustments always had  $> 0.99\alpha DFAR^2$

Index	Exponent DFA (Covid-19)
US/RMB	$0.47 \pm 0.0135$
US/EUR	$0.53 \pm 0.0236$
US/JPY	$0.43 \pm 0.0768$
US/MYR	$0.59 \pm 0.0169$
US/PHP	$0.38 \pm 0.0242$
US/SGD	$0.59 \pm 0.0159$
US/CHF	$0.46 \pm 0.0389$
US/THB	$0.60 \pm 0.0035$
US/GBP	$0.56 \pm 0.0452$

Note: The hypotheses are:  $H_0\alpha = 0.5$  and:  $H_1\alpha \neq 0.5$

**Source:** Own elaboration

Table 3 shows the results of Detrended cross-correlation coefficient (pDCCA) for exchange rates US-RMB (US-China), US-EUR (US-Zone Europe), US-JPY (US-Japan), US-MYR (US-Malaysia), US-PHP (US-Philippines), US-SGD (US-Singapore), US-THB (US-Thailand), US-CHF (US-Switzerland), US-GBP (US-UK). The *rhoDCCA* show 19 average correlation coefficients ( $\pm 0.333 \rightarrow \pm 0.666$ ), 10 weak correlation coefficients ( $\pm 0.000 \rightarrow \pm 0.333$ ), 7 strong trendless cross-correlation coefficients ( $0.666 \rightarrow \pm 1.000$ ). These findings show that the exchange rates analyzed have characteristics of diversification, due to the low autocorrelation between markets.

**Table 3.** Table summary of *rhoDCCA* coefficients for the 9 exchange rates from July 1, 2019 to October 27, 2020.

Index	<i>rhoDCCA</i>	Time scale (days)	Trend
US-RMB / US-EUR	0.28	n > 19 days	Weak
US-RMB / US-JPY	0.12	n > 37 days	Weak
US-RMB /US-MYR	0.60	n > 18 days	Medium
US-RMB / US-PHP	0.35	n > 12 days	Medium
US-RMB / US-SGD	0.52	n > 13 days	Medium
US-RMB /US-CHF	0.17	n > 17 days	Weak
US-RMB /US-THB	0.27	n > 10 days	Weak
US-RMB / US-GBP	0.34	n > 17 days	Medium
US-EUR / US-JPY	0.56	n > 13 days	Medium
US-EUR / US-MYR	0.54	n > 14 days	Medium
US-EUR / US-PHP	0.14	n > 10 days	Weak
<b>US-EUR / US-SGD</b>	<b>0.71</b>	<b>n &gt; 12 days</b>	<b>Strong</b>
<b>US-EUR / US-CHF</b>	<b>0.82</b>	<b>n &gt; 8 days</b>	<b>Strong</b>
US-EUR / US-THB	0.42	n > 14 days	Medium
<b>US-EUR / US-GBP</b>	<b>0.71</b>	<b>n &gt; 12 days</b>	<b>Strong</b>
US-JPY / US-MYR	0.21	n > 12 days	Weak
US-JPY / US-PHP	0.16	n > 10 days	Weak
US-JPY / US-SGD	0.41	n > 13 days	Medium
<b>US-JPY / US-CHF</b>	<b>0.70</b>	<b>n &gt; 16 days</b>	<b>Strong</b>
US-JPY/ US-THB	0.20	n > 12 days	Weak
US-JPY / US-GBP	0.41	n > 8 days	Medium
US-MYR / US-PHP	0.39	n > 15 days	Medium
<b>US-MYR / US-SGD</b>	<b>0.76</b>	<b>n &gt; 16 days</b>	<b>Strong</b>
US-MYR /US-CHF	0.41	n > 11 days	Medium
US-MYR /US-THB	0.39	n > 13 days	Medium
US-MYR / US-GBP	0.52	n > 12 days	Medium
US-PHP / US-SGD	0.42	n > 9 days	Medium
US-PHP / US-CHF	0.06	n > 14 days	Weak
US-PHP/ US-THB	0.29	n > 13 days	Weak
US-PHP / US-GBP	0.34	n > 26 days	Medium
<b>US-SGD / US-CHF</b>	<b>0.67</b>	<b>n &gt; 24 days</b>	<b>Strong</b>
US-SGD/ US-THB	0.55	n > 20 days	Medium
<b>US-SGD / US-GBP</b>	<b>0.70</b>	<b>n &gt; 10 days</b>	<b>Strong</b>
US-CHF/ US-THB	0.48	n > 11 days	Medium
US-CHF / US-GBP	0.59	n > 8 days	Medium
US-THB / US-GBP	0.36	n > 15 days	Medium

Source: Own elaboration

## 5. CONCLUSION

The general conclusion to be withheld and sustained in the results obtained, through tests carried out with econophysical models show that the global pandemic of 2020 affected the memory

properties of these exchange markets. The results indicate that markets have persistence and long memories, implying that investors will be able to achieve anomic yields without incurring additional risk. Most  $\rho DCCA$  of them show medium and low correlation coefficients, which shows that the implementation of portfolio diversification strategies may be feasible. We can conclude that although the random walk hypothesis has been rejected in all markets, the essential condition of diversification and coverage in these foreign exchange markets can be exploited by international investors in order to maximize the profitability of their portfolios, as well as mitigate the risk arising from the uncertainty and pessimism that was present in 2020 in the international financial markets.

## REFERENCES

- Alexandre, P., Dias, R., & Heliodoro, P. (2020). EUROPEAN FINANCIAL MARKET INTEGRATION: A CLOSER LOOK AT GOVERNMENT BONDS IN EUROZONE COUNTRIES. *Balkans Journal of Emerging Trends in Social Sciences*. <https://doi.org/10.31410/balkans.jetss.2020.3.1.78-86>.
- Alexandre, P., Heliodoro, P., & Dias, R. (2019). THE CONTAGION EFFECT IN EUROPE: A DCC GARH APPROACH. In *5th LIMEN Conference Proceedings (part of LIMEN conference collection)*. <https://doi.org/10.31410/limen.2019.73>
- Chaudhry, A. F., Hanif, M.M., Hassan, S., & Chani, M. I. (2019). Efficiency of the Black Foreign Exchange Market. *International Journal of Economics and Finance*. <https://doi.org/10.5539/ijef.v11n2p165>
- Chiang, S.M., Lee, Y. H., Su, H.M., & Tzou, Y. P. (2010). Efficiency tests of foreign exchange markets for four Asian Countries. *Research in International Business and Finance*. [HTTPS://DOI.ORG/10.1016/J.RIBAF.2010.01.001](https://doi.org/10.1016/J.RIBAF.2010.01.001)
- Dias, R., Alexandre, P., & Heliodoro, P. (2020). Contagion in the LAC Financial Markets: The Impact of Stock Crises of 2008 and 2010. *Littera Scripta*. [https://doi.org/10.36708/littera\\_scripta2020/1/3](https://doi.org/10.36708/littera_scripta2020/1/3)
- Dias, R., da Silva, J. V., & Dionysus, A. (2019). Financial markets of the LAC region: Does the crisis influence the financial integration? *International Review of Financial Analysis*, 63(January), 160–173. <https://doi.org/10.1016/j.irfa.2019.02.008>
- Dias, R., Heliodoro, P., & Alexandre, P. (2019). RISK TRANSMISSION AMONG STOCK MARKETS IN LAC REGION: FINANCIAL CRISES IMPACT. In *5th LIMEN Selected Papers (part of LIMEN conference collection)*. <https://doi.org/10.31410/limen.s.p.2019.91>
- Dias, R., Heliodoro, P., & Alexandre, P. (2020). Efficiency of Asean-5 Markets: An Detrended Fluctuation Analysis. *Mednarodno Inovativno Poslovanje = Journal of Innovative Business and Management*. <https://doi.org/10.32015/jibm.2020.12.2.13-19>
- Dias, R., Heliodoro, P., Alexandre, P., & Vasco, C. (2020a). FINANCIAL MARKET INTEGRATION OF ASEAN-5 WITH CHINA: AN ECONOPHYSICS APPROACH. In *4th EMAN Conference Proceedings (part of EMAN conference collection)* <https://doi.org/10.31410/eman.2020.17>
- Dias, R., Heliodoro, P., Alexandre, P., & Vasco, C. (2020b). THE SHOCKS BETWEEN OIL MARKET TO THE BRIC STOCK MARKETS: A GENERALIZED VAR APPROACH. In *4th EMAN Conference Proceedings (part of EMAN conference collection)*. <https://doi.org/10.31410/eman.2020.25>
- Dias, R., Pardal, P., Teixeira, N., & Machová, V. (2020). Financial Market Integration of ASEAN-5 with China. *Littera Scripta*. [https://doi.org/10.36708/littera\\_scripta2020/1/4](https://doi.org/10.36708/littera_scripta2020/1/4)
- Fame, E. F., & French, K. R. (1988). Dividend yields and expected stock returns. *Journal of Financial Economics*. [https://doi.org/10.1016/0304-405X\(88\)90020-7](https://doi.org/10.1016/0304-405X(88)90020-7)
- Heliodoro, P., Dias, R., & Alexandre, P. (2020). FINANCIAL CONTAGION BETWEEN THE

- US AND EMERGING MARKETS: COVID-19 PANDEMIC CASE. In *4th EMAN Selected Papers (part of EMAN conference collection)*. <https://doi.org/10.31410/eman.s.p.2020.1>
- Heliodoro, P., Dias, R., Alexandre, P., & Vasco, C. (2020). INTEGRATION IN BRIC STOCK MARKETS: AN EMPIRICAL ANALYSIS. In *4th EMAN Selected Papers (part of EMAN conference collection)*. <https://doi.org/10.31410/eman.s.p.2020.33>
- Huang, H., & Zhang, Z. (2019). Virtual Standard Currency for Approximating Foreign Exchange Rates. *International Journal of Electronic Commerce*. <https://doi.org/10.1080/10864415.2018.1512273>
- Jarque, C.M., & Bera, A. K. (1980). Efficient tests for normality, homoscedasticity and serial independence of regression residuals. *Economics Letters*, 6(3), 255–259. [https://doi.org/10.1016/0165-1765\(80\)90024-5](https://doi.org/10.1016/0165-1765(80)90024-5)
- Kantelhardt, J. W., Koscielny-Bunde, E., Rego, H. H., Havlin, S., & Bunde, A. (2001). Detecting long-range correlations with detrended fluctuation analysis. *Physica A: Statistical Mechanics and Its Applications*, 295(3–4), 441–454. [https://doi.org/10.1016/S0378-4371\(01\)00144-3](https://doi.org/10.1016/S0378-4371(01)00144-3)
- Matebejana, G., Motlaleng, G., & Juana, J. (2017). Foreign Exchange Market Efficiency In Botswana. *Review of Economic and Business Studies*. <https://doi.org/10.1515/rebs-2017-0050>
- Ning, Y., Wang, Y., & Su, C. Wei. (2017). How did China's foreign exchange reform affect the efficiency of foreign exchange market? *Physica A: Statistical Mechanics and Its Applications*. <https://doi.org/10.1016/j.physa.2017.04.150>
- Njindan Iyke, B. (2019). A TEST OF THE EFFICIENCY OF THE FOREIGN EXCHANGE MARKET IN INDONESIA. *Buletin Ekonomi Moneter Dan Perbankan*. <https://doi.org/10.21098/bemp.v0i0.976>
- Olufemi, A. P., Adewale, A. O., & Oseko, M. S. (2017). Efficiency of Foreign Exchange Markets in Sub-Saharan Africa in the Presence of Structural Break: A Linear and Non-Linear Testing Approach. *Journal of Economics and Behavioral Studies*. <https://doi.org/10.22610/jeb.v9i4.1827>
- Palma, A. A., & Sartoris, A. (2016). Weak-Form Market Efficiency of the Brazilian Exchange Rate: Evidence from an Artificial Neural Network Model. *Latin American Business Review*. <https://doi.org/10.1080/10978526.2016.1171720>
- Peng, C. K., Buldyrev, S. V., Havlin, S., Simons, M., Stanley, H. E., & Goldberger, A. L. (1994). Mosaic organization of DNA nucleotides. *Physical Review E*, 49(2), 1685–1689. <https://doi.org/10.1103/PhysRevE.49.1685>
- Podobnik, B., & Stanley, H. E. (2008). Detrended cross-correlation analysis: A new method for analyzing two nonstationary time series. *Physical Review Letters*, 100(8). <https://doi.org/10.1103/PhysRevLett.100.084102>
- Poterba, J.M., & Summers, L. H. (1988). Mean reversion in stock prices. Evidence and Implications. *Journal of Financial Economics*. [https://doi.org/10.1016/0304-405X\(88\)90021-9](https://doi.org/10.1016/0304-405X(88)90021-9)
- Sheik, M.M., & Banu, M. A. S. (2015). Study on Weak-Form Efficiency of Foreign Exchange Markets of Developing Economies: Some India Evidence. *International Journal of Management*.
- Sukpitak, J., & Hengpunya, V. (2016). Efficiency of Thai stock markets: Detrended fluctuation analysis. *Physica A: Statistical Mechanics and Its Applications*, 458, 204–209. <https://doi.org/10.1016/j.physa.2016.03.076>



# THE IMPACT OF THE COVID-19 PANDEMIC ON SUPPLY CHAINS IN THE AUTOMOTIVE INDUSTRY

Goran Milovanovic<sup>1</sup>  
Tamara Stankovic<sup>2</sup>

DOI: <https://doi.org/10.31410/LIMEN.2020.51>

---

**Abstract:** *Health crises have an impact on supply chains, mainly by disrupting their regular activities. In this research, the authors have analyzed the impact that the Covid-19 pandemic has made on business relationships between supply chain partners in the automotive industry and their suppliers, which are mostly from territories where the initial outbreak of the SARS COV 2 virus occurred. The analysis shows that in some cases, there is a strong dependency between the pandemic and production levels. Being dependent prevents supply chains from maintaining stability and causes system vulnerabilities. The authors conclude their work with a thesis on the pronounced impact of the current pandemic on automotive supply chain activities. For the analysis to be complete, it is necessary to monitor changes in production levels further, since data for the current year still does not provide a realistic insight into all the consequences at the supply chain level.*

**Keywords:** *Supply chains, Covid-19, Automotive industry, Production levels.*

---

## INTRODUCTION

The emergence of a new virus, SARS-CoV-2, which caused the Covid-19 pandemic, has greatly changed the opportunities on the global market. Its appearance in the province of Hubei in China caused great fear around the world. The spillover effect occurred very quickly, and other countries became active participants in solving the problem, which in the meantime grew to the level of a pandemic.

Based on various researches on the impacts of the current pandemic on different industry branches, an imposed assumption is that the most pronounced impact is in the domain of the automotive industry. In his paper, the author Shuichi Ishida observes the impact on various industry branches and concludes that the great dependency of production levels in the automotive industry and the current pandemic can be explained through business relations between the world's largest manufacturers and their main suppliers. Until just before COVID-19 appeared, most of the world's major automotive manufacturers were sourcing 30–60% of their components, including modules and subassemblies from China (Ishida, 2020, p.147). Due to the great importance of this topic, the paper will focus on examining the impact of the pandemic on production activities in global chains, and on understanding the consequences and trends. The context in which business takes place today sets a number of limitations, and various indicators point to pessimistic assessments of economic factors whose influence creates trends in the global environment. Based on aggregating industry-level shocks, the OECD estimates a drop in immediate GDP of around 25 per cent (Rio-Chanona, Mealy, Pichler, Lafond & Farmer, 2020, p.98). This research aims to examine the possibilities of global supply chains in the

---

<sup>1</sup> Faculty of Economics Nis, Trg kralja Aleksandra Ujedinitelja 11, Serbia

<sup>2</sup> Faculty of Economics Nis, Trg kralja Aleksandra Ujedinitelja 11, Serbia



automotive industry, and their ability to continue activities despite bad trends. The results of a study by the Institute for Supply Management indicated a serious deterioration in supply chain performances in the ongoing pandemic. In his research proposal, Anne Stall presents a sample of 600 manufacturers, who mostly based their cooperation on first-tier suppliers from China, as many as 57% indicated lead time extension compared to the previous year, while suppliers indicated their capacity utilization is only 50% on average. Due to the relevance of everything mentioned above, it is very important to examine the potential effects of the Covid-19 pandemic on the business activities in automotive companies and thus answer the question of its domains and consequences.

## **CHALLENGES IN THE AUTOMOTIVE INDUSTRY**

The Covid-19 pandemic has actualized supply chain disruptions caused by risks that primarily arose in the health sector. Current research indicates serious consequences of the current pandemic. Logistics operations play a crucial role during the containment effort of an epidemic outbreak as they strengthen the ability of all the parties involved to promptly respond and effectively control the situation (Dasaklis, Pappis & Rachaniotis, 2012, p.406).

Epidemic outbreaks are a special case of supply chain (SC) risks that is distinctively characterized by a long-term disruption existence, disruption propagations (i.e., the ripple effect), and high uncertainty (Ivanov, 2020, p.1). The great connection and dependency between actors in supply chains can now be seen as a bottleneck that shows significant weaknesses in pandemic conditions. Globalization has enabled decentralized management of global supply chains, which in crises become the subject of efficiency-focused research. The automotive market in particular shows the shortcomings of decentralized operations, and it is considered that the principle of centralization is more suitable, since such health crises show periodicity in their occurrence, and the overall effects of the consequences are growing. Having offshored their manufacturing activities to low-cost countries, many automakers and suppliers are now scrambling to create a centralized management system at a single location in the supply chain (Ishida, 2020, p. 147). Since this crisis is primarily in the health sector, many theorists have based their work on supply chains in the medical equipment procurement segment. The conclusions reached can be partially mapped to all global supply chains, since all of them, regardless of the specific type of product or service, operate in a similar micro and macro environment. Global value chains link the macro-level of international trade, investment, and finance with the meso-level of national and regional economies, and the micro-level of local suppliers, communities, and workers (Gereffi, 2020, p.289). The dominant effects of the pandemic, which can be distinguished among supply chains in any industry branch, relate to large variations in demand, supply and logistics activities. The existence of negative implications is certain, so the question arises as to how it is possible to continue the business and, above all, what changes to implement in order to keep the performance of the chains at the desired level.

In March 2020, most countries were forced to partially or completely close their borders due to the crisis in the health sector. The International Monetary Fund, for instance, predicts that despite massive government support the GDP in the advanced economies will contract by 6% in 2020 and that almost every country on the globe will face a severe economic recession (Brakman, Garretsen & Witteloostuijn, 2020, p.1). World trade volumes will contract by more than 10%, and the World Trade Organization (WTO) – in a worst-case scenario – is predicting a more than 30% decline in world trade (Brakman, Garretsen & Witteloostuijn, 2020, p.1). The onset of the crisis in the automotive industry almost coincides with the emergence of the SARS



CoV-2 virus in the Chinese province of Hubei. This province is one of the main industrial bases in which a large number of suppliers are located (slightly more than 100). Based on KPMG, just over 80% of the world's car production is related to China. It is therefore not surprising that the negative implications of the Covid-19 disease pandemic are spreading quickly to other regions of the world that import parts from their Chinese partners. Since the local Chinese market, due to its instrumental importance in building performance at the global level, exerts a great influence, the analysis of performance in other parts of the world should start from the initial decline in performance and interruptions that occurred in China with the SARS CoV-2 virus. Regardless of the current situation, China remains the largest car market in the world. Based on Accenture research a drop in production in February 2020 of as much as 80% caused major supply problems. Partners in the US have faced interruptions in the delivery of parts, or in some situations, the lead time has been extended several times. According to ICLG, the US market produced 2.62 million cars in February 2020, while a month later production dropped to 1.7 million cars. The EU market is also suffering huge consequences, where, due to the closure of plants, the number of produced cars has been reduced by 1.2 million. Experts warn that an additional problem in achieving performance in the automotive industry is the planned reduction in world production of 7% -10% in the pre-pandemic era (Global Supply Chain Law Blog, 2020). This reduction is related to the supply chain crisis that was current before the Covid-19 pandemic itself. For example, Ford, GM and FCA had suspended their production in the United States and focused their capacity on the production of medical devices. Nissan has suspended complete production in the UK because there was a break in the supply chain due to a drastic drop in demand (Global Supply Chain Law Blog, 2020). Toyota had faced similar problems and halted production in Europe. Officials in this company cite the decline in sales as the main reason for such a decision, but also government restrictions on the movement of people. Honda has temporarily closed its four plants in the US also due to a large drop in demand. Changes have also taken place in the territory of Europe. Thus, the company Renault has closed the plants in Slovenia and Romania.

## CHANGES IN PRODUCTION LEVELS

Statistics indicate a significant decline in production in the automotive industry. In this paper, the focus will be placed on three markets whose production levels are often used in analysis. Relevant information is shown in table 1.

**Table 1.** Production levels by quarters

Market	Production levels by years/quarters					
	2019/Q1	2019/Q2	2019/Q3	2020/Q1	2020/Q2	2020/Q3
Europe	5.603.214	11.263.935	15.954.001	4.658.408	6.943.160	11.286.068
America	5.166.362	10.439.742	15.445.325	4.552.956	6.132.489	10.921.320
Asia	12.174.183	23.812.995	35.252.876	8.445.952	17.762.263	29.300.826

Source: OICA, 2020

According to the data presented above, a trend of decreasing production activities in the mentioned areas can be observed. Looking at the data for 2019, it is possible to see a growth in production in all quarters presented. The growth trend stopped abruptly at the end of 2019 when the whole world became involved at the beginning of the pandemic to some extent. It is

important to point out that not all countries immediately found themselves in a direct struggle with the health risks arising from this crisis.

**Table 2.** Variation in production levels by quarters

Market	Variation		
	Q1	Q2	Q3
Europe	-16.9%	-38.4%	-29.3%
America	-11.9%	-41.3%	-29.3%
Asia	-30.6%	-25.4%	-16.9%

Source: OICA,2020

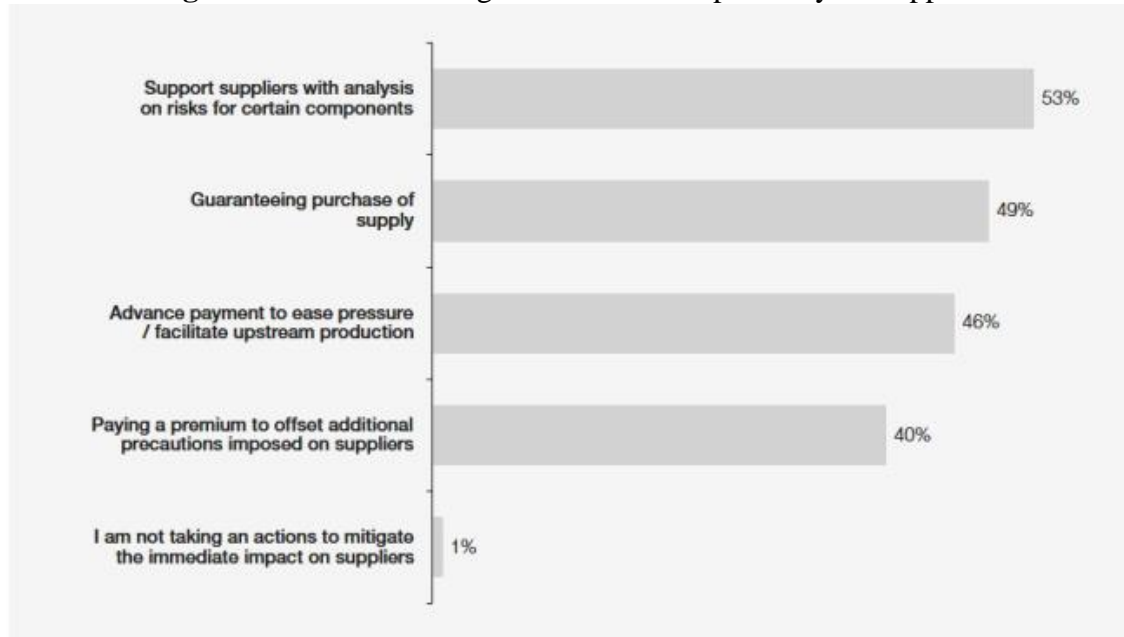
Production by quarters in 2020 points to the fact that we can talk about somewhat of a recovery trend that is partly a result of decentralization and restructuring of the supply chains themselves. Important assumptions can be made based on quartile variations, and they can best indicate the impact of the epidemic. Asian countries are the ones that suffered the biggest variations in the first quarter of 2020. That is by far the largest decline in production activities at that time. Such a situation is due to the fact that China was initially the focus of a pandemic, in which the situation was still not completely under control. As the pandemic progressed, so did the decline in countries in Europe and Asia, where the largest variations occurred during the second quarter. During the third quarter, the situation stabilized to some extent on all three continents, which is reflected by the decrease of negative values in production flows.

## FUTURE RESEARCH DIRECTIONS

It can be said that supply chain partners play a major role in responding to crises along the chains, as essentially their export activities were the first to be affected by the pandemic. The suppliers' inability to deliver and the limited availability of raw materials are the primary reasons for problems in supply chain flows. Nearly half of the respondents in the survey said that the COVID-19 pandemic has had a "limited impact" on their operations, for example, a minor reduction in output due to reduced OEM demand, with greater resilience in Asia (China and Japan mainly) where 46% of respondents claimed the disruption was contained (IHS Markit, 2020). The indicator observer in the research refers to the percentage of suppliers who had to close their plants. Nearly 39% of all respondents were forced to close at least one plant (IHS Markit, 2020). The highest percentage of closed plants was in Wuhan, at the beginning of the epidemic. As the virus intensity in China dropped, the chances of creating poorer performances increased on European soil. The research showed that in Europe there is the biggest chance for potential interruptions in supply chains. Although supply problems arose directly from suppliers, it should be noted that the root cause of the problem lies in the direct impact of infection.

The research unequivocally indicated that although the primary problem arose in the health sector, strong logistics processes, and material management processes as well as their flexibility are the key to solving such problems. For this reason, agility combined with new technologies is seen as a key factor in defending chain vulnerabilities. According to the World Economic Forum, the activities that suppliers should carry out to mitigate the negative effects are shown in the next picture.

**Figure 1.** Actions to mitigate short-term impact on your suppliers



Source: WEF,2020

The essential recommendation refers to the development of such partnerships, which would include the coverage of protection costs, by the partners within the supply chains themselves. It is important to plan costs so that they reach a minimum at the supply chain level, while they are justifiably high within individual partners. The trade-off should provide optimal conditions for overcoming crises. The main issue arising from this crisis is what the structure of suppliers should look like, as well as what is their optimal number. Besides, the issue of their schedule and level of cooperation also became more important. The answers to these questions should provide new development opportunities in restructuring existing supply chains and building their resilience.

## CONCLUSION

Based on everything that is written in this paper, it is possible to conclude that global automotive supply chains have been affected by the current pandemic. Due to not yet being able to determine all of the consequences, we can assume that the most pronounced impact in the automotive industry has not yet been confirmed. In order to reduce negative effects on production, it is necessary to restructure supply chains themselves, but also change relations with suppliers whose role is crucial in such a scenario. It is important to analyze new, more centralized business models at the supply chain level. Also, it is necessary to take into account the savings, define trade-offs and create optimal models that should be as accurate as possible. Getting acquainted with the changes, understanding the new role of the partners and detecting new tendencies is a step towards overcoming this crisis. Respecting these principles, as well as economic ones, will provide space for creating better business results.

## REFERENCES

- Ishida, S. (2020). Perspectives on supply chain management in a pandemic and the post-COVID-19 era. *IEEE Engineering Management Review*, 48(3), 146-152. <https://doi.org/10.1109/EMR.2020.3016350>

- Rio Chanona, R.M., Mealy, P., Pichler, A., Lafond, F., & Doyne Farmer, J. (2020). Supply and demand shocks in the COVID-19 pandemic: an industry and occupation perspective. *Oxford Review of Economic Policy*, 36(1), 94-137. <https://doi.org/10.1093/oxrep/graa033>
- Dasaklis, T., Pappis, C., & Rachaniotis, N. (2012). Epidemics control and logistics operations: A review. *International Journal of Production Economics*, 139(2), 393-410. <https://doi.org/10.1016/j.ijpe.2012.05.023>
- Ivanov, D. (2020). Predicting the impacts of epidemic outbreaks on global supply chains: A simulation-based analysis on the coronavirus outbreak (COVID-19/SARS-CoV-2) case. *Transportation Research Part E: Logistics and Transportation Review*, 136, 1-14. <https://doi.org/10.1016/j.tre.2020.101922>
- Gereffi, G. (2020). What does the COVID-19 pandemic teach us about global value chains? The case of medical supplies. *Journal of International Business Policy*, 3, 287-301. <https://doi.org/10.1057/s42214-020-00062-w>
- Brakman, S., Garretsen, H., & Witteloostuijn, A. (2020). The turn from just-in-time to just-in-case globalization in and after times of COVID-19: An essay on the risk re-appraisal of borders and buffers. *Social Sciences and Humanities Open*, 2(1), 1-6. <https://doi.org/10.1016/j.ssaho.2020.100034>

## ADDITIONAL READING

- KPMG. (2020). Covid-19: Impact on the automotive sector. Available: <https://assets.kpmg/content/dam/kpmg/ar/pdf/2020/covid-19-impact-on-the-automotive-sector.pdf> [28.11.2020].
- Accenture. (2020). COVID-19: Mobilizing the automotive industry now. Available: <https://www.accenture.com/be-en/insights/automotive/coronavirus-automotive-rapid-response> [29.11.2020].
- ICLG. (2020). Impacts to Automotive Supply Chains From COVID-19. Available: <https://iclg.com/briefing/11745-impacts-to-automotive-supply-chains-from-covid-19> [02.12.2020].
- Global Supply Chain Law Blog. (2020). Impacts to Automotive Supply Chains from COVID-19. Available: <https://www.globalsupplychainlawblog.com/automotive/impacts-to-automotive-supply-chains-from-covid-19/> [08.12.2020].
- IHS Markit. (2020). COVID-19 Pandemic Impact on Automotive Suppliers. Available: <https://ihsmarkit.com/research-analysis/covid19-pandemic-impact-on-automotive-suppliers.html> [10.12.2020].
- OICA. (2020). Production statistics. Available: <https://www.oica.net/category/production-statistics/2019-statistics/> [11.12.2020].
- WEF. (2020). How to rebound stronger from COVID-19? Resilience in manufacturing and supply systems. Available: [http://www3.weforum.org/docs/WEF\\_GVC\\_the\\_impact\\_of\\_COVID\\_19\\_Report.pdf](http://www3.weforum.org/docs/WEF_GVC_the_impact_of_COVID_19_Report.pdf) [15.12.2020].

# RISK MANAGEMENT CHALLENGES IN THE COVID-19 PANDEMIC

Vlado Radić<sup>1</sup> 

Nikola Radić<sup>2</sup> 

DOI: <https://doi.org/10.31410/LIMEN.2020.57>

---

**Abstract:** *Even before the current pandemic, humanity was faced with numerous situations that had serious global consequences. In addition to wars, nuclear radiation, cataclysmic earthquakes, volcanic eruptions, tsunamis, epidemics of SARS, swine flu, MERS, HIV, Ebola, Zika virus, they led to the cognition that humanity is powerless in the face of such disasters. Regardless of the achievements and development of science and technology, extensive and long-lasting medical research, "invisible" enemies have taken millions of human lives. People have always been faced with a risk, which comes from nature, human activities, or the mistakes of the man himself. Risk is a multidimensional, multifaceted and complex phenomenon, present on a daily basis in human life. Risk management in a state of the pandemic is primarily aimed at preserving the health and lives of the entire population, and measures applied to prevent a pandemic from taking countless human lives have no alternative.*

**Keywords:** *Automotive industry, Aviation, Supply chain, Tourism, E-business.*

---

## INTRODUCTION

Infectious diseases and associated mortality remain serious threats around the world. Some infectious diseases, such as tuberculosis and malaria, are endemic in many areas and require constant care. Others, such as influenza, fluctuate in prevalence and intensity, leaving equal problems in the economies of developed and developing countries when they occur (sudden increase in prevalence in a relatively limited area or population), develop into an epidemic (sudden increase covering a larger area or population), or when they turn into a pandemic (an epidemic that covers several countries or continents).

The risk of an epidemic (pandemic) is complex, but policy makers have the tools at their disposal to implement in response. Some reduce the likelihood of an outbreak or limit its spread. Others minimize the health impact of an outbreak, which cannot be prevented or stopped immediately. Others, again, aim to reduce the harmful economic effects (Radić et al., 2020).

Measures taken by states and their health systems to prevent and minimize the effects of coronaviruses were to reduce the frequency of coronavirus transmission and population mortality. However, restrictive measures have been accompanied by controversy due to their effectiveness in curbing the infection and potential negative economic effects. Evidence of the effects of these measures is crucial in the "reopening" phase when governments are considering abolishing them and bringing the economy back to normal. In fact, adjusting mitigation procedures and policies can greatly reduce the economic and human losses of a pandemic (Acemoglu et al., 2020, Alvarez et al., 2020, Jones et al., 2020).

---

<sup>1</sup> Faculty of Business Economics and Entrepreneurship, Belgrade, Mitropolita Petra 8, Serbia

<sup>2</sup> Faculty of Business Economics and Entrepreneurship, Belgrade, Mitropolita Petra 8, Serbia

The basic measures in the fight against the virus are already standardized, mainly according to the Chinese experience and model. The same goes for various statistics and scientific methods according to one's own or global experience. Everyone agrees that "nothing will be the same anymore" and there are certain arguments for such an assessment. The damage will vary in content and scope, from moral and ethical to organizational, economic, political and geostrategic. Since this time the most developed are much more affected by the virus and suffer more damage, even those who were minimally affected or not affected at all, will suffer economic, political and other damage due to the spillover of consequences in the conditions of globalization and general interdependence that dominate international relations.

The paper analyzes the sectors most affected by the pandemic, with special reference to disrupted supply chains and evident risks.

## **IMPLICATIONS OF COVID-19 PANDEMIC BY SECTORS**

At the beginning of the pandemic, the automotive industry suffered the biggest blow, and with the mass introduction of lockdown, the sectors of aviation (carriers and aircraft manufacturers) and tourism experienced unprecedented losses. As well as the economic crisis of 2008-2009, the new crisis caused by the coronavirus pandemic showed the weaknesses of the planning process, analysis of business risks and threats, and predictions of future events. It would be said that the consequences of the economic crisis have been forgotten and that the world was not ready for another shock, this time to health.

Even then, car manufacturers stopped working, reduced the volume of production, laid-off workers and had a multi-year decline in the number of cars produced. The crisis did not last only one year, so in some countries, the recovery was visible only after four or five years. Due to the effect of globalization, each industry is supplied with raw materials and parts from different countries in order to keep production costs low. In this regard, manufacturers from many industries are oriented towards suppliers from China. This is especially true of the fact that the automotive industry in the rest of the world imports parts worth more than 34 billion dollars from China. It is an indisputable fact that China is a very important factor in the global economy. Its importance is not only related to the status of producers and exporters of consumer products; China has become the main supplier of inputs for companies abroad. To date, about 20% of global trade in products has been in China (Radić et al., 2020).

The speed of the spread of the COVID-19 pandemic in China caused a disruption of supply chains. Restrictive measures and close the city of Wuhan, which has the largest capacity to produce car parts and equipment, as well as the restriction and complete cessation of flights from China to Europe in the first wave of the pandemic (February-April 2020), led to delays in the production of the main players in Germany, France and Italy (Volkswagen, Mercedes, Audi, Peugeot, Citroen, Fiat). In the first quarter of 2020, production was lower by 23% than in the same quarter of 2019, in the second quarter it was lower by 32.4%, and in the third quarter by 22.9% (OICA, 2020). This speaks not only of a smaller number of cars produced but also of a smaller number of cars sold. Of course, during a pandemic, interest in buying new cars is much less than under normal circumstances.

The coronavirus pandemic is slowing the economy, causing panic. On the other hand, the slowdown in the economy always has a negative impact on the car industry, because people in such a situation do not think about buying a car. Problems with stopping production and laying off workers, application of so-called measures social distancing, complete recovery and getting



back on "normal track" takes time. In short, the ability to absorb shock and get out of it better than the competition will be the key to survival and long-term prosperity. It remains for manufacturers to redefine existing strategies with suppliers in different geographical locations in the coming period, and it is likely that they will rely more on domestic suppliers in the future. Japan, for example, has already set aside 2.2 billion dollars to help companies that want to move their production base from China to Japan, and 214 million dollars to other countries (Radić et al., 2020).

The coronavirus pandemic represents a level of disorder that the automotive industry has simply not faced before. Never before have there been such broad limitations on people's ability to work, coexist, and buy things (like vehicles). All these limitations directly affect the ability to produce vehicles and sell them to consumers. The overall health of the automotive industry in 2021 depends almost entirely on the nature of the recovery that can be achieved worldwide. So far, the "soft" restrictions of some governments, especially in the US and Europe, have led to infection rates remaining high in those countries, leading to prolonged periods of reduced economic activity, as lockdown are applied and repealed differently in response to infection rates.

The pandemic has negatively affected all industries, and among the most affected are certainly airlines and air transport. With over 1.400 airlines that have 31.717 aircraft and serve 3.900 airports thanks to the support of 173 air traffic control service providers, the civil aviation sector has established an impressive global network at the service of passengers and businesses from all over the world. Airplanes are the safest and fastest means of transportation to cross oceans and borders to connect people and foster sustainable economic growth (ICAO, 2020). Almost overnight, airlines faced declining interest in travel, a flight ban and the landing of aircraft fleets. Due to several months of the suspension or low volume of flights, losses in air traffic, together with aircraft manufacturers, airports, air traffic control, travel agencies and hoteliers, are estimated at hundreds of billions of dollars. In that regard, the largest number of airlines laid off thousands of employees. A large number of smaller airlines are on the verge of bankruptcy, and the forecasts for further business are very devastating. Some analysts predict that during 2021, the decline in income and return to the level of 2019 will be more difficult and accompanied by great challenges. Based on the movement of the pandemic, the partial lifting of some restrictions, the limited number of flights during the summer season, it is estimated that the loss of airlines will be around 314 billion dollars in 2020, which is a drop of 55% compared to the 2019 level (IATA, 2020). According to other estimates, airlines will need several years to fully recover.

Tourism is one of the fastest-growing economic sectors and is an important driver of economic growth and development. In 2018, there were 1.4 billion international tourists, which is six percent more than in 2017 (WTO, 2020). Revenues from tourism amounted to 1480 billion dollars, and passenger transport brought another 250 billion dollars. Tourism is a major source of employment globally and is a very labor-intensive sector. A high share of jobs is performed by women (54%) and young employees, which means that the industry is considered inclusive. Also, there is indirect employment in the field of construction and infrastructure development, plus the supply of tourists with food, drinks and souvenirs. Also, many employees have direct contact with tourists in travel agencies, airlines, on ships, in hotels, restaurants, shopping malls and various tourist attractions. According to business indicators, it is obvious that the pandemic will have a longer-lasting effect on the tourism sector, while other economic sectors could recover faster. This is especially important for countries where the national economy relies heavily on the tourism industry (Croatia, Greece, Spain, Italy, Turkey, Malta, Cyprus).



In addition to airlines, the reduction in travel has also affected hotels. According to the analytical company STR, the prices of hotel accommodation fell in all regions in March (STR, 2020). In relation to performance indicators (revenue per free room and average daily occupancy), the impact of the pandemic and travel restrictions on revenues in the same period in 2019 is obvious. Several large hotel chains, including Marriot International and Hilton Worldwide, have seen mass layoffs and pay cuts. The executive director of the Marriot International hotel chain (about 174.000 employees), said that the corona virus pandemic affected their business worse than the Great Recession and the terrorist attack on the World Trade Center in New York together. In those two major crises, the biggest quarterly drop in revenue was 25%. With the onset of the coronavirus pandemic, the decline is 75%, and it is believed that it will be up to 90% in the United States (Bomey, 2020). With the spread of the pandemic, Marriott sent two-thirds of its employees on forced leave. They will not be paid, but they will have health benefits as before. Hilton Worldwide has also informed lenders that it will borrow 1.75 billion dollars as a precaution to maintain flexibility "in light of the uncertainty in global markets" (Borko, 2020). Other companies in the industry, such as the online platform Expedia Group, announced in late February that they were cutting 3.000 jobs. Meanwhile, the travel site Booking Holdings - which has 27.000 employees - has suspended employment.

The tourism industry accounts for about 10.3% of global GDP and generates roughly one in four new jobs in the world in the last five years (WTTC, 2020). But the abrupt halt to global travel due to the pandemic resulted in the dismissal of more than 100 million workers worldwide during 2020. UN Secretary-General Antonio Guterres released a new report in August that relies on WTO data to quantify the devastating impact the coronavirus pandemic has had on global tourism. He warned that about 120 million jobs in tourism are endangered, with the economic damage likely to exceed 1 trillion dollars in 2020 alone. "It is necessary to renew the tourism sector in order to regain its position as a provider of decent business, stable income and protection of our cultural and natural heritage." He further emphasized the role of tourism as one of the most important economic sectors, providing livelihoods for hundreds of millions of people, while "stimulating economies and enabling countries to prosper" (Richter, 2020). Depending on when travel restrictions are completely lifted, the World Tourism Organization expects tourism revenues to fall between 910 billion dollars and 1.2 trillion dollars in 2020, which would take the global tourism industry back 20 years.

## **RISK ASSESSMENT IN A PANDEMIC**

Even a superficial analysis of the events related to the coronavirus pandemic so far indicates the unwillingness of almost all countries in the world, their governments and health systems to successfully resist the waves of the pandemic, which has lasted for almost a year. This unequivocally points to the need to analyze the risks associated with the pandemic, especially for the lives and health of the population around the world. Political, economic, social and other risks can be discussed from the perspective of individual solutions, decisions, or public policies.

People have always been faced with a risk, which can come from nature, human activity, or the mistakes of the man himself. Risk is a multidimensional, multifaceted and complex concept, present in human life on a daily basis. As such, it has always attracted the attention of a large number of researchers and scientists, who have observed it from various aspects. For these reasons, there is no single definition of risk. However, all risks have in common that there must be future and uncertain events. Broadly speaking, the risk represents a possible negative deviation from the expected outcome. Risk is a danger that threatens a person or property (fire,

earthquake, explosion, pandemic), i.e. risk is only the possibility that some economically harmful event will occur (Radić, 2014).

Theoretically and practically, all organizations are located and operate in conditions of uncertainty. According to the definitions, in that case it is said that the activities of each organization take place in a more or less hazardous environment. In the context of risk management terminology, the hazard is considered to be the state and environment in which there is uncertainty about the realization of desired events. Just as there is no single definition of risk, there is no single one nor a single definition of risk management. Often management defines risk as a systemic process that involves determining and measuring the risks to which organizations and individuals are exposed, as well as selection and implementation of the most adequate risk management methods. Risk management is the process by which they are identified, assessed and address risks using consistent and repeatable procedures and methods for parts or the entire organization. Risk management does not seek to completely eliminate risks, as this is practically impossible, but to create an environment in which optimal business decisions can be made taking into account the identified risks and the consequences they may cause (Radić, 2014).

Risk assessment during a global pandemic is not an easy task, especially if all aspects of risk, types, levels of manifestation and consequences are taken into account. Experts are expected to formulate clear, unambiguous and non-politicized conclusions, on the basis of which public policies will be formulated. When the situation is complex and with serious consequences for individuals and society, the question is whether epidemiologists are the only ones called upon to formulate public policies in the current situation? Is it necessary to include economists, psychologists, sociologists, statisticians and other experts, who would provide answers within the multidisciplinary team on crisis communication strategies, change management and assessments of health, psychological and economic losses (Čabarkapa, 2016)?

The situation with coronavirus pandemic belongs to the domain of complex conditions, which are characterized by unclear connections between causes and consequences, as well as the possibility to establish only retrospectively whether the management of the crisis and the resulting changes was successful or not. Current public policies seem to be formulated as if the situation is structured, with clear cause-and-effect relationships, so it is possible to apply previously established best practices and apply them in a new context. However, the question is which risk assessment paradigm is applied here - axiomatic, socio-cultural or statistical? In the beginning, the universal axiomatic approach was dominant, but the further development of events with virus spread, frequency of diseases and deaths, soon showed that the socio-cultural context must be respected and appropriate statistical models used to assess complex risk (Živkovic & Čabarkapa, 2020).

Although there have been major pandemics in the past, none has shaken the whole world and all areas of social life as is the case with the corona virus pandemic. In addition to human health and life, the most severe consequences are manifested in the global economy, because the pandemic affected all social and economic areas. Due to the difficult movement of people, goods and capital, the functioning of economic entities is significantly hindered, so the key business risks have increased. The current pandemic has led to a changing environment and the emergence of a large number of emerging risks. These risks are most pronounced in areas where human resources are key and in areas where the importance of technology is growing due to teleworking. By working remotely, the usual way of life and functioning of people has changed

a lot. In a word, the world was not ready enough to deal effectively with such a devastating and devastating crisis.

As with all long-lasting dramatic events, which claim many lives every day and produce great material losses, researchers will need a lot of time, effort and commitment to comprehensively and in-depth look at the key aspects of this pandemic, as well as its real causes and long-term consequences. But it can already be stated that the coronary virus pandemic has exposed numerous risks and vulnerabilities of the digitalized, robotic and globalized world. It is, in fact, a kind of reflection of the world in which we live, with all its virtues and flaws.

## CONCLUSION

The coronavirus pandemic has already affected our lives forever. The way we work, shop, eat, seek medical advice, socialize, participate in sport, and entertain ourselves will all be different. Quite how different remains to be seen, but all industries must plan ahead for multiple eventualities.

The decline in car sales in 2020 is 16% compared to 2019, which is a bigger one-time shock than during the financial crisis of 2008-2009. As for 2021, a jump of almost 15% is expected. However, in global markets, pre-pandemic sales are not expected to reach pre-2020 due to the creeping macroeconomic effects of the coronavirus-induced recession. Following the announcement of the vaccines, air traffic is expected to increase by 50-75% in 2021. Job losses impact remains uneven, however, with over 80% come from Europe and the United States. Banks and payment companies are accelerating digital adoption. Consumers are reducing cash consumption, and banks have hired their digital channels for everyday needs.

Economic uncertainty and price awareness continue to affect readiness for consumption, and food and household products remain the only sector to record higher growth this year than before the pandemic. Firms recognize direct-to-consumer activities, as well as continuous investment in corporate social responsibility as necessary to mitigate losses. The volumes of hospital procedures are recovering, but the recovery is hindered by the second and third waves, as well as the appearance of potentially more contagious variants of the virus. Continuation of recovery depends on the successful application of vaccines, which will primarily reduce mortality rates in hospitals and enable a greater focus on the development of necessary therapies. The race for effective treatments and vaccines continues. Currently, there are 3,761 clinical trials for coronavirus and promising clinical data are beginning to emerge for vaccines. The tourism industry did not experience the turnaround it had hoped for. The summer holiday period initially provided great hope, but an increase in the infection rate in Europe led to the re-imposition of domestic and international travel restrictions that halted the recovery. It should be noted that the recovery is not the same in geographical terms either. As Europe continues to fight the resurgence of COVID-19 cases, parts of the Asia-Pacific region are showing signs of recovery. This is most noticeable in China, Taiwan and New Zealand. Moreover, restrictions on domestic and inter-state travel were eased in early December, a clear signal of progress.

Based on the reports of eminent international organizations and portals, specialized in monitoring and analysis of natural crises and catastrophes, the number of natural crises and catastrophes around the world is growing, their consequences and impact on people, the environment and everyday life are increasing. If natural disasters are accompanied by technical-technological and anthropogenic crises and catastrophes, global climate change, urban overcrowding, lack of drinking water in much of the world, pressure on critical infrastructure

and services, the risk of new diseases and epidemics, a conclusion is reached that the 21st century will be a century of increasingly frequent crises, which will have increasingly serious consequences, while the mechanisms of prevention, preparedness, control and response are generally lagging behind. Due to all the above factors of real and potential danger, there is an urgent need to establish new risk assessment and control mechanisms at the national and global levels.

## REFERENCES

- Acemoglu, D., Chernozhukov, V., Werning, I., & Whinston, M. D. (2020). A Multi-Risk SIR Model with Optimally Targeted Lockdown. *NBER Working Paper No. 27102*, Cambridge, USA.
- Alvarez, F., Argente, D., & Lippi, F. (2020). A Simple Planning Problem for COVID-19 Lockdown. *NBER Working Paper 26981*, Cambridge, USA.
- Bomey, N. (2020). *Marriott furloughs tens of thousands of employees due to coronavirus*. Available at <https://www.usatoday.com/>
- Borko, S. (2020). *Hotels Chains Maneuver to Deal with Coronavirus Gut Punch*. Available at <https://skift.com/2020/03/18/hotelschains-maneuver-to-deal-with-coronavirus-gut-punch/>
- Čabarkapa, M. (2016). *Stres – opšti modeli, uzroci i posledice*. Institut za psihologiju. Belgrade, Serbia: Fakultet za filozofiju.
- International Air Transport Association (2020). *COVID-19 Puts Over Half of 2020 Passenger Revenues at Risk*. Available at <https://www.iata.org/en/pressroom/pr/2020-04-14-01>.
- International Civil Aviation Organization (2020). *Effects of Novel Coronavirus (COVID-19) on Civil Aviation: Economic Impact Analysis*. Montréal, Canada.
- Jones, C. J., Philippon, T., & Venkateswaran, V. (2020). Optimal Mitigation Policies in a Pandemic: Social Distancing and Working from Home. *NBER Working Paper No. 26984*, Cambridge, USA.
- Organisation Internationale des Constructeurs d' Automobiles (2020). *Production statistics*. Paris, France.
- Radić, V. (2014). *Upravljanje rizicima u vojnoj industriji*. Belgrade, Serbia: Copy planet.
- Radić, N., Radić, V., & Ravić, N. (2020). Uticaj pandemije korona virusa na ciljeve održivog razvoja i ekonomiju. *Ecologica*, 27(99), 366-375.
- Radić, N., Radić, V., & Stevanović, M. (2020). Ekonomski uticaj pandemije korona virusa na automobilsku industriju. *Oditor*, 6(3), 72-88.
- Radić, N., Radić, V., & Stevanović, M. (In Press). Ekonomski efekti pandemije korona virusa na turizam i ugostiteljstvo, *Megatrend revija*.
- Richter, F. (2020). *Pandemic Could Set Tourism Sector Back by \$1 Trillion*. Available at <https://www.statista.com/chart/22689/global-international-tourism-receipts/>
- STR (2020). *Europe hotel performance for March 2020*. Available at <https://str.com/press-release/str-europe-hotel-performance-march-2020>.
- World Tourism Organization (2020). *World Tourism Barometer*. Available at <https://www.e-unwto.org/doi/epdf/10.18111/wtobarometereng.2020.18.1.6>.
- World Travel & Tourism Council (2020). *Economic Impact Reports & Trends*. Available at <https://wtcc.org/Research/Economic-Impact>
- Živković, S., & Čabarkapa, M. (2020). Psihološka procena rizika u kriznoj situaciji. *Kvalitet & Izvršnost*, No. 11-12, 28-31.



# WORKPLACE SAFETY CHALLENGES OF COVID-19 PANDEMICS: CASE OF SLOVAKIA

Silvia Capíková<sup>1</sup>   
Mária Nováková<sup>2</sup> 

DOI: <https://doi.org/10.31410/LIMEN.2020.65>

---

**Abstract:** *Public health laws designed to protect the life and health of people have an impact on working conditions as a significant social determinant of health. Laws designed to reduce the spreading of COVID-19 also had an impact on the organization of work. Legal research methods were used to analyse the regulatory framework for occupational health in Slovakia since the COVID-19 pandemics outbreak on March 6<sup>th</sup>, 2020, and to analyse how the obligations and rights of employers and employees have changed. This paper also examines emerging issues, such as employees' privacy and it explores the role of the external environment in safety management and leadership. New regulations passed to control spreading at workplaces strengthened the position of employers in surveillance of anti-pandemic measures. Pandemics mainstreamed the role of law as a public health tool. Sharing experiences across sectors of the economy and countries can be helpful to define good practices and their implementation into legislation.*

**Keywords:** *Safety leadership, Labour law, Health law.*

---

## INTRODUCTION

Slovak Republic registered the first patient hospitalized with COVID-19 on March 6, 2020. The emergency situation related to COVID-19 in Slovakia was announced by the Government on March 11, 2020, the same day when WHO Director-General characterized COVID-19 as a pandemic. Novel coronavirus disease was named COVID-19 on 11 February 2020 by WHO. (WHO, 2020) In March, the COVID-19 disease, its spreading, lethality and impact on human health, diagnostics, treatment were unknown and all countries worldwide are fighting with it since then. What was recommended by WHO experts were the isolation of the sick and the suspected (quarantine), reduction of opportunities and density of interpersonal face-to-face contacts, wearing face masks to reduce aerosol from breathing, washing hands, disinfection.

By a resolution under Constitutional Act No. 227/2002 Coll. on the security of the state, which allows limiting rights and freedoms of citizens for a certain period concerning a principle of proportionality (Burda, 2020), emergency measures were introduced quickly by the government, restricting the mobility of people by curfew and shutting of non-essential shops and services. The measure of the Public Health Authority (hereinafter as PHA) in Case of Public Health Threat No. OLP/5453/2020, introduced since 24.3.2020 a ban on movement of persons in an interior of buildings without coverage of mouth and nose by protective equipment such as facemask, shawl or scarf. Curfew was limited to the borders of the district, and restrictions

---

<sup>1</sup> Faculty of Medicine, Comenius University in Bratislava, Špitálska 24, 813 72 Bratislava, Slovak Republic

<sup>2</sup> Faculty of Law, Comenius University in Bratislava, Šafárikovo námestie 6, 810 00 Bratislava, Slovak Republic



included all non-essential activities, with few exemptions, e.g. necessary grocery or transport to a health care provider. Limitation of freedom of movement included closed state borders for most of transport and workers migration. The curfew was gradually eased during May and Jun, as statistics of the positively tested cases were decreasing. In July, state borders were open again for transport and employment migration, but also for holidays, with the recommendation not to travel to certain countries on the list of most affected countries – following EU strategy. During so called “first wave”, the number of positively tested inhabitants and registered deaths associated with COVID-19 was rather low. In September 2020, the country experienced community spreading and continuous exponential growth. The Slovak government has declared again a national state of emergency on Oct 1, 2020, which was extended until the end of the year 2020.

Labour law and health law in Slovakia overlap in the field of occupational health and safety. Although legislation distinguishes jobs and workplaces based on the extent of exposure to health risk factors many years yet, COVID-19 brings challenges to the field (e.g. need to define the status of essential and non-essential workers, front-line workers, etc.). The main research question studied is, how the pandemic was reflected by the regulatory framework, how employer and employees’ rights and duties had changed to control and hamper workplace spreading.

## **DEVELOPMENT OF LEGISLATIVE FRAMEWORK OF WORKPLACE SAFETY**

Labour law plays a strong protective function, e.g., the Labour Code contains many provisions that give women more protection in the case of pregnancy and maternity than is provided to a comparable employee (Hamul’ák et al, 2020). The baseline national legislation focusing on occupational health in Slovakia is the Act No 311/2001 Coll. the Labour Code, a special Act No 125/2004 Coll. on occupational health and safety and Act No 355/2007 Coll. on public health, Ordinance of the Government No. 83/2013 Coll. on the protection of occupational health against hazards related to working with exposition to biological factors, and Ordinance of the Government No 395/2006 Coll. on minimal requirements on provision and use of personal protective equipment at work. The basic laws are followed by decrees of The Ministry of Labour, Social Affairs and Family of the Slovak Republic and by other, mostly technical regulations.

Based on §5 of the Act No. 124/2006 Coll. on Occupational Health, the employer has to perform in accordance with general principles of prevention in the adoption of any measures necessary for occupational health and safety assurance, including assurance of information, education and organization of work and equipment. Based on this mandatory duty, an employer can ask an individual employee to undergo a preventive check-up, or ad hoc testing for COVID-19, etc.

Amendment to the Labour Code by Act No 66/2020 of April 2, 2020, since April 4 introduced new § 250b that relates to the situation during the period when measures on prevention and combating contagious diseases anti-epidemic measures or measures on protection of public health imposed by the authorized body are in force. Under section 2, the employer has the right to order home office in an employee’s household. Also, the employee has an explicit right to work in his household, if the character of work allows such regimen and if there are no known serious operational reasons not allowing work from the household.

Amendment to the Act 124/2006 Coll. on Occupational Health by Act No 66/2020 of April 2, 2020, since April 4 introduced new § 39i about postponing of some information duties of an



employer to the employee, but stating that employer still should provide any information necessary for occupational health to employees to protect employee health.

Since May 21, 2020, amendment No 125/2020 to Act No 355/2007 on public health suspended during the crisis some duties of the employer, such as regular work-related medical fitness assessment of employees for prevention of health-related diseases, but there is an exemption: Employers has mandatory obligation to ensure all measures to decrease exposition of employees and inhabitants to physical, chemical, biological or other workplace factors to a minimum level, or to the level defined by specific regulations. Explicitly, new legislation states that all subjects have legal duty to act in accordance with Measures in Case of Public Health Threat by the Public Health Authority.

Measure of the Public Health Authority in Case of Public Health Threat No. OLP/6911/2020 from 28.08.2020 imposed since September 1, 2020 obligation to employers to control the duty of an employee to home quarantine and testing. The employer must ask each employee to show a certificate about staying in home quarantine and negative result of RT-PCR on COVID-19, if employer has a knowledge and reasonable suspicion that he or she was during last 14 days abroad and any of defined exemptions is applicable in terms of Measure of the Public Health Authority in Case of Public Health Threat No. OLP/6850/2020. Employee also had a duty to register when crossing borders into the Slovak Republic and has obligation to show to the employer that he or she did not cross the border in the last 10 days, depending on the country from which he or she came, with some exemptions (e.g. for people who live near the borderline and work across the border). In case that an employee does not have above mentioned documents or refuses to show them, there is a new obligation of the employer: 1. to report this event to a regional office of public health authority, and 2. deny entrance to workplace or all facilities of the employer respectively. Based on § 56 section 2 Act on Public Health, an employee can be sanctioned for a misdemeanour with 1 659 EUR and besides, the vicarious liability leading to termination of employment can be applied by an employer. If an employer fails to fill above mentioned duties, the liability for an administrative tort can be applied, with financial sanction up to 20 000 EUR.

On October 15, 2020 an Act No. 286/2020 Coll. amending Act No. 355/2007 Coll. on public health and other acts, was published and came into force. The main goal of this amending act was to strengthen the position of PHA in creation of regulatory framework, strengthen the legal nature of its regulation by granting a competence to issue Decrees instead of Measures. This amendment also grants a competence of public health authorities to order a measure to employers or service providers about denying entrance into their facilities and access to services without provision of personal data in defined extent (name, birth date, address, signature, phone No.) of entering persons. Such registration shall serve for epidemiological purposes and should be protected and proceeded by the employer or service provider at maximum of 30 days, and can and provided upon request of the PHA. Employers and service providers also have granted legal right to have such “registration” measure from their own decision.

In order to decrease mortality and to avoid economic lockdown, population-wide testing was realized in the edge of October and November. (Pavelka et al., 2020) Slovakia deployed around 20 000 medical staff and 40 000 non-medical staff including armed forces and volunteers to run the programme, which started with a pilot from 23 to 25 October in few districts with highest prevalence, and was followed by a round of national mass testing on 31 October and 1 November. High prevalence counties were then targeted with a subsequent round on 7 and 8 November. More than five million tests were completed. Anyone who tested positive was asked

to quarantine for 10 days, along with all members of the same household and their self-traced contacts. Although Slovakia's testing was not mandatory, residents who did not attend were told to stay at home for 10 days or until the next round of mass testing. Those who participated received a medical certificate confirming their infection status, and a negative test certificate was required by employers in order to enter workplaces, while other venues carried out random checks. (Mahase, 2020) National antigen testing programme and details of the curfew had been enacted by Government Resolution No. 678 of October 22, and No. 693 of October 28, 2020.

COVID-19 was also recognized as a specific biological hazard, firstly by a Commission Directive (EU) 2020/739 of 3 June 2020, amending Annex III to Directive 2000/54/EC of the European Parliament and the Council as regards the inclusion of SARS-CoV-2 in the list of biological agents known to infect humans and amending Commission Directive (EU) 2019/1833. The Directive states: "given the absence of effective prophylaxis or treatment for SARS-CoV-2 and the little and uncertain scientific knowledge on its overall consequences on human health, which prevents its clear classification in risk group 3, SARS-CoV-2 would be more correctly classified in risk group 4 in order to ensure the highest possible levels of protection of workers' health and safety, minimising the risks of further infections and deaths, and a possible second wave of infections". On November 24, Commission Directive was implemented into national legislation by Ordinance of the Government No 333/2020 Coll., amending Ordinance of the Government No. 83/2013 Coll. on protection of occupational health against hazards related to work with exposition to biological factors in workplace. Workplaces are divided into several categories based on levels of health hazards. This Ordinance in its Annex No.5 extends the scope of protective measures and defines levels of protection against biological risk factors at workplace, including COVID-19.

Since November 21, 2020, contracting COVID-19 was enacted as work related injury by Act No. 330/2020 Coll. of November 3, 2020 amending Act 461/2003 Coll. on social insurance, confirmed by the employer that the disease is work-related. New § 293f,e,a states that employees and the defined group of physical persons such as students in professional training, people involved in emergency assistance, volunteers of the National Red Cross Society and etc. in specific situations have right to accident surcharge to the sick compensation within social insurance scheme, if during emergency was acknowledged as sick because of COVID-19 and this disease occurred while the person was working in defined situations, where exist provable contact with this disease or contact with infectious material as a part of this work, and this fact has been confirmed by the employer.

## **CHALLENGES FOR WORKPLACE SAFETY**

In general, occupational safety hazards are determined by the job and industry characteristics, work equipment and organization of work. Workplace safety is part of management and is impacted by influences from the wider social environment, which is including also legal environment. Ideally, the legal environment should be steady and comprehensive, however, the COVID-19 pandemics made the environment too turbulent and unpredictable and stability of legal order is challenged. In order to hamper the spreading of COVID-19, various regulations were adopted to protect public health and many of restrictive measures were adopted by authorities entered into force within few days or even hours. Their implementation changed organization of work.

The use of COVID-19 related narratives by extreme-right movements across the whole Europe can be observed. Extreme-right movements do not hesitate to abuse popular feelings and even

feed disguise and anger in the public against anti-pandemic measures, and organize riots to gain popularity and political power. This can be an important factor in compliance with any anti-pandemic measures. In Slovakia, since spring 2020, several illegal protests and riots were organized, where organizers encouraged people to non-compliance with anti-pandemic measures, even on October 16 and November 17, 2020, at a time of emergency state declared by the government.

Latest GLOBSEC report informed that while the CEE region managed the first wave of COVID-19 in the spring relatively well, the more recent second wave of the pandemic paired with a growing impact of pandemic counter-measures, economic lockdowns and an infodemic is testing the stability of the region. COVID-19 is, indeed, often used as an excuse to inflame simmering internal conflicts and tensions. A survey of GLOBSEC unravelled, that 31% of Slovak inhabitants bought into COVID-related conspiracy theories including the notion that the pandemic is fake and a tool to manipulate populations, showing the greatest proneness to believe in conspiracy theories in the V4 region. Almost 40% of respondents believed that Covid-19 does not exist. (GLOBSEC, 2020) However disinformation spreading can be subject of criminal liability in Slovakia (Slovák, 2020), and the investigation is not easy.

Health disinformation is considered a significant issue during 2020, that motivates behaviour of patients in Slovakia, confirmed a survey of the Behavioural and Experimental Economic Team (BEET) established in 2020 at the Ministry of Health of the Slovak Republic. A total number of 1974 physicians answered a questionnaire distributed in September 2020; 71% of them witnessed they experience disinformation from patients once a week and 38% daily. Most of the health disinformation physicians are currently facing are about vaccination (72%) and the new coronavirus (59%). A survey brought evidence, that health disinformation contributes significantly to non-compliance of patients with treatment plan (e.g. oncological patients), argue with physicians at a consultation, refuse routine vaccination and claiming e.g. that mortality statistics are overestimated or fake. (Sekelský et al., 2020)

We can only agree with Czech lawyer F.Křepelka, who points to individualism in Western society and claims: “The pandemic exposes an uneasy relation between expertise and politics. The anti-epidemic response is inherently political, especially if physicians and other scientists disagree, and the general public has a broad palette of views... Unfortunately, the Covid-19 pandemic escalates existing socio-political tensions, which hinders the pursuit of public health protection as a concretization of public interest.” (Křepelka, 2020, p.1)

To achieve compliance with organizational safety policies and mandatory duties, strong leadership is needed. Leadership, as well as compliance are related to the “mindset” of individuals. Disinformation and conspiracy theories, abuse of pandemics for criticism without offering solutions by political opposition and interest groups in society, high dynamics and complexity of regulatory framework, are examples of negative phenomena in social and especially legal environment of organizations with the potential to hamper the realization of anti-pandemic measures, and are very demanding on safety management and leadership.

## **LAW, SAFETY LEADERSHIP AND MANAGEMENT**

Although employers appear to be primarily responsible for workplace safety assurance, no rule can be effective without the motivation of employees to provide necessary collaboration and follow organizational safety policies.

According to D. Kritzinger, safety culture is the attitude that exists when everyone recognises and accepts their responsibilities for safety. (D. Kritzinger, in Aircraft System Safety, 2006) Safety culture is an integral part of safety management, which is very developed in certain sectors, such as aviation, nuclear industry and health care organizations. Safety science can be very useful for employers for creation of safety management models. Seminal work was the book by James Reason (1997), recognised worldwide for his “Swiss cheese” model explaining process how hazards lead to adverse outcomes, distinguishing active failures and latent conditions.

Findings of Macchi et al. suggest, that successful risk management in an organization requires: Safety definition - the desired result of safety management, Safety model - the description of how organisation functions and accidents happen, Safety management model - the background assumptions made in an organisation to manage and improve safety, and Safety management system - collection of systematic organisational processes, needed in order to steer the organisation to ensure and develop safety. (2011, p.39)

Macchi et al. (2011) highlighted components to be included in the safety management model in hospital settings but also in other sectors with high demand for safety:

- Management commitment: safety management is successful only if management is truly committed to safety and if it understands its role in promoting and steering safety. In this respect, management shall define the plan for continuous safety improvements etc.;
- Development of a supportive climate: safety management model shall promote an open and non-blaming climate within the organisation. Supportive climate is the precondition for reporting and discussing accidents and for organisational learning;
- Definition of structures for patient safety: safety management models shall clearly set guidelines for system's organisation, resources allocation, responsibility among actors, reporting of events etc.;
- Definition of the role of the patient: if and how the patient can be involved in managing safety has to be addressed in the safety management model;
- Definition of processes: safety management model shall address the way in which things are done and not only what their result is. This includes the development of procedures, technical and non-technical skills, etc.;
- Integration of safety management: safety management model shall define how safety management is integrated with other management functions (occupational safety, economics, information safety, production etc.). (Macchi et al., 2011, p.28 – 29)

This model can be applied beyond healthcare safety, with certain adaptations, such as instead of definition of the role of the „patient“ there can be role of „client“ or „visitor“ or „student“. However written documents about tasks and responsibilities can be viewed as boring formalism, clear safety policy can lead to better motivation of involved actors to act safely, and, from the legal point of view, it documents efforts of an employer to act proactively to prevent health risks, especially those related to deadly outcomes such as COVID-19, and fulfil the mandatory duties. Also, in case of non-compliance of an employee, a co-worker or a client or visitor, good workplace safety management system together with educated employees should reduce the risk of contagion and find legally defensible solution in a given situation.

## **FUTURE RESEARCH DIRECTIONS**

We suppose that majority of people in Slovakia are behaving in accordance with public health measures; however, further research could be useful for better understanding of barriers and

facilitators of coping of employers and employees with anti-epidemic measures (e.g. size of organization, industry sector etc.).

Anti-pandemic regulations are written in legal terminology, that is unclear to common people, but often to lawyers, too. Legal communication processes should be studied to broaden the knowledge, how employers and common people understand imposed public health law measures, as a necessary step in compliance with such measures.

Law and Economy (L&E) methodology (used e.g. by Houser et al., 2008) should be used to identify appropriate sanctioning of pathological behavioural patterns related to disobedience of law. Thorough empirical legal research, including health policy analysis, is needed to assess the quality, impact and efficiency of legal regulation and its enforcement.

Comparative legal research is needed, to identify effective legal concepts that can fit to national legal systems, especially taking into account a common statutory law tradition in Europe. Labour law overlaps with public health in field of protection of life and health of people who are employed.

Government members worldwide suddenly turned into public health leaders, attempting to work across sectors to hamper spreading of the virus. Coping with new national health regulations that owners and managers but also workers find very limiting, brings also the question, which type of leadership can be appropriate?

## CONCLUSION

Our study confirmed that labour law in Slovakia imposes a lot of duties to employers to protect employees from health hazards and act proactively, and the legal framework was supplemented by new obligations of employers to hamper the spreading of COVID-19 at workplaces. The research presented suggests, that since the COVID-19 outbreak in Slovakia, governmental regulations and public health measures contributed more to the complexity of legal environment than changes in statutory law in the studied period.

It should be mentioned social threads that COVID-19 imposes on employees, who are suspected or positively tested for COVID-19, who are facing social stigma related to COVID-19 and are often experiencing a significant reduction of income and financial hardships. As it can be expected that new mutations of the virus occur, disease can spread to farm animals (such as minks in Denmark), so the dynamics of legislation can also be rather high in the following months and years. All of this can have an impact on labour relations. Due to COVID-19, it seems necessary to understand the role of law as a public health tool and to integrate research to formulate more precise public health law regulations, minimizing their unintentional adverse impacts.

## REFERENCES

- Act No 311/2001 Coll. The Labour Code
- Act No. 461/2003 Coll. on social insurance, as amended by act 330/2020 Coll.
- Act No 124/2006 Coll. on occupational safety, as amended
- Act No 355/2007 Coll. on protection, promotion and support of public health, as amended (Act on public health)
- Act No 66/2020 amending Act No 311/2001 Coll. The Labour Code and some other acts.



- Act No 69/2020 Coll. On Emergency measures related to rapidly spreading dangerous contagious human disease COVID-19 in field of health care and amending some acts
- Act No 125/2020 amending Act No 355/2007 on public health
- Constitutional Act No. 227/2002 Coll. on security of the state at time of war, state of war, state of emergency, as amended
- Government Resolution No. 678 of October 22, 2020
- Government Resolution No. 693 of October 28, 2020.
- Ordinance of the government No 333/2020 Coll. that is changing and amending Ordinance of the Government No. 83/2013 Coll. on protection of occupational health against hazards related to work with exposition to biological factors in workplace
- Ordinance of the Government No 395/2006 Coll. on minimal requirements on provision and use of personal protective equipment at work
- Measure of the Public Health Authority in Case of Public Health Threat No. OLP/6911/2020
- Measure of the Public Health Authority (hereinafter as PHA) in Case of Public Health Threat No. OLP/5453/2020
- Measure of the Public Health Authority in Case of Public Health Threat No. OLP/6850/2020
- Commission Directive (EU) 2020/739 of 3 June 2020, amending the Directive 2000/54/EC of the European Parliament and of the Council as regards the inclusion of SARS-CoV-2 in the list of biological agents known to infect humans and amending Commission Directive (EU) 2019/1833
- Burda, E. (2020). Núdzový stav, obmedzenie zhromažďovacieho práva a právne riziká spojené s jeho nerešpektovaním. In *Comenius. Odborný blog*. November 2020. Online: <https://comeniusblog.flaw.uniba.sk/2020/11/15/nudzovy-stav-obmedzenie-zhromazdovacieho-prava-a-pravne-rizika-spojene-s-jeho-nerespektovanim/>
- GLOBSEC. (2020). *GLOBSEC Trends 2020: Central Europe, Eastern Europe & Western Balkans at the Times of Pandemic*. Online: [https://www.globsec.org/wp-content/uploads/2020/12/GLOBSEC-TRENDS20\\_singlepages.pdf](https://www.globsec.org/wp-content/uploads/2020/12/GLOBSEC-TRENDS20_singlepages.pdf)
- Hamulák, J., Freel, L., Nevická, D. (2020). The comparative analysis of women's status in labor relations in modern Slovakia and the Czech Republic. *Danube*. 11(3), Pp. 214-227.
- Houser, D., Xiao, E., McCabe, K. & Smith, V. (2008). When punishment fails: Research on sanctions, intentions and non-cooperation. *Games and Economic Behavior*, 62(2), pp.509-532.
- Křepelka, F. Právo pandémie covidu-19: náčrt celkového obrazu. *Časopis zdravotníckeho práva a bioetiky/ Journal of Medical Law and Bioethics*. 2020, Vol.10, č.2, p. 1–70. Online: <http://medlawjournal.ilaw.cas.cz/index.php/medlawjournal/article/view/201/162>
- Macchi, L., Pietikäinen, E., Reiman, T., Heikkilä, J. & Ruuhilehto, K. (2011). *Patient safety management. Available models and systems*. VTT Working Papers 169. Online: <http://www.vtt.fi/inf/pdf/workingpapers/2011/W169.pdf>
- Mahase, E. (2020). Covid-19: Mass testing in Slovakia may have helped cut infections *BMJ* 2020; 371 :m4761 doi: <https://doi.org/10.1136/bmj.m4761>
- Pavelka, M., Van-Zandvoort, K., Abbott, S., Sherratt, K., Majdan, M., CMMID COVID-19 working group, Inštitút Zdravotných Analýz, Jarčuška, P., Krajčí, M., Flasche, S. & Funk, S. (2020). The effectiveness of population-wide, rapid antigen test based screening in reducing SARS-CoV-2 infection prevalence in Slovakia. *medRxiv* (preprint) 2020. doi:10.1101/2020.12.02.20240648.
- Reason, J. (1997). *Managing the Risks of Organisational Accidents*. Aldershot: Ashgate
- Sekelský, L., Fehérová, M., Goda, J., Kurínek, L., Holubjaková, D. & Friedmannová, M. (2020). *Dezinformácie v slovenskom zdravotníctve z pohľadu lekárov*. Bratislava: Ministry of Health of the Slovak Republic. Online: <https://www.health.gov.sk/?beet-projekty>

- Slovák, I. (2020). Niekoľko poznámok k trestnej zodpovednosti osôb šíriacich konšpirácie v čase pandémie COVID-19. *Comenius. Odborný blog*. October 2020. Online: <https://comeniusblog.flaw.uniba.sk/2020/10/28/niekolko-poznamok-k-trestnej-zodpovednosti-osob-siriacich-konspiracie-v-case-pandemie-covid-19/>
- World Health Organization. (2020). Coronavirus Disease (COVID-19): Events as they happen. Online: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/events-as-they-happen>

### ADDITIONAL READING

- Florek, I, Koroncziová, A. & Zamora Manzano, J.L. (Eds.). *Crisis As a Challenge for Human Rights*. Bratislava: Comenius University in Bratislava, 2020, 480s. Online: [Crisis\\_as\\_a\\_challenge\\_for\\_human\\_rights.pdf \(uniba.sk\)](#)





# ANALYSIS OF THE IMPACT OF OCCUPATIONAL HEALTH AND SAFETY RISKS ON THE SUSTAINABILITY OF ROMANIAN ORGANIZATIONS UNDER THE SARS-COV-2 PANDEMIC

Mihaela Cornelia Sandu<sup>1</sup>   
Valentin Mihai Leoveanu<sup>2</sup> 

DOI: <https://doi.org/10.31410/LIMEN.2020.75>

---

**Abstract:** *In the current difficult economic and social situation in Romania and worldwide characterized by the health crisis caused by the evolutions of the SARS CoV-2 pandemic, the present study aims to highlight the amplitude to which the risk of occupational health and safety influences the continuity and sustainability of business in Romania. The research methodology adopted by the authors was based on the research highlighted in the specialized literature and by considering firstly the analysis of the results of the survey realized by applying a questionnaire to the employees from different fields of activity during the period February 29 - March 15, 2020. Secondly, the authors considered the analysis of the determinants of the risk of occupational health and safety at the level of the employers with an impact on the continuity and sustainability of the Romanian organizations, especially the businesses. The results of this research reveal how the working hypotheses in the second level of the analysis were confirmed or not regarding the impact of occupational and healthy risks on the sustainability of Romanian organizations under the SARS-COV-2 pandemic.*

**Keywords:** *Occupational health and safety risks, Business sustainability, SARS CoV-2 pandemic, Working remotely.*

---

## INTRODUCTION

In the current difficult economic and social situation in Romania and worldwide characterized by the health crisis caused by the evolutions of the SARS CoV-2 pandemic, the present study aims to highlight the amplitude to which the risk of occupational health and safety influences the continuity and sustainability of business in Romania. The authors start in their research on the premise that male employees and young employees are less concerned about their jobs. It also started from the assumption that good communication from the employer, as well as the possibility for employees to work remotely, both cause employees to be less concerned about the fact that their workplace will be affected by the SARS CoV-2 pandemic.

The research methodology adopted by the authors was based on the research highlighted in the specialized literature and by considering firstly the analysis of the results of the survey realized by applying a questionnaire to the employees from different fields of activity during the period February 29 - March 15, 2020. The questionnaire used in this paper is structured in two parts: first part about the impact of SARS-COV-2 on Romanian employees and the second part about demographical elements. We distributed the questionnaire on social media networks (Facebook and LinkedIn). Secondly, the authors considered the analysis of the determinants of the risk of

---

<sup>1</sup> University of Bucharest, 4-12, Blvd. Regina Elisabeta, etaj 1, sector 3, Bucharest, Romania

<sup>2</sup> University of Bucharest, 4-12, Blvd. Regina Elisabeta, etaj 1, sector 3, Bucharest, Romania

occupational health and safety at the level of the employers with an impact on the continuity and sustainability of the Romanian organizations, especially the businesses. Data that we collected based on this questionnaire were entered into R Studio and Excel. The authors developed a descriptive statistic for the questions of the questionnaire and then, they tested the hypothesis above.

## LITERATURE REVIEW

A general analysis of the occurrence and effects of the health crisis triggered by the November 2002 SARS CoV-1 pandemic in China was conducted by Lam et al. (2003) highlighting as the main lessons for public authorities, for the population, as well as for business people worldwide: “(1) any outbreak of infectious disease can rapidly spread around the world by air travel; (2) early reporting of the outbreak to neighboring countries/regions and the World Health Organization is essential to prevent international spread; and (3) infection control, tracing and quarantine of contacts are essential to control the epidemic” (Lam et al., 2003).

An article published by Jiang (2009) highlights the socio-psychological effects on human communities, in particular the Chinese community in Europe, produced by the health crisis caused by the spread of the SARS CoV-1 virus in 2002-2003. The study offers a view regarding the way in which, individually and at group level, the situation was managed, but also regarding the behavioral model thus offered by these communities that can serve as a template in the elaboration of the response strategies of the governments and the health leaders.

The authors Itzwerth, Moa & MacIntyre (2018) researched the 2009 influenza pandemic response plans in Australia, designed by public authorities at the national, state, or territorial level, by monitoring based on thirteen specified criteria. The study ultimately highlighted that "pandemic response would be more effective if plans were standardized, clear, and were to include overlooked dimensions of a pandemic's impact as well as guidance for specified end-users" (Itzwerth, Moa & MacIntyre, 2018)

Preliminary research by the authors Rebman, Wang, Swick and Reddic together with del Rosario (2013) regarding the responsiveness of businesses to the emergence and pandemic developments associated with the spread of viruses and to ensuring business continuity has highlighted as determinants: dimension business, the type of business, the association of human resources specialists in the planning and implementation of response plans and the perception of pandemic risk in the coming years.

Subsequently, a larger study by Rebmann et al. (2013) was based on applying a questionnaire addressed to human resources specialists and on carrying out an econometric analysis based on logistical and linear regressions in order to highlight the importance of the influencing factors regarding the implementation of decisions, personnel management, vaccination policy. The conclusions revealed, on the one hand, the great importance given to these factors at the level of the big businesses as compared to the smaller interest granted to them by the smaller businesses, an explanatory fact, and, on the other hand, they reflected the increasing attention that must be shown to pandemic plans to prepare for the next biological event (i.e., pandemic, bioterrorism attack, or emerging infectious disease outbreak)” (Rebmann et al., 2013).

The issue of the negative effects caused by the illness of the employees as a result of the H1N1 pandemic, highlighted by the study of the impact of the absence of the employees from the workplace, is reflected in the article of the authors Tora-Rocamora et al. (2012). The paper

presents as the main consequences the emergence of malfunctions regarding the daily operations, as well as the increase of the operational costs, with negative implications on the continuity of the activity and the sustainability of the company.

Blake, Blendon and Viswanath (2010) underline the important role that companies (businesses) play in protecting the health and safety of employees, conducting a study on how employees adapt and respond to the conditions imposed by employers as a result of influenza pandemic manifestation. The research was based on the application of the Harvard School of Public Health questionnaire on the 2006 pandemic influenza and the use in econometric calculations of multivariable logistic regression, leading to the conclusion that "inability to work from home, lack of paid leave and income" are determining factors in ensuring the stability of the workforce and the continuity of the business during the manifestation of a national health crisis.

At the Harvard Global Health Institute, a more recent study warns of the negative economic consequences of "closing companies, schools, public institutions, and often even health institutions" as well. "Interruptions in the transport of goods, commercial activities and tourism". The study proposes an action framework on four areas of interest, such as: "1. Strengthening the primary capacity of the public health system; 2. Improve science, technology and access to them; 3. Strengthening the analysis of risks and incentives for action; and 4. Strengthening global mechanisms (institutions such as the UN and WHO)" (Harvard Global Health Institute, 2018).

Smith, Hansen, and Spanbauer surveyed several businesses in the city of Omaha, Nebraska, regarding the preparation of companies for pandemic influenza and disaster preparedness, which revealed that "most businesses have Pandemic flu planning started, but few practiced the plan or used it to train employees." (Smith, Hansen, and Spanbauer, 2007).

Another revealing research for the present study is that of Watkins, Cooke and Donovan, who points out the importance of preparing for emergencies such as pandemics and establishing concrete response plans at the community level. Using semi-structured face-to-face interviews and applying binomial logistic regression analysis, the paper reveals that "small and medium-sized enterprises in Australia are not currently well prepared for the pandemic influenza. We have found that beliefs about risk, severity and the ability to respond effectively to the threat of pandemic influenza are important predictors of preparedness." (Watkins, Cooke and Donovan, 2007).

Based on previous research above, Watkins et al. (2008) conducted a new analysis of how managers and entrepreneurs from small and medium-sized enterprises manage to identify pandemic risks, plan and apply response measures to manifest such risks. In this context, the findings of the study revealed that "there is a perceived inability of participants to effectively prevent or control the spread of influenza in their workplace" (Watkins et al., 2008), essential in terms of awareness and management training for planning response.

Duncan in his article (Duncan, 2007) reflects in parallel the situation of a plan to respond to possible influenza pandemics at the level of US and Canadian companies and underlines the opportunity to prepare early for this situation in order to reduce the economic and social risks at the level of society, as well as ensuring business continuity. The research results focus on "developing a framework for pandemic preparedness at the organization level, including ensuring the health and well-being of employees, ethical and legal issues, business continuity and partnering with government and civil society." (Duncan, 2007).

In a study by authors Murphy, Friesner and Rosenman (2014), they highlight how companies had to cope with both the difficult economic situation and the pandemic influenza crisis, which led to different responses in intensity and effects. The study concludes that the managers have responded proactively in the event of economic difficulties with the manifestations of the influenza pandemic precisely because of a better knowledge of the response modalities and their implementation, of the more effective control in the first situation. As a result, the preparation and planning of action measures at the business level regarding the manifestation of future potential pandemics is a pressing necessity for managers.

The work of Beaton et al. (2007) analyses risk planning at the university level and highlights "gaps in pandemic influenza plans and policies at the university level, including issues related to isolation and quarantine, continuity of operations, disaster psychology services, integration volunteers in disaster response actions, monitoring student trips and university staff, communication problems and ways to meet the needs of the resident and foreign students and teachers during an outbreak." (Beaton et al., 2007).

A very special reference related to the present research is the work of Lee et al. (2010) who try to present the positive effects of the vaccination process of employees in the context of the flu pandemic. The results of the study show that disregarding employee vaccination measures can lead to substantial decreases in labor productivity and that applying timely vaccination to at least 20% of the workforce of large companies can have positive effects on job losses productivity.

A recent article by Ahmed et al. (2020), which analyzed the determinants of the presence of employees at work at the beginning of the 2017-2018 influenza season, emphasized that "compared with workers without a telework option, those with telework access worked more days during illness overall, but there was no difference in days worked at the usual workplace". The study revealed the need to use "paid leave benefits, as well as business practices that actively encourage employees to stay at home" (Ahmed et al., 2020), in order to prevent the spread of the pandemic and ensure the health and safety of employees at work.

The authors' Smith, Keogh-Brown, Barnett and Tait pointed out in their study (Smith et al., 2009) as a corollary of their research that: "balancing school closure against 'business as usual' and obtaining sufficient stocks of effective vaccine are more important factors in determining the economic impact of an influenza pandemic than is the disease itself. Prophylactic absence from work in response to the fear of infection can add considerably to the economic impact." (Smith et al., 2009).

As an important reference element in the present study, it is highlighted that there is a legislative regulation at the European level Directive 89/391 - the Framework Directive on safety and health at work, which considers "the implementation of measures to promote the improvement of safety and health". workers at work" (Directive 89/391 EU, 1989). This Directive is also associated with others on the same subject, namely: Directive 89/654 / EEC (jobs), Directive 89/655 / EEC (work equipment), Directive 89/656 / EEC (individual protective equipment), Directive 90/269 / EEC (manual handling of loads) and Directive 90/270 / EEC (working on the monitor), which have influenced and influence the national legislation of the Member States in the field. Romania, as a Member State of the European Union as of January 1, 2007, is subject and must comply primarily with the European legislation in force so that the provisions contained in this legal regulation are also essential for Romanian employers. The provisions of Directive 89/391 take into account, inter alia: "the establishment of a uniform level of safety

and health for the benefit of all workers”, “obliges employers to take appropriate preventive measures to increase the safety and health of the workplace” and “introduces the principle as a key element risk assessment and defines its main elements (for example, hazard identification, worker participation, the introduction of appropriate measures with priority to eliminate risk at source, periodic documentation and reassessment of workplace hazards)” (Directive 89/391 EU, 1989).

Regarding the national legislation on occupational safety and health at work, Romania has three major levels of legislation: primary, secondary and tertiary legislation. The main regulation at the national level in this field (primary legislation - general principles) is Law no. 319 of July 14, 2006, on Occupational Safety and Health amended on September 27, 2010. It is added as secondary legislation (preventive measures, enforcement rules), a series of Government Decisions and Standards, and on the third level (Tertiary legislation) employers' own OSH instructions.

## RESEARCH METHODOLOGY

The research methodology adopted by the authors was based on the research highlighted in the specialized literature and by considering firstly the analysis of the results of the survey realized by applying a questionnaire to the employees from different fields of activity during the period February 29 - March 15, 2020. Secondly, the authors considered the analysis of the determinants of the risk of occupational health and safety at the level of the employers with an impact on the continuity and sustainability of the Romanian organizations, especially the businesses.

Regarding the second level of the analysis, the following working hypotheses were outlined:

**Hypothesis One:** There is a direct relation between employees' concern that their workplace will be affected by the SARS CoV-2 pandemic and how well government respond to them concern.

**Hypothesis Two:** Employees are less concerned that their workplace will be affected by the SARS CoV-2 pandemic if the employer established a specific communication strategy regarding this medical crisis than the reverse case.

**Hypothesis Three:** Employees are less concerned that their workplace is affected by the SARS CoV-2 pandemic if employer provides them the opportunity to work remotely.

**Hypothesis Four:** Employees from Bucharest are more concerned than those from the rest of the country that their workplace will be affected by the SARS CoV-2 pandemic.

**Hypothesis Five:** Women employees are more concerned than men employees that their workplace will be affected by the SARS CoV-2 pandemic.

**Hypothesis Six:** Young people employees are less concerned that their workplace will be affected by the SARS CoV-2 pandemic.

The questionnaire used in this paper is structured in two parts: the first part about the impact of SARS-COV-2 on Romanian employees and the second part about demographical elements. We distributed the questionnaire on social media networks (Facebook and LinkedIn).

The sample consists of 251 respondents, out of which 80.4% female and 19.6% male. Out of all respondents, 0.7% were part of the Silent Generation (1928-1945), 2% were part of the Baby Boomer Generation (1946-1964), 23% were part of X Generation (1965 – 1980), 60.1% were part of Millennial Generation (1981 – 1996) and 14.2% were part of Z Generation (1997 –



2012). 73.13% of respondents work in Bucharest and the rest of 26.87% work in the rest of the country.

The majority of 43.1% respondents said they work in a multinational company, 21.9% work in a public institution in the area like education, culture and health, 13.1% work in an SME and 10.9% work in a microenterprise. Of all respondents 45.3% work for an employer with more than 249 employees, 21.6% of them work for an employer with 50-249 employees, 20.9% work for an employer with 10-49 employees and 10.1% work for an employer with less than 10 employees.

Data that we collected based on this questionnaire were entered into R Studio and Excel. We developed a descriptive statistic for the questions of the questionnaire and then, we tested the hypothesis above.

Asking the question about how their workplace was affected by the crisis, the majority of the respondents, 41.2% of them said they will continue to work from home, then 18.9% of the total said they were not affected up to this moment, 17.6% of the total said the employer asked them to stop the activity for a period, 12.8% of them said they work from home and sometimes have to go to the workplace and the rest said they stop the activity with the agreement of employer or their workplace was suspended.

We were interested to find out how concerned people are because SARS-CoV-2 will affect their workplace. 35.8% of respondents are very concerned, 33.8% are quite concerned, 21.6% are less concerned and 8.8% are not concerned.

Only 23.6% of respondents said they already lost a part of their income as a result of SARS-CoV-2, 20.3% said they do not know anything about losing income up to this moment and 56.1% said they didn't lose anything.

The majority of 63.5% respondents find out news about SARS-COV-2 from TV, 47.4% from social media, 35.8% from company manager, 32.8% from the internet, 24.8% from online media; only 10.2% of respondents find out news about SARS-COV-2 from the family doctor, 0.7% from WHO, 0.7% from Ministry of Internal Affairs and 0.7% from medical articles.

It seems that the majority consider the Government responds good enough at people concern, 42.3%; the rest of 40.1% said not so good, 4.4% said very good and 13.1% said very bad.

Apart from work, in percent of 81% of the total, people are also concerned about them and family health, 18.2% are worried they will not be able to pay the loan rates, 28.5% are worried they will not be able to pay the bill if the employer reduces their income, 0.7% are worried they will not be able to conduct their activities, 0.7% are worried they will lose the payment for wedding and 0.7% are not worried.

The employer has established a specific communication strategy with the employees in 55.5% of cases. In 68.6% of cases the employer provided hand and workplace hygiene products.

The employer sanitizes the workplace every time is necessary in 35.8% of cases, several times a day in 24.8% of cases, once a day in 18.2% cases, never in 15.3% of cases and whenever employees change their job duties in 5.8% cases. In 64.2% of cases the employer ensures flexibility of the work schedule.



In 62% of cases, employees can work remotely. Regarding SARS-COV-2 impact, the employer has a well-established plan in 38% of cases, took minimal protection measures in 35.8% of cases and has activated or developed a crisis team in 15.3% of cases.

In 35% of cases, the business travel was affected very much and in 20.4% was significantly affected; only in 14.6% cases, the business travel was not affected by the virus. The epidemic affected very much the transport to work place in 19% cases and significantly in 35.8% cases.

## RESULTS AND DISCUSSION

The testing hypothesis has as results the followings:

**Hypothesis One:** There is a direct relation between people concern their workplace will be affected by SARS-COV-2 and how well government respond to their concern. From those who declared they are very concerned their workplace will be affected by the virus, 15.8% declared the government respond well to them concern and 20.3% declared the government doesn't respond well. From those who declared they are not concerned at all their workplace will be affected by the virus, 7.5% declared the government respond well to their concern and 2.3% declared the government doesn't respond well. We can conclude that the hypothesis is partially true.

**Hypothesis Two:** People are less concerned their workplace will be affected by SARS-COV-2 if the employer established a specific communication strategy regarding this medical crisis than the case if the employer doesn't establish a specific communication strategy regarding this medical crisis. From the data sample we can observe that when the company established a specific communication strategy regarding this medical crisis, 40% are not so concerned their workplace will be affected by SARS-COV-2. If the company doesn't establish a specific communication strategy regarding this medical crisis, 16.7% of the total are not so concerned their workplace will be affected by SARS-COV-2. From the results above we can say that hypothesis 2 is rejected.

**Hypothesis Three:** People are less concerned their workplace is affected by SARS-COV-2 if employer provides employees the opportunity to work remotely. It seems that 39.5% are not concerned their workplace will be affected by SARS-COV-2 if the employer provides the opportunity to work remotely and 13.3% are not concerned their workplace will be affected by SARS-COV-2 if the employer doesn't provide the opportunity to work remotely. We can observe a bigger value for concern than lack of concern in both situations, so the hypothesis is rejected.

**Hypothesis Four:** People from Bucharest are more concerned than the rest of the country regarding the workplace will be affected by the virus. In this case, we can see that 33.7% of people from Bucharest and 20% of people from the rest of the country are not concerned regarding the workplace will be affected by the virus. In this case, we can say that we will accept the hypothesis.

**Hypothesis Five:** Women are more concerned than men regarding the workplace will be affected by the virus. In the sample we have more women than men. We observe that 30.3% of the total of women and 29.2% of the total of men are not concerned their workplace will be affected by the virus. People know this virus can affect their health so we can say this hypothesis is rejected.

**Hypothesis Six:** Young people are less concerned their workplace will be affected by the virus. People born after 1981 are not concerned their workplace will be affected by the virus in percent of 32.3% and people born until 1980 are not concerned their workplace will be affected by the virus in percent of 23.5%. We can say in this case that the hypothesis is rejected.

## FUTURE RESEARCH DIRECTIONS

In conducting future research, the authors will consider aspects less or not highlighted in the current study such as communication between employee and employer, measures taken by the employer to reduce or eliminate risks to occupational health and safety, and overcoming the limitations the choice and sizing of the research sample.

## CONCLUSION

The results of this research reveal how the working hypotheses in the second level of the analysis were confirmed or not regarding the impact of occupational and healthy risks on the sustainability of Romanian organizations under the SARS-COV-2 pandemic. In this regard, hypothesis H1 is partially true, the hypotheses H2, H3, H5, H6 are rejected, and the hypothesis H4 is accepted. In conclusion, there is a direct relationship between employees' concern that their workplace will be affected by the SARS CoV-2 pandemic and how well government responds to their concern, and employees from Bucharest are more concerned than those from the rest of the country that their workplace will be affected by the SARS CoV-2 pandemic.

## REFERENCES

- Ahmed, F., Kim, S., Nowalk, M.P., King, J.P., VanWormer, J.J., Gaglani, M., Zimmerman, R.K., Bear, T., Jackson, M.L., Jackson, L.A., Martin, E., Cheng, C., Flannery, B., Chung, J.R., and Uzicanin, A. (2020). Paid Leave and Access to Telework as Work Attendance Determinants during Acute Respiratory Illness, United States, 2017-2018. *Emerging Infectious Diseases*, [e-journal] 26(1). pp.26-33. <https://doi.org/10.3201/eid2601.190743> [Accessed 1 March 2020].
- Beaton, R., Stergachis, A., Thompson, J., Osaki, C., Johnson, C., Charvat, S.J., Marsden-Haug, N. (2007). Pandemic Policy and Planning Considerations for Universities: Findings from a Tabletop Exercise. *Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science*, [e-journal] 5(4). <https://doi.org/10.1089/bsp.2007.0029> [Accessed 1 March 2020].
- Blake, K.D., Blendon, R.J., Viswanath, K. (2010). Employment and Compliance with Pandemic Influenza Mitigation Recommendations. *Emerging Infectious Diseases*, [e-journal] 16(2). pp.212-218. <https://doi.org/10.3201/eid1602.090638> [Accessed 1 March 2020].
- Council of the European Union. (1989). Council Directive 89/391/EEC of 12 June 1989 on the introduction of measures to encourage improvements in the safety and health of workers at work. ELI: <http://data.europa.eu/eli/dir/1989/391/oj>
- Duncan, K. (2007). Pandemic flu: current threat and development of a preparedness framework. *WIT Transactions on the Built Environment*, 94. pp.473-485 DOI: 10.2495/SAFE070471 [Accessed 3 March 2020].
- Harvard Global Health Institute. (2018). *Global Monitoring of Disease Outbreak Preparedness: Preventing the Next Pandemic*. [pdf] Harvard University, Cambridge, MA. Available at: < <https://globalhealth.harvard.edu/> > [Accessed 2 March 2020].

- Itzwerth, R., Moa, A. & MacIntyre, C.R. (2018). Australia's influenza pandemic preparedness plans: an analysis. *J Public Health Pol.* [e-journal] 39. pp.111–124. <https://doi.org/10.1057/s41271-017-0109-5> [Accessed 29 February 2020].
- Jiang, X. (2009). The virtual SARS epidemic in Europe 2002–2003 and its effects on European Chinese. *Health, Risk & Society.* [e-journal] 11(3). pp.241–256. <https://doi.org/10.1080/13698570902887498> [Accessed 28 February 2020].
- Lam, W.K., Zhong, N.S., Tan, W.C. (2003). Overview on SARS in Asia and the World. *Respirology*, [e-journal] 8. S2–S5. DOI: 10.1046/j.1440-1843.2003.00516.x [Accessed 27 February 2020].
- Lee, B.Y., Brown, S.T., Cooley, P.C., Zimmerman, R.K., Wheaton, W.D., Zimmer, S.M., Grefenstette, J.J., Assi, T.M., Furphy, T.J., Wagener, D.K., & Burke, D.S. (2010). A computer simulation of employee vaccination to mitigate an influenza epidemic. *American journal of preventive medicine*, [e-journal] 38(3). pp.247–257. <https://doi.org/10.1016/j.amepre.2009.11.009> [Accessed 1 March 2020].
- Murphy, S., Friesner, D., Rosenman, R. (2014). Firm Responses to the Crises of 2009. *International Journal of Social Ecology and Sustainable Development.* 5. pp.90–108. DOI: 10.4018/ijsesd.2014010107 [Accessed 27 February 2020].
- Rebman, T., Wang, J., Swick, Z., Reddic, D., delRosario Jr., J.L. (2013). Business continuity and pandemic preparedness: US health care versus non-health care agencies. *American Journal of Infection Control*, [e-journal] 41(4). pp. e27–e33. <https://doi.org/10.1016/j.ajic.2012.09.010> [Accessed 28 February 2020].
- Rebman, T., Wang, J., Swick, Z., Reddic, D., Minden-Birkenmaier, C. (2013). Health care versus non-health care businesses' experiences during the 2009 H1N1 pandemic: Financial impact, vaccination policies, and control measures implemented. *American Journal of Infection Control*, [e-journal] 41(6). pp. e49–e54. <https://doi.org/10.1016/j.ajic.2012.09.012> [Accessed 1 March 2020].
- Smith, P.W., Hansen, K., Spanbauer, L., Duane, F.S. (2007). Pandemic influenza preparedness: A survey of businesses. *American Journal of Infection Control*, [e-journal] 35: 7. pp.484–485 <https://doi.org/10.1016/j.ajic.2006.11.008> [Accessed 28 February 2020].
- Smith, R.D., Keogh-Brown, M.R., Barnett, T., Tait, J. (2009). The economy-wide impact of pandemic influenza on the UK: a computable general equilibrium modelling experiment. *BMJ-British Medical Journal*, [e-journal] 339. b4571 DOI: 10.1136/bmj.b4571 [Accessed 3 March 2020].
- Torá-Rocamora, I., Delclos, G.L., Martínez, J.M., Jardí, J., Alberti, C., Manzanera, R., Yasui, Y., Clèries, R., Tobías, A., Benavides, F.G. (2012). Occupational health impact of the 2009 H1N1 flu pandemic: surveillance of sickness absence. *Occupational and Environmental Medicine*, [e-journal] 69. pp.205–210. <http://dx.doi.org/10.1136/oem.2011.065003> [Accessed 28 February 2020].
- Watkins, R.E., Cooke, F.C., Donovan, R.J., MacIntyre, C.R., Itzwerth, R., Plant, A.J. (2007). Influenza pandemic preparedness: motivation for protection among small and medium businesses in Australia. *BMC Public Health*, [e-journal] 7. 157 <https://doi.org/10.1186/1471-2458-7-157> [Accessed 29 February 2020].
- Watkins, R.E., Cooke, F.C., Donovan, R.J., Macintyre, C.R., Itzwerth, R., Plant, A.J. (2008). Tackle the problem when it gets here: Pandemic preparedness among small and medium businesses. *Qualitative Health Research*, [e-journal] 18(7). pp.902–912. doi: 10.1177/1049732308318032 [Accessed 3 March 2020].



# THE CORONAVIRUS PANDEMIC AND ITS IMPACT ON BIHOR COUNTY EXPORT ORIENTED COMPANIES

Adrian Negrea<sup>1</sup>  
Ciprian Beniamin Benea<sup>2</sup>  
Csaba Bekesi<sup>3</sup>

DOI: <https://doi.org/10.31410/LIMEN.2020.85>

---

**Abstract:** *In order to protect the health of their citizens, many governments decided to take a huge risk in implementing lockdowns all over the world, knowing how much it could affect the economy. The thought that choosing the most direct measure to cope with the pandemic in order to save their populations was one of the hardest and the governments cannot be blamed for it. The paper moves forward to correlate the links between mass shut downs affecting the economy with the effects registered by the export-oriented companies in Bihor County, Romania, and the measures that the Romanian Government took. Based on the data provided by AJOFM, the Bihor county employment agency, for the following months – March, April, May, several factors like the number of companies in export-oriented industries, the number of employees, the amount of money that the Government paid, will be analyzed.*

**Keywords:** *Coronavirus, Enterprises, Foreign trade.*

---

## INTRODUCTION: THE CORONAVIRUS PANDEMIC AND ITS IMPACT ON BIHOR COUNTY ECONOMIC ACTIVITY – MEASURES AND IMPLICATIONS

In order to protect the health of their citizens, many governments decided to take a huge risk in implementing lockdowns all over the world, knowing how much it could affect the economy. The thought that choosing the most direct measure to cope with “evil” in order to save their populations was one of the hardest and the governments cannot be blamed for it. No medical system in the world was capable of dealing with such a number of infected people with COVID-19 or any other disease at the same time, and neither were any of the medical systems in the world capable of taking care of their patients with other medical records, so in order for lives to be saved, in this case, the economy had to take the hit.

Correlating the links between mass shut downs affecting the world economy with the effects registered by the industry and unemployment rate in Romania and making a few economic predictions based on the information gathered, the paper moves forward to observe the evolution of the same macroeconomic indicators at a smaller scale, meaning in Bihor County. Based on the data provided by AJOFM, the Bihor county employment agency, for the following months – March, April, and May, several factors will be analyzed that determined the Bihor county companies with foreign trade activities to temporarily suspend their activity and work contracts for their own employees. One factor analyzed follows the typology of companies that have either reduced their foreign trade activity or have completely suspended their activity, in terms of their size: micro-enterprises, small enterprises, medium-sized

---

<sup>1</sup> University of Oradea, Strada Universității nr. 1, Oradea 410087, Romania

<sup>2</sup> University of Oradea, Strada Universității nr. 1, Oradea 410087, Romania

<sup>3</sup> Bihor County Employment Agency (AJOFM), Oradea, Romania

enterprises, large enterprises. This factor leads to the following one which analyzes whether there is a temporal difference in the temporary or total activity suspension between enterprises with a single foreign customer compared to those that produce for several customers. The next factor analyzed concerns the period in which companies start asking for help and registering all their employees for technical unemployment or only partially reducing their activity.

The following CAEN codes have been selected because they represent the main industrial production activities correlated with export operations:

- 13 Manufacture of textiles,
- 14 Manufacture of clothing,
- 16 Woodworking, manufacture of wood and cork products, except furniture; manufacture of articles of straw and plaiting materials,
- 20 Manufacture of chemicals,
- 22 Manufacture of rubber and plastic products,
- 24 Metallurgical industry
- 26 Manufacture of computers and electronic and optical products,
- 27 Manufacture of electrical equipment,
- 28 Manufacture of machinery equipment,
- 30 Manufacture of other means of transport,
- 31 Manufacture of furniture,
- 32 Other industrial activities.

After determining which are the main export-oriented sectors of industrial production, the paper goes on to the next step determining the relevant data and examining the number of companies that operate in these sectors and the total number of employees that they have.

In Table 1 below, based on the data provided by AJOFM, at 31.12.2019, the companies were classified by the number of employees in four categories: between 0-9, between 10-49, between 50-249 and over 250. The picture for the 11 export-oriented industrial sectors stands like this: 1.122 companies are operational and they employ almost 23.000 people. The vast majority of companies are SMEs; the classification below shows that there are 860 micro-companies, 188 small companies, 60 medium companies and 14 big companies.

**Table 1.** Companies classification based on SMEs standards, the number of companies and the number of employees at 31.12.2019

	13	14	16	20	22	24	26	27	28	31	32	Total Companies
Between 0 - 9	34	195	172	21	150	22	16	9	19	115	107	860
Between 10 - 49	12	46	29	6	38	2	2	3	8	22	20	188
Between 50 - 249	4	23	1	2	10	1	2	3	1	9	4	60
Over 250	0	1	0	0	3	0	3	1	1	4	1	14
Total Companies	50	265	202	29	201	25	23	16	29	150	132	1122
Total Employees	659	3946	1171	331	4340	279	5109	670	893	4127	1319	22844

**Source:** Data provided by AJOFM. Disclosures were being requested in order not to give companies names and the amount of government help they received.



The main export oriented sectors are 14 manufacture of clothing, 22 manufacture of rubber and plastic products, 31 manufacture of furniture. For sector 14 – manufacture of clothing Romania had a competitive advantage after the year 2000, but after that lost it compared to other countries in Asia. This particular sector had a positive result in the trade balance, adding each year after 2000 only trade surpluses. The same thing can be said for sector 31 – manufacture of furniture.

Even though at the end of 2019 things were relatively stable and the first two months of 2020 brought a steady output increase, nobody believed that the Coronavirus pandemic will hit the economy with such fierce and would create havoc in the future.

**Table 2.** Total number of suspended working contracts and total value in RON of awarded benefits at 31.06.2020 for all the companies in Bihor County

	Total number of suspended working contracts	Total Value in RON of awarded benefits
March	16.432	8.672.823
April	37.625	61.866.592
May	32.173	44.213.216

**Source:** Data provided by AJOFM. Disclosures were requested in order not to give companies names and the amount of government help they received.

The measures taken by local and governmental officials through AJOFM came in support and relieve the financial burden for the affected companies and sectors. In Table 4 the consequences of local and governmental officials through AJOFM actions can be seen. If in March only 16.432 got their contracts suspended and AJOFM paid 8.672.823 RON, in April and May the picture gets gloomier. The number of suspended contracts rise to 37.625 and the economic relief to 61.866.592 RON, an increase of more than 700%. In May things appear better, but still severe, with 32.173 suspended contracts and a cost of 44.213.216 RON for the government.

In March a lot of European countries started to impose lockdowns, and basically hit the export-oriented sectors of Bihor County. The table of March total lockdowns of non-essential economic activities in the West is as follows: 11.03.2020 Italy, 14.03.2020 Spain, 15.03.2020 Romania, 16.03.2020 Austria, 17.03.2020 Ireland, 18.03.2020 Belgium and Denmark, 22.03.2020 Germany, 24.03.2020 Britain and Portugal.

Since the four main export partners of Romania imposed lockdowns on non-essential economic activities, what can be seen in Table 3 is the result of early lockdowns on several export-oriented sectors that were feeling the first early signs of a consumption contraction in the West.

Since the lockdowns started after the middle of March, the results are encouraging, since only 72 companies asked for governmental help in supporting the cost with suspended employees' contracts. But at a closer look, even if the figures are low, three sectors suffer the brunt of consumption contraction in the West and at home, being 14 manufacture of clothing, 22 manufacture of rubber and plastic products, 31 manufacture of furniture. These sectors show signs of distress because the big companies and the medium ones that employ 20% of staff for sector 14, and more than 50% for sector 22 and respectively 31, are affected.

This is only the gathering of the clouds because the economic storm is at the corner for the world economy, but also the case study at hand: Bihor County.



In Table 3 which comprises the available economic dates for all the sectors in April and May shows the real extent that the lockdowns created. It is a fiasco for local and national officials that see the staggering number of companies that have suspended contracts and asked for government help.

**Table 3.** The number of companies that received governmental help at 31.06.2020

March												
CAEN code	13	14	16	20	22	24	26	27	28	31	32	Total
Companies that applied for government subsidies	3	17	6	2	16	2	0	3	0	11	12	72
% of companies that applied for government subsidies from the total	6%	6%	3%	7%	8%	8%	0%	19%	0%	7%	9%	6%
Employees with suspended contracts	10	268	92	16	1117	7	0	83	0	1543	341	3477
% of Employees with suspended contracts from the total	2%	7%	8%	5%	26%	3%	0%	12%	0%	37%	26%	15%
Subsidies	3710	114974	44096	12385	322395	2933	0	33594	0	814125	127053	1475265
% of subsidies from the total	0%	1%	1%	0%	4%	0%	0%	0%	0%	9%	1%	17%
April												
CAEN code	13	14	16	20	22	24	26	27	28	31	32	Total
Companies that applied for government subsidies	22	61	31	7	57	3	3	4	3	37	60	288
% of companies that applied for government subsidies from the total	44%	23%	15%	24%	28%	12%	13%	25%	10%	25%	45%	26%
Employees with suspended contracts	224	1138	258	46	2377	18	262	196	19	2596	622	7756
% of Employees with suspended contracts from the total	34%	29%	22%	14%	55%	6%	5%	29%	2%	63%	47%	34%
Subsidies	356152	1415008	444458	84336	4643036	21415	271129	337921	41175	4464762	1183032	13262424
% of subsidies from the total	1%	2%	1%	0%	8%	0%	0%	1%	0%	7%	2%	21%
May												
CAEN code	13	14	16	20	22	24	26	27	28	31	32	Total
Companies that applied for government subsidies	21	56	30	6	53	3	3	4	2	32	59	269
% of companies that applied for government subsidies from the total	42%	21%	15%	21%	26%	12%	13%	25%	7%	21%	45%	24%

Employees with suspended contracts	150	736	202	36	2014	177	425	185	12	1931	607	6475
% of Employees with suspended contracts from the total	23%	19%	17%	11%	46%	63%	8%	28%	1%	47%	46%	28%
Subsidies	178510	793325	239903	47962	3221803	228057	348935	242321	32761	2135424	746253	8215254
% of subsidies from the total	0%	2%	1%	0%	7%	1%	1%	1%	0%	5%	2%	19%

**Source:** Data provided by AJOFM. Disclosures were requested in order not to give companies names and the amount of government help they received

The data for March indicates a completely different story when it comes to percentages. If the 3 sectors seem severely affected only by looking at the number of affected companies when the focus shifts towards to percentages, the sector 27 Manufacture of electrical equipment is the worst affected, where over 19% of companies in this sector have decided to suspend employment contracts and ask for governmental help. If the focus remains at the same percentage, especially at % of employees with suspended contracts from the total, there is a noticeable shift that, although the percentage of companies in sectors 22 manufacture of rubber and plastic products, 31 manufacture of furniture, 32 other industrial activities, does not exceed 10%; when it comes to the suspension of employment contracts, the percentages are: 26% for sector 22, 37% for sector 31 and respectively 26% for sector 32.

Most of the subsidies in March went to sector 31 manufacture of furniture, obtaining RON 814,125, representing approximately 9% of the total subsidies granted in that month. The total subsidies granted to the exporting companies represented 17% of the total subsidies for March. At a time when the evolution of the pandemic imposed harsh measures of total lockdown in most countries of Europe and given the fact that European markets are the main markets for Romanian products, the effects are obvious.

April 2020 is the first month of the year in which the devastating effects of the imposed draconian measures could be felt. All the figures in Table 3 are getting worse. The number of companies applying for state subsidies and sending employees into technical unemployment is raising. In all sectors analyzed, at least a tripling of the numbers of companies requesting aid can be observed. If the percentages are being analyzed, they reflect the same worrying trend of companies resorting to government aid. The highest percentage increase of employees that are sent into technical unemployment is also driven by the sectors 22 manufacture of rubber and plastic products, 31 manufacture of furniture, 32 other industrial activities, where the percentages are 55% for sector 22, 63% for sector 31 and 47% respectively for sector 32, totaling approximately 5500 employees whose employment contracts have been suspended.

May does not show a significant improvement in terms of reducing the number of companies in need of government assistance. The trend is maintained and is similar to the previous month, both in terms of the number of companies, percentages, number of employees and grants received. There is also a positive evolution of the reduction of contracts sent for financing by companies, from over 7700 in April to about 6500 in May. The improvement in export activity can be seen, for example, in sector 31 manufacture of furniture, where the number of employees with suspended employment contracts is reduced from 2569 people to 1931 employees. This reduction of around 600 contracts may also lead to a stronger restart of this sector due to the increase in consumption in Western European countries. Probably the pandemic and the

obligation to stay locked in a house or apartment aroused the desire of people to improve their personal comfort and make purchases of the new furniture.

## CONCLUSION

From the economical point of view, some businesses had to cut off staff, some of them even closed due to the Coronavirus pandemic; it is clear that it has already affected Bihor County entire export-oriented sectors like 14 manufacture of clothing, 22 manufacture of rubber and plastic products, 31 manufacture of furniture, 32 other industrial activities which were hit and forced to suspend contracts for their employees, causing further supply chain disruption and ultimately a decrease in demand.

The proactive measures taken by the government in order to support the financial relief of companies with their workers will be seen at the beginning of 2021. If the Western economies bounce back to the consumption level before the pandemic, the feeling is that companies from the 11 export-oriented sectors from Bihor County will further produce vendible goods.

## REFERENCES

- AJOFM Bihor, statistical data *accessed at 20th July 2020*  
Institutul Național de Statistică, <https://insse.ro/cms/ro/tags/comunicat-indicii-productiei-industriale> *accessed at 20th July 2020*  
Institutul Național de Statistică, <https://insse.ro/cms/ro/tags/comunicat-comenzi-noi-din-industrie> *accessed at 20th July 2020, dates available until March 2020*  
Institutul Național de Statistică, <https://insse.ro/cms/ro/tags/comunicat-somaj-bim> *accessed at 20th May 2020*

# ONLINE IDENTITY IN A PANDEMIC – FROM INNOVATION PRACTICE TO COMPETITIVE ADVANTAGE THROUGH THE LEARNING PROCESS

Michaela Mihaylova<sup>1</sup> 

DOI: <https://doi.org/10.31410/LIMEN.2020.91>

---

**Abstract:** *The current chapter presents the transformation of perception about the online identity of a business in the context of the COVID-19 pandemic. Online identity and related marketing activities, perceived until only recently as innovative actions, today are a prerequisite for a competitive advantage. The chapter comments on the general knowledge and understanding of this topic, the different types of innovations, the elements of online identity and the marketing actions related to them. The competitive advantage and the evolved view of its nature are outlined as a positive transformation – a creation of new knowledge as a result of the learning processes application.*

**Keywords:** *Online identity, Competitive advantage, Innovation, Learning, Pandemic.*

---

## INTRODUCTION

The phrase "we live in dynamic times" has never had as big of meaning as in 2020. The conditions of the pandemic have led to a change in every aspect of consumer and business habits. Physical communication not only became secondary ad interim but is also considered a condition for danger, synonymous with risk and irresponsibility in both personal and business contexts. The abbreviation 3 "D" - disinfection, discipline and distance, is becoming one of the most common and recognizable worldwide. Both companies and consumers have been faced with a huge challenge in terms of the limits of their adaptability. The already established practices and relationships had to be maintained, but the question was, how? With physical contact kept to a minimum, the communication environment shifted solely to the Internet. This allowed the companies with a substantial online presence to evolve from innovators to architects of one of their most important sustainable competitive advantages. This article aims to outline the increasingly important role of online identity and the realization of a business that operates in a pandemic, as these are businesses that are considered responsible and adaptive nowadays - they offer their users the opportunity to exchange information in a way relevant to the situation.

## THE FUNDAMENTALS OF ONLINE IDENTITY AND ITS DIMENSIONS

The fact that the Internet is a tool for commercialization has been long documented. "In 2019, the number of internet users worldwide stood at 4.13 billion, which means that more than half of the global population is currently connected to the Internet" (<https://www.statista.com>). Choosing a channel for communication on the Internet is a complex task as defining the goals behind it. Online marketing is undergoing many transformations in the online environment. Perceived and applied initially as a traditional approach - as a means of selling products and

---

<sup>1</sup> VUZF University, Gusla 1 str., 1618 Sofia, Bulgaria

services - today one area of online marketing is attracting more and more attention - Inbound Marketing. The motive behind the transformation of online marketing is the evolution of consumer perceptions, the change in their habits, and the growing role of interaction processes in terms of building and perceiving corporate images. As a consequence of this change - a “digital customer” concept has been presented where the “Internet consumer” is defined as “physical person or an institute who or that intends to purchase, purchases or has already purchased goods or services (including through the third parties) with the help of informational-telecommunication technologies.” (Krasnov, Chargaziya, Griffith & Draganov, 2019).

Currently, consumers need security. And not the security that has been synonymous with trust and confidence so far, but rather security in a pandemic. The current challenge that lies in front of the business is to provide this type of security without losing market share and presence, while at the same time making sure that the consumers are not changing their habits and are remaining loyal to the companies they have been with so far. In the COVID-19 pandemic, one of the important conditions for compliance is physical distance. And the Internet is certainly a way to provide distance. In a way, the current situation provides a paradox - created to diminish the distance between people, today the Internet is a way to ensure it. Marketing activities occur through three types of channels: distribution, transaction, and communication. The Internet is used as a transaction channel to generate sales. The second channel is distribution, allowing exchange between goods and services, and the third one, which is especially important today, is the communication channel. Communication is the basis of the partnership between the consumers and the company. It is a process generating extremely valuable information about the business. Communication is a confirmation of the importance of socializing. From the users' point of view – communication is not only a way of expressing an opinion but also a way of receiving information and updates. For companies, communication is a way to build a presence, to provoke a reaction as a prerequisite for gathering information about the market.

We previously mentioned Digital Inbound Marketing, which “represents the process of reaching and converting qualified consumers by creating and pursuing organic tactics in online settings” (Opreana & Vinerean, 2015, p. 30). In addition to the definition, Opreana and Vinerean comment on the main manifestations of Inbound Digital Marketing - Search Engine Optimization marketing, Email marketing, Blog marketing, Content Marketing, Social Media marketing. This part of online marketing allows you to build long-term relationships with customers. This is feasible through the technical capabilities provided by the Internet when registering user actions (number of clicks, duration of time spent on a website, number of written comments). Based on this set of information, the company has up-to-date information for consumers and prospects.

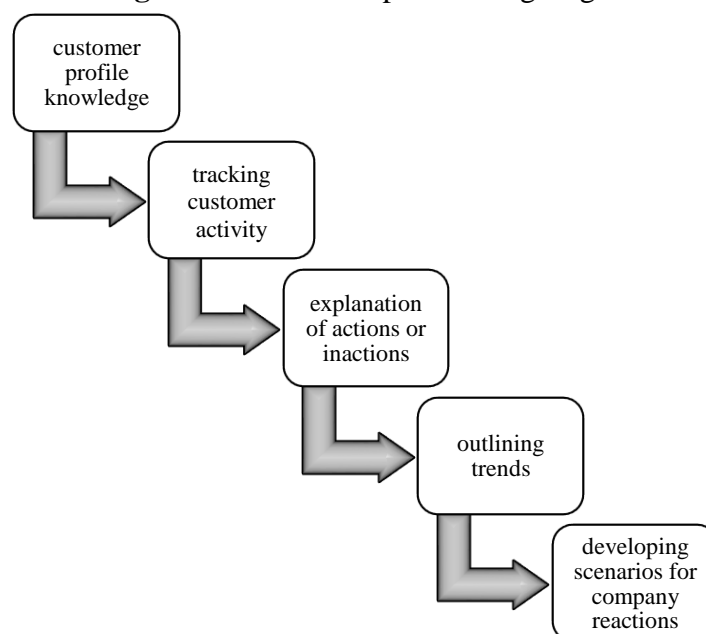
But in order to receive this information - the company must invest in several main areas:

- website development,
- creating and maintaining pages on social networks,
- creating backlinks,
- the use of email marketing platforms.

Website development refers to building a website. Building a website includes decisions related to creating a single plain-text webpage or developing a complex web application. Taking into consideration the fact that every business is different, we could confirm that the positive effect of having a website may differ according to business specifics. One of the main benefits that a website as an online element brings is the establishment of credibility for the

business. Other positive consequences of website creation are accessibility 24/7, building connection with customer, resource of company information, an increase of company's visibility, confirmation of company responsible approach in pandemic satiation. Backlinks are important for a website in order to receive consumers directly from search engines like Google or Bing. A backlink represents the connection between your website and another one. When a search engine recognizes your website links to another, it is considered that your website is more worthy of appearing within your search results. The result is – the more backlinks – the higher ranking in search engines. There are many possibilities to build a backlink but this process has a lot of peculiarities that have to be taken into consideration. For example – the websites which “backlink” yours should be carefully selected because the connection with another site reflects on the reputation of yours. The power of social networks is related opportunity to “humanize” your brand or to close the distance (of course in a pandemic context – this is not the best expression) between your company and your brand. The social media presence is related to the company's website because it could contribute to increased website traffic. In the COVID-19 situation, social media are the best example of an element of online identity for crisis communication. Customer engagement or monitoring the competitors are other characteristics of company pages on social networks. The Internet offers the possibility to track customers' actions in real-time. Thus, e-mail marketing can be tailored to them. This online identity element assures relevant communication with customers according to their interests due to the trackability characteristic of the Internet. In order to achieve a high level of customer engagement, the communication via e-mail could refer to changes in the company or request feedback from the customers. E-mail marketing should be a balanced approach applied regularly and moderately. Similarly, in every other element of the online environment, results from e-mail marketing campaigns could be measured. Besides, one of their specifics is that they are action-oriented and could also contribute to website traffic. The investment in online marketing and its related activities is characterized by long-term results. Strategies related to building an online identity do not yield quick results. They are based on the concepts of relationship marketing. Figure 1 - Relationship marketing stages illustrates the stages that this process usually goes through:

**Figure 1.** Relationship marketing stages



**Source:** Authors processing



The long period required to generate and produce results is offset by their sustainability. By developing and maintaining a good and SEO optimized website, rhythmically copywriting for the purposes of backlink strategies, maintaining pages on social networks filled with interesting and useful content, as well as keeping in touch with prospects and clients through e-mail marketing, companies will build a sustainable Internet presence. This presence will provide an opportunity to communicate with consumers from a distance, to contribute to building relationships, to strengthen their market presence and to an overall sense of increased social responsibility. If until recently everyone repeated the mantra that the future is happening on the Internet, today we realize how important it is to adapt quickly - because being dynamic is a key feature of our time. And if online identity before the pandemic was a complementary activity, today it is associated with sustainability, longevity and flexibility, and adaptability. In addition, it ensures that a competitive position is maintained and sometimes even a competitive advantage is created.

## **ONLINE IDENTITY IN THE CONTEXT OF INNOVATION**

When physical communication was still considered a form of common and typical communication, despite the growing role of the Internet in everyday life, not all companies were aware of the potential and high levels of adaptability it offers. Building an online identity was even considered innovative. Below we will look at the different interpretations of innovation, grouped according to different criteria.

There are different classifications when it comes to grouping and differentiating innovations. First of all, they can be distinguished according to the level at which they manifest. If the innovation takes expression inside the company, then it is internal. If the innovation is related to the external manifestations of the company's actions - then it could be qualified as external.

Internal innovations affect administrative processes, company structure, technologies and methods used, and external innovations are expressed through products and services. Even in the recent past, the main notion of innovation has been limited to its outward manifestation. But time has proved this is a limitation, and Han, Kim and Srivastava (1998) are one of the scientists who share their expanded perception of innovation as a process that is not just tied to a new product. Therefore, today there is more and more talk about the importance and contribution of innovation in its expression as a new process or new organizational structure.

Innovation literally means modernization or transformation, and the general perception of it could be expressed as the transformation of scientific knowledge into a marketable product. The transformation of knowledge into innovation is a process based on a certain set of abilities (Ozkaya, Droge, Hult, Calantone & Ozkaya, 2015) or 'skills', as Li and Calantone (1998) call them. These skills are organized into four groups, depending on whether they take place outside or inside the company. The first two skills concern the knowledge of competitors and consumers. They, as representatives of the external environment for the company, influence and outline to a certain extent its decisions, plans, and approaches. The third and fourth skills are related to coordination, in particular that of marketing activities and research and development. Marketing activities vary depending on the goals of the companies but could be organized into a marketing program that combines goals, strategy, costs, results, and time required. So logically, online identity comes first in the skills associated with marketing activities. Interestingly, in addition to these skills, online identity can be a part of the skills of market awareness - knowing competitors and consumers. We can draw this conclusion from the fact that the online presence in a pandemic is in line with the limited ability of users to

contact companies (along with their products and services), in addition to their evolving needs in terms of technology and interactive communication. Online presence is a skill for competitiveness because in its presence it becomes a reference point and, in its absence - it makes the company a pioneer in this activity. Innovation is divided into two types - administrative and technological (Damanpour, 1991)<sup>2</sup>. The administrative refers to the processes related to the administration, and the technological to the products and services that the company offers and develops. So logically, one can find the similarity between administrative and internal innovation, as well as between technological and external innovation. Schumpeter is an Austrian economist who believes that innovation is at the heart of generating profit. According to him, innovation is “a process of industrial mutation, which incessantly revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one” (Schumpeter, 1942). Schumpeter (1934) offers organizing innovations in 5 groups, almost 100 years ago:

- (a) the placing on the market of a new product or new varieties of an already known product;
- (b) the application of new production methods or those affecting sales;
- (c) conquering new markets;
- (d) use of new sources for the supply of unprocessed or semi-processed raw materials;
- (e) restructuring of sectors, for example establishment or destruction of a monopoly position.

Of course, these notions are based on production specifics in that period. Through a distant reference, online identity, along with all related marketing activities, can be classified as the first type of innovation. It is the new kind of offering products and services, the new form of regular communication, and the new way of expressing and reflecting user feedback. By analyzing Schumpeter's understanding, we can conclude that stagnation is the antithesis of innovation. Innovation is associated with dynamics, with the ability to accept change and adapt to it. And despite the various manifestations of innovation, it always moves companies forward, shows recognition of the new, and a desire to apply and develop an adapted and structured approach to it.

## IMPLEMENTING INNOVATIONS THROUGH ORGANIZATION LEARNING

Innovation is possible when it corresponds to the internal and external environment. In the context of external environment conditions – the innovation should be developed if micro-and macroenvironment factors are taken into consideration. Macroenvironment factors such as demographic, economic, political, cultural ones play a framing role during the whole innovation development cycle, because the company does not function in isolation. For example, GDPR significantly changed the regulation related to data collection and usage on the Internet. Consumers, competitors, distributors and suppliers are representatives of microenvironment. Consumers are one of the main generators of innovation ideas because every company develops its products and services in order to meet and answer to their needs and expectations. Competitors as external actors of the microenvironment should be monitored and analyzed. As a consequence of this analysis, the company could protect its market share and adapt its actions and plan according to the current competitive situation.

The main and unique representative of the internal environment is the company itself. The company is a set of processes, organizational structure, employee skills, qualification level of different departments such as Marketing, Finance, Production as well as interdepartmental

---

<sup>2</sup> Damanpour, F. (1991). Organizational Innovation: A Meta-Analysis Of Effects Of Determinants and Moderators. *Academy Of Management Journal*, 34(3), 555-590. doi: 10.5465/256406

connections. All these dynamic and static elements are a source of information which should be taken into consideration when developing an innovation. In other words, the internal and the external environment along with their participants and peculiarities should be considered as an informative resource in the context of the innovation. The company should constantly analyze the information related to current and past moments because this practice contributes to the decision for an innovation development followed by its implementation to be successful. A premise or a consequence of this practice is the striving for constant learning. Support for the validity of this conclusion can be found in Crossan and Apaydin's (2010) statement that innovation is a multidimensional construct, which includes different determinants (as resources designated the particular innovation, company structure and strategies, corporate structure) and one of them is the organizational learning. Sinkula (1994) differentiates three stages within the multidimensional construct of organizational learning: information acquisition, information diffusion and information sharing. In the current chapter, we share an expanded understanding of this process by adding the "undertaking of relevant actions" as a fourth stage. Organizational learning is a constant process, which beginning and end could be difficultly outlined. It resembles even circular economics (topic commented and analyzed in many papers by V.Zhelyazkova, 2019) because the main idea of circular economics proclaims that in nature nothing is lost, nothing is created, everything changes (Antoine Lavoisier) and that the end of an activity is the beginning of a new one. Analogically, when commenting on organizational learning – the stage of the undertaking of relevant actions is being preceded by the one of information acquisition - but only at first sight – because it could be its predecessor since undertaken actions provoke acquisition of information related to their reverberation around the external and internal environment. Knowledge could be divided to component and architectural (Tallman, Jenkins, Henry & Pinch, 2004). The component type represents the recognizable part of the organizational structure – e.g. academic and technical engineering skills, or skills that apply to analyzing customer behavior, sales planning and execution and marketing-driven actions. Component knowledge can "leak out" from the organization because it is a constantly circulating set of skills and information. Architectural knowledge - is intangible. It is complex and could be described as a fund of knowledge. Its creation is a result of the individual and unique experience developed within the company. This type of knowledge is the foundation of a successful competitive advantage. Absorptive capacity (ACAP) or a firm's ability to acquire, assimilate, transform, and apply knowledge. This ability is being developed upon:

- Technology knowledge;
- Customer knowledge;
- Competitors knowledge.

Technology knowledge has a direct contribution to the development and application of innovations. Customer knowledge adds value for the users through the specific innovation. When we come to the competitors one could assure superiority or could generate a relevant reaction to competitive actions. The current chapter already confirmed the relation between innovation and dynamics and the one between innovation and the ability to handle and to properly react to a change. In addition, Zahra and George (2002) describe the ability to assimilate organizational learning as a dynamic one aiming at reaching a sustainable competitive advantage.

As a consequence, the learning process and the knowledge acquisition could be defined as a driving force for the company to adapt within the market's conditions, also innovation could be one of the results and manifestations of this process.

## ONLINE IDENTITY AS A SUSTAINABLE COMPETITIVE ADVANTAGE

Innovation based on market knowledge creates a new type of value and this is a premise of sustainable competitive advantage (Zhou, Yim & Tse, 2005). The sustainable competitive advantage is commonly related to customer's intention to choose a given product or service due to the perception for the higher quality received. Competitive advantage is „something that the firm does better than its competitors, that give it an edge in serving customers' needs and/or maintaining mutually satisfying relationships with important stakeholders “(Ferrell, 2012, p.16).

We would achieve the transition to sustainable competitive advantage analysis by specifying that organizational learning in its adaptive aspect aims at satisfying needs that already exist when the goal of generative learning is to predict customer's needs. In pandemic context it is requirable to comment on Maslow's hierarchy of needs and more concretely why its second level (safety /shelter, security, both physical and financial) should be a point of reference. Any product or service needs to focus on the establishment of customer safety and not to jeopardize their health, and this is most easily accomplished in the online environment. Thus, we could confirm that every company, which has a well-developed online presence, has been applying the generative approach (according to organizational knowledge classification). Such companies have succeeded in foreseeing customer needs, and competitive advantage has been created as a consequence. In other words, maintaining competitive advantage represents a system of activities related to analysis and anticipation of internal and external factors and the effects that they could potentially generate. And when competitors' monitoring is being added to these activities, then the competitive advantage grows in a sustainable one. Nakova (2007) defines the criteria in order for the sustainable competitive advantage to be significant for a company. Several of them are:

- The level its influence on market share,
- The level its influence on the company's profit,
- The level of its “ability” to provoke/prevent a company's instability,
- The level of its importance for the company's reputation.

We would like to add that the most significant criteria for sustainability of an advantage in online environment is its geographical independence. The online identity depends only on the company's resources and decisions and it does not depend on the geographical peculiarities of the regions where customers are located. According to Day (1994) the potential to develop a competitive advantage as a set of skills and abilities. They represent the bonding mechanism between all the available resources, knowledge and skills within an organization and they contribute to company's activities execution.

- Sources of advantage. This group of advantages is based on superiority skills and resources.
- Positional advantages. Advantages based on a higher customer value and on lower expenses.
- Company results. Market share, customer satisfaction, loyalty, profit.

When commenting the online presence and identity – every company should designate a budget dedicated to these activities. If such financial resources were provided in the past – today they are transformed in superior ones. And if we differentiate two types of businesses: online based and such based on both markets (the online and physical), we can claim that the right resource balance between online and offline activities results in intentionally pursued competitive advantage.

In the online context, the important superiority competencies are related to:

- understanding business in online environment,
- ability to adapt,
- knowledge and positive attitude toward new technologies' application,
- analysis of information generated in online environment.

Logically, the perception for sustainable competitive advantage evolves. This comes as a result of the necessity for confirmation of its characteristics in the dynamic conditions of a different time context. According to Fiol (Fiol, 2001) achieving sustainable competitive advantage is possible when it is based on specific internal skills and competencies and it does not depend on the level of its imitability. These internal competencies are discussed by other authors<sup>21</sup> in the last 40 years. They are being perceived as a set of available resources, competencies and skills within the company, as well as a way in which they are used and implemented in order to generate revenues. This long period again confirms the intransitive importance of competitive advantages when commenting the functioning of the business. It is Fiol (2001) again who claims that in the 21<sup>st</sup> century the major factor for an advantage to be a competitive one is not a synonym of the inability for imitation. The superiority and sustainability originate from the ability and the power to deconstruct and restructure existing habits and resources. A foundation of creating, developing and managing a fixed set of valuable resources is a stable organization where values and a sense of belonging exist. In such an organization positive attitude toward changes is spread.

## CONCLUSION

This pandemic influenced the trivial round of every customer and every business. During the searching process related to protection of market share some companies understood that their prevailing hither to investments in creating an online identity, resulted in the presence of competitive advantage. During this process companies implemented different adaptability implementation practices in order to keep the contact with their customers in compliance with the COVID-19 protection regulations. The rest of the companies became aware of the of the sustainability as an important characteristic of the online identity, especially in dynamic competitive environment.

This could be called a transformational one regarding the online activities' concept and more precisely – their conversion from innovational act to competitive advantage. The detailed comment of possible activities in online environment contributing to the creation of a company identity (e.g. Website or profiles in social networks) shows their complex nature and that they complement one another. The essence of these activities makes an allusion to organizational learning necessity as a binding element aiming their positive adoption and integration with the company's activities. Of course, the sustainable competitive advantage has the full meaning of sustainability when it is perceived as a dynamic element that is being developed in order to correspond to the dynamic environment where the companies operate.

## REFERENCES

- Crossan, M., & Apaydin, M. (2009). A Multi-Dimensional Framework of Organizational Innovation: A Systematic Review of the Literature. *Journal Of Management Studies*, 47(6), 1154-1191. doi: 10.1111/j.1467-6486.2009.00880.x



- Damanpour, F. (1991). Organizational Innovation: A Meta-Analysis Of Effects Of Determinants and Moderators. *Academy Of Management Journal*, 34(3), 555-590. doi: 10.5465/256406
- Day, G. (1994). The Capabilities of Market-Driven Organizations. *Journal Of Marketing*, 58(4), 37-52. doi: 10.1177/002224299405800404
- Day, G. S., and Wensley, R., (1988) Assessing Advantage: A Framework for Diagnosing Competitive Superiority. *Journal of Marketing*, 52(2), 1–20
- Ferrell, O. C., *Marketing Strategy: Text and Cases*, Cengage Learning, 2012.
- Fiol, C. (2001). Revisiting an identity-based view of sustainable competitive advantage. *Journal of Management* 27 (6), 691-699.
- Han, J., Kim, N., & Srivastava, R. (1998). Market Orientation and Organizational Performance: Is Innovation a Missing Link? *Journal of Marketing*, 62(4), 30-45. doi: 10.1177/002224299806200403
- <https://www.statista.com/topics/1145/internet-usage-worldwide/>
- Krasnov, A., Chargaziya, G., Griffith, R., & Draganov, M. (2019). Dynamic and static elements of a consumer's digital portrait and methods of their studying. *IOP Conference Series: Materials Science and Engineering*, 497, 012123. doi: 10.1088/1757-899x/497/1/012123
- Li, T., & Calantone, R. (1998). The Impact of Market Knowledge Competence on New Product Advantage: Conceptualization and Empirical Examination. *Journal Of Marketing*, 62(4), 13-29. doi: 10.2307/1252284
- Nakova, R. (2007). Ustoychivo konkurentno predimstvo. *Upravljenje i ustoychivo razvitie*, 18, (3-4)
- Nelson, R. R., & Winter, S. G. (1982). *An evolutionary theory of economic change*. Cambridge, MA: Harvard University Press
- Ozkaya, H., Droge, C., Hult, G., Calantone, R., & Ozkaya, E. (2015). Market orientation, knowledge competence, and innovation. *International Journal Of Research In Marketing*, 32(3), 309-318. doi: 10.1016/j.ijresmar.2014.10.004
- Rakthin S. et al. (2016). Managing market intelligence: The comparative role of absorptive capacity and market orientation. *69(12)*, 5569-5577
- Reed, R., & DeFillippi, R. J. (1990). Causal ambiguity, barriers to imitation, and sustainable competitive advantage. *Academy of Management Review*, 15, 88–102.
- Schumpeter, J.A. 1934, *The theory of economic development: an inquiry into profits, capital, credit, interest and the business cycle*, Harvard Economic Studies, Vol. 46,
- Schumpeter, J.A. 1942. *Capitalism, Socialism and Democracy*, 3rd edition, London: George Allen and Unwin, 1976
- Sincula, J.M., (1994), Market information processing and organizational learning, *Journal of Marketing* 58, 35-45
- Tallman, S., Jenkins, M., Henry, N., & Pinch, S. (2004). Knowledge, Clusters, and Competitive Advantage. *The Academy Of Management Review*, 29(2), 258. doi: 10.2307/20159032
- Zahra, S. A., & George, G. (2002). Absorptive capacity: A review, reconceptualization, and extension. *Academy of Management Review*, 27, (2), 185–203. doi: 10.2307/4134351
- ZHelyazkova, V. (2019). Vaznikvane i razvitie na kontseptsiyata za kragovata ikonomika. *Kragova ikonomika i ustoychivi finansi. Savremenni perspektivi*. 6-22
- Zhou, Kevin Zheng, Yim, Chi Kin, & Tse, David K. (2005). “The effects of strategic orientations on technology-and market-based breakthrough innovations.” *Journal of Marketing*, 69, 42–60.





# THE DENTAL MEDICINE SECTOR IN THE AGE OF THE COVID-19 PANDEMIC – RECOVERY BETWEEN RISKS AND CHALLENGES

Andra-Teodora Porumb<sup>1</sup>

Adina Săcara-Onița<sup>2</sup>

Cristian Porumb<sup>3</sup>

DOI: <https://doi.org/10.31410/LIMEN.2020.101>

**Abstract:** *In this paper we will show how the COVID-19 pandemic has affected one of the sectors that have undergone a booming development in recent years, namely the sector of dental medicine. This is an industry that includes numerous and diversified activities: treatments and surgical interventions in dental practices and clinics, dental aesthetics interventions in luxury clinics, the organization of specialization courses, conferences and congresses, the development of extremely innovative procedures and materials. Dental tourism has also had a spectacular trend, especially in Eastern European countries. Within a very short period of time, this highly profitable field, but which presents a huge risk of transmitting potential viruses, has recorded significant financial losses. In March 2020, in some European countries a lockdown was imposed by governmental decree or ordinance, all private practices having ceased their activity, whereas in other countries a significant number of clinics closed on their own initiative, and those remaining open recorded a staggering decrease in the number of patients. Courses, conferences, and congresses have been cancelled one after another throughout Europe. As a result of the cancellation of many flights, the activity in the branch of dental tourism has ceased almost entirely. For two months, an extremely small number of medical units, especially hospitals, were reorganized to provide care in dental emergencies, according to a very strict protocol to limit the risk of contamination. In view of resuming their activity as of May, professionals in the sector had to meet several severe protection conditions, regulated by institutional documents by the National Orders/Colleges of Dentists. In October, in the face of the second wave of the pandemic, the governments of European countries took less restrictive measures in an attempt to avoid a new lockdown and the decrease in the supply of goods and services to the population to such a great extent, so this time, governments have not closed private practices, despite the fact that in some countries the beginning of November has brought about a new isolation – albeit a partial one – and a renewed closedown of some businesses. We will analyze, in the context of the ongoing pandemic, the situation of this sector in several European countries. Given that the demand for dental services has only decreased very little, professionals in the sector have tried in various ways to continue their work so as not to sacrifice the dental health of the population. The risk/benefit ratio is very hard to manage in this field, so precautions, prevention, and protection measures in dental practices remain of the utmost importance. If the branch of organization of courses, conferences, congresses can compensate to a certain extent the sharp decline in revenues during the lockdown period by moving the activity on online platforms, the branch of dental tourism is still suffering massively, and the possibilities of recovery are greatly reduced. Dentists remain the most exposed to risks. They are facing medical and*

<sup>1</sup> University of Oradea, Faculty of Economic Sciences, Department of International Business, 1 Universităţii Street, Oradea, 410087, Bihor, Romania

<sup>2</sup> University of Oradea, Faculty of Economic Sciences, Department of International Business, 1 Universităţii Street, Oradea, 410087, Bihor, Romania

<sup>3</sup> University of Oradea, Faculty of Medicine and Pharmacy, Department of Dental Medicine, 10 - 1 Decembrie Square, Oradea, 410073, Bihor, Romania

*financial concerns and have to make final treatment decisions amidst an uncertain and dangerous situation.*

**Keywords:** *Dental medicine, COVID-19 pandemic, Crisis management, Risk, Dental tourism.*

---

## 1. INTRODUCTION

The global economy has been deeply affected by the Covid-19 pandemic. Most business sectors have endured huge losses in a very short period. Except for Sweden, where it was considered more important to continue business activities while the measures to contain the risk of contamination and spread of the infection (hygiene measures and social distancing) were communicated to the population only as a recommendation, about 45 countries imposed a two-month lockdown (i.e. from March 12-15 to May 11-15, 2020) and shut down most activities.

Data collected by governments showed that the measure of a mandatory lockdown has paid off in almost all European countries, even in those that have faced a very large number of infections and deaths (i.e. China, Germany, Spain, Italy, France), so the infection rate decreased in May; nevertheless, the lockdown failed to stop infections. The recent developments make it difficult for specialists to forecast and estimate future evolution.

The decision to implement traffic restrictions and interrupt business activities have had multiple consequences in the economy, the most striking being the following ones:

- serial bankruptcies, especially in the case of small and medium enterprises;
- the lowest employment rate in the last decade;
- a rising unemployment;
- higher burden for the state budget as a result of supporting social and economic protection measures (financial aid granted for SMEs and individual entrepreneurs, partial or technical unemployment during the quarantine and post-quarantine period);
- increase of public debt.

Considerable losses have been sustained in tourism and transport, in the hospitality industry (hotels, restaurants and cafes sectors), in the creative cultural sector, and in the sports industry. Despite the recovery plan for Europe *Next Generation EU* (approved in July 2020), which provides for a fund of EUR 750 billion of which EUR 390 billion will be allocated as subsidies to the states most affected by the pandemic, economic recovery is a very difficult process, with many private businesses at risk of extinction. Few business sectors have increased their income during the lockdown period and in the following months (e.g. postal and courier services, catering services, digital advertising).

## 2. MOTIVATION AND SOURCES

Most of the research and studies carried out so far by economists and financial specialists in 2020 focused on ways to recover in the aforementioned business areas. However, there is little work dedicated to one of the sectors most affected by the pandemic, namely the dental medicine sector.

While being considered at the beginning of the pandemic to involve activities with a high risk of infection (it is mainly about procedures during which aerosols are formed), the dental medicine sector was directly targeted by the first decisions taken by the governments of several

European states. Thus, at the beginning of March 2020, in many European countries it was ordered by presidential decrees, by ministerial ordinances and, in some cases, by military ordinances, the closure of dental practices and clinics:

- In France the dental practices were closed on 16<sup>th</sup> of March 2020;
- in Romania, on 21<sup>st</sup> of March 2020, the first article of the Military Ordinance no. 2 communicated by the Minister of the Interior provided for the temporary suspension of medical practice in the dental offices;
- Portugal declared a national state of emergency on 18<sup>th</sup> of March 2020; one of the measures ordered was the closure of dental practices.

Such measure was not taken during any of the previous economic crises. For two months, dental emergencies were provided only by hospitals and a few private dental practices, which were forced to meet very strict hygiene and safety requirements.

In addition, in March, the Italian Government decided to close all but the main economic activities in Italy (logistics and transport, pharmacy and health, energy and agro-industry, banking, postal and financial services) and recommended dental offices and clinics to perform only emergency medical interventions.

Also, the professional associations of dentists in some European countries have recommended the temporary suspension of activity in private clinics, even if governments did not impose such measures. In a few countries, i.e. Denmark and Norway, the state of emergency declared on 12<sup>th</sup> of March 2020 did not involve the closure of dental offices and clinics, but many private clinics closed as a preventive measure to contain the spreading of the virus.

In Germany, the dental offices remained open, while being imposed few additional protection measures and the reduction of certain procedures (use of the dental turbine). However, ultrasonic descaling was banned.

In late May, economic activity resumed in Europe, but the period that followed was a very difficult one, full of risks, providing little forecast information, and the medical practice was carried out against the background of increased spending on protective materials, additional measures to control infections and depletion of financial resources of dental offices and clinics.

In many European countries, after the March-May lockdown period, governments have imposed a state of alert, issued rules and regulations, released through the professional councils of dentists, on measures to prevent and contain COVID-19 infection, at endowment with personal protective equipment, increased obligations to disinfect the medical offices in compliance with strict health protocols.

In addition to dental services, there is a wide range of related activities that have endured significant losses because of the health crisis and restrictive measures taken by governments: the organization of specialization courses, conferences and congresses in dentistry, production and marketing of dental materials and equipment, activity of dental laboratories.

In this paper, we will mainly review the situation of private dental practices and clinics against the background of impossibility to put an end to health crisis in March-May, the impact of restrictive measures taken by European governments during the lockdown period and after 15<sup>th</sup> of May and the way in which entrepreneurs in the dentistry fields could withstand throughout

this period, the end of which cannot yet be foreseen, and could overcome the obstacles created by the COVID-19 crisis.

It is worth mentioning that, even though the dental medicine sector seemed one of the most profitable sectors - with an impressive number of innovations and a rapid development - many dental clinics were already facing many difficulties before the spread of coronavirus:

- many dental clinics did not fully recover after the 2008-2009 economic crisis;
- the fierce competition in this field means that the revenues of the clinics are not always as expected;
- entrepreneurs in the field of dentistry must constantly invest significant amounts in state-of-the-art equipment, in training courses for doctors, in order to be able to ensure high quality dental care and services;
- the costs for the implementation of safety measures adequate to this activity, even under normal conditions, are relatively high.

Moreover, the disruption of the medical practice for a period of several months is devastating for any business; the recovery is a long process, which requires patience, perseverance, financial resources and always an updated management and marketing expertise.

We used as sources the European documents drafted under the guidance of the Council of European Dentists (CED), national legislations (decrees, ordinances, decisions of state authorities), and recommendation guidelines developed by dental professional associations.

### **3. RESTRICTIONS ENFORCED AFTER 15<sup>TH</sup> OF MAY**

After the first stage of combating the pandemic, a state of alert was imposed in mid-May in many European countries. The hope for a speedy recovery in the dental sector is dashed by the second wave of the pandemic. Since September 2020, the daily number of infections and fatalities has been steadily increasing all over the world.

Israel was the first country to return to a period of *strict lockdown* imposed by the government and to traffic restrictions. Thus, between 18<sup>th</sup> of September 18 and 9<sup>th</sup> October 2020, schools, shops and many private companies, restaurants, salons, and gyms were shut down again. Unlike the first quarantine period, this time private dental clinics remained open, so as not to limit medical services to emergency cases only.

In addition, given the extremely high infection rate faced in September-October, France imposes restrictions on large cities and a night traffic ban. Given that the effects were not as expected, on 30<sup>th</sup> of October, the President of France announced a new period of *general lockdown* for one month (30<sup>th</sup> of October 30 – 1<sup>st</sup> of December). Here, too, there is a less strict lockdown than in the early 2020, and private dental clinics remain open. Germany has imposed a *light lockdown* on 2<sup>nd</sup> of November for a period of 4 weeks and does not ban dental practices either.

Hoping to slow the spread of the virus, in Ukraine the prime minister announces the quarantine over the weekend, valid as from 14<sup>th</sup> of November 14 the end of this month.

In order to prevent blocking the economy, in November many European countries avoided imposing new periods of general lockdown, while opting for quarantine imposed by region, depending on the rate of daily infections (e.g., Spain, Italy, Romania).

In brief, we may notice that compared to the first period of lockdown, private dental offices and clinics may operate throughout Europe.

According to the Council of European Chief Dental Officers (2012), the analysis of the estimated percentage of GDP allocated to oral health in 2010 in different European countries shows that Italy, Germany, Ireland are the top three countries, while Poland, Lithuania and Romania are ranked last in this hierarchy. Recent statistics show that Romania<sup>4</sup> ranks last in the European Union in terms of oral health; therefore, the decision to quarantine certain regions and not to shut down the dental offices in September-November is beneficial.

In fact, studies conducted by dental associations in several countries have shown that, under any circumstances, good hygiene and proper disinfection have always been provided in dental offices, strict safety regulations have been observed and strict health protocols have been applied there.

The additional measures imposed by the authorities to prevent infection with COVID-19 entail high additional costs, as the prices of protective equipment have increased significantly in recent months. These costs will be found either in the increase of fees for dental services, or in a loss of profit should the pre-pandemic fees be maintained.

#### **4. CHALLENGES FACED BY DENTAL OFFICES**

The consequences of all these events, restrictions, and regulations for dental practices, which generally operate as sole proprietorships and as limited liability companies, have been numerous and on multiple levels:

- a) Financial,
- b) Occupational,
- c) Medical.

##### **a) Financial issues**

The closure of private practices in March-May 2020 led to the plummeting of incomes of dentists and dental auxiliary staff. Subsequently and during the quarantine periods of September-November, they faced the difficult situation consisting of lower income and higher expenditure.

The main factors that triggered the decrease of income were, inter alia, the following ones:

- complete shutdown of the dental practice during March-May 2020, following the official decrees and ordinances;
- a decreased number of patients after 15<sup>th</sup> of May compared to the period before the onset of the pandemic;
- abandonment of complex dental treatment plans;
- reduction of income among many patients who have been affected, at their turn, by the health crisis.

---

<sup>4</sup> In Romania, the dentistry field receives only 1% from public budget allotted to health.



The number of patients has dropped dramatically because of:

- the two-month suspension of the medical practice in the private dental offices;
- additional procedures to be performed in dental offices in order to prevent the spread of COVID-19 pandemic;
- allotting enough time between medical appointments for proper cleaning, disinfection and ventilation of the dental office after each patient;
- performing a preliminary screening - by phone or through application running on the dental clinic website;
- patients' screening on arrival in the dental office;
- postponement of urgent medical interventions and non-essential treatments;
- closing the borders and suspending the flights, which determined the foreign patients to stop travelling for medical tourism purposes (both in the quarantine and post-quarantine period).

Dental office expenditures have increased due to the need to:

- equip the office with additional means to combat viruses and bacteria (devices for sterilization of air microflora and air filtration, UVC ultraviolet light disinfection systems, nebulizers, disinfectants) and testing equipment;
- purchase additional special protective equipment for medical staff (overalls, disposable medical gowns, visors, booties) and for patients (masks, gowns, booties);
- make available hydro-alcoholic solutions to patients;
- make changes to the dental office organizational structure and flows: creation or reorganization of a waiting room, organization of special circuits for patients in the office;
- acquire specialized computer applications that can help in establishing the diagnosis through telemedicine;
- perform additional operations: screening of patients, performing remote-consultation, proper completion of the patient's dental file, completion of a questionnaire to assess the patient's general health condition.

## **b) Occupational issues**

While facing the complete plummeting of their revenues during the lockdown period and a poor recovery of their revenues in the following period, the doctors who own dental offices have faced all the financial problems mentioned above. Consequently, maintaining the human resources needed to operate the offices has been a challenge by itself.

In April-May, in almost all EU member states (except Bulgaria, Finland, Iceland, Ireland and Switzerland), the state allocated resources and financial aid:

- according to the *partial unemployment scheme* conceived by the French government, in France, an employee benefits from 70% of the gross salary and 84% of his/her net salary;
- in Romania, the technical unemployment benefit is 75% of the gross salary, but it cannot exceed 75% of the gross salary per economy (RON 4,000, i.e. roughly EUR 800).

In Italy, on 13<sup>th</sup> of March 2020, the Board of Directors of ENPAM (National Insurance and Assistance Institute for Physicians and Dentists) asked the government for assistance and social protection for doctors and dentists affected by coronavirus (i.e. by maintaining the remuneration of quarantined public doctors and expanding protection to freelancers). For the latter, a monthly aid of about EUR 2,400 was confirmed should they were forced to interrupt their practice due to the quarantine imposed by the authorities.

Since June, entrepreneurs, including those activating in the dental medicine sector, have had to deal with the issue of maintaining their own offices and paying their staff - even if they have not yet managed to fully recover financial loss incurred with their dental offices.

In addition, they were placed in the position of conducting training for the staff in charge with welcoming the patients and for dental nurses who were given additional tasks: carrying out the pre-screening of patients by phone, screening at the entrance to the dental office, body temperature control, documentation management (application of COVID questionnaires).

### **c) Medical issues**

The health of the population has suffered throughout the year 2020. Access to specialized treatments has been restricted, which will have negative effects in the long run:

- during the lockdown period, only emergency treatments were performed in hospitals and in a very small number of private medical practices;
- even in countries where dental activity has not been stopped by state authorities (e.g. Germany, Denmark, Norway, Sweden, Finland), many doctors have decided to close offices (as a precautionary measure or due to the impossibility of meeting the functional requirements);
- after the lockdown period, patients were very reluctant to request an appointment with a doctor, given the fact that the number of infections could not be stopped;
- restricting access to dental care has determined not only the aggravation of existing oral health problems of population, but also the impossibility of early detection of possible serious problems (i.e. oral cancers);
- dental treatment postponement will have consequences on the overall health condition of the patients and on the quality of their life.
- In fact, as provided by the Platform for Better Oral Health in Europe:  
"Oral health is a determining factor for quality of life, essential for well-being, and an integral part of general health" (source: <http://www.oralhealthplatform.eu/>).

## **5. PRIORITY RECOVERY ACTION FOR DENTAL OFFICES AND CLINICS**

The Council of European Dentists (CED)<sup>5</sup> argues that the continuation of dental activity during the pandemic is of paramount importance.

In our opinion, recovery - especially in the case of private dental offices - is a long and difficult process, which involves the corroboration of skills and competencies at the highest level, in multiple fields (finance, management, marketing, law, IT), a special attention to be paid in the elaboration of action plans, patience and perseverance, and permanent vigilance.

Mitroff (1987) emphasizes the importance of early warning signals in crisis management: "To prevent some major crises, organizations need only learn to read these early warning signals and respond to them more effectively" (1987: 285). However, in the case of this crisis, we cannot speak of such warning signs, given that previous epidemics (seasonal influenza, SARS virus) did not have such a devastating impact and did not require such severe restrictive measures. Mitroff considers that "effective crisis management is a never-ending process, not an event with a beginning and an end" (1987: 285).

<sup>5</sup> A total of 32 national federations and professional councils from 30 European countries joined the Council of European Dentists association. The CED advises the European Commission on issues related to the dental profession.

According to Roger P. Levin (2020), an American specialist in dental office management, during and after a crisis the management of dental offices is very different from the daily management. Levin finds four critical factors for the recovery of dental offices: income, cash flow, expenditures, and advisers.

- First, dental offices must take measures to generate income urgently. For this, several steps are important to be taken (weekly analysis of income and expenditure, finding the break-even point) and measures (extending the work schedule, reducing staff leave, giving priority to the most productive cases, focusing on a large volume of simple treatment plans).
- If revenues increase, the dental office gain *cash*, which allows it to "operate from a position of strength." Levin argues that a dental practice should have a 4-month cash reserve available (placed in a separate reserve) to support its activity in the event of unforeseen events. In contrast, according to the analyses performed by his consulting firm, in the context of the COVID-19 pandemic most of the dental clinics (90%) had cash available only for one month.
- For a successful recovery, dental offices must be able to purchase the necessary materials, hire appropriate staff to resume and coordinate dental practice, manage appointments, and perform specialized procedures, or retrain its existing staff according to new needs; in brief, they must have the capacity to make expenses to generate income. On the contrary, in the current situation, most dental offices have tried to cut their costs.
- The sanitary crisis was an unforeseen, unprecedented element; that is why the dental offices that have resorted to *external assistance and consultancy* have had greater chances of recovery. There is a need for financial advisers to obtain a possible government aid and loans, for the management of gains and losses; there is need for lawyers specialized in labor law to manage staffing and unemployment issues: there is a need for accountants for calculating taxes and managing related documents.

Given the timing of the health crisis and the demands for social distancing, the dental office manager could also turn to IT consultants. We believe that *access to digital solutions and innovation* are essential for the speed recovery of dental practices.

The online presence of the dental offices is paramount:

- any dental office needs a website: to attract new patients, retain them, cultivate a positive experience (Porumb, 2017, 2020), provide information on dental services;
- new functionalities must be placed in the already existing websites, for example a webpage for remote, online dental consultations (given the need for patients to interact with their doctor even if the dental office would be closed or to have smooth access to medical recommendations and medication in the forthcoming period);
- it would be also advisable that a first dental consultation in order to sort urgent cases also takes place online;
- one of the dental office staff could send - via email, WhatsApp, or other social media platform - messages to inform patients about the resumption of dental office activity, working schedules, importance of dental treatment, and consequences of neglecting the treatment.

In this way, a digital connection between the doctor and the patients is created and developed, access to medical care is simplified, time is saved, operational flows are improved, appointments are managed to prevent patients crowding in the dental office.

However, the dental activity takes place mainly in the office. Therefore, it is extremely important to develop strict hygiene and health protocols and manifest increased vigilance throughout the next period. Good practices, attention paid to detail and even testing of patients will help to minimize the risk in dental offices, to practice a quality dentistry focused on the well-being of the patient. The doctor will also make decisions regarding the selection of procedures to be followed or the appropriateness of performing multiple treatments in one patient in a single session.

Finally, partnerships could be concluded or, in some cases, renewed with industries such as tourism to provide medical facilities to clients, with the academic environment to be constantly up to date with new studies and research in the field, and for the practical application of possible solutions provided by scholars.

European Commissioner Paolo Gentiloni predicted a return to a "prepandemic level" of the European economy by 2023. Thus, in his opinion, the pandemic would have cost Europe about three years of growth (*Le Figaro*, 6 Nov. 2020, p. 22).

## 6. CONCLUSION

The COVID-19 pandemic is an event whose amplitude and gravity has endangered businesses, jobs and incomes of citizens, but also the short, medium and long-term health of the population. Given that people and businesses have never faced a similar crisis in the past, it is very difficult for entrepreneurs to overcome the problems they face every day to save their business.

In the dental medicine sector, especially the activity of private dental offices, in developing an action plan for overcoming the crisis effects, doctors and managers in the field must constantly oscillate between risks and benefits, needs and priorities, tradition and innovation, immediate profit and the long-term gain, while being guided all by a basic principle: responsibility. They must be proactive and surround themselves with advisers from many fields to guide them in choosing the best strategies and implementing the most appropriate and innovative methods for recovery and carrying on their business under the special circumstances and uncertainties generated by the pandemic.

Certainly, in the future, some of the changes made now will become rule, and the activity will improve thanks to the measures and reforms applied at present.

## REFERENCES

- Booth, J. (2020) "Lăsați stomatologii să lucreze în continuare – lecții din al doilea blocaj israelian", *Dental Tribune*, 26.09.2020, <https://romd.dental-tribune.com/news/lasati-stomatologii-sa-lucreze-in-continuation-lectii-din-al-doilea-blocaj-israelian/>.
- Cabut, S. (2020) "« Cette crise est placée sous le signe de l'émotion ». Le psychiatre Michel Lejoyeux décrit l'éventail des troubles psychiques liés à la pandémie de Covid19", *Le Monde*, 27.11.2020, p. 10.
- Cooper, N. (2020) "Serving your patients in a Post-COVID-19 World", *Compendium of Continuing Education in Dentistry*, 41(6) June 2020, <https://www.aegisdentalnetwork.com/cced/2020/06/serving-your-patients-in-a-post-covid-19-world>.

- Jeffcoat M., Sollecito T. (2020) "Evidence, Junk Science, and Hope in a Time of Pandemic: On the Front Lines in Dentistry", *Compendium of Continuing Education in Dentistry* 41(8), September 2020, pp. 420-424.
- Levin Roger P., DDS (2020) "Four Priorities for a Successful COVID-19 Recovery", *Compendium of Continuing Education in Dentistry*, 41(7) July/August 2020, <https://www.aegisdentalnetwork.com/cced/2020/07/four-priorities-for-a-successful-covid-19-recovery>.
- Lo Nigro G., Bizzoca M.E., Lo Muzio L, Campisi G. (2020) „The Management of Dental Practices in the Post-COVID 19 Era: An Economic and Operational Perspective”, *International Journal of Environmental Research and Public Health*
- Mastrobuoni, T. (2020) « Germania, "Lockdown light" dal 2 novembre. Merkel: "Situazione molto seria" », *La Repubblica*, 28 ottobre 2020, [https://www.repubblica.it/esteri/2020/10/28/news/germania\\_ok\\_al\\_pacchetto\\_frangi-flutti\\_dal\\_2\\_novembre\\_chiusi\\_bar\\_ristoranti\\_e\\_palestre-272175712/](https://www.repubblica.it/esteri/2020/10/28/news/germania_ok_al_pacchetto_frangi-flutti_dal_2_novembre_chiusi_bar_ristoranti_e_palestre-272175712/).
- Meng L., Hua F., Bian Z. (2020) "Coronavirus Disease 2019 (COVID-19): Emerging and Future Challenges for Dental and Oral Medicine", *Journal of Dental Research*, Vol. 99(5) 481–487.
- Mitroff Ian, I., Shrivastava, P., Udwadia F.E. (1987) "Effective Crisis Management", *The Academy of Management Executive*, Vol. 1, No. 3, pp. 283-292.
- Munteanu, A. (2020) CMSR: "Măsuri pentru prevenirea infectării cu noul coronavirus în cabinetele stomatologice", *Dental Tribune*, 18.03.2020, <https://romd.dental-tribune.com/news/cmsr-masuri-pentru-prevenirea-infectarii-cu-noul-coronavirus-in-cabinetele-stomatologice/>
- Porumb, A.T. (2016) « Mise en thème de l'identité organisationnelle: le cas du site web », *Analele Universității din Oradea (Seria Științe Economice)*, tom XXV, Vol. II, pp. 149-157.
- Porumb, A.T., Porumb, C. (2017) « Stratégies de construction d'un discours positif. Le cas des sites web des praticiens de l'art dentaire », *Journal of Languages for Specific Purposes*, n° 4, pp. 77-92.
- Porumb A.T., Porumb C., 2020, „Communication devices. The dentists' case study / Dispositifs de communication. Le cas des praticiens de l'art dentaire", *Analele Universității din Oradea (Seria Științe Economice)*, tom XXIX, pp. 567-574.
- Redazione FNOMCEO (2020) *La prevenzione non si ferma. Continua la campagna dell'Associazione Nazionale Dentisti Italiani #DalDentistaInSicurezza*, 04/11/2020, <https://portale.fnomceo.it/la-prevenzione-non-si-ferma-continua-la-campagna-dellassociazione-nazionale-dentisti-italiani-daldentistainsicurezza/>.
- Savini, G. (2020) "Il modello svedese per la gestione di Covid-19 ha funzionato?", 11.11.2020, <https://dottoremaeveroche.it/il-modello-svedese-per-la-gestione-di-covid-19-ha-funzionato/>.
- Secon Holly, Su Ruobing (2020) "Sweden's per capita coronavirus death toll is among the highest in the world — a sign its decision to avoid a lockdown may not be working", *Business Insider*, 22.05.2020.
- Tosseri, O. (2020) « Covid-19: l'Italie, malade de son régionalisme », *Les Échos*, 27/28.11.2020, p. 10.
- UFFICIO STAMPA FNOMCEO (2020) *Odontoiatria al tempo di Covid-19, OMS emette linee guida. Iandolo (CAO nazionale): "Misure che in Italia, su nostra iniziativa, abbiamo già messo in atto tra marzo e aprile"*, 14/08/2020, <https://portale.fnomceo.it/odontoiatria-al-tempo-di-covid-19-oms-emette-linee-guida-iandolo-cao-nazionale-misure-che-in-italia-su-nostra-iniziativa-abbiamo-gia-messo-in-atto-tra-marzo-e-aprile/>.

- Webber, C. (2020) “Six Productivity Mistakes That Can Hinder a Dental Practice”, *Compendium of Continuing Education in Dentistry*, 41(10) November/December 2020, [https://www.aegisdentalnetwork.com/cced/2020/11/six-productivity-mistakes-that-can-hinder-a-dental-practice?page\\_id=434](https://www.aegisdentalnetwork.com/cced/2020/11/six-productivity-mistakes-that-can-hinder-a-dental-practice?page_id=434).
- CED, PRESS RELEASE, SAFETY OF DENTISTRY IN TIMES OF COVID-19 (2020) <https://mailchi.mp/b00ea6db3085/press-release-safety-of-dentistry-in-time-of-covid-19?e=bbcdc63636>.
- COVID-19 e la gestione dello studio odontoiatrico: prospettive economiche e operative, 30.11.2020, <http://www.odontoatria33.it/approfondimenti/20179/covid-19-e-la-gestione-dello-studio-odontoiatrico-prospettive-economiche-e-operative.html>.
- Enpam rinvia i contributi e vara indennità, 2020, <https://www.enpam.it/2020/coronavirus-enpam-disponibili-a-interventi-straordinari/>.
- European Union Agency for Fundamental Rights (FRA) (2020) *Coronavirus pandemic in the EU – Fundamental Rights Implications. Country: Romania*, [https://fra.europa.eu/sites/default/files/fra\\_uploads/ro\\_report\\_on\\_coronavirus\\_pandemic\\_june\\_2020.pdf](https://fra.europa.eu/sites/default/files/fra_uploads/ro_report_on_coronavirus_pandemic_june_2020.pdf).
- Guide. Réponses rapides dans le cadre du COVID-19 - Mesures et précautions essentielles lors des soins bucco-dentaires après le déconfinement, [https://www.has-sante.fr/upload/docs/application/pdf/2020-05/rr\\_391\\_soins\\_bucco-dentaires\\_apres\\_le\\_deconfinement\\_14\\_05\\_20\\_mel.pdf](https://www.has-sante.fr/upload/docs/application/pdf/2020-05/rr_391_soins_bucco-dentaires_apres_le_deconfinement_14_05_20_mel.pdf).
- Indicazioni operative per l'attività odontoiatrica durante la fase 2 della pandemia Covid-19, [http://www.salute.gov.it/imgs/C\\_17\\_pubblicazioni\\_2917\\_allegato.pdf](http://www.salute.gov.it/imgs/C_17_pubblicazioni_2917_allegato.pdf).
- <http://www.oralhealthplatform.eu/>
- <http://www.oralhealthplatform.eu/news/platforms-covid-19-statement/>
- <https://portale.fnomceo.it/>





# DEVELOPMENT OF CEFTA 2006 – MINI SCHENGEN -ECONOMICS VERSUS POLITICS

Dijana Grahovac<sup>1</sup>

Senad Softić<sup>2</sup>

DOI: <https://doi.org/10.31410/LIMEN.2020.113>

---

**Abstract:** *The effectiveness and efficiency of CEFTA 2006, even after almost a decade and a half, are far from utilising the potential. Member States act more as competitors than as partners, manifested by a significant number of formal and informal non-tariff barriers. There is no true will to fully exploit the potential offered by the free trade zone. This is also reflected in the low utilisation of financial resources envisaged for joint cross-border cooperation projects of IPA I and IPA II funds. All countries focus their international exchanges through trade with the EU, and intra-CEFTA trade is focused only on exports. The EU is making efforts to connect more tightly countries by supporting mini-Schengen project for Western Balkans. The paper will try to answer the questions: what economic benefits can the mentioned model bring and is politics a significant obstruction? The comparative regression analysis of the impact of the exchange of goods and services on the economic development of the member states for CEFTA 1992 and CEFTA 2006 will be presented in the paper. The analysis will be done by using the SPSS statistical program.*

**Keywords:** *CEFTA 2006, Mini Schengen, Countries of Western Balkan, External trade, Economics, Politics.*

---

## INTRODUCTION

The development of international trade today, undoubtedly, represents one of the priorities of the world economies. Moreover, scientific studies are dealing with the relationship between foreign trade and economic development. The scientific study of two professors from the University of Harvard, Sachs and Warner (1995) show that developing countries during the 1970s and 1980s opened their markets to the world, and had an average economic gain of 4.5%, whereas closed economies had only 0.7%. They also stated that developed countries with open economies have economic growth of 2.3%, while those countries with closed economies had only 0.7% of economic growth.

The same conclusion was reached in a scientific study in 2003 carried by economists Wacziarg and Horn Welch (2003). The fact is that most economists are for developing international trade.

Any economic integration, on an economic basis, towards the creation of a free trade area aims at increasing trade within that region and enhancing competitiveness with the rest of the world. In addition to these goals, the emergence of the CEFTA Free Trade Area in 2006 was also motivated by certain political issues, such as the process of integration of Member States into the EU.

---

<sup>1</sup> Central Bank of Bosnia and Herzegovina and University of Business Studies Banja Luka, Bosnia and Herzegovina

<sup>2</sup> Central Bank of Bosnia and Herzegovina and Economic Faculty in Sarajevo, Bosnia and Herzegovina

## 1. THE FOREIGN TRADE COEFFICIENT

Should small countries fully liberalize their trade with foreign countries? This is a question that in theory is largely no longer being posted. The advantages of integrating into the international trading system are such that autarchy is not a real alternative. Even famous Neo-Keynesians, like Krugman (1993), believe that free trade *"though not perfect, is rather good,"* and that *"any attempt to get away from free trade will end up with more harm than good."*

The foreign trade coefficient (the coefficient of openness of the economy) measures the overall dependence of the country on foreign trade. It is obtained as a ratio of foreign trade (exports and imports) and gross domestic product. Researcher Daitoh (2008) believes that such policies are a path to the process of poverty reduction in underdeveloped economies and that the economies that are pushing for restrictive policies in international trade are lagging behind and facing a low standard and slow recovery and growth. (Sachs, Warner, 1995; Krueger, 1998; Dollar, Kraay, 2001; Krugman, Obstfeld, 2001). However, numerous researchers expressed doubt about the consistency of the positive link of international trade and economic growth/development (Rodriguez, Rodrik, 2000), mainly as a result of the lack of a conceptual definition of openness and its measurement (Baldwin, 2004).

Dowrick and Duc-Tho (1989) do not doubt that the openness of the economy, even with the elements of protectionism, promotes growth. Thus, the research by these authors points to the fact that the dynamic benefits of trade are indisputable, but there is a possibility that in many countries "immiserizing growth" occurs (growth with impoverishment), i.e. deterioration of the "exchange relationship" because trade liberalization stimulates growth in the world economy (stimulating international flows of knowledge and innovation and "allowing" economies to specialize), but at the same time some economies can specialize in areas where low work qualifications are needed, or in slowly growing sectors<sup>3</sup>.

Table 1 shows the coefficient of openness of the CEFTA countries. There is a high degree of openness, which is not surprising since these are small countries, which have to seek their place in the global market through the exchange.

**Table 1.** Foreign trade coefficient of CEFTA 2006 countries

Year/Country	AL	SER	FYRM	B&H
2008	0,9	0,8	1,1	0,88
2009	0,8	0,7	0,9	0,68
2010	0,9	0,8	1,0	0,79
2011	0,9	0,8	1,1	0,88
2012	0,9	0,9	1,1	0,84
2013	0,9	0,9	1,0	0,83
2014	0,8	1,0	1,1	0,87
2015	0,7	1,1	1,1	0,83

**Source:** Central banks of mentioned countries

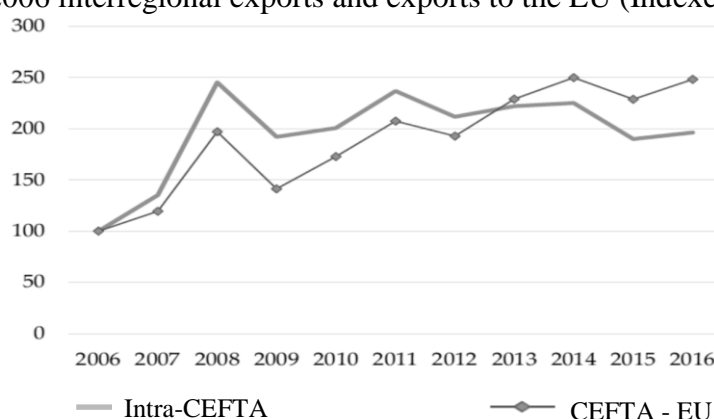
<sup>3</sup> Possible specialization in " natural resource based activities " reduces educational and 'skills' initiatives

## 2. COMPARATIVE ANALYSES OF INTRA-CEFTA AND EXTERNAL TRADE WITH EU

The greatest effects of this agreement were visible in the first years after signing (for example, in 2008, the total value of intra-regional export flows was 2.5 times higher than in 2006). However, in the following years, a slower growth rate of intra-regional exchange followed, which throughout the entire 2006-2016 period produced an average annual growth of 7% (Bjelić, Dragutinović, 2018, 23).

Graph 1 shows a significant decline in intra-CEFTA trade since mid-2013 due to Croatia's leaving the CEFTA market. The decline increased until mid-2015 when a slight increase in intra-CEFTA exchange began. At the end of 2016, the index of exchange with the EU was 250, and intra CEFTA below 200, compared to the essential 100 in 2006.

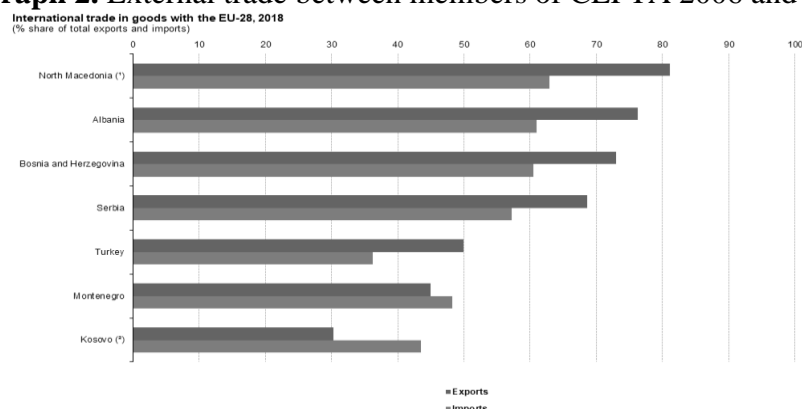
**Graph 1.** CEFTA 2006 interregional exports and exports to the EU (Indexes, 2006 = 100)



**Source:** Bjelić and Dragutinović-Mitrović (2018)

The EU was the main partner of the Western Balkan countries, both in terms of exports (72 %) and imports (58 %) in 2018. In 2018, manufactured goods made up 78 % of EU exports and 81 % of EU imports from the Western Balkan countries (graph 2).

**Graph 2.** External trade between members of CEFTA 2006 and EU



Note: ranked on the share of exports destined for the EU-28.

(\*) 2017.

(\*) This designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

Source: Eurostat (online data code: ext\_it\_intercc)

eurostat

**Source:**

[https://ec.europa.eu/eurostat/statisticsexplained/index.php?title=Western\\_Balkan\\_countries-EU\\_-\\_international\\_trade\\_in\\_goods\\_statistics](https://ec.europa.eu/eurostat/statisticsexplained/index.php?title=Western_Balkan_countries-EU_-_international_trade_in_goods_statistics) (02.08.2020.)

### 3. ECONOMETRIC ANALYSIS OF THE IMPACT OF FOREIGN TRADE EXCHANGE WITH CEFTA AND EU ON GDP

The following is an overview of the impact of CEFTA member countries' trade with CEFTA and the EU on the GDP of the countries observed. The model of multiple linear regression will be applied to the formula for GDP.

GDP = C + I + G + X, where  
C=spending by consumers,  
I=investment by businesses,  
G= government spending and  
X= Ex - Im (equals net exports),

adapted to the way in which set all variables to be a constant, except for foreign trade (through exchange with the EU and intra CEFTA). Multiple Linear Regression (R) is used to find out the relationship between mentioned external trade and GDP.

The formula applied is:

$$\ln \text{GDP}_t = \beta_0 + \beta_1 \ln \text{ET}_t + \varepsilon_t$$

where

$\beta_0$  = Intercept

$\beta_1$  = slope (measure the impact of the dependent variable on the independent variable)

GDP  $t$  = Gros domestic product in period  $t$

ET  $t$  = External trade (EU and intra CEFTA) in period  $t$

$\varepsilon_i$  = Random Error

Table 2 shows the significant linkage of all CEFTA members' trade exchange with EU and CEFTA with GDP, with very high coefficients.

**Table 2.** Model Summary of influence intra CEFTA 2006 trade and CEFTA 2006 with EU trade on GDP

Country	R	R Square	Adjusted R Square
Albania	,976 <sup>a</sup>	,953	,941
B&H	,973 <sup>a</sup>	,946	,933
N. Macedonia	,825 <sup>a</sup>	,680	,600
Serbia	,919 <sup>a</sup>	,845	,806

a. Predictors: (Constant), EU, CEFTA

b. Dependent Variable: GDP

If the volume of trade between CEFTA and the EU is separated (Table 3), there is incomparably lower importance of the exchange with CEFTA concerning the EU, where the coefficient is even above 1 in cases of some countries. Negative coefficients in the case of Albania and S. Macedonia express their primary orientation to the EU market.

**Table 3.** Coefficients of correlation – separately, trade CEFTA-EU; intra CEFTA trade

Country	EU	CEFTA
Albania	1,065	-0,93
B&H	1,071	0,242
N. Macedonia	0,795	-0,134
Serbia	0,919	0,203

#### 4. THE (UN) SUCCESS OF CEFTA 2006 AND THE PERSPECTIVE OF THE "MINI SCHENGEN"

The economic situation in CEFTA is difficult to separate from the political because economic flows are built on political grounds. It is therefore not surprising that Serbia has the highest volume of exchanges with B&H (Republic of Srpska) and vice versa, then with North Macedonia, while Albania has the largest exchange with Kosovo. On the other side, Kosovo has the largest volume of exchanges with Serbia (the unresolved status of Kosovo) and then with North Macedonia (a significant number of Albanian population) and Albania.

**Table 4.** Intra - CEFTA trade in period 2012-2018 Mil. EUR

	B&H	SER	AL	NM	KOSOVO
B&H	-	9419	204	949	572
SER	9419	-	857	4887	2795
AL	266	857	-	730	1320
NM	1192	4887	730	-	1670
KOSOVO	740	2795	1320	1670	-

**Source:** CEFTA Secretariat, <https://statistics.cefta.int/goods>

Due to the growing political tensions and the refusal of an increasing number of EU countries to integrate the Western Balkans countries into the EU, official Brussels decided to strengthen efforts to create the so-called Mini Schengen for the mentioned countries. The countries of the region are also covered by the process of stabilization and accession to the European Union, which means that they are on the path to full membership, although this path is very slow in their case. Montenegro and Serbia are candidates for membership and they have been negotiating entry for years, but their entry, according to the latest available information, is not expected before 2025. Albania and Northern Macedonia have candidate status and they are just at the beginning of the negotiating saga, while B&H and Kosovo are still only potential candidates. In the very slow process of joining the EU, many see the real reason for the creation of the Balkan mini Schengen: an area that should accelerate trade and commerce between the countries of the Western Balkans, but also those regions with the rest of Europe. The goal is to remove obstacles to the exchange of goods and services between the countries of the region, as well as the free movement of the population.

The project mini Schengen implies the establishment of a common market and a single investment destination with harmonized regulations and simpler rules in the Balkans, which would facilitate and accelerate the crossing of borders between the countries of the region, which is one of the biggest problems due to long waits and high costs. In the first phase, the project includes three signatory countries, and in the second phase, it should include Bosnia and Herzegovina, Kosovo and Montenegro. Among other things, it provides for the possibility of crossing borders only with ID cards, and unique work permits will be introduced as well.

If there was a mini-Schengen and if the EU stimulated the funds, then through the participation of countries and regional integration, bilateral problems would be reduced, regional infrastructure would be strengthened or built and economic systems would be improved.

Application of the mini Schengen could show that the region is not a burden for the EU, but that it requires significant concrete reforms in each of the countries - in the field of labor legislation, immigration and customs policies, judicial reform, especially when it comes to the



collection of claims and respect for workers' rights, which would be the same for everyone in the region.

Mini Schengen could also significantly alleviate the problem that the Western Balkan countries have now with economies of scale. On the one hand, the free flow of people and goods means a more attractive market of almost 20 million consumers, and on the other hand, by pooling production capacities, the problem of insufficient production volume could be overcome due to which the companies from each country cannot compete in larger markets which are looking for larger quantities of goods.

Increased cooperation between the countries of the region could increase the inflow of foreign direct investment and the region's networking with the West. It would be most desirable for the countries of the region to merge production capacities and export products provided that there are no excessively large political obstacles.

## **CONCLUSION**

The CEFTA 2006 region is very complex, viewed through the prism of historical socio-political relations. Numerically small nations, expressed needs for national identity, in the territories that have been under occupation for centuries, accentuate primarily the achievement of political goals, and economic relations have put under them. Unfortunately, in this way, economic development is blocked and the population is trapped in the political sphere. The result of such processes is a pronounced migration of the population of all countries in the region to the EU and other developed countries.

Observing the level of trade and investment in the region in 1998, Gligorov found that rather than shifting trade to the region, historical divisions and rivalries discouraged Balkan countries from integrating into regional trade relations and prevented them from using geographical proximity as a means of increasing profits and profits.

Importance of the involvement of all countries in the flow of international trade is important for every national economy. This is particularly obvious in small countries, which cannot be self-sufficient. This is the case with Bosnia and Herzegovina, as well as with all the countries in the region. Regarding B&H, from all of the above, it follows that the EU market is dominant for B&H, and that the potential for the CEFTA zone has not been fully utilized.

The emergence of political problems diminishes the chances of increased export of Serbian businesses to the countries of CEFTA 2006, so it needs to work on stabilizing the political situation in the region and then on new forms of trade and investment cooperation in the regions that precede the accession to the EU (Bjelić, Dragutinović, 2018, 6).

Considering the low level of efficiency of CEFTA 2006, the "mini Schengen" zone should strengthen and deepen economic activities between the countries of the Western Balkans, but also stabilize the political situation. The goal to be achieved is economic and political stabilization with the purpose of effective preparation for the integration of the entire region into the EU. Whether economic interests, supported through EU projects, will prevail or whether political tensions will obstruct the project, the time will show.

## REFERENCES

- Baldwin, R.E., Openness and growth: What's the empirical relationship?. In *Challenges to globalization: Analyzing the economics* (pp. 499- 526), University of Chicago Press, 2004.
- Bjelić, P., Dragutinović-Mitrović R., *Unaprijeđenje pozicije Srbije u okviru CEFTA 2006*, Belgrade, 2018.
- Daitoh, I., Environmental Protection and Trade Liberalization in a Small Open Dual Economy, *Review of Development Economics*, Vol. 12, Issue 4, pp. 728-736, November 2008
- Dollar, D., & Kraay, A., *Trade, growth, and poverty*, World Bank, Development Research Group, Macroeconomics and Growth, 2001
- Dowrick, S., Duc-Tho, N., *OECD Comparative Economic Growth 1950-1985: Catch-Up and Convergence*. *American Economic Review*, 79 (5): 1010-1030, 1989
- Gligorov, V., Trade and Investment in the Balkans, in Vladimir Gligorov and Hermine Vidovic, *On the Way to Normality – The States on the Territory of Former Yugoslavia in the Postwar Period*, WIIW Paper no. 250, October 1978, str. 1 - 7. See: [www.wiiw.ac.at/balkans/files/gligorov.pdf](http://www.wiiw.ac.at/balkans/files/gligorov.pdf)
- Krueger, A., Why trade liberalisation is good for growth, *The Economic Journal*, 108(450), 1513-1522, 1998;
- Krugman, P., Obstfeld, M., Rev. ed. of *International economics: Theory and Policy*, Pearson Series in Economics, 2009;
- Krugman, P., On the Relationship Between Trade Theory and Location Theory, *Review of International Economics*, p 364, 1993.
- Međak, V. (editor) *Effects of Stabilisation and Association Agreements and CEFTA2006 on WB6 European Integration and Regional Cooperation: Achievements and Ways Forward*, European Movement in Serbia, Belgrade, 2018
- Rodriguez, F., Rodrik, D., Trade policy and economic growth: a skeptic's guide to the cross-national evidence, In *NBER Macroeconomics Annual 2000*, Volume 15 (pp. 261-338). MIT Press, 2001;
- Rodrik, D., Subramanian, A., Trebbi, F., *Institutions rule: the primacy of institutions over integration and geography in economic development*, 2002;
- Sachs, J.D., Warner, A., *Economic reform and the process of global integration* Brook. Pap. Econ. Act., 1 (pp. 1-118) 1995.
- Sachs, J.D., Warner, A., *Economic reform and the process of global integration* Brook. Pap. Econ. Act., 1 (pp. 1-118) 1995;
- Wacziarg, R., Horn Welch, K., *Trade Liberalization and Growth: New Evidence*, NBER Working Paper No. 10152, Issued in December 2003.



# SMART REGIONAL SPECIALIZATION - OPPORTUNITY OR OXYMORON OF THE DEVELOPMENT OF SMALL AND MEDIUM ENTERPRISES

Desislava Botseva<sup>1</sup> 

Georgi Tsolov<sup>2</sup> 

Nikola Tanakov<sup>3</sup> 

DOI: <https://doi.org/10.31410/LIMEN.2020.121>

---

**Abstract:** *The need to understand and characterize management approaches, especially in their modern context, is becoming particularly important, mostly to test small and medium-sized businesses' ability to adapt to modernization's high demands. According to the research team, several challenges generated by various constraints, external and internal to organizations of this type, are why they fail to reach their growth and development potential. However, such a statement must be subjected to a severe analysis based on the methodology of a new, modern system of indicators to illustrate SMEs' real readiness and ability to be in line with development trends. The regional sector analysis successfully identifies the prerequisites for these enterprises' development and determines their specific regional potentials. The study analyzes the small and medium-sized enterprise sector in the Balkan countries and within the European Union. The research team identifies the predisposition for small and medium enterprises to regional specialization, application of innovations, technologies, entrepreneurial discoveries, digitalization and strategy, planning, and programming of a new generation.*

**Keywords:** *Regional specialization, Smart specialization, SMEs, Innovation, Regional competitiveness.*

---

## INTRODUCTION

The continuous and contemporary discussion on small and medium-sized enterprises (SMEs) remains to excite and arouse research interest in the present. Of particular importance is the sector's study to consider its fundamental role in the process of development, updating, and modernizing the sectors of national economies. Today, the need to analyze and evaluate the SME sector's development is more critical than ever. We can observe the reasons in two particular aspects. First, there is a need to study SMEs' value and their importance for developing the socio-economic nature of the regions. Second, how does this development improve SMEs' ability to modernize their activities to provide an adequate response to societies' continuous and dynamic modernization? Many authors and researchers on the topic of SMEs support the thesis that these structures have, to no small extent, an unrealized potential that should be exploited, especially in the context of modernity, shaped by the economy 4.0 and society 5.0 (Nikolov, G. 2019). Such a formulation should be subjected to an analysis based on a new methodology and a modern system of indicators to illustrate SMEs' real readiness to adapt to modern development challenges and trends. In turn, such

---

<sup>1</sup> University of National and World Economy, Student Town, 1700 Sofia, Bulgaria

<sup>2</sup> University of National and World Economy, Student Town, 1700 Sofia, Bulgaria

<sup>3</sup> University of National and World Economy, Student Town, 1700 Sofia, Bulgaria

development must be considered and characterized from different positions, economic, social, technical and technological, informational, infrastructural, cultural, and many others, presenting the modern picture of regional development's integrity, designed to engage all these aspects.

The management of small and medium-sized enterprises (SMEs) in the structures of national economies has always been a topic of discussion, which arouses serious research interest.

The research team observes this statement from two opposing positions. First, through analysis and empirical verification, to characterize SME management's importance as an opportunity to increase their usefulness for a territory's economic development. Second, to what extent, the achieved development and specialization of the territory (region) promote the progress of SMEs in such a way that they, in their activities, can optimally respond to the rise of modern societies and new concepts related to globalization, digitalization, economy 4.0 and society 5.0. There is hardly a researcher on the development and management of small and medium-sized businesses that supports the claim that these structures make optimal use of their capabilities. In turn, we consider and characterize such development must by different positions, economic, social, technical and technological, informational, infrastructural, cultural, access to finance, innovation, and many others, presenting the modern picture of regional development's integrity engage all these aspects. The author's team will identify the predisposition of small and medium businesses to regional specialization, application of innovations, technologies, entrepreneurial discoveries, digitalization and strategy, planning, and programming of a new generation.

One of the possibilities to research the SME sector and their condition is their regional sector analysis. It creates good preconditions for identifying the development factors of these enterprises and could determine their specific regional potentials. The use of the regional sector analysis of SMEs enables decision-making and implementation of mechanisms to support specific sectors of the economy and thus ensure their success. From another point of view, it is essential to assess the effect of these interventions on the economies of the countries and their impact on the development of the region in which the incentives applied to SMEs operate. The authors of the present study support the hypothesis that there is an objective need for timely assessment of such interventions and their impact on the development of both the SME sector and the specific industry to which they belong, and the overall development of the region. These mechanisms should aim to achieve a multiplier effect by generating added value, stimulating export activity, and increasing employment.

## **1. A BRIEF OVERVIEW OF REGIONAL SPECIALIZATION THEORIES EVOLUTION**

At the dawn of the emergence of regional economic literature, most economists believe that differences in their size determine individual territories' wealth. This economic thought line has been called "mercantilism" developed by European Scholars T. Moon, W. Petty, J.W. Colbert in the late 16th and 17th centuries. Mercantilists maintain the view that the amount of gold and silver determines the wealth of the territory. They suggest that the interventions related to the territories' economic development should aim at increasing them. To achieve this, they propose to stimulate the exports and restrict imports, except exports of precious metals.

Thus, recognizing the vital role of trade for economic growth is accompanied by an increase in restrictions and strict foreign exchange regulation by the state. One of the first British

representatives of classical economic theory, Adam Smith (1789), criticized these limitations. He showed that the territory well-being depends not on the amount of gold and silver as on the production level through the division of labor and cooperation. He supports the view that the region's specialization must be based on the principle of absolute advantage. The region exports its products at the lowest price and imports those made in other lower-cost areas. Producers must operate in conditions of free competition and a certain amount of economic freedom. Thus, was born the theory of absolute advantage.

The absolute advantage theory has clearly shown how foreign trade should occur if there is an absolute advantage in the region. However, it does not answer how a region can participate in foreign trade areas if it does not have such an "absolute advantage." The theory of "comparative advantage" derived the answer to that question. Another representative of the classical school, David Ricardo (1817), developed the theory of absolute advantages and showed that trade could be mutually beneficial, even if one of the regions did not have an absolute advantage in producing certain products or services. Ricardo, who essentially developed A. Smith's theory proved that absolute advantages are only a particular case of the principle of rational division of labor, based not on absolute but relative (comparative) advantages. Even countries (regions) with higher production costs for their products can benefit from specialization in foreign markets due to the difference in prices between different participants. The comparative advantage principle is that the regions must specialize in the production of those goods that they can sell at the lowest comparative cost compared to other regions. Comparative costs show how much of the production of some goods we have to give up to increase the production of others by one.

In the theories of Adam Smith and David Ricardo, the main factor in determining the rational structure of production and exchange is labor costs, in the 30s of the XX century. Swedish economists E. Heckscher and B. Olin (1992) developed a theory of international (interregional) division of labor, taking into account the ratio of the main interchangeable factors of production (labor, land, capital, etc.). From Heckscher and Olin's conclusions, it is clear that backward or developing countries (regions), which as a rule have an intense shortage of capital and surplus labor, must specialize in the production and export of labor-intensive products. Developed countries and regions with accumulated significant capital (including scientific and technical) must strive to export capital-intensive products. The natural-geographical profile of the territory strongly influences the specialization. Thus, e.g., countries and regions with sizeable agricultural land areas and relatively low population density should expand agricultural exports. Land and other natural resources are immovable factors, and only the products of their exploitation can move.

The key assumptions and interpretations of the Heckscher-Olin theory are tested and corrected in the coming decades. In particular, this was done to search for relevant export and import patterns of goods, taking into account the direct costs of the production factors and the indirect ones, concentrated in raw materials and consumables. This analytical task was realized much later. In the late 1940s, Vasily Leontiev subjected the theory to empirical verification. The results of this inspection went down in history as Leontief's paradox. Leontiev decided to check whether since capital is abundant in the United States, based on a comparison with other partner countries, the country's exports are mainly capital-intensive goods and imports of labor-intensive ones. Among the calculations and comparison of the results obtained, it turned out that US imports are more capital-intensive than exports.



There is a lot of research in the regional economic literature that has approached regional specialization and concentration problems. The definitions of regional specialization are based on the same production structures, reflecting the same reality. Regional specialization expresses the territorial perspective and depicts the distribution of sectoral shares in one region, usually compared to the rest of the country. Here, localization theories play a significant role in shaping the theoretical foundation.

The creation of the theory of the location of objects is associated with the publication (in 1826) of the book by the German economist J. Thünen "The isolated state in terms of agriculture and the national economy" (*Der isolierte Staat in Beziehung auf Landwirtschaft und Nationalökonomie*). The theory is based on the assumption that there is an economically isolated country in the world. There is a single central city, the only market for agricultural products, and a source of industrial goods (The theory of location of agricultural products). The method which compares the costs of delivery and transport of goods from the production point to the market (city) should be used. As a result of the analysis, it determines the most favorable areas for the positioning of individual types of agricultural products (their specialization). Despite von Thünen's work (since in practice, no state meets the prerequisites set in his theory), it becomes a critical example of the use of mathematical models in the view of spatial economics. The modern economy appreciates and recognizes its essential methodological significance and value.

The next step in developing localization theories was made with the advent of ideas about industrial objects of economic activity. W. Laundhart and A. Weber are recognized as founders of this trend. W. Laundhart developed a theory for the rational localization of industrial enterprises. Its most important achievement is the method of finding the optimal location for the location of a unit of an industrial enterprise in terms of sources of raw materials and markets for the sale of products. The determining factor in both Johann von Thünen's Theory and Wilhelm Laundhart's Theory is transport costs. Laundhart's views are further developed in the works of A. Weber. The most significant works of the German economist and sociologist Alfred Weber are "Theory of the location of industry (1904)" and "Theory of the location of industry. Pure Standard Theory (1909)". They become the most circumstantial theories in this area.

Afterwards, the next stage of the localization theories development is the emergence of the so-called settlement positioning theory. W. Kristaler introduced the first functional Theory related to the localization of settlements in the market system. His central places theory was revealed in the work *Central Places in Southern Germany*, published in 1913.

The general spatial theory was developed in the twentieth century. Its author is A. Lösch, a Polish economist whose views are set out in his work "Spatial Organization of the Economic," published in 1940. The general spatial theory is linked to the private ideas of Thünen, Weber, Kristaler. We can conclude that he is the founder of the thinking for the specialization of regional industries because he set himself the task to justify the possibility of the rational geographical distribution of production. His book indicates the most advantageous options for the location of newly built industrial enterprises in the centers with active economic life and in the market areas. Lösch bases his scientific work on the subject of localization theory, moving from the development of enterprises and the community to the problems of forming economic regions. The most important contribution of A. Lösch is developing the basic principles of spatial theory and financial equilibrium.

From all the above, we can conclude that regional specialization expresses the local perspective and depicts the distribution of sectoral shares in the regional economy, usually compared to the rest of the country. A region is considered highly specialized if a small number of industries have a large share in that region's economy.

## 2. REGIONAL OR SECTORAL SPECIALIZATION FOR SMES IN BULGARIA, SOME BALKAN COUNTRIES AND THE EU

The small and medium-sized enterprise sector forms the largest segment of enterprises in the national economies of both the Balkan countries and the European Union. There are cases in the Balkans and the EU, where over 99% of all enterprises are small or medium-sized. For example, in the Bulgarian economy, they form 99.8% representation in the country's economic structure. We could note that they generate more than 65% of value-added and more than 75% of employment. According to the indicators, the country is significantly ahead of the average Union's values (over ten percentage points) - Current data on SMEs (2014-2018), Ministry of Economy of the Republic of Bulgaria. However, this is not the case when considering the average indicator productivity of Bulgarian SMEs, which is still significantly behind the Union's average values. That is why increasing the competitiveness of SMEs is key to the Bulgarian and Balkan country's economic development. For example, the case in Serbia and North Macedonia is similar.

**Table 1.** Summary of number of enterprises and relative value of SMEs compared with the EU28 average (for 2019). [1];

Class size	Number of Enterprises						
	Bulgaria		Serbia		North Macedonia		EU-28
	Number	Share	Number	Share	Number	Share	Share
Micro	315410	91,80%	294876	95,80%	49372	89,90%	<b>93%</b>
Small	23471	6,80%	10122	3,30%	4576	8,30%	<b>5,90%</b>
Medium	4248	1,20%	2288	0,70%	797	1,50%	<b>0,90%</b>
SMEs	343129	99,80%	307286	99,80%	54745	99,70%	<b>99,8%</b>
Large	623	0,20%	521	0,20%	151	0,30%	<b>0,2%</b>
Total	343752	100,00%	307807	100,00%	54896	100%	<b>100,0%</b>

Source: DIW Econ'2019

In the studied cases, we observe a similar trend, which refers to the number and ratio of SMEs and their participation in the structures of the Balkan countries' economies (Bulgaria, Serbia, and North Macedonia). The trend is also valid for the Union as a whole (EU-28). Notably, micro-enterprises form the largest relative share in all studied cases. Their most extensive presence is in Serbia, where over 95% of all enterprises' are micro-organizations. For comparison, the author's team has identified the large organizations share, which in all cases form about 0.2% of the total number of enterprises. Only in North Macedonia, their share is 0.3%, higher than the average Union's value.

Opportunities for providing employment is a continually exciting researchers question. Its relevance is becoming increasingly important, especially in the context of modernizing societies and new labor needs. In this sense, it is crucial to explore small and medium-sized enterprises' possibilities to ensure employment. In the European Union (EU-28), the SME sector provides 66% employment. This indicator is close to the Serbian economy, in which the SMEs sector engages 66.3% of the employed. In Bulgaria and Northern Macedonia, the

number of people involved in employment in micro, small or medium enterprises is even higher. The values are 75.8% and 74.3%, respectively. The large share is another reason that distinguishes the objective need for in-depth study of SMEs' development trend, its ability to provide employment, and its adaptability to the ever-changing requirements of the labor market and the related development of human resources. The SME sector seems to create high expectations of continuing to supply employment to the population. An additional finding in the investigated cases concerns large enterprises, although they are not a direct study object. In relative terms, large organizations are responsible for about 33% at the EU level. However, it is notable that their share in the Balkan countries is below the Union average. The employment provided by large enterprises is about 24-25%. Only Serbia is close to the Union average. We may find the reason in the well-developed industrial zones responsible for generating a significant share of employment. Regarding the number of SMEs in Bulgaria, the largest is their relative share in Services. This is typical of the whole territory of the Union and quite logical. The close share of SMEs in the field of Construction is the smallest. According to this indicator, Bulgaria significantly lags behind the Union average (6.1% to 14.6%).

**Table 2.** Summary of number of employed people in SMEs compared with the EU28 average (for 2019). [1];

Class size	Number of Persons Employed						
	Bulgaria		Serbia		North Macedonia		EU-28
	Number	Share	Number	Share	Number	Share	Share
Micro	616012	30,60%	442332	33,20%	122402	31,60%	<b>29,7%</b>
Small	477693	23,70%	203675	15,30%	87555	22,60%	<b>20,10%</b>
Medium	432689	21,50%	236836	17,80%	78000	20,10%	<b>16,80%</b>
SMEs	1526394	75,80%	882843	66,30%	287957	74,30%	<b>66,6%</b>
Large	489587	24,20%	447849	33,70%	99950	25,70%	<b>33,4%</b>
Total	2015981	100,00%	1330692	100,00%	387907	100%	<b>100,0%</b>

Source: DIW Econ'2019

Comparing the data on the number of employees in different industries in SMEs' structure for Bulgaria and the EU-28, we can make some essential summaries. Although it engages the largest relative share in our country's economic system (42%), the Services sector offered employment to 33% of the employed. In comparison, this value for the Union is close to 44%. In terms of the number of employees, in the national economy, the service sector successfully competes with trade. The industries share an almost equal relative share of employees. The construction industry employs the smallest number of employees, both at the national and European level (9.2% to 12.2%)

**Table 3.** Summary of SMEs added value within Bulgaria, Serbia and North Macedonia compared with the EU28 average (for 2019). [1];

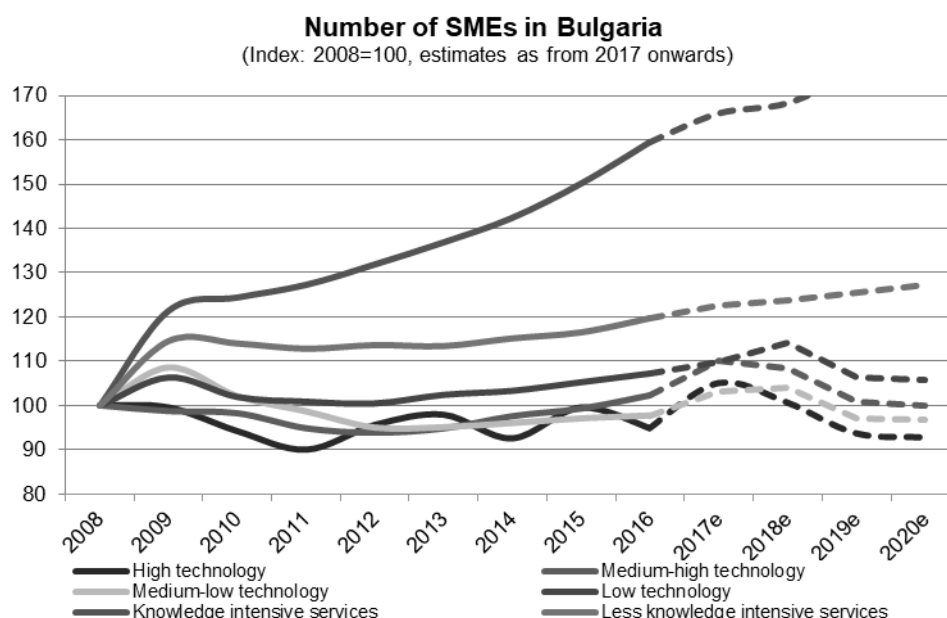
Class size	Value Added						
	Bulgaria		Serbia		North Macedonia		EU-28
	Billion Eur	Share	Billion Eur	Share	Billion Eur	Share	Share
Micro	6,5	21,60%	3,8	20,30%	0,88	20,70%	<b>20,8%</b>
Small	7	23,20%	2,9	15,40%	0,95	22,40%	<b>17,60%</b>
Medium	6,1	20,50%	3,8	19,90%	0,86	20,30%	<b>18,00%</b>
SMEs	19,6	65,30%	10,5	55,60%	2,69	63,40%	<b>56,4%</b>
Large	10,4	34,70%	8	44,40%	1,6	36,60%	<b>43,6%</b>
Total	30	100,00%	18,5	100,00%	4,29	100%	<b>100,0%</b>

Source: DIW Econ'2019

From the point of view of SMEs' added value at the Balkan countries' level and the European Union level, it is noteworthy that these organizations are responsible for more than half of the indicator's value. The fact is justified, given their strong relative presence in the structure of economies. We need to take that into account considering 0.2% - 0.3% of the organizations in the national economies, represented by large enterprises, generate between 35 and 45% of value-added. Precisely because of this particular importance for developing economic sectors and providing an adequate response to the new challenges caused by dynamically evolving societies is developing a high-tech knowledge economy (Tsolov, G. 2019). The analysis requires us to compare the Bulgarian economy's performance in the context of the EU-28 averages. The graphs below visualize SMEs' dynamics and offer an overview of the development of different technology classes and knowledge-intensive SMEs.

To give depth to the study, we will focus on the Bulgarian case. The graph below shows the development of low-, medium- and high-tech and science-intensive sectors (2008-2017).

**Figure 1.** Number of low-, medium- and high-tech and science-intensive sectors SMEs in Bulgaria (2008 - 2020)



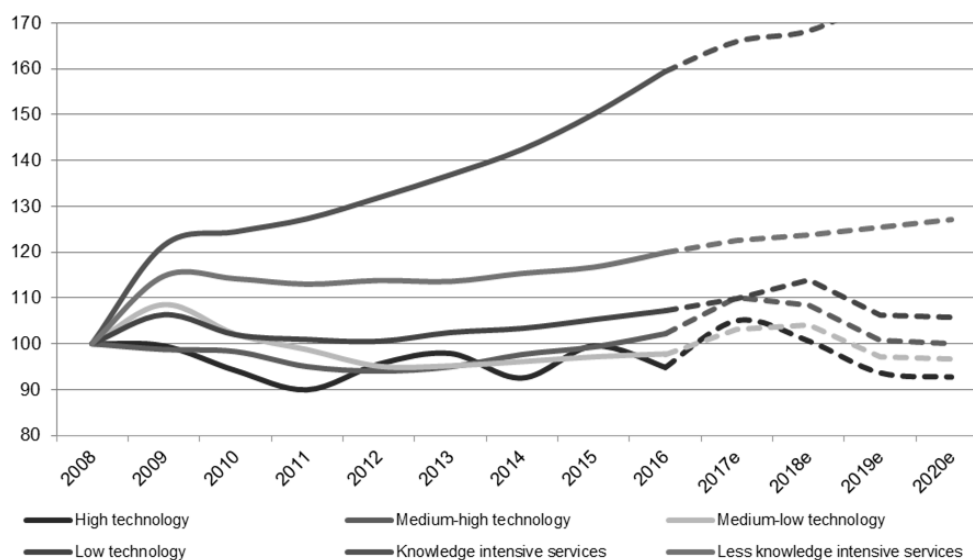
Source: SME Performance Review 2019, DIWEcon, 10th May 2019

For the period 2008-2016 and the forecast 2017-2020, Bulgaria reports excellent results regarding the dynamic increase in the number of Knowledge-intensive services, as their number almost doubles. However, there is no progress or expansion in their number concerning high-tech industries, but even a decrease, compared to the indicators achieved in 2008. Bulgaria should realize a large part of its untapped potential in terms of high technologies. In catching up with development, technologies should be dynamically recognized and integrated into the Bulgarian regions' economic activities to optimize production. However, there are many reasons why this does not happen, and Bulgarian SMEs face several challenges in integrating high-tech industries. On the one hand, this is the still tricky access to funding (including poor understanding of procedures, lack of transparency, and publicity); on the other hand, the increasingly topical issues related to human resources and capital (Tanakov, N. 2019).

For comparison, we also apply the graph of identical industries and the values for the EU-28. We see that the development is analogous. Here we can think in two directions. On the one hand, opportunities should be sought for better integration of global technological innovations

in the field of economic sectors, and on the other hand, to design and program new concepts for the development of territories expressed through the prism of Intelligent Regional Specialization.

**Figure 2.** Dynamics of the Number of SMEs in EU-28 (technology and knowledge) 2008 - 2020



**Source:** SME Performance Review 2019, DIWEcon, 10th May 2019

Regarding the share of fast-growing SMEs, in 2016, a balanced structure of development, against European enterprises' background, is impressive. In the general case, the ratio Bulgaria: EU-28 is 11.2%: 10.7%. According to the specific indicator, Bulgarian SMEs are ahead of the average for the Union in terms of growth. Outpacing values are also observed in the areas of Transportation and storage, Manufacturing, Real estate activities, Construction, Wholesale and retail trade, repair of motor vehicles and motorcycles.

It is important to note that the rapid growth of information and communication enterprises' share continues. Thus, the percentage of IT companies is growing most dynamically. This, of course, is a very logical response to the current trends in modern societies' development. In this sense, in 2016, their share in Bulgaria increased by 13.7%, and for the Union by 16.5%. The increase in employees in the industry is happening at a slightly more moderate pace. According to data for 2018, they increase by 9% annually to 30.1 thousand, and in 2019 increase by 10% to 34.1 thousand people. Historically, within seven years, employees in software companies have doubled in number. This should keep relevant to the eternal issue of staff shortages in the IT field.

Although at the EU-28 level, 49.5% of SMEs have undertaken some form of innovation, the share of innovative SMEs varies considerably from one Member State to another. In 13 Member States, over 50% of SMEs in 2014-2016 were innovators. On the other hand, 7 Member States, incl. Bulgaria has taken the form of innovation in less than 1/3 of SMEs. Within the EU-28, the gap between innovative large enterprises and innovative SMEs is particularly large in several Central European countries, including Bulgaria.

According to the European Commission's report, the main barriers reasons for the development of innovation for SMEs in Bulgaria are: Lack of cooperation partners; Lack of external



financing (credit or private capital); Difficulties in obtaining public subsidies; High competition; Uncertain market demand; Lack of qualified employees in the enterprise; 'Lack of internal finance' and 'High costs'.

Most innovative SMEs believe that each barrier is more important than large enterprises for all the factors considered. Innovative SMEs typically face a much more comprehensive range of challenges than innovative large enterprises. It is more difficult for SMEs to obtain funding for their innovations, whether from external, internal, or government sources. SMEs are less likely to have qualified employees to innovate and find it more challenging to find cooperation partners. Some factors are particularly important for SMEs. For example, 6% of large enterprises say that the "lack of external financing" is essential to hamper innovation efforts, compared to 12.9% of SMEs. Besides, 14.4% of SMEs cite "high competition" as a significant barrier compared to 7.6% of large companies. These differences reflect the SMEs' specific market context, which seems less favorable for innovation at the aggregate level. In general, SMEs seem to find it relatively more difficult to increase and maintain their innovation activity.

In January 2017, the Commission carried out a comprehensive assessment of Bulgaria's progress over the last ten years since the establishment of the Cooperation and Verification Mechanism (SME) in 2007.

Based on the long-term perspective and significant progress, the Commission has outlined 17 key recommendations, the implementation of which would lead to the termination of the SME process, in line with President Juncker's goal of completing the SME process by the end of this Commission's term. Therefore, the recommendations made in January 2017 are considered sufficient for SMEs' closure unless changes occur that could lead to a clear reversal of progress. It was also stressed that the process's pace would depend on how quickly Bulgaria will implement the recommendations irreversibly (Vasileva, E. 2018). In particular, the recommendations focused on the Bulgarian authorities' accountability requirements and on the introduction of internal guarantees to ensure the irreversibility of the results, i.e. to prove that the implementation of ongoing projects will continue, even without SMEs. As the Council emphasized, SMEs' performance will end when each of the six indicators applicable to Bulgaria is satisfactorily met (Bulgaria's Progress Report 2018. [COM(2018)850]).

### **3. INTELLIGENT REGIONAL SPECIALIZATION - THE MODERN DIMENSION OF SECTORAL CONCENTRATION**

What is smart specialization [3]? Smart specialization is a strategic approach to economic development through targeted support for research and innovation (R&D). This will be the basis for Structural Funds investments in R&D, as part of the contribution of Cohesion Policy to achieving the long-term goals for growth and jobs of the Europe 2020 Strategy (Nikolov, G., Vasileva, E. 2018). More generally, smart specialization involves a process of developing a vision, identifying competitive advantages, setting strategic priorities, and using smart policies to maximize development potential based on the knowledge of each region, whether weak, strong, high- or low-tech (Nikolov, G. 2019). The Innovative Intelligence Specialization Strategy (ISIS) is generally a strategic document for changing Bulgaria's policy and overcoming the socio-economic challenges. It is a means to improve the competitiveness of the economy, both in Bulgaria and in the EU. Smart specialization is such for two reasons: it sets the main priorities for both politics and industry; it considers global trends, stimulating businesses to reach their true potential. It provides an opportunity to build on the strategic advantages of the given territories, which implies a clear communication policy, active



participation of stakeholders, a high degree of integration, and connection with international guidelines and programs.

Smart specialization strategies contribute to the Europe 2020 goals of smart, sustainable, and inclusive growth by strengthening the EU's regional and national research and innovation potential.

Smart specialization is a concept of innovation policy that aims to stimulate regional innovation, contributing to growth and prosperity, helping and enabling regions to focus on their strengths. Smart specialization is based on partnerships between businesses, public entities, and knowledge institutions (e.g., the Academy).

Defining the smart specialization strategy established by Regulation (EU) № 1303/2013 of the European Parliament and the Council defines it as: “Smart specialization strategy” means national or regional innovation strategies that set priorities to build competitiveness advantage. The SS develops and compares research and innovation's strengths with business needs to achieve a coherent solution to emerging opportunities and market developments. It avoids duplication and fragmentation of efforts; The smart specialization strategy can take the form of (or be included in) a national or regional strategic framework for research and innovation. The Smart Specialization Platform (S3 Platform) provides information, methodologies, expertise, and advice to national and local policies and promotes mutual learning and transnational cooperation, and contributes to the academic debate on the concept of smart specialization.

The smart specialization strategy must prioritize areas, sectors, and economic activities where regions or countries have a competitive advantage or have the potential to generate knowledge growth and lead to the economic transformation needed to address the main and most pressing challenges facing society, and the natural and built environment. The number and nature of these priorities will vary from region to region.

Such an approach requires keeping in mind that when designing the Smart Specialization Strategy, priorities need to be identified that can be changed or modified when the availability of updated information/analyzes recommends it. Priorities could be formulated in terms of areas of knowledge or activities (not only science-based but also social, cultural, and creative), subsystems within a sector, corresponding to specific market niches, clusters, technologies, or the scope of application of technologies for specific societal and environmental challenges or the health and security of citizens (e.g., ICT for active aging, mobility solutions to reduce traffic congestion, innovative material solutions for eco-building, etc.).

While some regions or countries may prioritize one or more key technological innovations, others will focus on such technologies' applications to specific goals or specific areas. Social, organizational, market, and service innovation or practice-based innovation play as important a role in the Smart Specialization Strategy as research-based technological innovation. This is especially important for regions with a relatively weaker technical and scientific basis.

The smart specialization strategy includes radical innovation and the use of niches through design in traditional areas, the development and implementation of new business or organizational models, and the adaptation/use of invention stemming from knowledge and experience in these areas. Horizontal measures will complement the priority choice of districts, sectors, or specific economic activities. They aim to realize adequate framework conditions for

entrepreneurship, supporting the work of all types of companies both on the domestic and international markets and the development of inter-company, inter-cluster, and cross-border cooperation.

## CONCLUSION

Intelligent regional specialization is called to work and stimulate the best of the territory, thus improving living standards, socio-economic and regional development, and increasing regional competitiveness. It is built based on platform thinking, which aims to improve the investment climate in the regions, promote entrepreneurship, and the development of high-tech industries and the knowledge economy.

The main engine of such platform thinking is innovation and the ability to generate, adapt, and integrate innovations. Based on the analysis, it is clear that Bulgarian SMEs still face several difficulties in innovation. It is not well implemented and recognized as a priority area for development by small and medium businesses. Despite the many programs aimed at supporting innovative SMEs, the share of SMEs undertaking innovative activities has not changed significantly since the beginning of 2000. Bulgaria traditionally maintains its place among the old non-innovators. However, this is valid with some reservations. The amplitude between SMEs' innovation activity and the corporations, which have the role of the core of the innovative development of our country, is significant.

The analysis of the degree of innovation and non-innovation among SMEs (and large enterprises) showed that our country's general innovation climate is an important driver for the spread of innovation activity among SMEs and large enterprises. Many of the existing programs address a wide range of issues and challenges that have been identified by innovative and non-innovative SMEs. Stakeholders have suggested several additional actions that could increase SMEs' innovation rate in the EU. However, there are large differences across the EU concerning the frequency of innovative SMEs among the SME population. The scope and type of problems they face and the level of state support for R&D in SMEs vary.

The regional specialization and especially its modern intelligent concepts contain several opportunities for the Bulgarian regions. Proper recognition of priorities would generate added value, economic growth, and development. The accurate and timely orientation of regional development policies towards a small number, concretely and clearly defined regional priorities with significant and possible for realization potential, based on the specific territorial reality, is the key to bringing the Bulgarian regions to the European and the world economic scene.

## Notes:

- [1] The data presented in the table are forecasts for 2018, prepared by DIW Econ, based on data from 2008-16 from the Structural Database for Business Statistics (Eurostat). The data cover the "non-financial business economy", including industry, construction, trade, and services. The following definitions of the size class apply micro-firms (0-9 employees), small companies (10-49 employees), medium-sized companies (50-249 employees). The advantage of using Eurostat data is that the statistics are harmonized and comparable between countries. The disadvantage is that for some countries, the data may differ from those published by national authorities;


- [2] Alfred Kristaler (1893-1969) was a German geographer, the founder of the rational theory of the hierarchy of settlements. According to his main work, *The Central Cities of Southern Germany*, people organize their settlement network to make the most efficient use of the region's natural resources and localization advantages.
- [3] Platform for intelligent specialization of the EC. <http://s3platform.jrc.ec.europa.eu>.

## REFERENCES

- Khalachev, V. (2018) "Analiz na razvitiето na MSP v Bŭlgariya prez 2018 godina", <https://ubclubs.eu/>, posledno obnoven: 28.12.2018, accessed: 04.08.2020
- Aktualni dannii za MSP (2014-2018), Ministerstvo na iekonomikata na Republika Bŭlgariya  
Doklad za napredŭka na Bŭlgariya za 2018 g. [COM(2018)850]
- Nikolov, G., Vasileva, E. (2018) *Usŭvŕshenstvane na politikite za iekonomicheskoto razvitie na regionite. Natsionalna nauchna konferentsiya: Regionalna iekonomika i ustoŭchivo razvitie*, tom 1, izd. Nauka i iekonomika, r.78-85. ISBN 978-954-21-0956-3
- Blaug, M. (1992). *The methodology of economics, or, How economists explain*. Cambridge University Press. p. 190. ISBN 978-0-521-43678-6.
- Leontief, W. (1953). "Domestic Production and Foreign Trade; The American Capital Position Re-Examined". *Proceedings of the American Philosophical Society*. 97 (4): 332–349. JSTOR 3149288
- McCann, P., & Ortega-Argilés, R. (2015b). *Smart specialisation: Results-oriented policies and the use of results indicators with specific reference to entrepreneurship and SMEs policies*. Discussion Paper Prepared for the Smartspec Framework 7 Project.
- McCann, P., & Ortega-Argilés, R. (2013b). *Transforming European regional policy: A results-driven agenda and smart specialisation*. *Oxford Review of Economic Policy*, 29(2), 405–431.
- Nikolov, G., Lyubomirova, V., Suryanto, T. (2019) "Building an integrated regional approach in the new programming period 2021-2027". III International Conference "Regional development and cross-border cooperation". Serbia, Pirot 2019. ISBN 978-86-900497-2-1
- Nikolov, G. (2019) *Innovations as a factor for regional growth*. "Mezhdunarodnata nauchna konferentsiya, Tendentsii v upravlението na Regionalното razvitie i sigurnostta. ISBN 978-619-232-265-6
- Ricardo, D. (1817), *On the Principles of Political Economy and Taxation* (1 ed.), London: John Murray, retrieved 2020-08-07 via Google Books
- Smith, Adam (1789). *An Inquiry into the Nature and Causes of the Wealth of Nations*. 1 (5 ed.). London: A. Strahan; T. Cadell.
- Tanakov, N., Kazakova, M. (2019) *Impact of human resources on the development of the regions*. "II International Scientific Conference - Regional development and cross-border cooperation, pp 513-521". Serbia, Pirot. ISBN 978-86-900497-1-4
- Thünen, Johann Heinrich von. (1826) *Der isolierte Staat in Beziehung auf Landwirtschaft und Nationalökonomie*, Akademie-Verlag, 1990, retrieved 2020-08-07 via Google Books
- Tsolov, G., Vasileva, E. (2019) *European concept of collaborative economy*, XXIV Međunarodni naučni skup Regionalni razvoj i demografski tokovi zemalja jugoistočne Evrope, Nis, Serbia, ISBN 978-86-6139-178-1
- Vasileva, E. (2018) *Genesis and Possibilities for Overcoming the Regional Disparities in Bulgaria Development*. International conference proceeding: Regionalni razvoj i demografski tokovi, University of Nish, Faculty of Economics, p.225-257. Nis, Serbia. ISBN 978-86-6139-155-2

# CAUSES OF DIFFERENTIATED DEVELOPMENT OF REGIONAL STRUCTURES IN THE SLOVAK REPUBLIC

Katarína Kráľová<sup>1</sup> 

Jana Sochuľáková<sup>2</sup> 

Dagmar Petrušová<sup>3</sup> 

DOI: <https://doi.org/10.31410/LIMEN.2020.133>

---

**Abstract:** *Our paper aims to identify and evaluate the factors determining the differentiated development of the regional structure of the Slovak Republic through analysis; directly or indirectly to show the reasons for the lag of some regions of the Slovak Republic. We will analyze the socio-economic lag of the regions in Slovakia through relevant social and economic indicators (e.g. unemployment rate, economic performance, the sectoral structure of the economy, state of infrastructure, average wages, selected demographic structures, level of innovation and others). We calculate and evaluate regional disparities using selected methods, which should point us to the fact that the differences between developed and lagging regions have already reached such proportions that regional polarization and regional disparities are entirely appropriate for this situation.*

**Keywords:** *Region, Regional structure, Regional disparities, Regular polarization.*

---

## INTRODUCTION

Regional differences and insufficient regional development have long been a problem not only of the Slovak economy. We can state that regional differences are the result of the uneven distribution of available resources within the economy and can lead to even greater and deepening problems between individual regions of the economy. Let's ask ourselves what a region is, how to correctly define a region in terms of comparing regional development or measuring the performance of regions. The regions represent complex and richly structured units. The term region in general represents a territorial-administrative or political-administrative unit with a precisely defined competence of administrative bodies in the territory, while it has certain resources (internal or external) forming the preconditions for its development (Habánik, 2014). Some regions of the Slovak Republic are more developed, others less so. Each region is different, it is characterized differently, it has different conditions for its growth and development and this is the reason why certain differences arise and exist between individual regions of the Slovak Republic. In the Slovak Republic, regional disparities began to grow after 1989, due to social and economic changes. Subsequent economic growth and development in the Slovak Republic gradually contributed to the emphasis on differences between regions and districts of Slovakia, which led to the emergence of regional polarization. These significant differences between the regions, which have gradually formed in the Slovak

---

<sup>1</sup> Alexander Dubček University in Trenčín, Faculty of Social and Economic Relations, Študentská 3, 91150 Trenčín, Slovakia

<sup>2</sup> Alexander Dubček University in Trenčín, Faculty of Social and Economic Relations, Študentská 3, 91150 Trenčín, Slovakia

<sup>3</sup> Alexander Dubček University in Trenčín, Faculty of Social and Economic Relations, Študentská 3, 91150 Trenčín, Slovakia

economy, are very large and have many accompanying negative consequences, and the regions themselves often fail to address this effectively. The main reason for the emergence of these differences, not only in the past but also today, is the existence of different possibilities and capabilities of regions to adapt and respond flexibly to new economic and social conditions. (Korec, Polonyová, 2011, p.165) Švecová and Rajčáková (2014) also point to the fact that the democratization process, which we embarked on in 1989 and was accompanied by a transformation in the political, economic, social, cultural and environmental fields, significantly affects the socio-spatial situation in society after 1989. (p. 259) Tvrdon et al. (2007) is based on the assumption that the main causes of regional disparities can be considered the specificity of natural potential, settlement structure, location attractiveness, demographic structure, transport infrastructure, territorial accessibility or economic specialization of regions, and last but not least the influence of territorial - administrative arrangement. In view of the current nature of the growing trends of regional disparities in Slovakia, regional disparities are generally considered an undesirable situation in the process of regional development, which negatively affects their social and economic development, quality of life and regionally polarizes society. (Gajdoš, 2005, p. 116)

However, we must also point out that these regional differences, which can be a source of social tension on the one hand, or can threaten the economic stability of the region, can also be an incentive for the development of the region development disparities. Thus, disparities are generally understood as inequalities or differences. In our paper, we will understand them as differences in the degree of socio-economic development of individual regions of the Slovak Republic. Our analysis focuses on 8 regions according to the NUTS 3 categorization, the observed development represents 10 time periods. An indicator or a group of indicators is a means for us to evaluate a regional or spatial structure and its changes. Indicators for measuring regional development and disparities should meet certain requirements:

- should reflect changes in the level of socio-economic development,
- should be detectable,
- should be optimal for use in analysis.

Therefore, when selecting indicators, we selected indicators that reflect both economic and social aspects of development or lagging regions, which we were able to obtain from official statistics. In order to achieve a more objective assessment of regional structure and development, we chose the unemployment indicator, the average nominal monthly wage indicator, the regional gross domestic product per capita in EUR, the motorway network in km, the number of high school students in the regions, crime in the region.

## **EVALUATION OF REGIONAL DIFFERENCES IN THE CONDITIONS OF THE SR**

Regional disparities can be caused by several economic and non-economic factors. The causes of regional disparities are diverse and thus limit the opportunities for development and growth of regions. We consider the area of household income to be one of the basic factors that significantly affects the emergence of disparities. In table no. 1 we have recorded the development of average nominal wages of employees in individual regions of the Slovak Republic. In the observed period, in all regions of the Slovak Republic, average nominal wages increased by an average of 50% over the last 10 years. The largest increase was in the Trenčín region and the smallest, if we do not take into account the Bratislava region, was in the Košice region.

Based on the sigma convergence indicator, which will be shown in figure 1, we can evaluate the convergence of regions. We speak of convergence if the value of the sigma indicator decreases during the observed period. Based on our analysis, which we performed over the period, it is clear that the value of the sigma convergence indicator calculated from the average nominal wages of employees in individual regions of the Slovak Republic decreased from 0.0655 to 0.0592, which is a 9.61% decrease.

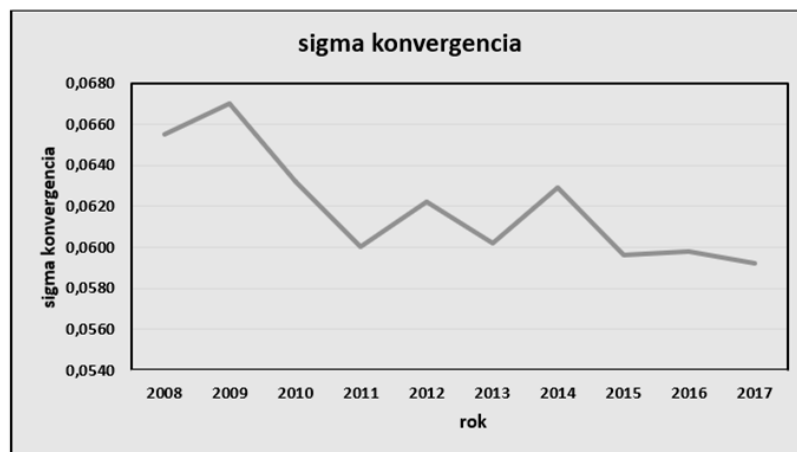
**Table 1.** Average nominal monthly salary of an employee in EUR

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	index
Region of Bratislava	1160	1124	1184	1205	1294	1322	1377	1426	1532	1646	<b>1,41</b>
Region of Trnava	787	815	848	860	900	938	982	1050	1114	1204	<b>1,52</b>
Region of Trenčín	732	774	798	821	872	909	960	1020	1094	1186	<b>1,62</b>
Region of Nitra	707	753	776	789	835	860	915	959	1034	1126	<b>1,59</b>
Region of Žilina	759	801	816	839	877	920	960	1018	1088	1180	<b>1,55</b>
Region of Banská Bystrica	702	756	772	798	845	866	908	940	1023	1113	<b>1,58</b>
Region of Prešov	659	697	718	736	771	800	833	875	928	1025	<b>1,55</b>
Region of Košice	792	848	853	883	925	947	986	1025	1110	1179	<b>1,48</b>

Source: Statistical Office of the Slovak Republic

This means that, in terms of the average nominal wage indicator, there is a gradual convergence of regions. Nevertheless, the lowest value during the whole period is reached by the Banská Bystrica and Prešov regions.

**Figure 1.** Sigma convergence



Source: own processing

The indicator regional gross domestic product per capita expresses to us, although not directly, what is the economic activity of the population in the region, what is the employment in the region, unemployment, or household income. In the period under review, gross regional product per capita grew in individual regions. The largest increase was recorded in the Prešov region, but nevertheless, the achieved gross regional product per capita reaches only 26.7% of the level shown by the most developed region of the Slovak Republic, namely Bratislava. Among other facts, this is also due to the fact that the Prešov region has long had the lowest average nominal wage rate among the regions and also the highest unemployment rate, which is reflected in the amount of total gross regional product. The Prešov region is one of the regions with the highest population.



**Table 2. Regional gross domestic product per capita in EUR**

Regional gross domestic product per capita in EUR											
	index	%	2018	2017	2016	2015	2014	2013	2012	2011	2010
Region of Bratislava	1,24892	24,98	38836	37514	36657	36158	34461	34544	32862	32794	31096
Region of Trnava	1,2924	29,24	17917	16702	16191	15668	15778	15073	15187	14940	13864
Region of Trenčín	1,25928	25,92	13742	12512	12411	12553	12015	11700	12003	11706	10912
Region of Nitra	1,36974	36,97	13769	13293	12572	12200	12029	11805	12189	11135	10052
Region of Žilina	1,26882	26,88	14079	13306	12912	12891	12275	11718	11714	11770	11096
Region of Banská Bystrica	1,31184	31,18	12064	11292	10753	10578	9912	9847	9666	9586	9196
Region of Prešov	1,47194	47,19	10389	9308	9036	8807	8360	8017	8076	7360	7058
Region of Košice	1,33942	33,94	13353	12896	11730	11891	11112	10732	10650	10191	9969

Source: Statistical Office of the Slovak Republic

As Table 3 shows, it has 19.5% more inhabitants than the Bratislava Region. This fact also ultimately affects the amount of regional gross product per capita in the region.

**Table 3. Status of permanent population in the region**

Population density										
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Region of Bratislava	625834	603234	609609,5	615531	621773,5	629227,5	637590	646365	655218	664595
Region of Trnava	562391	554765	556043	557092,5	558142,5	559187	560426,5	561764	562981,5	564254
Region of Trenčín	599018	594320	593672,5	592776,5	591813,5	590584	589375,5	588090	586623	585225,5
Region of Nitra	705193	689937,5	688982	687531	685792	683724,5	681653	679735,5	677682	6754489
Region of Žilina	698009	688948	689861	690270,5	690434,5	690441,5	690606	690900,5	691195,5	691438,5
Region of Banská Bystrica	652800	660559,5	659309	657651,5	656086	654191,5	652266,5	650648,5	648831	646575
Region of Prešov	808532	814706	816594	818149	819446,5	820337	821503,5	823068	824424	825633
Region of Košice	779247	791914	793508	794390,5	795160,5	796107,5	797376,5	798660	799815,5	800937

Source: Statistical Office of the Slovak Republic

Also, in terms of the level of registered unemployment, the Prešov region is the worst together with the Košice region. On the positive side, compared to previous years, the unemployment rate in all regions showed a significant decline and in 2019 reached a historically lowest level. The lowest unemployment rates have long been in the Bratislava and Trnava regions.

**Table 4. Registered unemployment rate in %**

Registered unemployment rate (in %)											
	index	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Region of Bratislava	0,6112	2,83	2,62	3,05	4,51	5,34	6,13	6,17	5,72	5,41	4,63
Region of Trnava	0,3219	2,63	2,31	2,6	4,41	6,71	8,03	9,16	9,43	8,88	8,17
Region of Trenčín	0,3365	3,2	2,93	3,53	5,85	7,71	9,56	10,74	10,89	9,95	9,51
Region of Nitra	0,2491	2,93	3,12	4,05	6,96	9,71	11,21	12,52	14,08	13,27	11,76
Region of Žilina	0,3646	3,96	4,04	4,7	6,92	8,86	10,91	12,51	12,79	11,91	10,86
Region of Banská Bystrica	0,3547	6,69	7,03	8,67	12,8	14,94	17,22	18,26	20,81	19,83	18,86

Region of Prešov	0,4614	8,19	8,61	9,68	13,91	15,5	17,45	19,35	20,66	18,95	17,75
Region of Košice	0,4511	7,57	8,17	9,94	12,76	14,39	15,92	17,23	19,58	18,76	16,78

Source: Statistical Office of the Slovak Republic

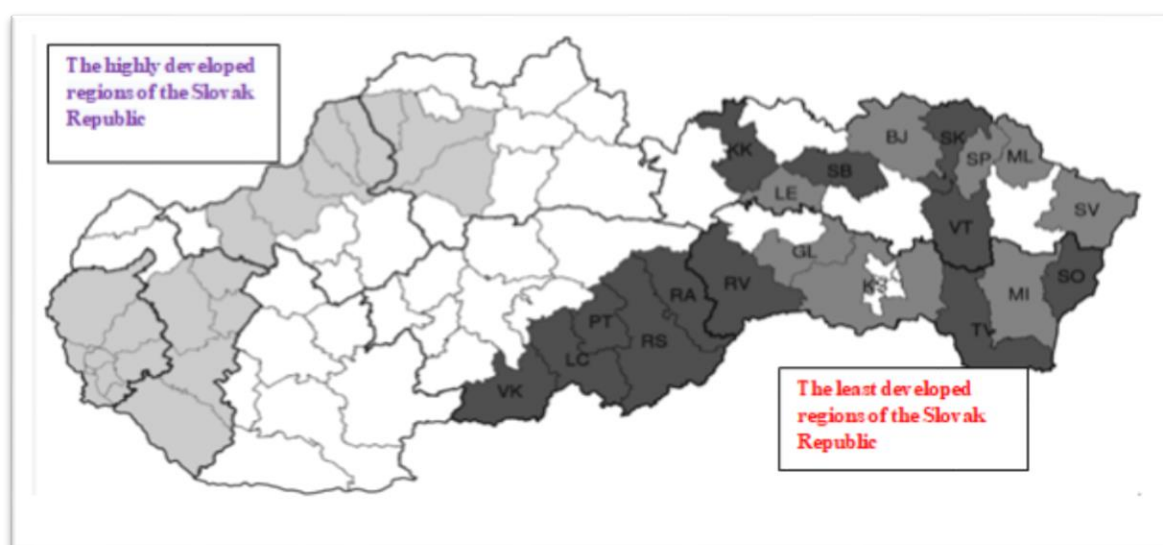
A very important part of the evaluation of the development of the region is also the level of the educational process. The results of the education system in the region and the degree of lagging behind in the region are strongly linked. Given the high rate of intergenerational reproduction of educational outcomes as well as the educational structure of long-term unemployed jobseekers, it can be argued that the educational outcomes of pupils in the regions largely predict the future unemployment rate in the region. From the point of view of the forecast of the development of a specific area, it can be said that the overall results of children's education are an important indicator determining the unemployment rate in the region in the future.

**Table 5.** Number of secondary vocational school students

Number of secondary vocational school students													
	index	%	abs. val.	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Region of Bratislava	0,781	-21,91	-2994	10670	10336	10336	10383	10426	10658	10847	11537	12437	13664
Region of Trnava	0,675	-32,51	-4793	9952	10239	10630	10957	11378	11748	12263	12923	13871	14745
Region of Trenčín	0,565	-43,5	-8796	11423	11945	12516	13196	14049	14857	15754	17264	19035	20219
Region of Nitra	0,644	-35,62	-7818	14130	14708	15243	16202	16661	16996	17812	18891	20568	21948
Region of Žilina	0,635	-36,47	-9005	15689	16336	17012	17729	18784	19456	20436	21721	23152	24694
Region of Banská Bystrica	0,69	-30,97	-5551	12374	12983	13337	13567	13900	14388	15007	15760	16803	17925
Region of Prešov	0,635	-36,54	-9210	15995	16650	17531	17931	18618	19439	20324	21914	23334	25205
Region of Košice	0,676	-32,36	-7124	14889	15161	15922	16943	17457	17995	18211	19141	20179	22013

Source: Statistical Office of the Slovak Republic

**Figure 2.** Map of the least developed regions of the Slovak Republic



In addition to economic, regional disparities also have social and political consequences. Because disparities prevent the achievement of sufficient economic growth within the region,

production is reduced and available resources are not used efficiently. Differences in living standards cause dissatisfaction and outrage in the population of the regions, higher crime rates and social exclusion in regions with high unemployment, which also has political consequences. Increasing criminality also brings with it an increase in the costs associated with its suppression or prevention.

Disparities cause problems not only in lagging regions, but also in developed regions. In fast-growing regions, economic costs are rising due to growing demand for infrastructure and public goods. Disparities also cause inflationary pressures. These arise in regions with intense competition in the field of skilled labor, which occurs mainly in times of expansion and results in wage growth. High wages cause an increase in demand for apartments and this leads to an increase in apartment prices. Regional disparities can then also increase because high housing costs become a barrier to, for example, population (labor) immigration.

The causes of regional disparities are therefore diverse. This may be the different equipment of regions with production factors (labor, capital, technology), insufficient or irrational use of production factors, differences in economic structure of regions, social capital, relatively low mobility of labor and capital, differences in demand for regional products, different consumption habits, different ability to create innovations, different geographical, natural and historical conditions, different geographical size of regions, demographic characteristics and differences in educational level, chance or historical event, different political and institutional factors, traditions, differences in culture, etc. And these facts caused in the conditions of the Slovak Republic a differentiated development of regional structures of the Slovak Republic, as we can see on the map in Figure 2.

## CONCLUSION

In conclusion, we can state that regional disparities are basically reflected in the uneven development of regions. This is a fact that causes inequalities in social, economic and living conditions of the inhabitants of individual regions of the Slovak Republic. Deepening and non-resolution of regional disparities can lead to the formation of marginal regions, with all the signs of lagging behind in the economic and social area and to the formation of the so-called regions of poverty. Already today, there are 27.7% of districts in Slovakia, which are referred to as the least developed regions of the so-called regions of poverty. These regions occupy one fifth of the area of the territory of the Slovak Republic, which is really a large share of the territory, which lags significantly behind other areas of the Slovak Republic. 12 districts, which are referred to as poverty regions, are located in the Prešov region, six are in the Košice region and five in the Banská Bystrica region. The lag of these regions was also confirmed by the analysis of selected economic indicators.

## REFERENCES

- Baštová, M., Hubáčková, V., Frantál, B. (2011) Interregional differences in the Czech Republic, 2000-2008. Moravian Geographical Reports, Brno: Novpress, roč. 19. č. 1, s. 2-16
- Gajdoš, P. (2005) Diferenciácia regionálneho rozvoja Slovenska a jej sociálno-priestorové súvislosti a dopady. In: New members – new challenges for the European regional development policy. Košice, EF

- Goschin, Z., Constantin, D., Roman, M., Ileanu, B. (2008). The Current State and Dynamics of Regional Disparities in Romania. In *Romanian Journal of Regional Science*, Vol. 1, No. 2, s. 80-105.
- Habánik, J. a kol. (2014) *Regionálna ekonomika a regionálny rozvoj*. TnUAD Trenčín, 245 s.
- Hučka, M., Kern, J., Kutscherauerer, A., Malinovský, J., Sucháček, J., Tománek, P. (2008) *Vznik regionálních disparit, jejich pojetí, charakteristika a klasifikace (studie)*. Ekonomická fakulta Vysoké školy báňské – Technické Univerzity Ostrava. [http://disparity.vsb.cz/vysledky/03\\_studie\\_du2.pdf](http://disparity.vsb.cz/vysledky/03_studie_du2.pdf)
- Korec, P., Polonyová, E. (2011) *Zaostávajúce regióny Slovenska – pokus o identifikáciu a poukázanie na príčiny*. In: *ACTA GEOGRAPHICA UNIVERSITATIS COMENIANAE*, Vol. 55, 2011, No. 2, pp. 165-190
- Matlovič, R., Matlovičová, K. (2011) *Regionálne disparity a ich riešenie na Slovensku v rozličných kontextoch* In: *Folia geographica*. Roč. LIII, č. 18, PU Prešov, s. 8-87
- Michaeli, E., Matlovič, R., Ištók, Klamár, R., Hofierka, J., Mintálová, T., Mitříková, J. (2010). *Regionálny rozvoj pre geografov*. Prešov: Prešovská univerzita v Prešove, 717 s.
- Švecová, A., Rajčáková, E. (2014) *Regionálne disparity v sociálno-ekonomickej úrovni regiónov Slovenska v rokoch 2001-2013*. In: *Regionálne dimenzie Slovenska*. Univerzita Komenského v Bratislave.
- Tvrdoň, J., Kmecová, Z. (2007): *Dimenzia hospodárska - typológia regiónov.: Regionálna diferenciácia, regionálny rozvoj v Slovenskej republike v kontexte integračných dosahov*. Bratislava: Sociologický ústav SAV, s. 67–81.
- Výrostková, E.: *Regionálna ekonomika a rozvoj*, Bratislava: Iura Edition, 2010, 352 s. <http://datacube.statistics.sk/>



# INFORMATION AND CONSULTANCY CENTRES IN SLOVAKIA – PROMOTING PARTNERSHIP IN COHESION POLICY

Igor Jašurek<sup>1</sup>

DOI: <https://doi.org/10.31410/LIMEN.2020.141>

---

**Abstract:** *Implementation of cohesion policy, as the major EU budgetary chapter, is subject to vast scholarship. Therefore, surprisingly enough, the principal-agent (P-A) framework has received little recognition in this academic field so far. The present paper contributes to the expansion of this increasingly popular approach also into cohesion scholarship by examining the operation of Information and Consultancy Centres (ICC) in Slovakia. The major finding shows limits of the P-A framework by suggesting that instead of a mutual conflict, it is a cooperative mode dominantly shaping dynamics of P-A relations due to the shared goals and interests. ICC operations and relations with the Government are interpreted via observational equivalence and ceremonialism as the recognized P-A framework tools.*

**Keywords:** *ICC, Principal, Agent, Uncertainty costs, Observational equivalence, Ceremonialism.*

---

## INTRODUCTION

This paper attempts to expand the scope of studying micro-delegation (Delreux and Adriaensen, 2017) meaning P-A relations under an individual EU policy area such as cohesion policy. Thus, the paper contributes to the limited scholarship employing the P-A framework in cohesion policy which by now focuses mostly on control mechanisms in implementation (Blom-hansen, 2005; Bachtler and Ferry, 2013). In this research, an alternative perspective on dynamics of P-A relations is adopted. Instead of being conflict propelled, the paper explains why partnership prevails in the P-A relations. By adopting this perspective, the paper also reveals methodological pitfalls of the P-A framework. On top of that, using the primary sources only, constituting of official releases from the ICC and the Government, sets methodological limits on the scope of the study as it leaves aside a broader portfolio of stakeholders who may be a source of valuable inputs on the P-A relations examined by means of e. g. qualitative methods such as structured interviews or surveys. Nevertheless, the paper presents a consistent analysis of the ICC operations via the P-A framework with noteworthy findings relevant for studying the limits of the P-A framework. The major finding of the paper suggests that the cooperative mode between the ICC and the Government dominantly shapes the dynamics of the P-A relations rather than their mutual conflict. This is due to the shared goals and interests between the ICC as the agent and the Government as the principal which are determined by the political context. P-A relations are interpreted through the recognized P-A framework tools of observational equivalence and ceremonialism. Cooperation between the principal and the agent fosters mutual partnership ties which are in the end beneficial for both actors. The paper is structured as follows. The first part outlines the application limits of the partnership principle. The second part introduces the theoretical foundations of the P-A framework. In the third part, major aspects of ICC operations are depicted in order to interpret

---

<sup>1</sup> Faculty of National Economy of the University of Economics in Bratislava, Dolnozemska cesta 1 852 35, Slovakia



them via the P-A framework in the fourth part. The concluding fifth part summarizes the main arguments and methodological limitations.

## **APPLICATION LIMITS OF THE PARTNERSHIP PRINCIPLE**

The partnership is one of the founding principles in cohesion policy since its birth in 1988. By providing an organisational platform for engaging different stakeholders in programming and implementation, partnership touches the heart of cohesion policy. Barca in his Report for the European Commission (2009) tellingly expresses this idea when regarded partnership a vehicle for mobilisation of public and private actors' expertise and experience (p. 100). Thus unsurprisingly, partnership is "an idea whose time has come" (Bache, 2010, p. 58). Yet, its application significantly varies across the EU and has become subject to recurrent criticism. Despite its increasing importance over decades and strengthening its institutionalisation (Bachtler and McMaster 2009), partnership suffers of "mistrust and misgivings among the involved actors about the perceived strategies of the administrative and societal partners" (Bauer, 2002 p. 783). This is for example a consequence of the undeveloped accountability of non-state actors for different implementation phases as well as the Commission limited advocacy role on behalf of a more active pursuit of partnership (Polverari and Michie, 2009). Consequently, control over implementation is left at discretion of member states excelling in their gatekeeping role (Bache, 1999). And this has not changed much with the last cohesion reform in 2013 which on one hand brings substantial reinforcement of the principle of partnership being binding for overall programming exercise including preparations of operational programmes and partnership agreements. And on the other hand, the partnership is regulated by means of the Commission regulation (Commission Delegated Regulation, 2014). However, the Commission falls short of devising its regulatory control mechanisms to monitor an application of partnership which again leaves room for member states and their individual approaches in pursuit of partnership without pressures from the Commission. At the same time, there is wide room for exploring the untapped potential for advancing partnership in different national and subnational contexts.

As the principle of partnership is applicable across hierarchically organized patterns of cooperation, the ICC as means to apply partnership are particularly interesting subject to study relations in a public policy environment. First of all, it is however necessary to explain the rationale for employing the P-A framework as a convenient analytical tool to examine ICC. Even more so in the light of the fact that the P-A framework, though not completely new to cohesion policy, is far from being a conventional tool in studying this major chapter in the EU budget. The following part outlines the main characteristics of the P-A framework relevant for the present analysis of the ICC operation.

## **P-A FRAMEWORK**

The P-A framework origins in microeconomics exploring hierarchical relations between firm owners (principals) and managers (agents) in ensuring that the pursuit of the former's interest represents the highest operational imperative for the latter. This premise stemming from a dyadic relation relying on the acts of delegation and its subsequent control then gives rise to the scholarship applying the framework also in studying public administration (Shavell, 1979; Moe, 1984; Perrow, 1986) and US congressional politics in particular (McCubbins and Schwartz, 1984; Epstein and O'Halloran). With Pollack's seminal work (1997), the P-A framework also enters the field of EU studies and integration theories demonstrating promises and shortcomings in interpreting policy making at the European level (Kassim and Menon,

2003). Taken from this perspective, it is somewhat surprising that the P-A framework has so far found a limited employment in the area of cohesion policy as the major chapter in the EU budget. As already noted, the existing accounts focus on control mechanisms in implementation (Blom-hansen, 2005; Bachtler and Ferry, 2013).

As stated above, delegation and control are the building components of the P-A framework. Hierarchy presents a basis for a functional interpretation of a dyadic relation through a formal contract and its tools. In this way, the P-A framework is rather theory-neutral (Dür and Elsig, 2011, p. 331). The primary reason for delegation is principal's lacking capacity to carry out specific tasks. Therefore, the principal authorizes the agent to engage in these tasks at his own discretion. Taken from this perspective, the principal plays an entrepreneurial role as he has authority to establish a service provider (agent) and delegate specific tasks upon him.

Traditionally, the P-A approach assumes that principal's lacking performance capacity as a reason for delegation translates into his disadvantage. Simply, the agent has more task specific information resulting in an information asymmetry, at the expense of the principal. Therefore, the principal has to devise mechanisms to control agent's potentially excessive arbitrary or opportunistic behaviour. Derails in agency is called agency loss (Pollack, 1997), slack (Delreux and Adriaensen, 2017) or shirking (Kassim and Menon, 2003). Inevitably, cost incurred to put in place efficient control mechanisms shall not override benefits of delegation for the principal. Therefore, the principal has to properly balance efficiency of control mechanisms to minimize agent's opportunistic behaviour and overall cost of agency.

Little attention is, however, paid to the fact that actually both, principal and agent, are opportunity seekers and rational utility maximisers (Sobol, 2015). This means that as much as the agent act opportunistically, the principal can also be calculative. Such complexity in their relations was addressed already by Perrow (1986) who tellingly noted that P-A theorists "almost invariably assume that it is the agent that is opportunistic, even to the point of cheating, rather than the principal" (p. 14). This does not necessarily lead to "pathological delegation" where the agent is hindered by the inimical principal (Sobol, 2015). More importantly, agency and dynamics of P-A relations often takes place in the context which is highly political, a point though underappreciated, is already addressed elsewhere (Hawkins and Jacoby, 2009). Therefore, results of agency are at best difficult to predict or in the worst-case scenario, they come with high political costs. Furthermore, through delegating new agency, the principal incurs also uncertainty costs (Hawkins and Jacoby, 2009) expressing burden of unfamiliarity with the new agent whose operational skills are unknown to the principal at the start of agency as is also efficiency of established control mechanisms. Such uncertainty is, however, also on the part of the agent who may not be sufficiently familiar with principal's intentions and motivations as well as with his managerial skills. Public administration is particularly exposed to these dilemmas and their impacts. Thus, both actors share uncertainty costs, notably in the form of a reputation risk. Therefore, both aim at reducing such risk. To launch a reformed measure in public administration, such as the ICC operation is an opportunity as much as a risk in the P-A relations. As the paper shows, the P-A ultimate strategy is maximisation of the former and reduction of the latter and this is the point where interests of the principal and the agent meet and align. This is a subject of the part interpreting the ICC operation via P-A framework. Let's first depict the aspects of ICC operations.

## ICC IN SLOVAKIA

Established in 2016, the ICC addresses the issues of visibility and awareness of EU funding opportunities at the regional level by providing free of charge consultancy and information dissemination. The aim is to encourage new applications for grants and to increase the number of approved projects and thus further stimulate territorial development. Their operation is financed from national technical assistance. Before going any further, it is important to note why the issue of the ICC operation is a relevant subject to study. There is not only an obvious explanation linking EU funding opportunities to territorial development. More importantly, this is a domain of public policy which even demonstrates a continuation over political cycles. Founded in 2016, the ICC have not only survived the changing government representations after the general elections in 2020. The agenda of free-of-charge territorial-based consultancy and targeted information dissemination on EU funding gains new momentum. The government in its Manifesto commits to engage the already existing infrastructure of information-consultancy centres into consultancy and project preparation (Programové vyhlásenie – Manifesto, 2020). This signals that willingness of the newly formed Government to continue with the ICC operation is a politically convenient approach with a perceived positive impact on public attitudes.

Foundation of the ICC was initiated in 2016 by the Deputy Prime Minister's Office for Investments and Informatization (DPMO) responsible for the overall coordination of programming and implementation of the EU funds in Slovakia. The decision was partially motivated by the results from the assessment of administrative burden among applicants and beneficiaries of the EU funds as part of national ex post evaluation of the 2007-13 programming period (Zhodnotenie administratívnej záťaže -Assessing administrative burden, 2013). The results e.g. show that potential applicants are discouraged by overgeneralized nature of otherwise easily accessible information lacking also more practical value. At the same time, applicants would also appreciate more personalized consultation services including workshops on calls for grant applications. Having in mind these results, DPMO coordinates municipalities in founding the ICC at the level of 7 regional seats and 1 district seat. Municipalities offer own premises for the ICC operation. As founders, they are also held accountable for ICC staffing (4 employees per Centre), material resourcing and overall operation. ICC foundation is based on the legally binding partnership contracts between the DPMO and the individual regional or district municipalities laying down coordination responsibilities (DPMO) and delegated responsibilities (municipality). As already noted, all operational costs are covered from the EU funds.

DPMO regulates the ICC operation straight from the beginning by means of the Guidance (Metodický pokyn č. 25 – Methodology Guidance no. 25, 2019). It determines ICC establishment in terms of staff selection procedures and its publicity as well as listing activities and their monitoring. Guidance also stipulates a framework of cooperation between the ICC and the Managing Authorities in order to ensure a smooth conduct of ICC activities. At the same time, the Guidance lays down the ICC responsibilities towards their coordinator, DPMO, notably biannual reporting on their activities in the prescribed format. ICC reports typically include summarization of their information dissemination and consultancy activities, campaigns, workshops and seminars, cooperation with the implementation bodies and publicity. On top of that, the ICC also collect and analyse feedback from all clients and stakeholders on improving their services.

Based on the ICC Reports and clients' and stakeholders' feedback, DPMO regularly reviews the ICC operation in terms of activities conducted and costs incurred. Importantly, the ICC was initiated as the pilot project for the period up until the end of 2018 (Metodický pokyn č. 25 – Methodology Guidance no. 25, 2018). During this period project had to demonstrate fulfillment of the two formal criteria. First, meeting the value of the measurable indicator expressed as the total number, six founded ICC (Zmluva o poskytnutí č. 750/2016 – Grant Award Agreement no. 750/2016) and the second, reported stakeholders' positive feedback representing ESIF management and implementation bodies as well as ICC clients. Only then, the contract is renewed for the period up until the end of the programming period in 2023 (Zmluva o poskytnutí č. 1311/2019 – Grant Award Agreement no. 1311/2019).

On top of monitoring the ICC activities via their reports, DPMO is entitled to terminate operations of any ICC in the following instances (Methodology Guidance no. 25, 2019):

- if at least half of the Managing Authorities or ICC clients formally express their dissatisfaction in regular surveys or biannual reports;
- ICC has no employees for the period exceeding one month;
- a given municipality hinders its ICC operation e.g. by disabling trainings for staff or it does not create a dedicated website;
- ICC does not follow DPMO Guidance even after receiving an email notification from the DPMO urging compliance.

As Table 1 shows, the ICC demonstrates measurable activities representing quantifiable results between July 2016 and June 2020. These figures enable some interesting findings. Firstly, the ICC does not spend as much as they are entitled. This shows that the budget does constrain ICC operations and they can quite easily provide their service portfolio within the given financial limits. Secondly, their activities combine the reception of clients and office work (expressed as consultations and emails in Table 1) in their premises and off-the-premises (to some extent expressed as workshops and contacts in Table 1). It is however difficult to determine which of the two types of activities (if any at all) has a decisive impact on submission of grant applications and their successful awarding. Thirdly, even though, there is no fact-proven direct linkage between services provided on one side and submission of grant applications and their awarding on the other side, it is certainly an interesting fact of a relatively high percentage rate of grant awards linked to applications which were preceded by consultations in the ICC.

**Table 1.** July 2016 - June 2020 report

Type of indicator	Value
Number of consultations	6508
Number of contacts acquired	4716
Number of workshops conducted	16931
Efficiency (expressed as % of total available running costs needed to ensure full operation)	65%
Number of emails sent aimed at information dissemination	2805
Number of grant applications from clients	3509
Percentage of successful applications	<70%

**Source:** Sumárna správa [Summary Report], 2020

## INTERPRETING ICC VIA THE P-A FRAMEWORK

As stated in the previous part, improving visibility and awareness of EU funding opportunities at regional level constitutes a legitimate ground for identifying a proper improvement measure on the part of the state administration such as founding the ICC. Two important findings can be derived here with an impact on the P-A relations. Firstly, there are no pre-existing public services and organisational structures to address identified gaps. This means a brand-new solution should have been devised. An obvious Government ambition is to launch a project which shows to be successful in terms of providing a change. At a minimum, this means setting up services which in the eyes of stakeholders demonstrate some relevance. Secondly, EU funds are a synonym for successful EU membership. Thus, the EU grants have a direct impact on citizens' perceived quality of membership and formation of pro-European sentiments. Both phenomena, funds absorption and pro-EU sentiments are politically sensitive falling under the Government's responsibility which obviously seeks solutions to achieve both.

The Government attempts its best to stimulate new grant applications and increase their awarding by creating necessary institutional arrangements such as founding the ICC. However, even with reported stakeholders' positive recognition of the ICC services, there is currently no evidence that an increase in applications and their awards is in hands of the Government/ICC. This means that even if the Government does hypothetically everything correctly, fund absorption and pro-EU sentiments may not have a corresponding increase as there is no direct correlation demonstrated so far. Conversely, without ICC, absorption and pro-EU sentiments may not decline. A politically sensitive context is an unavoidable fact determining Government actions as the principal. Similarly, ICC as the agent, being also a public administration actor, is also familiar with this context. Both are thus facing uncertainty costs in the form of reputation risk as outlined before. This perspective sheds new light on the P-A relations.

Traditionally, delegation and control as the building components predetermine P-A interactions. The principal delegates and to minimize negative consequences of information asymmetry and consequent agency slack, he also puts in place control mechanisms including punitive means to intimidate the agent including a threat of a withdrawal of the delegation mandate. Thus, dynamics of P-A relations is built around a permanent tension stemming from their divergent interests and mutual distrust. To demonstrate control system's efficiency, there are instances of activating punitive mechanisms. The contrary is traditionally interpreted as agent's extraordinary autonomy or a nearly perfect control system. As Epstein and O' Halloran (1999) put it in case of the latter: "If the mere threat of [principal] retaliation is enough to cow [...] agents into submission, then these agents will never step out of line and [principals] need never impose any overt sanctions. Thus, the traditional tools of control may be so effective that they are never actually used" (p.24). However, neither of the two (agent's extraordinary autonomy or a nearly perfect principal's control system) can explain rather a smooth ICC operation.

There are two possible and mutually reinforcing interpretations for rather non-conflicting P-A relations stemming from the above outlined political context and the shared P-A interest to minimise uncertainty costs. Firstly, leaving punitive means aside does not necessarily represent their sufficiently deterring nature or principal's passivity/agent's autonomy. Instead, it may show agent's skill to anticipate principal's interest. For example, Table 1 shows operational efficiency meaning ICC can do much more with spending much less while achieving still increasing overall stakeholders' satisfaction (Sumárna správa - Summary Report, 2019, p. 15). So, even if direct oversight mechanisms also called "police patrol" (McCubbins and Schwartz



1984) are in place, due to converging interests the agent acts in unison with the principal's goals. Such situation is referred in the P-A scholarship as observational equivalence (Pollack, 2002; Damro, 2007; Delreux and Adriaensen, 2017). A reply to the obvious questions how specifically is observational equivalence manifested in our context constitutes the second interpretation of the non-conflicting P-A relations.

As depicted in the previous part, the ICC bindingly report on the set of indicators, however with no predefined values. This means that the ICC reports more on activities than on results. The actual achievements (specific values of indicators) thus are solely a result of the ICC individual and unregulated performance while the interpretation of their performance is the Government's unique competence as the principal and this exercise is inevitably subjective. As both public administration actors' function in a highly political context, they mutually align their goals. Their shared interest is to minimize uncertainty costs meaning not to jeopardize their reputation. Thus, instead of conflict over reporting and its evaluation, the agent and the principal opt for cooperation based on a tacit agreement with the steps of the other actor provided stakeholders' feedback remains positive. Thus, agent's reporting as well as principal's monitoring and evaluation show to be guided by ceremonialism. The P-A scholarship associates ceremonialism with agent's strategy of resisting principal's monitoring (Hawkins and Jacoby, 2009). However, with the shared goals and a common reputation securing strategy, ceremonialism can well explain also principal's conduct. Importantly, ceremonialism does not necessarily infer (though it may) that the P-A performance is merely guided by sheer and superficial formalism. Instead, a prevailing mutual cooperative mode in the P-A relations is an underlying motive, shaping dynamics of their interactions with beneficial effects for both.

Observational equivalence and ceremonialism show that the overall political context is decisive for dynamics of the P-A relations. In the end, however, a missing mutual conflict is not detrimental to the mission of stimulating a grass-rooted EU funds consultancy and information dissemination. Instead, a cooperative mode contributes to fostering partnership ties between the state and municipal actors which are in the end beneficial for both. Their cooperation enables them to minimize uncertainty costs, notably their individual reputation risk and achieve stakeholder's satisfaction. Evidence of the success of this strategy is the formalized Government's commitment to continue with the territorial consultancy and information dissemination services also in years to come.

## CONCLUSION

The paper presents a consistent analysis of the ICC operations via the P-A framework with noteworthy findings relevant for studying the limits of the P-A framework. The major finding of the paper suggests that the cooperative mode between the ICC and the Government dominantly shapes the dynamics of the P-A relations rather than their mutual conflict. In this respect, observational equivalence and ceremonialism are the two underlying interpretative tools providing explanations for understanding the P-A concerted relation. However, these tools have a limited explanatory power in the paper. The reason is that they address dynamics of the P-A relations as only being determined by the overall political context. This is on the one hand necessary, and on the other, it limits the scope of the research on official releases of both actors. Then we know little how their interactions are shaped notably by a broader portfolio of stakeholders. Such a methodological pitfall can only be addressed by generating additional data from stakeholders through qualitative research methods as structured interviews or questionnaires. Furthermore, interpreting P-A concerted relations stemming from the shared



goals and interests as determined by the political context shows also limits of the P-A framework to provide more in-depth functional analysis of public administration. Similarly, such an analysis, going beyond the official releases, would also enable to examine the ICC as a collective rather than unitary agent as is the case of the present paper.

## ACKNOWLEDGEMENT

“This contribution was supported by VEGA grant no. 1/0605/19.”

## REFERENCES

- Bache, I. (1999). The extended gatekeeper: Central government and the implementation of EC regional policy in the UK. *Journal of European Public Policy*, 6(1), 28-45.
- Bache, I. (2010). Partnership as an EU policy instrument: A political history. *West European Politics*, 33(1), 58-74.
- Bachtler, J. and McMaster, I. (2008). EU cohesion policy and the role of the regions: investigating the influence of structural funds in the new member states. *Environment and Planning, C* 26(2), 398-427.
- Bachtler, J. and Ferry, M. (2013). Conditionalities and the performance of European structural funds: A principal-agent analysis of control mechanisms in European Union cohesion policy. *Regional studies*, (49)8, 1258-1273.
- Barca, F. (2009). An agenda for a reformed cohesion policy. A place-based approach to meeting European Union challenges and expectations. Independent report prepared at the request of Danuta Hübner, Commissioner for Regional Policy, Brussels.
- Bauer, M. (2002). The EU “partnership principle”: still a sustainable governance device across multiple administrative arenas? *Public Administration*, 80(4), 769-89.
- Blom-hansen, J. (2005). Principals, agents, and the implementation of EU cohesion policy. *Journal of European Public Policy*, 12(4), 624-648.
- Commission Delegated Regulation (EU) No 240/2014 on the European code of conduct on partnership in the framework of the European structural and investment funds. Official Journal of the European Union.
- Damro, C. (2007). EU delegation and agency in international trade negotiations: A cautionary comparison. *Journal of Common Market Studies*, 45(4), 883-903.
- Delreux, T. and Adriaensen, J. (2017). Introduction. Use and limitations of the principal-agent model in studying the European Union. In T. Delreux and J. Adriaensen (Eds.) *The Principal Agent Model and the European Union*. (pp. 1-34). Cham: Palgrave Macmillan, Palgrave Studies in European Union Series. <https://doi.org/10.1007/978-3-319-55137-1>
- Dür, A. and Elsig, M. (2011). Principals, agents, and the European Union’s foreign economic policies. *Journal of European Public Policy*, (18)3, 323-338
- Epstein, D. and O’Halloran, S. (1994). Administrative procedures, information, and agency discretion. *American Journal of Political Science*, 38(3), 697-722.
- Hawkins, G. D. and Jacoby, W. (2009). How agents matter. In D. G. Hawkins, D. A. Lake, D. L. Nielson, and M. J. Tierney (Eds.) *Delegation and Agency in International Organizations*. Cambridge: Cambridge University Press. <https://doi.org/10.1017/CBO9780511491368>
- Kassim, H. and Menon A. (2003). The principal-agent approach and the study of the European Union: promise unfulfilled? *Journal of European Public Policy*. 10(1), 121-139.
- Metodický Pokyn č. 25, verzia 3 (2018) [Methodology Guidance no. 25, version 3]. Centrálny koordinačný orgán, c, Bratislava.

- Metodický Pokyn č. 25, verzia 4 (2019) [Methodology Guidance no. 25, version 4]. Centrálny koordinačný orgán, Úrad podpredsedu vlády SR pre investície a informatizáciu, Bratislava.
- McCubbins, M. D. and Schwartz, T. (1984). Congressional oversight overlooked: police patrols versus fire alarms. *American Journal of Political Science*, 28, 165-179.
- Moe, T. (1984). The New Economics of Organization. *American Journal of Political Science*, 28 (4), 739-777.
- Perrow, C. (1986). Economic theories of organization. *Theory and Society*, 15, 11-45.
- Pollack, M. A. (1997). Delegation, Agency, and agenda setting in the European Community. *International Organisation*, 51 (1), 99-134
- Pollack, M. (2002). Learning from the Americanists (again): Theory and method in the study of delegation. *West European Politics*, 25(1), 200–219.
- Polverari, L. and Michie, R. (2009). New partnership dynamics in a changing cohesion policy context. *IQ-Net Thematic Paper*, 25(2), 1-86.
- Programové vyhlásenie vlády Slovenskej republiky na obdobie rokov 2020 – 2024, Uznesenie vlády č. 239/2020. (2020) [Manifesto of the Government of the Slovak Republic 2016-2020, Government Resolution No. 239/2020].
- Shavel, S. (1979). Sharing and incentives in the principal and agent relationship. *The Bell Journal of Economics*. 10(1), 55-73.
- Sobol, M. (2015). Principal–agent analysis and pathological delegation: The (almost) untold story. *Governance: An International Journal of Policy, Administration, and Institutions*. (29)3, 335-350
- Sumárna Správa o Činnosti Informačno-poradenských Centier za obdobie od 1.7. do 31.12.2019 (2019). [Summary report on activities of Information and Consultancy Centres between 1 July and 31 December 2019]. Úrad podpredsedu vlády SR pre investície a informatizáciu, Bratislava
- Sumárna Správa o Činnosti Informačno-poradenských Centier za obdobie od 1.1. do 30.6.2020 (2020). [Summary report on activities of Information and Consultancy Centres between 1 January and 30 June 2020]. Ministerstvo investícií, regionálneho rozvoja a informatizácie SR, Bratislava.
- Zhodnotenie Administratívnej Zátáže na Strane Žiadateľov a Prijímateľov v Procese Implementácie Pomoci z Fondov EÚ v Programovom Období 2007-2013. (2013). [Assessing Administrative Burden on the Part of Applicants and Beneficiaries in the Process of Implementing EU Funds in the Programming Period 2007-2013]. Úrad vlády SR, Bratislava.
- Zmluva o Poskytnutí Nennávratného Finančného Príspevku č. 750/2016 (2016). [Grant Award Agreement no. 750/2016] [https://www.crz.gov.sk/data/att/2593386\\_dokument1.pdf](https://www.crz.gov.sk/data/att/2593386_dokument1.pdf)
- Zmluva o Poskytnutí Nennávratného Finančného Príspevku č. 1311/2019 (2019). [Grant Award Agreement no. 1311/2019] [https://www.crz.gov.sk/data/att/4371853\\_dokument1.pdf](https://www.crz.gov.sk/data/att/4371853_dokument1.pdf)



# A REVIEW OF PLATFORM CORPORATE GOVERNANCE IN THE DIGITAL ECONOMY AGE

Jianxin Ge<sup>1</sup>   
Cong Li<sup>2</sup> 

DOI: <https://doi.org/10.31410/LIMEN.2020.151>

**Abstract:** *The development of the digital economy has given rise to a new industry structure. Many platform corporates (such as Facebook, Amazon, Uber and Alibaba) have emerged around the world with rapid development, strong momentum and service innovation. With the help of Internet digital technology, platform corporates promote the commonality and integration of resources and value co-creation among the subjects connected by the platform. At the same time, the operation of the platform has also caused hot issues such as "data disputes among platforms", "the responsibility boundary of platform corporates is difficult to determine" and "the platform mode challenges the traditional anti-monopoly restrictions". Therefore, it is very important to promote the research on platform corporate governance. This paper systematically reviews the important literature on platform governance in the Web of Science database. Firstly, it states the connotation of platform corporate and platform governance. Then, it expounds on the main viewpoints of platform enterprise governance from three aspects: governance body, governance system and governance mechanism. Finally, it analyzes and summarizes the characteristics of platform corporate governance, which are multiple subjectivities, the openness of boundary, dynamic relationship and ambiguity of rights and responsibilities, points out the existing problems of platform corporate governance, and provides guidance for the practice of platform corporate governance in the future.*

**Keywords:** *Digital economy, Platform corporate, Platform governance, Decentralization governance.*

## INTRODUCTION

As mobile Internet, cloud computing, big data, a new generation of information technology such as artificial intelligence technology rapid development and economic digital levels rising, the new type of economic form of "digital economy" into people's horizons, become a leading science and technology revolution and industrial revolution, promote the important engine of economic development (Kenney & Zysman, 2016; Adamik & Nowicki, 2018; Lee, Malerba, & Primi, 2020), and even become a new trend in the global transition from the industrial economy to the digital economy (Kovacs, 2018), as well as a core force influencing the global competitive landscape (Liang Zheng & Li Rui, 2020). Early scholars did not give a clear explanation of the concept of the digital economy, which can be traced back to its multifaceted, dynamic and transformative power of digital technology (Kannan & Kopalle, 2001; Kim, Barua, & Whinston, 2002; Hanseth & Lyytinen, 2010; Makridakis, 2017). In 2016, in the G20 digital economy development and cooperation initiative, the digital economy is defined as, "to use digital as a key factor of knowledge and information, with modern information network as the important carrier, with the effective use

<sup>1</sup> Central University of Finance and Economics, Beijing 100081, China

<sup>2</sup> Central University of Finance and Economics, Beijing 100081, China

of information communication technology as an important driver of efficiency improvement and optimization of the economic structure of a series of economic activities".

The development of the digital economy has spawned a new industry structure (Yoo, Henfridsson, & Lyytinen, 2010; Ayres& Williams,2004). Driven by the market trend, a large number of platform corporates with rapid development, strong momentum and service innovation have mushroomed in the international market (De Reuver, Sorensen,& Basole,2018; Lehdonvirta et al., 2019), such as Facebook, Amazon, Uber, Alibaba, Tencent, etc., have subverted and reshaped the industrial chain supported by digital technology tools and systems including online communities, social media, e-commerce, and travel sharing (Sui& Rejeski, 2002; Basole & Karla, 2011; Constantinides, 2018; Akbar& Tracogna, 2018). With the aid of digital technology, platform corporates promote the commonality and integration of resources and the interaction between platform connecting entities (Benlian Hilkert, & Hess, 2015). To a certain extent, it improves the information asymmetry in the economic system, makes the supply and demand information of production and service more refined, and resources and information flow and cycle among the main bodies of the platform through the value network connected by the platform, so as to realize the value co-creation (Sambamurthy, Bharadwaj, & Grover, 2003; Gawer, 2014). The rapid development of platform corporates has brought great changes to production and lifestyle, and this emerging business model and logic has also become a hotspot of extensive research in academia (Fumagalli et al., 2018; Kenney & Zysman, 2020).

However, the entire platform economy is still in the early stages of development. The relationship between participants in the business ecosystem is relatively complex (Hoang, Blank, & Quan-Haase, 2020), and the governance mechanism of platform companies is not yet complete. The operation of platform companies causes "Data disputes between platforms", "platform corporate responsibility boundaries are difficult to determine" and "platform models challenge traditional antitrust restrictions" and other hot issues that have attracted social attention (Shelanski, 2013). The advancement of platform corporate governance research has become a point that needs urgent attention. In the research of platform corporates, governance is often mentioned. However, it is different from traditional enterprises in multiple subjectivity, strong harmfulness and governance complexity. Platform governance has not yet reached a unified conclusion. The governance mechanism is in the process of continuous development and improvement.

In view of this, this study sorts out and summarizes important articles of "Platform Governance" in recent years by entering the keywords "Platform Governance", "Digital Platform" and "Platform Economy" in the Web of Science database (Highly ranked in Science or more frequently cited). First, it expounds the connotation of platform governance, then clarifies the main perspectives and results of platform governance, explores the law and context of research development, and finally summarizes the prominent characteristics of platform corporate governance. This research hopes to follow up on the international frontiers of platform governance research through the research summary of previous literature, so that the scattered research results will be more systematic, and provide useful references for breakthroughs and innovations in future research and applications. At the same time, the platform corporates are allowed to operate within the boundaries of laws and systems, assume the social responsibilities of the main body of commercial operation, and coordinate and control the relationship between multiple subjects.

## PLATFORM CORPORATE AND GOVERNANCE CONNOTATION

### Platform and Platform Corporate

The platform theory has been studied for a long time in the academic circle, but there is no unified understanding (Schwarz, 2017). Early research on the concept of platform focused on the field of industrial organization and strategic innovation. The field of industrial organization paid more attention to two-side market research (Rochet & Tirole, 2003), and the field of strategic innovation paid more attention to product and innovation platform research. (Thomas, Autio, & Gann, 2014). Armstrong (2006) believes that the platform is an agent of bilateral market interaction, characterized by cross-network effects, connecting groups in the bilateral market through the platform, and providing services to buyers and sellers of products or services through a certain price strategy, while groups join the platform to gain benefits. It depends on the size of the other side of the group to join the platform. Gillespie (2010) believes that a platform brings together different participants, and its connotation is related to platform developers, users, advertisers, etc., enabling interaction between multiple different subjects (Helmond, 2015). The key to the evolution of the business ecosystem from platform to platform lies in the symbiotic dependence of open platforms and multi-agents in the ecosystem. Gawer (2000) defines a platform from the perspective of a business ecosystem as a series of corporates composed of a business ecosystem as basic modules that can provide complementary products, technologies or services. At the same time, he also pointed out that the industrial platform must be distinguished from the product platform. The product platform is only a simple combination of building modules and does not involve innovation by other participants. On this basis, Cusumano (2010) pointed out that two important differences between the industrial platform and the product platform are: the industrial platform provides corporates with a common foundation that can be reused in different product types. Like the product platform, the industrial platform One function is a platform design system, and its constituent elements come from different companies that are usually called complementarity. Without these complementary products and services, the industry platform is of little value to users.

In this study, platform corporates refer to companies that are based on computer network technology and rely on Internet technology to survive, use network platforms to provide goods or services and thus obtain income, with typical bilateral market characteristics (Plantin et al., 2018; Kornberger et al., 2017), such as Facebook and Alphabet. The core difference between platform companies and traditional companies lies in the characteristics of connecting multilateral entities. The platform architecture includes demand-side users, supply-side users and platform providers, and there are same-side and cross-side network effects among users. In response to this definition, two types of research phenomena have been excluded. One is a platform for unilateral users or users with more than three times. The fully self-operated e-commerce platform belongs to unilateral users, such as the early JD model; for platforms involving trilateral users, its simplified to a bilateral situation. The second is traditional organizational forms such as commercial department stores and wholesale markets. The research focuses on a new platform based on the development of Internet information technology driven by the digital economy. The network effect of platform companies and the characteristics of bilateral markets will affect efficiency and social welfare changes. Scholars have analyzed the field of platform governance.



## Governance and Platform Governance

The term "governance" originated in the field of French government management in the Middle English era and means "guidance and rules." Corresponding to this origin, the research on governance theory also emerged in the field of political science, especially public administration (Fukuyama, 2013; Dawes, 2009). Based on a macro perspective, research on governance theory is mainly concentrated in the field of public management. According to Fukuyama, governance is "the ability of the government to formulate and implement rules and provide services" (Fukuyama, 2013), which is commonly used by political scientists as "good governance". It refers to the ability of a country to establish functions and effective institutions, and to use these institutions to maintain law and order (Weiss, 2000). And Stoker (1998) believes that governance is not only an ability but also a specific and complex interactive network across different actors. The governance from the micro perspective is mainly in the field of corporate governance, and the problem to be solved is mainly the agency risk caused by the separation of corporate ownership and management under the corporate system (Betle & Means, 1932). Early corporate governance theories took shareholder interests as the ultimate goal (Jensen & Meckling, 1976). Following the occurrence of a series of political and economic events (several financial crises and many corporate financial scandals) after the 1980s, more and more people are aware of the narrowness and short-sightedness of this view, and governance should also pay attention to the value of stakeholder groups. In addition to paying attention to agency problems and exploration problems within the company in corporate governance, traditional corporate governance research has also expanded from within the company to inter-company (Claussen et al., 2015). The goal is to resolve conflicts of interest between corporates through the balance and complementarity of contract governance and relationship governance, and jointly promote the performance improvement of cooperatives (Khanna & Yafeh, 2007). Combining the research results of scholars, we can discover two core issues of governance. One is "multiple subjects", which coordinate the interest relationship between multiple subjects; the other is "system", which regulates the scope of behavior of each subject through the design of institutional rules.

Platform corporates, as a new business form in the digital economy (Tauscher& Laudien, 2018), have changed their business model, economic form and organizational structure compared with traditional corporates. However, the governance process of platform corporates is still tightly centered on the two cores of "multi-agent" and "system" of corporate governance. Platform corporate governance does not simply refer to the internal governance process of a platform corporate, but lays more emphasis on the market governance of platform-based corporates. In addition to platform participants, platform corporate governance also includes the coordination of multiple main forces such as government, market and social organizations. At the same time, it is not limited to the authoritative, pluralistic and polycentric institutional arrangements in the general sense. In addition to some formal policy provisions and legal norms, informal moral and value constraints and controls should also be considered. In this way, the responsibilities of different subjects such as the government, corporates and users are clarified, and the platform is promoted to connect the subjects, so as to maintain the continuous interaction of forces among various subjects (Tiwana, 2010; Nieborg & Poell, 2018). From this point of view, the governance of platform corporates involves the governance of the ecosystem connected to the platform, the content and boundary of governance are constantly changing, and the governance process is dynamic and complex. The following is a review of the research results of scholars from the perspective of governance bodies, governance systems and governance mechanisms.

## MAIN VIEWPOINTS OF PLATFORM GOVERNANCE

### Based on Governance Body

The operation process of platform corporates connects multiple bodies, and it is difficult to solve various problems if the governance of platform corporates starts from the platform corporates themselves. In the current research, from the perspective of platform governance participants, from platform corporates themselves to multi-stakeholders, according to the different entities involved, scholars' views can be summarized as Centralization governance and Decentralization Governance (Chen Yan et al., 2020; Tiwana, 2014; Sutherland & Jarrahi, 2018), but generally advocate the decentralization governance of multi-party power with platform companies as the core.

The participants of centralization governance are the owners of platform corporates. Platform owners make governance decisions based on market demand and corporate strategic goals, and take relatively decisive and independent actions to ensure the effectiveness of the governance process and structure. In his research, Gorwa (2019) put forward platform corporate autonomy, that is, "self-governance" or "self-regulation". Platform companies have a high degree of autonomous decision-making power and are directly responsible for third-party feedback or complaints, but they are not right. Users are responsible for matters negotiated through this platform. In this mode, the established laws and regulations only play a small role in the supervision of the governance of the platform. The platform mainly improves the transparency and fairness of the subject's interaction process through the improvement of its own technology or rules (Suzor, 2018). Data drives the decision-making of platform companies. The algorithm and iteration of data in the process itself is a "black box". Platform corporate autonomy helps protect the company's business secrets and promote the innovation and development of the company. Projects can be quickly and effectively implemented, and the work process and production The export standard is more flexible (Brown & Grant, 2005). However, centralization governance, because the governance decision-making power is mainly concentrated on the platform owner, lacks sufficient checks and balances, resulting in the platform owner may act for the maximization of their own interests (Mookherjee, 2006) and damage the rights of other stakeholders. Also, the lack of direct communication in the interactive process of the bilateral market connected by the platform affects the efficiency of transactions.

Decentralization governance fully considers the characteristics of platform companies connecting multilateral markets and multi-party entities, and leading platform corporate governance needs to consider more participants. One view is to rely on government forces for external governance. This claim is based on the consideration of user safety and privacy protection (such as platform companies leaking users' personal information accessed through APP, frequent online car-hailing damage to passengers, property and personal safety incidents). In practice, the governance of platform corporates is mainly through the government's policy intervention in three aspects, namely, privacy and data protection regulations, abolition of intermediate liability protection, and the use of competition law and monopoly law. On the one hand, platform companies are allowed to operate in a standardized network data space, and on the other hand, legal measures are adopted to protect the rights and interests of platform users. Because of the ambiguity of the boundaries of platform companies and the complexity of network relationships, policies are usually only further defined after the incident, so it is still difficult to achieve in the short term. However, legislation on user data and privacy, as well as antitrust laws and anti-competitive behaviors on platforms have attracted social attention

(Tisne, 2018; Pasquale, 2018). Another view is the combination of platform autonomy and external governance, that is, taking into account the cooperative governance or co-governance of platform owners, participants and external stakeholders. Through the decentralization of governance power, the hierarchy of power in the organization is eliminated, the decision-making power is allocated to multiple parties, and the multiple parties jointly negotiate the performance realization and value distribution of the platform. Under the governance power, it can enhance the power of platform participants, limit the behavior of platform owners (Cheibub, Gandhi, & Vreeland, 2010), eliminate decision-making bottlenecks, make the complex governance process clear, and the power of government and social organizations makes that the platform Corporate governance is regulated under the framework of law and ethics. The participation of platform users can transform decentralized network governance into the self-management of the platform community, and provide users with a fairer and just digital economy (Scholz, 2016; Scholz & Schneider, 2017). Community governance has strong coordination, which can help adjust the overall incentive mechanism, coordinate actions, reduce conflicts, and sort out common identities (Di Tullio, & Staples, 2013). Under collaborative governance, different responsibilities are assigned to the stakeholders (platforms, users, and governments) of platform companies, and certain governance powers are given to enable these actors to effectively assume responsibilities, develop the concept of collaborative responsibility, and standardize the platform, Cooperative governance of users and government in public space (Helberger, Pierson, & Poell, 2018). With the joint efforts of multiple parties, the responsibility of the platform company itself is mainly to assume the social responsibility of data protection, and to create good platform conditions to enable individual users to comply with their responsibilities.

In general, there are great differences between decentralization governance and centralization governance in the distribution of participants and decision-making power. Gol (2019) studies crowdsourcing platforms in digital platforms, discusses the relationship between platform governance mechanism and value creation, and compares the differences between centralized and decentralization governance in detail from aspects of workflow, communication, decision making, standards, cost control, quality control and performance control. Decentralization governance is characterized by overlapping workflow, direct communication between participants, transparent decision-making process, flexible adjustment based on standards and high cost control.

### **Based on Governance System**

The participation of multiple bodies in the governance of platform corporates should be based on a certain system, which makes the governance procedures more standardized and comprehensive, and the rights and responsibilities between various subjects clearer. On the one hand, the establishment of reward and punishment system can restrict the decision-making of platform owners, and on the other hand, it can also encourage multi-parties to realize self-regulation in the value co-creation system constructed by participating platform corporates. From the perspective of governance system, it can be mainly divided into the governance based on formal system and the governance based on informal system, which imposes restrictions on the interaction between platform owners and stakeholders (Constantinides, Henfridsson, & Parker, 2018). To ensure that the best interests of platform developers are aligned with those of platform owners, while preventing direct interactions between producers and consumers outside the platform from harming the platform's economic interests (Rochet & Tirole, 2003; Rochet & Tirole, 2006). The formal system mainly refers to legislation, discipline, supervision

and punishment, etc., while the informal system includes various codes of conduct, corporate culture, values and moral constraints of the platform corporates.

Facebook has used an eclectic mix of algorithmic and judicial governance tools to govern its vast social network. Algorithmic analysis of captured user data is used as a governance tool to generate different rules and monitor user behavior. Meanwhile, the legal system remains at the heart of Facebook's legal governance. Algorithmic governance is mainly used to organize the possible illegal information released by users in a timely manner, which is forward-looking to some extent. Judicial governance is the punishment of various illegal and criminal problems, and more of a guarantee after the event (Schwarz, 2019). Another example is the Apple App Store, where regulators will legislate to restrict Apple's access to users' personal data, and at the same time, Apple itself encourages the development of technologies that cannot access users' data as a new design specification for the platform ecosystem (Simonite, 2016). Google also encourages the innovation of user privacy protection functions, but not in the form of legislation, but from the perspective of social morality, the innovation of self-developed technology is used as a governance tool (Greene & Shilton, 2018). In the digital economy, consumer privacy violations caused by apps are common, and there is no choice but to trust an app completely or refuse to use it. For this problem, the platform's development technology promotion is the fundamental governance.

The strategic design and deployment of platform governance policies can be an important tool for platform governance. Owners of innovation platforms develop layered platform access policies to dynamically adjust the cooperation and interaction between complementaries in platform submarkets and promote knowledge sharing through platform governance (Zhang et al., 2020). The "Platform Logic" proposed by Schwarz (2017) studies the concepts and mechanisms of digital platforms at the micro, meso and macro levels to structurally manage emergencies of various types of platforms (Kapoor & Akarwal, 2017). The micro level refers to the interaction of individuals on the digital platform, the macro level mainly refers to the cumulative effect of various platform interactions seen from the social level, and the meso level focuses on the connection between the platform and the surrounding system. Therefore, for different levels of governance, the basis of the system measures is also different. At the micro level, the design of the platform's user interface is mainly improved, which mainly depends on the rules of the platform itself. The middle level is the management of big data and media, which is the more complex part of the current platform governance. At the macro level, political economy is involved, and platform governance is restricted by national laws and policies.

### **Based on Governance Mechanism**

The main body of governance determines who governs, the dominant basis of governance system governs, and the governance mechanism answers the question of how to conduct governance. A key goal of the platform governance mechanism is to provide incentives to align the interests of stakeholders (Kapoor & Agarwal, 2017; Song et al., 2018), so the allocation of power in governance is crucial. In the existing researches, platform governance mechanism mainly focuses on power grant and process guarantee. Delegation includes the establishment of intellectual property rights (Eisenman, 2008), the decentralization of decision-making rights (Tiwana et al., 2010) and the placement of control points (Dattee, Alexy, & Autio, 2008); Process assurance mainly consists of adjusting incentives for buyers and sellers of the platform (Song et al., 2018), adjusting incentives for complementaries (Wareham, Fox, & Giner, 2014), public communication governance costs (Huber, Kude, & Dibbern, 2017) and detecting outputs (Wareham, Fox, & Giner, 2014).

Tiwana (2010) points out that the design of platform governance mechanism can be studied from three different perspectives, namely, decision right division, control and governance attributes. Decision-making power is embodied in who has the right and responsibility to make what kind of decisions to platform corporates. The decentralization of governance power makes the balance of decision-making power among various subjects become the key to the coordination of platform ecosystem relations. The decision rights at three levels should be distinguished, namely, what features and functions the platform has, how to design the user interface, and who controls the internal interface of the ecosystem. Control mainly refers to a variety of rewards and punishments set by platform owners to motivate developers, including output control and process control. In addition, the interaction between stakeholders of the platform and the differences of interests between them should also be controlled. Governance attributes mainly refer to whether the platform is owned by a single corporate or shared by multiple owners. In this process, you need to achieve transparency, diversity and responsibilities assigned to the platform of public value such as the corporate's stakeholders, each stakeholder role in realizing the value, and to agree on how to improve the public value, the consultation results into a code of conduct (Helberger, Pierson, & Poell., 2018). Schreieck et al. (2017) discussed the platform governance mechanism from four aspects: governance structure, platform access and control, trust building and boundary resources. The governance structure can be centralized or relatively decentralized, which is mainly the division of governance decision-making power and platform ownership. The openness of the platform ecosystem determines that the governance process needs more control; The establishment of trust mechanism is crucial for participants to reduce risk perception and continue interaction (Pavlou, 2002). Intangible and effective boundary resources play a certain role in the implementation of platform governance strategy (Ghazawneh & Henfridsson, 2013).

Airbnb is a model of platform corporates. Leoni studied and analyzed its governance and control system, including the division of decision-making rights between Airbnb and participants and how the platform owner formally controls the participants (Leoni & Parker, 2019). The platform maintains autonomy in decision making in four major areas, listing, pricing, booking process, and accommodation rules, in order to maintain the performance of the platform and the interests of the platform owner. The behavior of the platform participants is monitored by the platform, such as the ratings provided by the tenants, the response rate of the platform algorithm, and so on. Through power division and a series of control technologies, the performance goals of platform users and platform organizations can be consistent, thus leading to more organizational citizenship behaviors. The governance of platform corporates will be in a relatively loose state, which will help promote the order and innovation of the platform ecosystem.

## **CHARACTERISTICS OF PLATFORM CORPORATE GOVERNANCE IN DIGITAL ECONOMY**

Through studying the achievements of the academic community on the governance of platform corporates, it is found that under the background of the digital economy, the governance of platform corporates has attracted attention from all walks of life. It is no longer the same as the traditional corporate governance, aiming at the interest disputes within the corporate, which is gradually implemented by the senior management to the employees. Platform corporate governance not only expands the responsibility of being an independent operator, but also embodies the responsibility of being a commercial operation platform and the responsibility of resource allocation and integration in the social system (Acquier, Daudigeos, & Pinkse, 2017;



Schor, 2017). The governance of platform corporates presents the characteristics of multiple subjectivity, open boundary, dynamic relationship and fuzzy rights and responsibilities.

### **Multiple Subjectivity**

Besides platform owners, platform participants and social forces are also the main body of governance of platform corporates. Platform participants, in terms of the services provided by the platform, include complementaries in bilateral markets, developers of the platform corporate, and other participants in the value creation process of the platform ecosystem (Courtois & Timmermans, 2018). Social forces are organizations outside the platform ecosystem, involving governments, communities, and other regulatory agencies (Berkowitz & Souchaud, 2019). Multiple subjects play an unreasonable role in the process of participating in platform governance (Ansell & Miura, 2019). In general, platform owners and platform developers are mainly responsible for the improvement of platform technology and functions to ensure the efficient, transparent and orderly two-way market interaction process. Platform participants participate in the governance process to facilitate the normative operation of data-driven platform business and focus on the creation of social value (Alreshidi, Mourshed, & Rezgui, 2016; Saadatmand, Lindgren, & Schultze, 2019); The government and regulatory agencies play a controlling role in the governance process to ensure that this emerging business logic has a real significance to promote China's innovation-driven strategic transformation. Collaborative governance of embedded platform connecting plural ecosystem (Ansell & Gash, 2018), a complex network intertwined relationships, the value creation process by multiple subject and elements of ecological system is complete, each subject in the common governance holding power and responsibility and platform of business ecosystem symbiosis (BasoLe & Karla, 2011).

### **Boundary Openness**

One of the characteristics of platform corporates is the uncertainty of the boundary, and the boundary of platform governance is also open. Scholars have explained in their studies that the governance of platform corporates can start from the micro, meso and macro levels. The micro level focuses on the platform itself, the meso level focuses on the relationship between the platform and the main body of the ecosystem, and the macro level focuses on the platform ecosystem (Schwarz, 2017). But in the actual governance process, the three levels are blended with each other, and each level also involves more contents. Platform corporate itself as the main body of independent operation, as well as other corporates (Culpepper & Thelen, 2020). The core of platform corporates lies in the interaction between the two sides of the market, and the behavior of the supply side and the user side also needs to meet the requirements of governance responsibility. For example, the development of shared bikes has made people's travel more convenient and green, but it has led to the undesirable phenomenon of random parking, malicious destruction and possession. The platform ecosystem enables the value-creation process to mobilize and allocate more social resources, and accordingly, the governance process needs to highlight the paradigm of social responsibility fulfillment. On the basis of legal operation, it should also save factor resources, improve the efficiency of resource allocation, promote the sharing of knowledge, protect innovation patents, take the initiative to assume social responsibilities, jointly participate in solving social problems, and promote the strategic transformation and sustainable development of social economy (Kenney & Zysman, 2016; Martin, Upham, & Klapper, 2017; Geissinger et al., 2019).



## Dynamic Relationship

A major difficulty in platform corporate governance lies in the dynamic relationship of platform system, which makes the original layer nested network relationship more complex (Schmeiss, Hoelzle, & Tech, 2019). On the one hand, in the era of digital economy, big data analysis and artificial intelligence are the keys to drive the decision-making of platform corporates. The algorithm of platform corporates is fast, so the business model is constantly adjusted and innovated (Gong et al., 2020). On the other hand, the transactions reached by platform participants are changing in real time. Moreover, the competition between different platforms is increasingly intensified, and the relationship between the platform and the subject is also changing rapidly. There is no traditional employment contract relationship. Because it involves the allocation of social resources, there is also a relationship between platform corporates and social systems (Gerwe& Silva, 2020). Therefore, platform corporate governance involves the dynamic adaptability of the relationship between "individual and individual", "individual and platform" and "platform corporate and society". For example, the driving distance and fuel consumption of online hailing cars without load should be as little as possible, and the carrying distance and times of shared bikes between different stations should also be as little as possible. The optimization of the platform ecosystem not only shortens the value creation cycle and reduces the cost of the platform, but also reduces the consumption of social resources and improves the efficiency. However, the solution of the problems in the dynamic environment also needs to have the vision of development, taking into account the interest disputes and responsibility conflicts in the governance process.

## Ambiguity of Rights and Responsibilities

Whether it is platform self-governance or multi-party cooperative governance, there are problems of power division and responsibility assumption in the process of platform corporate governance. Although, the governance mechanism of platform corporates all mentioned the two aspects of decision-making and control (Martin, Upham, & Klapper, 2017), and proposed how to allocate decision-making rights among multiple subjects, as well as how to ensure the implementation of various projects and rules. However, in the practice of platform corporate governance, it is still difficult to clarify the responsibility of each subject. At present, it is mainly centralization governance. The decision-making power of governance is mainly concentrated in the platform owner, and the control of the governance process is realized by the government's policies and regulations. The participation of platform participants and other stakeholders in governance is low. Platform rely on policies and laws of ecological system and the formalized method can only play a role in mandatory norms (Suzor, 2018; Lehdonvirta, 2018).

## CONCLUSION

The development of the digital economy has enabled the operation of platform corporates. The innovative business model of platform corporates has brought great changes to the value creation methods of traditional corporates, but at the same time, it has also triggered a variety of common social problems. The governance of platform corporates has become a hot topic of academic research in recent years. This study sorts out and summarizes the viewpoints and conclusions of scholars on platform governance. Firstly, the connotation of platform corporate and platform governance is discussed. Then from the three aspects of governance body, governance system and governance mechanism, illustrates the main ways and means of platform for corporate governance. Mobilize various main collaborative governance of power,

the combination of formal system and informal system balance management, decentralized decision-making power and more ways to control the loose coupling of cooperative governance, is the current mainstream view. In the final analysis to summarize the characteristics of the platform for corporate governance, the subject pluralism, openness, border relationship dynamics and accrual fuzziness, we point out the platform stakeholder participation in the corporate governance practices, responsibility, multi-level, dynamic network and informal system USES fewer problems, platform business management practice that provides guidance for the future.

## REFERENCES

- Acquier, A., Daudigeos, T., Pinkse, J. (2017). Promises and paradoxes of the sharing economy: An organizing framework. *Technological Forecasting and Social Change*, 125, 1-10. DOI: 10.1016/j.techfore.2017.07.006
- Adamik, A., Nowicki, M. (2018). Preparedness of companies for digital transformation and creating a competitive advantage in the age of Industry 4.0. *Proceedings of The International Conference on Business Excellence*, 12(1), 10-24. DOI: 10.2478/picbe-2018-0003
- Akbar, YH., Tracogna, A. (2018). The sharing economy and the future of the hotel industry: transaction cost theory and platform economics. *International Journal of Hospitality Management*, 71, 91-101. DOI: 10.1016/j.ijhm.2017.12.004
- Alreshidi, E., Mourshed, M., Rezgui, Y. (2016). Cloud-based BIM governance platform requirements and specifications: Software engineering approach using BPMN and UML. *Journal of Computing In Civil Engineering*, 30(4). DOI: 10.1061/(ASCE)CP.1943-5487.0000539
- Ansell, C., Gash, A. (2018). Collaborative platforms as a governance strategy. *Journal of Public Administration Research and Theory*, 28(1), 16-32. DOI: 10.1093/jopart/mux030
- Ansell, C., Miura, S. (2019). Can the power of platforms be harnessed for governance? *Public Administration*, 98(1), 261-276. DOI: 10.1111/padm.12636
- Armstrong, M. (2006). Competition In Two - Sided Markets. *The RAND Journal of Economics*, 37 (3), 668-691. DOI: 10.1111/j.1756-2171.2006.tb00037.x
- Ayres, RU., Williams, E. (2004). The digital economy: Where do we stand?. *Technological Forecasting and Social Change*, 71(4), 315-339. DOI: 10.1016/j.techfore.2003.11.001
- Basole, RC., Karla, J. (2011). On the evolution of mobile platform ecosystem structure and strategy. *Business & Information Systems Engineering*, 3(3), 313-322. DOI: 10.1007/s12599-011-0174-4
- Benlian, A., Hilkert, D., Hess, T. (2015). How open is this platform? The meaning and measurement of platform openness from the complementors' perspective. *Journal of Information Technology*, 30(3), 209-228. DOI: 10.1057/jit.2015.6
- Berkowitz, H., Souchaud, A. (2019). (Self-)regulation of sharing economy platforms through partial meta-organizing. *Journal of Business Ethics*, 159(4), 961-976. DOI: 10.1007/s10551-019-04206-8
- Brown, A. E., Grant, G. G., (2005). Framing the frameworks: a review of it governance research. *Communications of the Association for Information System*, 15 (1), 38. DOI: 10.17705/1CAIS.01538
- Cheibub, J. A., Gandhi, J., Vreeland, J. R. (2010). Democracy and dictatorship revisited. *Public Choice*, 143, 67-101. DOI: 10.1007/s11127-009-9491-2
- Chen, Yan., Pereira, Igor; Patel, Pankaj, C. (2020). Decentralized governance of digital platforms. *Journal of Management*. DOI: 10.1177/0149206320916755

- Claussen, J., Essling, C., Kretschmer, T. (2015). When less can be more-setting technology levels in complementary goods markets. *Research Policy*, 44(2), 328-339. DOI: 10.1016/j.respol.2014.10.005
- Constantinides, P., Henfridsson, O., Parker, G. G. (2018). Platforms and infrastructures in the digital age. *Information Systems Research*, 29(2), 381-400. DOI: 10.1287/isre.2018.0794
- Courtois, C., Timmermans, E. (2018). Cracking the tinder code: an experience sampling approach to the dynamics and impact of platform governing algorithms. *Journal of Computer-Mediated Communication*, 23(1), 1-16. DOI: 10.1093/jcmc/zmx001
- Culpepper, PD., Thelen, K. (2020). Are we all amazon primed? Consumers and the politics of platform power. *Comparative Political Studies*, 53(2), 288-318. DOI: 10.1177/0010414019852687
- Cusumano, M. (2010). The evolution of platform thinking, *Communications of The Acm*, 53(1), 32-34. DOI: 10.1145/1629175.1629189
- Dattee, B., Alexy, O., Autio, E., (2018). Maneuvering in poor visibility: how firms play the ecosystem game when uncertainty is high. *Academy of Management Journal*, 61 (2), 466-498. DOI: 10.5465/amj.2015.0869
- Dawes, S. S. (2009). Governance in the digital age: a research and action framework for an uncertain future. *Government Information Quarterly*, 26(2), 257-264. DOI: 10.1016/j.giq.2008.12.003
- de Reuver, M., Sorensen, C., Basole, R. C. (2018). The digital platform: a research agenda. *Journal of Information Technology*, 33(2), 124-135. DOI: 10.1057/s41265016-0033-3
- Di Tullio, D., Staples, D. S. (2013). The governance and control of open source software projects. *Journal of Management Information Systems*, 30(3), 49-80. DOI: 10.2753/MIS0742-1222300303
- Eisenmann, TR., (2008). Managing proprietary and shared platforms. *California Management Review*, 50 (4), 31-53. DOI: 10.2307/41166455
- Fukuyama, F. (2013). What is governance? *Governance-An International Journal of Policy Administration and Institutions*, 26(3), 347-368. DOI: 10.1111/gove.12035
- Fumagalli, A., Lucarelli, S., Musolino, E.& Rocchi, G. (2018). Digital labour in the platform economy: the case of Facebook. *Sustainability*, 18(6). DOI: 10.3390/su10061757
- Kahl, S. (2011). Platforms, markets and innovation. *Organization Studies*, 32(4), 571-573. DOI: 10.1177/0170840611400273
- Gawer, A., Cusumano, MA. (2014). Industry platforms and ecosystem innovation, *Journal of Product Innovation Management*, 31(3), 417-422. DOI: 10.1111/jpim.12105
- Gawer. (2014). Bridging differing perspectives on technological platforms: toward an integrative framework. *Research Policy*, 3(7), 1239-1249. DOI: 10.1016/j.respol.2014.03.006
- Geissinger, A., Laurell, C., Oberg, C., Sandstrom, C. (2019). How sustainable is the sharing economy? On the sustainability connotations of sharing economy platforms. *Journal of Cleaner Production*, 206, 419-429. DOI: 10.1016/j.jclepro.2018.09.196
- Gerwe, O., Silva, R. (2020). Clarifying the sharing economy: conceptualization, typology, antecedents, and effects. *Academy of Management Perspectives*, 34(1), 65-96. DOI: 10.5465/amp.2017.0010
- Ghazawneh, A., Henfridsson, O. (2013). Balancing platform control and external contribution in third-party development: the boundary resources model. *Information Systems Journal*, 23(2), 173-192. DOI: 10.1111/j.1365-2575.2012.00406.x
- Gillespie, T. (2010). The politics of "Platforms." *New Media & Society*, 12, 347-364. Doi:10.1177/1461444809342738

- Gol, E. S., Stein, M., Avital, M. (2019). Crowdwork platform governance toward organizational value creation. *Journal of Strategic Information Systems*, 28(2), 175-195. DOI: 10.1016/j.jsis.2019.01.001
- Gong, DQ., Liu, SF., Liu, J., Ren, L. (2020). Who benefits from online financing? A sharing economy e-tailing platform perspective. *International Journal of Production Economics*, 222. DOI: 10.1016/j.ijpe.2019.09.011
- Gorwa, R. (2019). What is platform governance? *Information Communication & Society*, 22(6), 854-871. DOI: 10.1080/1369118X.2019.1573914
- Greene, D., Shilton, K. (2018). Platform privacies: governance, collaboration, and the different meanings of "Privacy" in iOS and android development. *New Media & Society*, 20(4), 1640-1657. DOI: 10.1177/1461444817702397
- Hanseth, O., Lyytinen, K. (2010). Design theory for dynamic complexity in information infrastructures: the case of building internet. *Journal of Information Technology*, 25(1), 1-19. DOI: 10.1057/jit.2009.19
- Helberger, N., Pierson, J., Poell, T. (2018). Governing online platforms: from contested to cooperative responsibility. *Information Society*, 34(1), 1-14. DOI: 10.1080/01972243.2017.1391913
- Helmond, A. (2015). The platformization of the web: making web data platform ready. *Social Media + Society*, 1(2). DOI: 10.1177/2056305115603080
- Hoang, L., Blank, G., Quan-Haase, A. (2020). The winners and the losers of the platform economy: Who participates? *Information Communication & Society*, 23(5), 681-700. DOI: 10.1080/1369118X.2020.1720771
- Huber, T.L., Kude, T., Dibbern, J. (2017). Governance practices in platform ecosystems: navigating tensions between co-created value and governance costs. *Information Systems Research*. 28(3), 563–584. DOI: 10.1287/isre.2017.0701
- Jensen, M. C., Meckling, W. H. (1976). Theory of the firm: managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305-360. DOI: 10.1016/0304-405X(76)90026-X
- Kannan, PK., Kopalle, PK. (2001). Dynamic pricing on the internet: importance and implications for consumer behavior. *International Journal of Electronic Commerce*, 5(3), 63-83. DOI: 10.1080/10864415.2001.11044211
- Kapoor, R., Agarwal, S., (2017). Sustaining superior performance in business ecosystems: evidence from application software developers in the IOS and Android smartphone ecosystems. *Organization Science*, 28 (3), 531–551. DOI: 10.1287/orsc.2017.1122
- Kenney, M., Zysman, J. (2016). The rise of the platform economy. *Issues in Science and Technology*, 32(3), 61-69.
- Kenney, M., Zysman, J. (2020). The platform economy: restructuring the space of capitalist accumulation. *Cambridge Journal of Regions Economy and Society*, 13(1), 55-76. DOI: 10.1093/cjres/rsaa001
- Khanna, T., Yafeh, Y. (2007). Business groups in emerging markets: paragons or parasites?. *Journal of Economic Literature*, 2007: 331-372. DOI: 10.1257/jel.45.2.331
- Kim, B., Barua, A., Whinston, AB. (2002). Virtual field experiments for a digital economy: a new research methodology for exploring an information economy. *Decision Support Systems*, 32(3), 215-231. DOI: 10.1016/S0167-9236(01)00094-X
- Kornberger, M., Pflueger, D., Mouritsen, J. (2017). Evaluative infrastructures: accounting for platform organization. *Accounting, Organizations and Society*, 60, 79-95. DOI: 10.1016/j.aos.2017.05.002
- Kovacs, O., (2018). The dark corners of industry 4.0-grounding economic governance 2.0. *Technology in Society*, 55, 140-145. DOI: 10.1016/j.techsoc.2018.07.009



- Lee, K., Malerba, F., Primi, A. (2020). The fourth industrial revolution, changing global value chains and industrial upgrading in emerging economies. *Journal of Economic Policy Reform*, 23(4), 359-370. DOI: 10.1080/17487870.2020.1735386
- Lehdonvirta, V., Kassi, O., Hjorth, I., Barnard, H., Graham, M. (2019). The global platform economy: a new offshoring institution enabling. Emerging-economy microprovers. *Journal of Management*, 45(2), 567-599. DOI: 10.1177/0149206318786781
- Lehdonvirta, V., (2018.). Flexibility in the gig economy: managing time on three online piecework platforms. *New Technology Work and Employment*, 33(1), 13-29. DOI: 10.1111/ntwe.12102
- Leoni, G., Parker, L D. (2019). Governance and control of sharing economy platforms: Hosting on Airbnb. *British Accounting Review*, 51(6). DOI: 10.1016/j.bar.2018.12.001
- Liang Zheng., Li Rui. (2020). New techno-economic paradigm and global competition pattern in digital age. *Science & Technology Review*, 38(14), 142-147.
- Makridakis, S. (2017). The forthcoming artificial intelligence (AI) revolution: its impact on society and firms. *Futures*, 90, 46-60. DOI: 10.1016/j.futures.2017.03.006
- Martin, CJ., Upham, P., Klapper, R. (2017). Democratising platform governance in the sharing economy: an analytical framework and initial empirical insights. *Journal of Cleaner Production*, 166, 1395-1406. DOI: 10.1016/j.jclepro.2017.08.123
- Mookherjee, D. (2006). Decentralization, hierarchies, and incentives: a mechanism design perspective. *Journal of Economic Literature*, 44, 367-390. DOI: 10.1257/jel.44.2.367
- Nieborg, D. B., Poell, T. (2018). The platformization of cultural production: theorizing the contingent cultural commodity. *New Media & Society*. Doi:10.1177/1461444818769694
- Pasquale, F. (2018). Tech platforms and the knowledge problem. *American Affairs*, 2(2).
- Pavlou, PA. (2002). Institution-based trust in interorganizational exchange relationships: the role of online B2B marketplaces on trust formation. *Journal of Strategic Information Systems*, 11(3-4), 215-243. DOI: 10.1016/S0963-8687(02)00017-3
- Plantin, J., Lagoze, C., Edwards, P. N., Sandvig, C. (2018). Infrastructure studies meet platform studies in the age of Google and Facebook. *New Media & Society*, 20(1), 293-310. DOI: 10.1177/1461444816661553
- Rochet, J. C., Tirole, J. (2003). Platform competition in two - sided markets. *Journal of The European Economic Association*, 1(4), 990-1029. DOI: 10.1162/154247603322493212
- Rochet, J. C., Tirole, J. (2006). Two-sided markets: a progress report. *RAND Journal of The European Economic Association*, 37(3), 645-667. DOI: 10.1111/j.1756-2171.2006.tb00036.x
- Saadatmand, F., Lindgren, R., Schultze, U. (2019). Configurations of platform organizations: implications for complementor engagement. *Research Policy*, 48(8). DOI: 10.1016/j.respol.2019.03.015
- Sambamurthy, V., Bharadwaj, A., Grover, V. (2003). Shaping agility through digital options: reconceptualizing the role of information technology in contemporary firms. *MIS Quarterly*, 27(2), 237-263.
- Schmeiss, J., Hoelzle, K., Tech, RPG. (2019). Designing governance mechanisms in platform ecosystems: addressing the paradox of openness through blockchain technology. *California Management Review*, 62(1), 121-143. DOI: 10.1177/0008125619883618
- Scholz, T. (2016). Platform cooperativism (challenging the corporate sharing economy). *New York: Rosa Luxemburg Foundation*.
- Scholz, T., Schneider, N. (2017). Ours To Hack And To Own: The Rise Of Platform Cooperativism, A New Vision For The Future Of Work And A Fairer Internet. New York, NY: OR Books.

- Schor, JB. (2017). Does the sharing economy increase inequality within the eighty percent?: Findings from a qualitative study of platform providers. *Cambridge Journal of Regions Economy and Society*, 10(2), 263-279. DOI: 10.1093/cjres/rsw047
- Schreieck, M., Wiesche, M., Krcmar, H. (2017). Governing nonprofit platform ecosystems - an information platform for refugees. *Information Technology for Development*, 23(3), 618-643. DOI: 10.1080/02681102.2017.1335280
- Schwarz, J. A. (2017). Platform logic: an interdisciplinary approach to the platform-based economy. *Policy & Internet*, 9(4), 374-394. DOI: 10.1002/poi3.159
- Schwarz, O. (2019). Facebook rules: structures of governance in digital capitalism and the control of generalized social capital. *Theory Culture & Society*, 36(4), 117-141. DOI: 10.1177/0263276419826249
- Shelanski, H. A. (2013). Information, innovation, and competition policy for the Internet. *University of Pennsylvania Law Review*, 161(6), 1663-1705.
- Simonite, T. (2016). Apple's New Privacy Technology May Pressure Competitors To Better Protect Our Data. MIT Technology Review.
- Song, P., Xue, L., Rai, A., Zhang, C., (2018). The ecosystem of software platform: a study of asymmetric cross-side network effects and platform governance. *MIS Quarterly*, 42(1), 121-142. DOI: 10.25300/MISQ/2018/13737
- Stoker, G. (1998). Governance as theory: five propositions. *International Social Science Journal*, 50(155), 17-28.
- Sui, DZ., Rejeski, DW. (2002). Environmental impacts of the emerging digital economy: the e-for-environment e-commerce? *Environmental Management*, 29(2), 155-163. DOI: 10.1007/s00267-001-0027-X
- Sutherland, W., Jarrahi, M. H. (2018). The sharing economy and digital platforms: a review and research agenda. *International Journal of Information Management*, 43, 328-341. DOI: 10.1016/j.ijinfomgt.2018.07.004
- Suzor, N., Van Geelen, T., Myers West, S. (2018). Evaluating the legitimacy of platform governance: a review of research and a shared research agenda. *International Communication Gazette*, 80(4):385-400. DOI: 10.1177/1748048518757142
- Suzor, N. (2018). Digital constitutionalism: using the rule of law to evaluate the legitimacy of governance by platforms. *Social Media + Society*, 4(3). DOI: 10.1177/2056305118787812
- Tauscher, K., Laudien, SM. (2018). Understanding platform business models: a mixed methods study of marketplaces. *European Management Journal*, 36(3), 319-329. DOI: 10.1016/j.emj.2017.06.005
- Thomas, L., Autio, E., Gann, D. (2014). Architectural leverage: putting platforms in context, *The Academy of Management Perspectives*, 28 (2), 198-219. DOI: 10.5465/amp.2011.0105
- Tisne, M. (2018). It's Time For A Bill Of Data Rights. MIT Technology Review.
- Tiwana, A. (2015). Evolutionary Competition in Platform Ecosystems. *Information Systems Research*, 26(2), 266-281. DOI: 10.1287/isre.2015.0573
- Tiwana, A., Konsynski, B., Bush, A. A. (2010). Platform evolution: coevolution of platform architecture, governance, and environmental dynamics. *Information Systems Research*, 21(4), 675-687. DOI: 10.1287/isre.1100.0323
- Wareham, J., Fox, PB., Giner, JLC. (2014). Technology ecosystem governance. *Organization Science*, 25 (4), 1195-1215. DOI: 10.1287/orsc.2014.0895
- Weiss, T. G. (2000). Governance, good governance and global governance: conceptual and actual challenges. *Third World Quarterly*, 21(5), 795-814.



- Yoo, Y., Henfridsson, O., Lyytinen, K. (2010). The new organizing logic of digital innovation: an agenda for information systems research. *Information Systems Research*, 21(4), 724-735. DOI: 10.1287/isre.1100.0322
- Zhang, Yuchen., Li, Jingjing., Tong, Tony W. (2020). Platform governance matters: how platform gatekeeping affects knowledge sharing among complementors. *Strategic Management Journal*. DOI: 10.1002/smj.3191

# ADVANTAGES AND DISADVANTAGES OF QR CODE IN TAX INVOICES IN PORTUGAL

Anabela Marques<sup>1</sup>   
Leonilde Reis<sup>2</sup> 

DOI: <https://doi.org/10.31410/LIMEN.2020.167>

---

**Abstract:** *The systematization of the information underlying the electronic invoice, published in the Decree-Law no. 28/2019 of 15 February in Portugal, brought legislative changes leading to the introduction of a QR-Code on the invoice creating the conditions for the document's dematerialization. This article's purpose is to present the results of a set of surveys applied to the various stakeholders in the process, in order to validate the advantages and constraints of an aggregating Approach, designed to systematize such stakeholders in a process of this nature. The methodology adopted was Design Science Research and proved to be adequate for the design of the artefact. The elaborated approach and the results of the surveys are also presented. In 2021, invoices and other tax documents must contain a two-dimensional bar code, containing all information related to the invoice, allowing the consumer to digitally send this information to his electronic invoice without his Fiscal ID introduction.*

**Keywords:** *QR-code, Invoice, Innovation, Approach.*

---

## INTRODUCTION

Although taxes are not the only source of tax revenue, they are undoubtedly the most important, being hegemonic over the revenue from fines, fees, penalties, among others. Tax evasion and fraud seriously undermine the economic and financial capacity of governments, calling into question the principle of equity and tax justice (Marques, 2020).

The growing development of Information and Communication Technologies (ICT) that we have been observing in recent years, has been an accelerator of the digital transformation process of organizations. According to Secretaria do Estado dos Assuntos Fiscais - SEAF (2018), in this domain, Portugal has come to assume itself as one of the advanced tax administrations, being internationally recognized for its pioneering spirit and for the innovative projects that have followed the technological evolution and the digital transformation that has taken place in recent years. In Portugal, given the legal framework, tax-relevant invoices play a decisive role given the tax incentives granted to citizens when they request invoices.

Following the direction set by the Government to strengthen, simplify and digitalize the Public Administration (PA), and taking into account that the legislation related to invoices and other fiscally relevant documents was very dispersed, the Government, as a way to consolidate and update the legislation dispersed, proceeds to its regulation, through the Decree-Law no. 28/ (2019), of February 15<sup>th</sup>. Through this decree, the conditions for the issuance of paperless invoices are created, providing for the waiver of their printing.

---

<sup>1</sup> Polytechnic Institute of Setúbal, Setúbal, Portugal  
<sup>2</sup> Polytechnic Institute of Setúbal, Setúbal, Portugal

After the introduction of some changes associated with Electronic Billing in Public Procurement, it is pertinent to analyze the recent Decree Law 28/2019 of 15 February, alongside with other legislation regarding some more measures of the so-called “E-invoice 2.0” package, which will enter into force, at least according to expectations, throughout 2019 and 2022.

Through the implementation of the Decree Law no. 28/ (2019), and as of January 1<sup>st</sup>, 2020, invoices and other fiscally relevant documents must contain a two-dimensional bar code (QR Code), which will allow purchasers wishing to benefit from the collection deduction, to have the possibility of communicating to the Tax and Customs Authority-AT, invoices without a tax identification number, using the respective QR Code or the unique document code.

## **IMPACT OF LEGISLATION**

According to Zhang (2018) the insertion of a QR-Code on the consumer invoice, is the solution for the company to make the technological connection between the company and tax authorities, allowing to streamline processes in a convenient, fast, and low cost way.

After the signing of a memorandum of understanding with the Troika and with the approval of the State Budget for the year 2012, the legislative authorization expressed in article no. 172 is born, so that the government can regulate a regime for the electronic transmission of the elements of the invoices (Melo, 2018).

In July 2012, the Government approved a structural reform of the billing regime in Portugal, which led to the start of the e-invoice system (Decree-Law n.º 198/2012) production on January 1<sup>st</sup>, 2013. The participation of final consumers is the key to the success of the system and e-invoice, a tax incentive for taxpayers that was created in 2013 due to the invoice requirement with its Tax Identification Number (TIN) (XXI Governo, 2015). This legislation introduced new rules for invoicing and filing for VAT taxable persons, creating the conditions for the existence of the paperless invoice. However, it is important to analyze what impact this legislation has on the different stakeholders.

A review of the literature regarding the subject’s field was carried out, as well as the study of the legal diplomas, international standards, frameworks, and technological specifications in view of the specificity of the problem.

The Approach is a synthesis model that involves processes, people and technology, and allows to add knowledge contemplating the normative references related to this aspect, namely ISO/IEC 18004 (2015), and the ITIL V4 (ITIL, 2019), COBIT (ISACA, 2019), CMMI (CMMI Institute, 2019) frameworks.

The impact of the legislative change will lead to the availability, accessibility, and legibility of the relevant data and technical documentation to be guaranteed by the AT as well as the authenticity of the origin, integrity of the content, operational integrity, accuracy and reliability and legibility of the QR-Code (Decree-Law 28/2019).

With the dispensation of the goods transport document, the security and reliability will be guaranteed, which in return will allow the streamline of businesses, logistics or transportation processes and the increase of their efficiency. Furthermore, the possibility of integrating digital

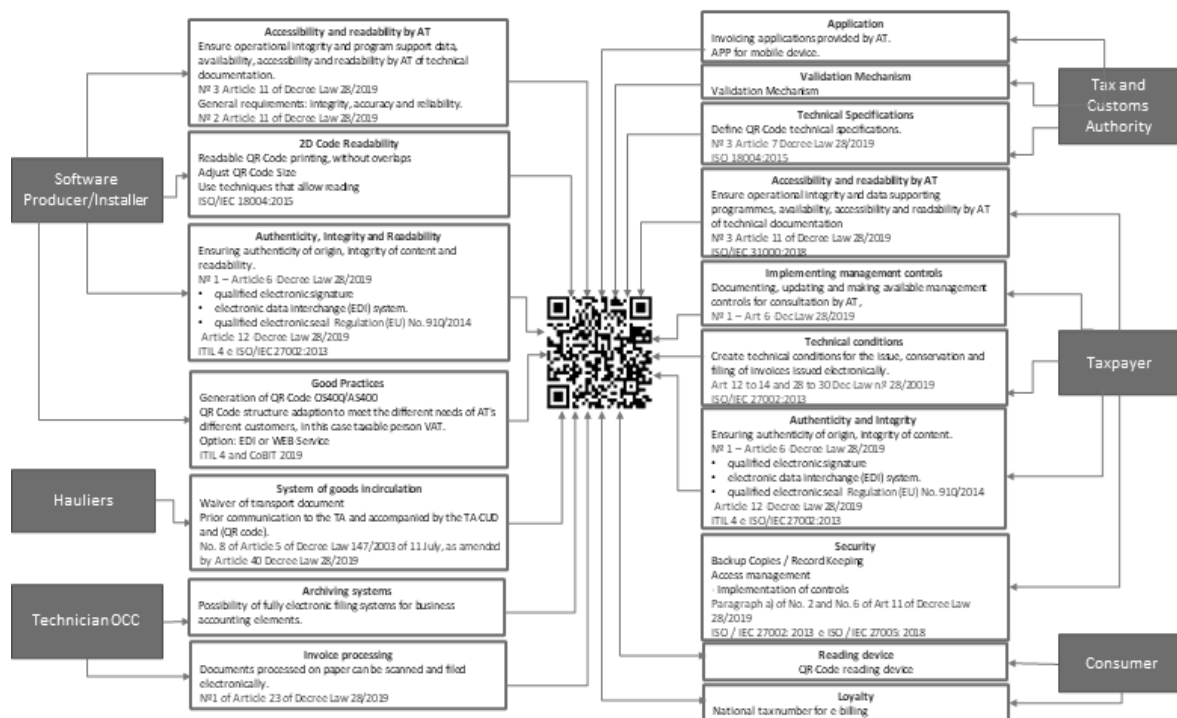
or scanned documents into the accounting software, the speed and efficiency of the accounting process and the reduction of the physical archive are equally expected to increase.

It also provides easy control of any transactions carried out by taxpayers in order to combat the informal economy, tax fraud and evasion, and the adoption of new technological instruments, thus incorporating a philosophy of innovation, debureaucratization, the dematerialization of documents, and saving resources. On the other hand, it compels the implementation of security measures (access, backup, management controls) and development of new technological aptitudes and tax incentives.

## APPROACH

An Approach was created (Marques, 2020), with the aim to systematize the changes that the introduction of the QR-Code on the invoice can bring to the different stakeholders. According to Marques & Reis (2020), the multidisciplinary and aggregating Approach enhances the systematization of the problem.

**Figure 1. Approach - Stakeholders in the QR-Code**



Source: (Marques & Reis, 2020)

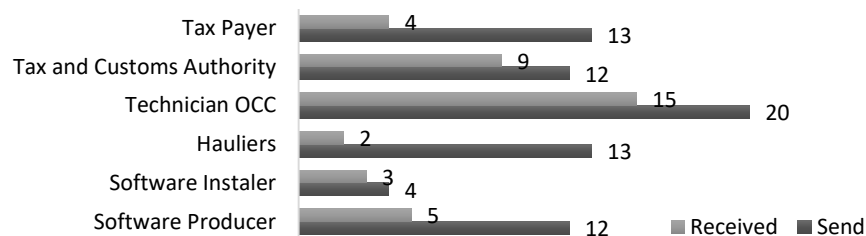
The Approach shown in Figure 1 was created, in order to systematize the different stakeholders in the process and allows stakeholders in the process to understand the differences and the development requirements and strategies to be followed to implement the QR-Code in the fiscal context and provide a tool to support decision-making and strategy development by helping to analyze the impact that changes will have on processes and to guide the development of appropriate measures and understanding of the issues involved in the decision (Marques, 2020). The underlying concerns in this area of the problem are ensuring the authenticity of the origin and the integrity of the content as well as the readability of tax-relevant invoices for the citizen.

## ANALYSIS AND DISCUSSION

It is considered that the added value of the Approach focuses on systematizing knowledge, centralizing, and synthesizing information, providing important conceptual bases for the theme and making available the main changes that the introduction of QR-Code will cause in a fast-reading format, highlighting measures to be taken. Regarding the disadvantages of the approach, they focus on the fact that, as a result of the analysis of the data collection, it was found that information is not widely disseminated, and it is not possible to represent the interactions between the stakeholders in the approach.

The aim is to validate the approach drawn up, in order to analyze its suitability in practice. In view of this need, different types of the questionnaire were chosen according to the stakeholders in order to validate with experts the approach constructed. To this end, interview scripts were created, according to the profile of each actor, for subsequent analysis of content. Graph 1 briefly describes the number of interviews sent and the number of responses obtained.

**Graph 1.** Interviews sent and results obtained

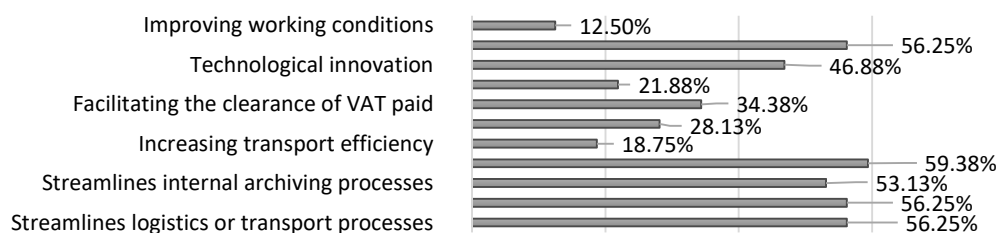


Through Graph 1 we can see that the highest number of results obtained Certified Accounting followed by the Tax and Customs Authority.

Following the analysis of the structured interviews, the existence of a common core between them highlights the need for a synthesis analysis of the interviews of the different stakeholders. In this sense, the data concerning the issues common to the groups analyzed, have been aggregated and analyzed, which we will present below.

In regard to the multiple-choice question, where it was requested that individuals indicate, from a common set of twelve advantages, those considered relevant with the introduction of the QR-Code on the invoice, it was possible to observe the following answers as presented below in Graph 2.

**Graph 2.** Advantages of introducing QR-Code on the invoice

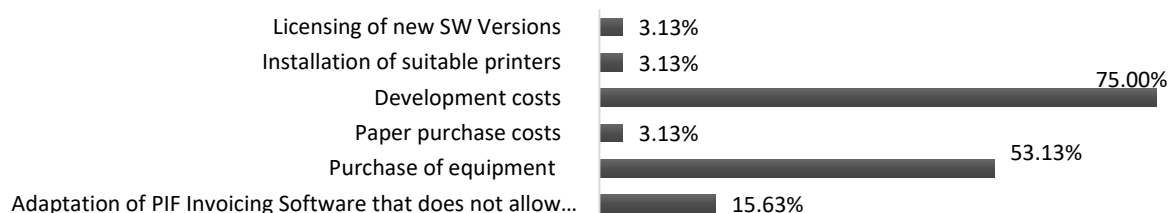


In an analysis of Graph 2, we can see that the advantages considered relevant for the respondents, are first of all the option "Assist in combating fraud and tax evasion" with 59.38%,

followed by “Integration of the documents produced by the invoicing program in the accounting software”, “Streamlines the internal processes of filing, Streamlines the business processes and Streamlines the processes of logistics and transport "ex-aequo" with 56.25%.

In regard to the multiple-choice question, where it was requested that individuals indicate, from a common set of five constraints, those that are expected to exist with the introduction of the QR-Code on the invoice, it was possible to observe the following answers as presented below in Graph 3.

**Graph 3.** Constraints you expect to exist with the introduction of QR-Code on the invoice



In analysis of Graph 3, we can see that the constraint Development costs, was the most marked by the respondents with 75.00% and followed by Equipment acquisition with 53.13%.

In regard to the multiple-choice question, where it was requested that individuals indicate, from a common set of four other functionalities, those considered relevant with the introduction of the QR-Code on the invoice, are firstly the Electronic Payments, with 75.00% and then the Integration in the logistic systems/stocks, with 62.50%. From the universe of respondents, when questioned if they consider that the QR-Code on the invoice may conflict visually with the QR-Code on the e-TaxFree invoice, 56.25% of respondents answered negatively and 37.50% of respondents answered positively.

In regard to the multiple-choice question, where it was requested that individuals indicate, from a common set of three advantages, those considered relevant with the introduction of the QR-Code on the invoice, the features considered relevant to the respondents are first of all the option "It would be interesting to develop functionalities that allow electronic payment if the purchaser wishes so", with 93.75%, followed by "Speed up the accounting records of the data on the invoice", with 75%.

## FUTURE RESEARCH DIRECTIONS

The products used in the composition of thermal paper, namely Bisphenol-A (BPA), are identified as harmful to health, and their use is therefore being regulated in several countries around the world. The European Union, through regulation (EU) no. 2235/2016 (European Commission, 2016), has legislated to ban the marketing of thermal paper products with concentrations equal to or greater than 0.02 % by mass, after January 2<sup>nd</sup>, 2020. As an EU regulation, it is binding in its entirety and directly applicable to all member states. An important aspect still to be studied will be the evaluation of the minimum quality of thermal paper, due to the fact that it is the most used in terms of invoicing in the retail sector, and the evaluation of compliance with this regulation by thermal paper suppliers.

Due to the current pandemic situation, with regards to the prepared questionnaires, it has not been possible to take the necessary steps to obtain more information. It will be important at a later stage, regarding the validation of the Approach, to obtain the opinion of the different



experts, in order to carry out a more in-depth study and enrich the present project. It is suggested that dissemination of the work done is carried out to the scientific and business community.

## CONCLUSION

The fact that certain countries adopt measures of unfair tax competition or create preferential tax regimes, thus constituting a factor of distortion and injustice, was decisive for the revision of traditional tax systems. The Approach validation was carried out through semi-structured interviews and online surveys and demonstrated the added value of such an Approach in view of its aggregation and multidisciplinary nature in support of the different stakeholders, providing in a single model an overview of the situation.

Therefore, the aforementioned Approach constitutes a fundamental element for decision making, strategy definition, while assisting in the analysis of the impact that the changes will cause at the level of the processes, guiding the creation of appropriate measures and the understanding of the implicit issues to the specificity of the situation. The added value of the Approach shall be deemed to focus on: systematize knowledge; centralize information; to provide a rapid and simplified reading of information; provide important conceptual bases for the subject; summarize relevant information; highlight the measures to be taken.

## REFERENCES

- CMMI Institute. (2019). *What is CMMI®?* Obtido em 18 de 11 de 2019, de [cmmiinstitute.com: https://cmmiinstitute.com/cmmi/intro](https://cmmiinstitute.com/cmmi/intro)
- Decree-Law 28/2019. (15 de 02 de 2019). Regulates the obligations regarding the processing of invoices and other fiscally relevant documents as well as the obligations to keep books, records and their supporting documents that fall upon VAT taxpayers. Lisbon, Portugal.
- Decree-Law nº 198/2012. (24 de 08 de 2012). Establishes measures to control the issue of invoices; form of communication to AT; encourages the request of invoice with NIF. Lisbon, Portugal.
- European Commission. (13 de 12 de 2016). Regulamento (UE) 2235. *Jornal Oficial da União Europeia*. Bruxelas. Obtido em 11 de 01 de 2020, de <https://eur-lex.europa.eu/legal-content/PT/TXT/PDF/?uri=CELEX:32016R2235&from=EN>
- ISACA. (2019). *COBIT® 2019 Framework: Introduction & Methodology*. Schaumburg, USA. doi:ISBN 978-1-60420-763-7
- ISO/IEC 18004:2015. (2015). ISO/IEC 18004:2015.
- ITIL. (2019). *What is ITIL® 4*. (l. AXELOS, Ed.) Obtido em 07 de 11 de 2019, de [www.itilportugal.pt: http://www.itilportugal.pt/itil-o-que-e/](http://www.itilportugal.pt: http://www.itilportugal.pt/itil-o-que-e/)
- ITSM Academy, Inc. (2019). *ITIL4 Training Catalog - ebook*. Obtido em 17 de 11 de 2019, de [www.itsmacademy.com: https://www.itsmacademy.com/about-us/](https://www.itsmacademy.com: https://www.itsmacademy.com/about-us/)
- Marques, A. (2020). *QR-Code na Fatura Eletrónica - Vantagens e Condicionantes*. Dissertação de Mestrado, Instituto Politécnico de Setúbal, Escola Superior de Ciências Empresariais, Setúbal. Obtido em 2020
- Marques, A., & Reis, L. (2020). QR-Code nos documentos fiscalmente relevantes em Portugal. *CISTI'2020 - 15ª Conferencia Ibérica de Sistemas e Tecnologías de Informação*, (pp. 1-7). Sevilha. Obtido em 30 de 06 de 2020
- Melo, C. M. (2018). *e fatura A reforma digital da AT. Implicações no crescimento da receita fiscal*. Tese, Instituto Superior de Gestão- ISG, Gestão Fiscal, Lisboa. Obtido em 18 de 12 de 2019, available at <https://comum.rcaap.pt/>

- Secretaria do Estado dos Assuntos Fiscais - SEAF. (04 de 07 de 2018). *Plano Estratégico de Combate à Fraude e à Evasão Fiscal e Aduaneira (PECFEFA) 2018-2020*.
- XXI Governo. (2015). *Relatório de Atividades Desenvolvidas Combate à Fraude e Evasão Fiscais e Aduaneiras*. (GSEAF, Ed.) Obtido em 18 de 12 de 2019, de blogs.sl.pt: [https://blogs.sl.pt/cloud/file/aa4ced447f00ac5becad3d5eeddd34cb/fiscalidadeonline/2016/Relatorio\\_de\\_Combate\\_a\\_Fraude\\_e\\_Evasao\\_Fiscal\\_2015\\_GSEAF.pdf](https://blogs.sl.pt/cloud/file/aa4ced447f00ac5becad3d5eeddd34cb/fiscalidadeonline/2016/Relatorio_de_Combate_a_Fraude_e_Evasao_Fiscal_2015_GSEAF.pdf)
- Zhang, W. (2018). Online Invoicing System based on QR Code Recognition and Cloud Storage. *Advanced Information Management, Communication, Electronic and Automation Control Conference (IMCEC 2018)*, (pp. 1-4). Xi'an Peihua University, Xi'an, China.



# EXPANSION OF E-PAYMENT

Vladimir Mladenović<sup>1</sup>  
Milica Krulj-Mladenović<sup>2</sup>  
Danilo Obradović<sup>3</sup>

DOI: <https://doi.org/10.31410/LIMEN.2020.175>

---

**Abstract:** *As a result of the difficulties caused by Covid-19 all over the world, there is an expansion of contactless and online payment. People are turning more and more toward E-commerce, and if this is not possible, they tend to choose contactless payment, in order to comply with all the current health and safety regulations. This paper is about the current variety of offers for contactless payment in Serbia, which is expanding daily. Cash is used less and less in Serbia, this being the consequence of mass usage of internet cards offered by the banks operating in our country, as well as Apple pay, one of the most advanced and secure ways of payment in the world.*

**Keywords:** *Internet, Card, Bank, Apple.*

---

## INTRODUCTION

How well a business company will do depends on its ability to find its appropriate place in the worldwide business distribution and to become a part of the global processes, which in turn demands working in an information oriented business environment.<sup>4</sup> Banks had at first been reluctant to all those innovations, but in the end, they accepted all the practices that the new era of the internet brought about. The internet opened a new chapter regarding money and systems of payment. All the established practices and business rules were replaced by a new system that had no model in the previous techniques and technologies and had to be invented from the beginning. Digital payment systems were developed under the pressure of the internet speedy expansion. The latest research results point out the fact that, of all the internet activities under research since 2000, online banking was the one with the fastest and most significant growth.<sup>5</sup> The development of modern banking itself is largely connected to the development and growth of information technologies. The growing number of new banking products causes an increase in the number of transactions because the absence of time and space limitations is used to the maximum.

---

<sup>1</sup> Academy of Vocational Studies South Serbia-Department of Business Studies Blace, 7 Partizanska Street, Leskovac, Serbia

<sup>2</sup> Academy of Vocational Studies South Serbia-Department of Business Studies Blace, 7 Partizanska Street, Leskovac, Serbia

<sup>3</sup> Academy of Vocational Studies South Serbia-Department of Business Studies Blace, 7 Partizanska Street, Leskovac, Serbia

<sup>4</sup> R. Stankić, *Elektronsko poslovanje*, Ekonomski fakultet, Beograd, 2007. str 13

<sup>5</sup> V. Vasković, *Sistemi plaćanja u elektronskom poslovanju*, Fakultet organizacionih nauka, Beograd, 2007. str 128

## CLASSIFICATION OF INTERNET CARDS

There are several models of internet card classifications, but we have selected to discuss the following classification. Prepaid cards are based on the same system as the prepaid cards issued by mobile operators. Their main characteristic is that we can use only the money we already have on our accounts, similar to mobile phone cards. They are therefore the safest to use on the internet since if they are possibly abused, we lose only the money already on the account, which we put there before some internet transaction. As opposed to that, there are cards connected to our current accounts, which enable us to use the money from the account, as well as from the overdraft. Those are the debit cards. The third type in this classification is the internet card which uses money from our credit cards. In this case, there is a possibility of using as much money as our credit card allows and even paying for the goods in installments, as specified in the contract we made with the bank when receiving the card.

## INTERNET PAYMENT IN SERBIA

This is the right moment for the promotion of massive use of internet cards in Serbia, as well as worldwide, having in mind the Coronavirus situation, limited contacts, as well as many other limitations imposed on our normal functioning. Whether we like it or not, we are stuck with shopping on the internet. Ordering necessities, paying the bills, fulfilling our monetary obligations online – it is all meant to make our lives easier in these times, but also in the times to come. The benefits of using the internet in everyday life today are immeasurable, with a tendency to become even more so in the future. At the moment, there is a boom in applications which use internet cards in our country. The example set by some companies is the way everyone should follow. Drive.Go.<sup>6</sup> is the application that was created to help people pay for gas at the gas stations without physical contact or having to enter the premises. Wolt<sup>7</sup> enables a contactless food delivery from the location of your choice to your location. Enpay<sup>8</sup> enables electronic payment of highway tolls in Serbia. Besides applications, there is an increasing number of foreign and domestic sites which offer the possibility of online ordering and payment, all for the purpose of easier functioning in these conditions. The habits created with people in these times are bound to leave a deep trail in the practice of internet transactions. This is a turning point for them, and they are bound to grow, regardless of the virus situation.

## KOMERCIJALNA BANKA

KOM4PAY is the new way of payment via the internet. It enables you to make a payment via the internet without using the card, entering the account number, PIN or other confidential data. All you need to enter the application is a user name and a password. Each payment is further authorized by the client using a single-use security code (SMS or Token)<sup>9</sup>.

## BANCA INTESA

Visa Internet card is created exclusively for the payment of goods and services on the internet, thus it is not possible to use it on the POS terminals and ATMs, and it is issued without a PIN code. When shopping on sites that bear the „Verified by Visa“ mark, the payment is verified

---

<sup>6</sup> [www.nis.eu](http://www.nis.eu), access 13.04.2020.

<sup>7</sup> [www.wolt.com](http://www.wolt.com), access 13.04.2020.

<sup>8</sup> [www.enpay.rs](http://www.enpay.rs), access 14.04.2020.

<sup>9</sup> <https://www.kombank.com/sr/e-servisi/stanovnistvo-e-servisi/kom4pay-novi-nacin-placanja-preko-interneta>, access 20.04.2020.

by a single-use password issued for every transaction and sent by SMS to a verified phone number. The expenditure limit is defined by the amount available on the client's foreign currency account.<sup>10</sup> The way the bank protects its clients against the abuse of internet payments by issuing a special-purpose card mentioned above is good from the security point of view, but is it really necessary that each card has its exclusive use and that we have one for each of them?

#### Secure link

A secure link is one of the solutions for internet shopping. Pay by link or payment via link functions in the following way: a company creates a link that directs a customer to a page where he/she can be informed about all the relevant payment details and securely use his/her card.<sup>11</sup>

#### 3D secure

3D secure (also often appears as Verified by Visa, MasterCard SecureCode or American Express SafeKey) is a card authentication service that allows its owner to use it exclusively.<sup>12</sup> If during the payment process a window appears with a request to enter a single-use security code, it means that the card is already registered. The code will be sent to the phone number given to the bank. There is also verification through a PIN code obtained in the bank when receiving the card. Only during the first usage of this system, it is necessary to follow the card registration instructions.

#### Paywave – paypass

Visa or Mastercard, i.e., Paywave or Paypass - contactless payments are carried out by simply tapping your card near the terminal. It is not necessary to hand the card to the shop assistant or to perform any other actions. It is therefore ideal for use during the pandemic. The very idea of having a payment card was originally inspired by the need to prevent the bacterial infections caused by handling money notes. The mission was therefore completed successfully - this system is extremely convenient in the time of Coronavirus.

### QR CODE

IPS or instant payment is the way of payment available with Banca Intesa. A client chooses IPS Show or IPS Scan option on the homepage of the mobile application, within the Payment option. He/She then must show the QR code to the shop assistant, who scans it and completes the payment process.<sup>13</sup> A client can also scan the QR code on the bill and complete the payment.

### APPLE PAY IN SERBIA

Apart from internet payments, the company Apple has provided the clients in Serbia with its payment service. ApplePay is finally available in Serbia, at the moment only in selected banks, but it is good to see that the most contemporary payment services function in our country too. Raiffeisen, Procredit and OTP are among the first banks to provide this service in Serbia. By several simple adjustments, you are provided with a virtual wallet on your smartphone or

<sup>10</sup> <https://www.bancaintesa.rs/stanovnistvo/platne-kartice/debitne-kartice/visa-internet-kartica.1679.html>, access 02.05.2020.

<sup>11</sup> <https://www.allsecure.rs/sr/securelink-pojednostavnite-naplatu-putem-linka-za-placanje/>, access 02.05.2020.

<sup>12</sup> <https://www.allsecure.rs/sr/securelink-pojednostavnite-naplatu-putem-linka-za-placanje/>, access 02.05.2020.

<sup>13</sup> [www.bancaintesa.rs](http://www.bancaintesa.rs), access 03.11.2020.



smartwatch. All you need is to have an account in one of the previously mentioned banks and to apply for this service – and you will be able to forget about cash or payment cards. You will just need your mobile phone with the IOS operative system or an Apple watch in order to use this service. ApplePay is used for safer and easier payments in shops that support contactless payment, online payment services and applications that support ApplePay. If you are using Touch ID, i.e. fingerprint payment confirmation, you just need to press your Iphone to the contactless POS terminal simultaneously holding your finger on the fingerprint reader on your Iphone. To confirm the payment with Face ID, i.e. face scan, press twice the button on the right side of your phone facing the screen, and then press your Iphone to the contactless POS terminal.<sup>14</sup>

These advanced options offered by Apple are among the most contemporary payment services in the world and are designed in order to make the lives of their users easier. One of their services, Apple Pay cash, is still not available in our country. It is used for direct payments between the users transferring the money via iMessage.

## CONCLUSION

The current state of the epidemic in Serbia, imposed upon all of us, directs us towards using electronic payment. There are more payment services besides those listed above, but we have chosen to present the most commonly used services.

During the past year, more than 1 820 000 people have ordered and purchased goods or services via the internet.<sup>15</sup> We have no data as to how many people had used those services before, but we have the information that almost 20 000 more people were using those services than the year before. When we consider the fact that during 2019 over 93.7% of the population of Serbia used mobile phones, i.e. over 4 950 000, and that over 3 810 000 used the internet every day, we can come to the conclusion that electronic payment services are gradually taking the lead compared to the traditional types of payment. This sudden increase in the number of people shopping online, using mobile phones and the internet, using numerous mobile applications, among which there are many electronic payment services, initially spurred by the Covid virus pandemic, progressed further during 2020, and this will undoubtedly be proven in subsequent research.

## REFERENCES

- R. Stankić (2007), *Elektronsko poslovanje*, Ekonomski fakultet, Beograd.  
V. Vasković (2007), *Sistemi plaćanja u elektronskom poslovanju*, Fakultet organizacionih nauka, Beograd. [www.nis.eu](http://www.nis.eu), access 13.04.2020.  
[www.wolt.com](http://www.wolt.com), access 13.04.2020.  
[www.enpay.rs](http://www.enpay.rs), access 14.04.2020.  
[www.kombank.com](http://www.kombank.com)  
[www.bancaintesa.rs](http://www.bancaintesa.rs)  
[www.allsecure.rs](http://www.allsecure.rs)  
[www.otpsrbija.rs](http://www.otpsrbija.rs)  
Statistical Office of the Republic of Serbia:  
<http://publikacije.stat.gov.rs/G2019/Pdf/G201916014.pdf>

---

<sup>14</sup><https://www.otpsrbija.rs/apple-pay/>, access 03.11.2020.

<sup>15</sup><http://publikacije.stat.gov.rs/G2019/Pdf/G201916014.pdf>

# MULTIDISCIPLINARY SUSTAINABILITY - THE MULTIPLE PERSPECTIVES OF A SOCIAL ORGANIZATION

Leonilde Reis<sup>1</sup>   
Clara Silveira<sup>2</sup> 

DOI: <https://doi.org/10.31410/LIMEN.2020.179>

---

**Abstract:** *Information and Communication Technologies in the context of social organizations, enhance the definition of strategies to optimize the use of Information Systems in order to provide better support services to their users. The paper presents a real case of optimizing the current information system of a social organization in which it proposes to develop an integrative and multidisciplinary prototype incorporating sustainability concerns in the context of sustainable development objectives to improve cooperation between the Institution and its users. The methodology adopted was based on the literature review of the thematic and the case study. The main results point to the added value that a multidisciplinary and aggregator prototype can constitute in order to incorporate sustainability concerns in the technical, environmental, social, economic and individual fields.*

**Keywords:** *Sustainability, Information systems, Software development, Information and communication technologies.*

---

## INTRODUCTION

Currently, most organizations are dependent on Information and Communication Technologies (ICT) in order to create added value to their business. In particular, social organisations are faced with the asset of specific challenges given the characteristics inherent to them. In this sense, it is advocated that the contribution of Information and Communication Technologies is of great interest to the implementation of strategies to support the activities of a social organization.

It is also considered that concerns in the field of social sustainability may go towards delineating a set of actions aimed at improving the quality of the provision of services to users of the Institution. These actions aim to reduce social inequalities, expand rights and ensure access to services, especially health and well-being.

For Balaman (Balaman, 2019), social sustainability includes the management of positive and negative impacts of systems, processes, organizations and activities on people and social life. This concept integrates, among many others, the topics of health and social equality, human and worker rights, justice, community development and well-being, community resilience and cultural competence.

The concept of social sustainability applies to the social organization of the case study to the extent that it integrates the multiple dimensions of sustainability: human, social, environmental, economic and technical, thus constituting multidimensional sustainability.

---

<sup>1</sup> Polytechnic Institute of Setúbal, Portugal  
<sup>2</sup> Polytechnic Institute of Guarda, Portugal

## BACKGROUND

The Sustainable Development Goals (SDGs), also known as Global Goals, were adopted by all United Nations Member States in 2015 as a universal call to action to end poverty, protect the planet and ensure that everyone enjoys peace and prosperity by 2030 (UNDP, 2015).

**Figure 1.** SDG's - Agenda for Sustainable Development



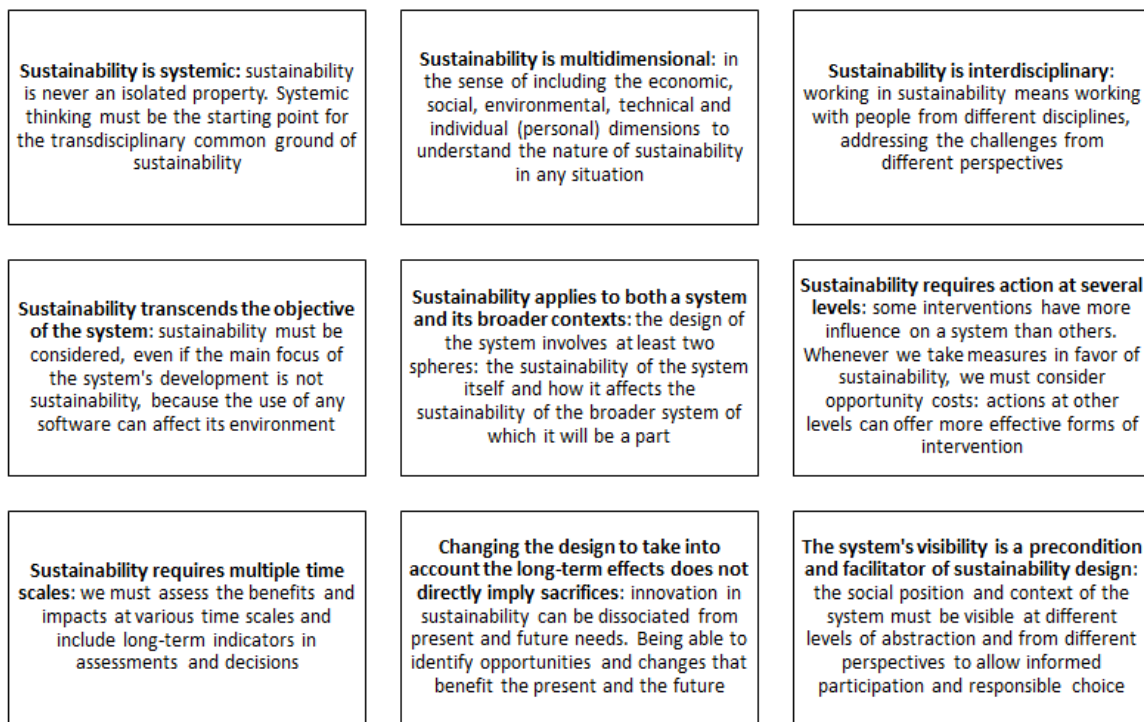
**Source:** (UNDP, 2015)

The 17 SDGs (Figure 1) are integrated as action in one area will affect results in others. The complex challenges we face today (for example, containing the spread of the pandemic) cannot be tackled in isolation. Therefore, integrated solutions require a common understanding of sustainable development.

The study of sustainability (Gianni, Gotzamani, & Tsiotras, 2019; Hettrick, 2016; Meneses, 2019; Software Sustainability Institute, 2019; SustainAbility, 2018) in the various areas of knowledge is of the utmost importance. The research and applicability of sustainability software development and information systems is also critical. The software has made an invaluable contribution to the advancement of research (Software Sustainability Institute, 2019) by responding to the great challenges of our society. Good sustainability practices will enhance more sustainable and reusable software development. Software sustainability creates reliable, reproducible and reusable software (Hettrick, 2016).

In the research of (Becker, et al., 2015; Oyedeji, Ahmed, & Penzenstadler, 2017; Penzenstadler, 2015), sustainability is multidimensional as it leads to the economic, social, environmental, technical and individual dimensions. Also in the perspective of these authors, the sustainability of the software is a principle and a commitment contained in the Manifesto de Karlskrona - Sustainability Design and Software. These principles are presented in Figure 2.

**Figure 2. SDG's – Sustainability Principles - Karlskrona Manifesto**



**Source:** Adapted from (Becker et al., 2015)

Regarding these principles (Figure 2), it is intended to study the possible impact that sustainability concerns may contribute to the reflection on the current practices established in social organizations in this field of knowledge.

## CASE STUDY

The case study, which is presented, aims to characterize the situation of the Community of São Domingos (CSD). The socio-cultural characterization of the Community was based on the need to optimize information system to support the activity of a social organization here called the Social Center.

The areas involved in studying the various valences supported by a comprehensive strategy were analyzed, namely: physical therapy, social situation, medical care, nursing care, housing, experience, skills, health, training, and volunteering (Silveira, Reis, Santos, & Mamede, 2020b).

In order to integrate citizens, it is necessary to establish partnerships and involve official entities, such as: Public Security Police, Foreigners and Borders Service, Social Security, Parish Council, and Health Center.

To summarize all this information, Figure 3 was elaborated, which aims to show the areas involved in a multidisciplinary logic of support to the citizen of a community, which counts, by its nature, the commitment of the various official entities.

**Figure 3.** CSD characterization in promoting SDG's



**Source:** (Silveira & Reis, 2021)

Figure 3 allows the various entities involved in the process of creating synergies to optimize the provision of services to their users. It also shows the SDGs involved in each valence. In this way, sustainability is promoted in the community.

It should be noted that knowledge is creative and must be stimulated to develop (Davenport & Prusak, 1998). In this way, technology is a mean to improve communication and collaboration between community elements, and experience/knowledge and skills can be shared (Silveira, Reis, Santos, & Mamede, 2020a).

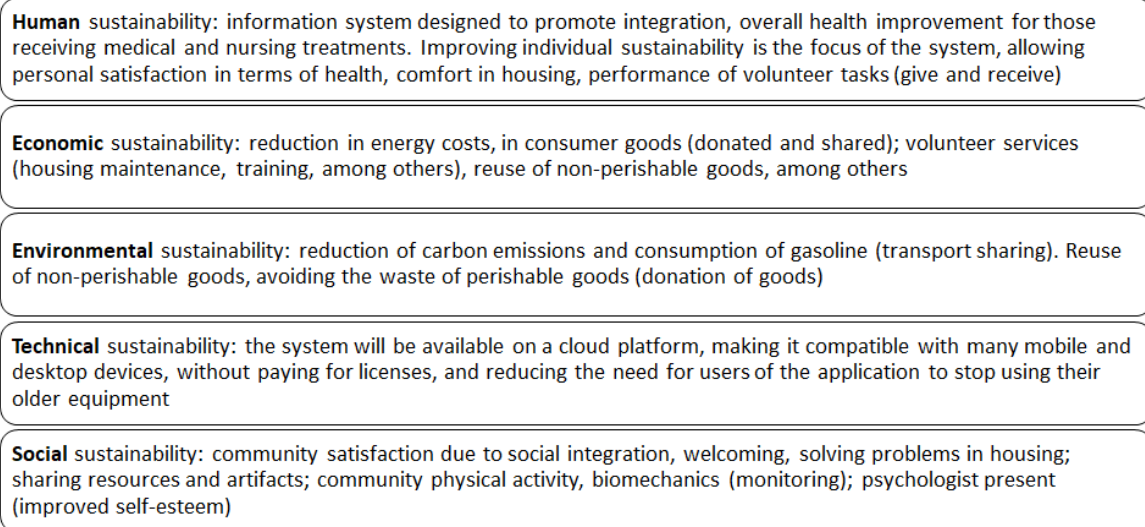
It is also intended to create a platform in which the various actors can, under their access profile, access the information of the elements of the CSD under analysis in order to optimize the services provided.

Based on the principles and commitments of the *Karlskrona Manifesto* (Becker et al., 2015), which provide an overview of the various dimensions of sustainability and its relationships, the corresponding scheme for CSD was built, it is thus intended to show the impact that sustainability concerns can have when optimizing an information system.

The application of the five dimensions of sustainability are described in Figure 4.

Figure 4 presents the various dimensions of sustainability, giving the various valences in the human, economic, environmental, technical and social fields that can be incorporated in view of the specificity of the case under study.

**Figure 4.** Five dimensions of sustainability



## FUTURE RESEARCH DIRECTIONS

Organizations feel the need to expand, improve their services and reduce response times to citizens, who are their customers (Landum, Reis & Moura, 2020). Another aspect that also raises concerns is the domain of information security. In order to implement resilience and follow directives that encourage protection against disruptive incidents or events, Information Systems are increasingly prepared to resist failure, (Russo & Reis, 2020). Open source platforms as well as the development of software free may be an added value in this area of work given the constraints of social organisations.

## CONCLUSION

The optimization of the CSD SI was the basic objective of this Project. For its implementation, the literature was reviewed in this area, as well as including in this aspect of analysis concerns in the dimensions of sustainability, from the point of view: social, economic, technical, environmental and individual. With reference to these objectives, we studied the possible impact that the concerns raised in the various manifestos could contribute to the reflection on the current practices established in organizations in this field of knowledge.

The prototype, still under development, will enhance management practices, contributing to the optimization of the provision of services given the existence of several access profiles in order to allow the cooperation of several key areas in support of users. In view of the current state of the pandemic, teleworking can be a differentiating factor in the provision of social services of the institution with the increase of users in need of social support.

It is therefore considered that it was possible to assess that the implementation of sustainability concerns in an integrated aspect when optimising an IS and business support ICT can provide added value in order to contribute to the achievement of gains in various aspects.

As future work prospects, it is considered relevant to continue the analysis and strategy of optimizing policies in this field of knowledge. It is also intended to address the underlying concerns of information security, based on the specificity of the organization, service levels



and access profiles, as the practices instituted to contribute to the availability of information and ubiquity can be optimized. It is also considered that paper dematerialisation can provide added value in process optimisation and thus contribute to sustainability.

## REFERENCES

- Becker, C., Chitchyan, R., Duboc, L., Easterbrook, S., Penzenstadler, B., Seyff, N., & Venters, C. (2015). Sustainability Design and Software: The Karlskrona Manifesto, Proc. 37th International Conference on Software Engineering (ICSE 15).
- Balaman, S. (2019). Sustainability Issues in Biomass-Based Production Chains. In Balaman, S. *Decision-Making for Biomass-Based Production Chains*, Academic Press. <https://doi.org/10.1016/B978-0-12-814278-3.00004-2>.
- Gianni, M., Gotzamani, K., & Tsiotras, G. (2019). Multiple perspectives on integrated management systems and corporate sustainability performance. *Journal of Cleaner Production*, 168, 1297-1311. doi:doi.org/10.1016/j.jclepro.2017.09.061.
- Davenport, T., & Prusak, L. (1998). *Conhecimento Empresarial*. Rio: Campus.
- Hettrick, S. (2016). Research Software Sustainability: Report on a Knowledge Exchange Workshop; *The Software Sustainability Institute*.
- Landum, M., Reis, L., & Moura, M., (2020). Concept of approach to optimize ICT management practices - State of the art, in L. Cagica Carvalho, L. Reis, A. Prata, R. Pereira (eds), *Handbook of Research on Multidisciplinary Approaches to Entrepreneurship, Innovation, and ICTs*, USA: IGI Global, DOI: 10.4018/978-1-7998-4099-2.ch009.
- Meneses, J. (2019). *A sustentabilidade em 2019*. Retrieved October 25, 2019, from BCSD Portugal: [www.bcsdportugal.org/noticias/a-sustentabilidade-em-2019](http://www.bcsdportugal.org/noticias/a-sustentabilidade-em-2019).
- Oyedeji, S.; Ahmed, S., & Penzenstadler, B. (2017). Sustainability Quantification in Requirements Informing Design; *RE4SuSy2017*.
- Penzenstadler, B. (2015). Sustainability and Requirements: A Manifesto, *IEEE Software*; Volume: 32, Issue: 05, pp 90-92.
- Russo N., & Reis, L., (2020). Methodological approach to systematization of Business Continuity in organizations, in L. Cagica Carvalho, L. Reis, A. Prata, R. Pereira (eds), *Handbook of Research on Multidisciplinary Approaches to Entrepreneurship, Innovation, and ICTs*, USA: IGI Global, DOI: 10.4018/978-1-7998-4099-2.ch010.
- Silveira, C., & Reis, L. (2021). Sustainability in Information and Communication Technologies. In Carvalho, L. C., Reis, L., Prata, A., & Pereira, R. (Ed.), *Handbook of Research on Multidisciplinary Approaches to Entrepreneurship, Innovation, and ICTs* (pp. 375-396). IGI Global. <http://doi:10.4018/978-1-7998-4099-2.ch017>.
- Silveira, C., Reis, L., Santos, V. & Mamede, H. (2020a). Criatividade no Design de Protótipos - O caso das Organizações Sociais. CISTI'2020 - 15th Iberian Conference on Information Systems and Technologies, Sevilha, Espanha, doi: 10.23919/CISTI49556.2020.9140870.
- Silveira, C., Reis, L., Santos, V. & Mamede, H. (2020b). Creativity in Prototypes Design and Sustainability – The case of Social Organizations, *Advances in Science, Technology and Engineering Systems Journal*, vol. 5, no. 6, pp. 1237-1243, doi: 10.25046/aj0506147.
- Software Sustainability Institute. (2019). *Manifesto*. Retrieved from Software Sustainability Institute: [www.software.ac.uk/about/manifesto](http://www.software.ac.uk/about/manifesto).
- SustainAbility. (2018). *Sustainability: Can our society endure?* Retrieved September 25, 2019, from: SustainAbility an ERM Group company: [sustainability.com/sustainability/](http://sustainability.com/sustainability/).
- UNDP (2015). Sustainable Development Goals, Retrieved September 30, 2019, from *United Nations Development Programme*: [www.undp.org/content/undp/en/home/sustainable-development-goals.html](http://www.undp.org/content/undp/en/home/sustainable-development-goals.html).

# SOCIAL ENGINEERING AND INFORMATION AND COMMUNICATION TECHNOLOGIES

António Lopes<sup>1</sup>   
Leonilde Reis<sup>2</sup> 

DOI: <https://doi.org/10.31410/LIMEN.2020.185>

---

**Abstract:** *Social Engineering, in view of the current dependence of information systems and information and communication technologies organizations, is of great interest in creating conditions, in order to reduce the threats and vulnerabilities, to which organizations are exposed. Thus, Social Engineering is considered to have emerged as a serious threat in virtual communities and is an effective way of attacking information systems, by creating conditions in order to jeopardize business continuity. The article presents the problem in the field of Information Security, emphasizing concerns in the field of Social Engineering in view of the vulnerabilities to which the generality of organizations is exposed. The research methodology adopted is Design Science Research, given the specificity of the problem. The main results are the literature review in the field of Social Engineering, with special emphasis on attack models and a reflection of the real-world professional experience.*

**Keywords:** *Social engineering, Information security, Information systems, Information and communication technologies.*

---

## INTRODUCTION

Currently, the majority of organizations are dependent on their Information Systems (IS), supported by the Information and Communication Technologies (ICT). It is considered that this interdependency is often scaled up and organizations are exposed to various vulnerabilities.

Therefore, the problem surrounding the issues concerning Information Security (InfoSec), is of particular interest, namely Social Engineering. It is considered that the services used by the organizations stakeholders enhance the preparation of spaces for sophisticated attacks of Social Engineering (ES).

The analysis of the national legal framework and relevant international regulations/standards in this field may be of interest in the sense of systematizing knowledge. It is considered that the analysis of ISO/IEC 27001:2013, ISO/IEC 27002:2013 and ISO/IEC 27008:2019 standards may constitute added value in identifying components to be included in a Framework, in which the social engineering problem is systematized.

The *Design Science Research* (DSR) methodology was adopted as a theoretical basis for sustaining the scientific validity for the elaboration of this work (Peppers, Tuunanen, Rothenberger, & Cha, 2007). Because it is a research methodology indicated for research projects in technologies and information systems and systems architectures, (Ferreira, Ferreira,

---

<sup>1</sup> Polytechnic Institute of Setúbal, Portugal  
<sup>2</sup> Polytechnic Institute of Setúbal, Portugal

Silva, & Carvalho, 2012), inherent to the activity design ensures in this way, discipline, rigor and transparency, (Pedro, 2015), cited by, (Lacerda, Dresch, Proença, & Antunes Júnior, 2013). It is a widely used methodology in the domain of IS because it has the necessary iterations for the development of the artifact, in order to be possible to define a framework.

## **SOCIAL ENGINEERING**

Is considered that ES has emerged as a serious threat in virtual communities and is an effective means of attacking IS. The services used by employees enhance the preparation of spaces for sophisticated ES attacks. The growing trend towards Bring Your Own Device (BYOD) policies and the use of online communication and collaboration tools in private and business environments worsen the problem (Krombholz, Hobel, Huber, & Weippl, 2015). An ES attack aims to exploit vulnerabilities using various manipulation techniques to obtain sensitive information. ES's dominance is still in the early stages, regarding formal definitions, attack frames and attack models (Mouton, Leenen, & Venter, 2016).

ES attack models generally cover the three types of communication, namely two-way communication, one-way communication, and indirect communication. To perform comparative studies of different models, processes and frameworks, it is necessary to have a formalized set of scenarios of ES attacks that are fully detailed in all phases and stages of the process. ES attack models are converted to ES attack scenarios, populating the model with individuals and objects from real-world examples, maintaining the detailed flow of the attack, as provided in the model, (Mouton, Leenen, & Venter, 2016).

Decreased personal interaction combined with a multitude of tools used for communication (*email, IM, Skype, Dropbox, LinkedIn, Lync*, etc.) create new attack vectors for ES attacks. Attacks on companies show that targeted phishing *attacks* are an effective and evolving step in ES attacks that constitute a dangerous weapon that is often used by advanced persistent threats (Krombholz, Hobel, Huber, & Weippl, 2015).

A *phishing* attempt is an example of an attack ES. As in a banking institution or other organization where you have an account, ES uses this method and may use company logos or information about you to appear as a legitimate user (Srivastava, Walker, & Olson, 2015).

Semantic attacks are the specific type of ES attacks that mislead technical defenses by actively manipulating the characteristics of objects, such as platform or system applications, to trick rather than directly attack the user. Generally observed examples include URL's, phishing emails, drive-by downloads, fake websites and scareware (Heartfield & Loukas, 2015).

It is considered that the methods and systems of ES attack deployment include: extracting one or more non-semantic data items from an incoming e-mail; determine whether non-semantic data correspond to the information stored in a previously collected information database; conducting behavioral analyses on one or more items of non-semantic data; analyzing semantic data associated with e-mail to determine whether non-semantic data corresponds to one or more patterns associated with malicious emails; and based on determination, realization and analysis, identifying email as potentially malicious or non-malicious, may constitute added value, (Srivastava, Walker, & Olson, 2015).

## SOCIAL ENGINEERING ATTACK MODELS

Current studies aim to demonstrate the usefulness of ES Attack Frameworks in preventing ES attacks. One of these studies, released by (Mouton, Leenen, & Venter, 2016), states that when a question is posed to the potential victim of attack, it is very important that they identify, without any doubt, what information is being requested.

**Figure 1.** Social Engineering Attack Deployment Model

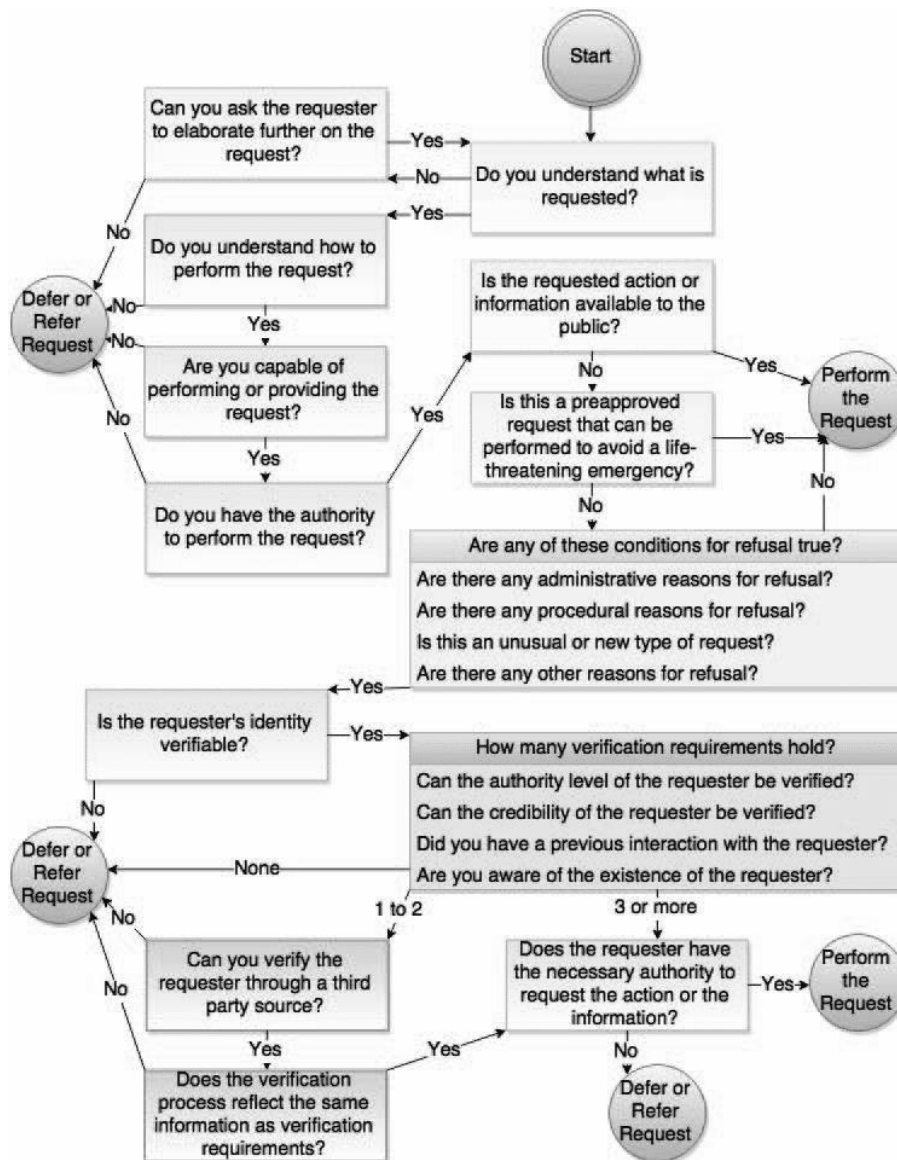


Figure 1 presents a proposed model in order to identify the possibility of facing an Attack of ES. In view of the study carried out, it is emphasized that the Framework is in the initial phase of development. The Framework will be multidisciplinary and aggregator of international standards, legal framework, recommendations, guiding and supporting stakeholders in the selection and definition of controls that ensure the security of organizational information and avoid possible attacks of Social Engineering. The framework under development has the objective to incorporate the valences underlying the scientific vision under study in the field of theme, but also the organizational practices defined as well as incorporate the practical know-how obtained in the international context.

## FUTURE RESEARCH DIRECTIONS

As ICT evolves, ES attacks become increasingly frequent. It is also considered imperative to include, in this context, the sustainability concerns of ICT, (Silveira & Reis, 2020) and (Reis, et al. 2020). In this sense, ES is able to implement strategies for manipulating people's minds to obtain private information, instead of attempting the attack on security devices. It is advocated that a set of strategies should be delineated, so that people are aware of the problems of InfoSec, namely likely attacks of ES.

In view of the studies analyzed, it is also concluded that most incidents with InfoSec are related to processes and human behavior itself, to the detriment of more technical issues. The prospects for future work are intended to continue the development of the Framework within the InfoSec Framework, more specifically in the area of ES, which allows the understanding and integration of issues related to ES, in order to allow the definition of strategies (Lopes & Reis, 2021).

## CONCLUSION

It is considered that in view of the increasing dependence on ICT businesses, organizations are generally vulnerable in the field of InfoSec. In this sense, and face to the studies analyzed, it is also concluded that most incidents with InfoSec are related to processes and human behavior itself, rather than technical issues.

Regardless the importance and pertinence of the development of a multidisciplinary framework and aggregator of a set of valences, it has the intention of contributing to brist gaps in this field of knowledge.

The future work perspectives are intended to continue the development of the Framework within the InfoSec field, more specifically in the area of ES, which allows understanding and integrating issues related to ES, helping in the definition of strategies and optimizing the practices currently established in organizations.

## REFERENCES

- Bianchi, I., & Dinis de Sousa, R. (2015). Governança de TI em universidades públicas: Proposta de um modelo. Instituto Universitário de Lisboa (ISCTE-IUL). Obtained from <http://hdl.handle.net/1822/39467>
- Eiras, M. (2004). Engenharia Social e Estelionato Eletrônico. Rio de Janeiro.
- Ferreira, I., Ferreira, S., Silva, C., & Carvalho, J. (2012). Dilemas iniciais na investigação em TSI design science e design research, uma clarificação de conceitos. Proceedings of Conferência Ibérica de Sistemas y Tecnologias de Informação. Obtained from [https://repositorium.sdum.uminho.pt/bitstream/1822/21696/1/CISTI 2012.pdf](https://repositorium.sdum.uminho.pt/bitstream/1822/21696/1/CISTI%202012.pdf).
- Heartfield, R., & Loukas, G. (December de 2015). A Taxonomy of Attacks and a Survey of Defence Mechanisms for Semantic Social Engineering Attacks. ACM Computing Surveys(37). doi: <https://doi.org/10.1145/2835375>
- Hevner, A., March , S., Park, J., & Ram, S. (2004). Design Science in Information Systems Research. MIS Quarterly, 1(28), 75–105.
- ISO/IEC 27001:2013. (2013). Information technology — Security techniques — Information security management systems — Requirements. ISO/IEC.





- ISO/IEC 27002:2013. (2013). Information technology — Security techniques — Code of practice for information security controls. ISO/IEC.
- ISO/IEC 27008:2019. (2019). Information technology — Security techniques — Guidelines for the assessment of information security controls. ISO/IEC.
- Kaspersky. (2020). What is Social Engineering?: Obtained from <https://www.kaspersky.com/resource-center/definitions/what-is-social-engineering>
- Krombholz, K., Hobel, H., Huber, M., & Weippl, E. (June de 2015). Advanced social engineering attacks. *Journal of Information Security and Applications*, 22, 113-122. doi:<https://doi.org/10.1016/j.jisa.2014.09.005>
- Lacerda, D. P., Dresch, A., Proença, A., & Antunes Júnior, J. A. (2013). Lacerda, D. P., Dresch, A., Proença, A., & Antunes Júnior, J. A. V. (2013). Design Science Research: 89 método de pesquisa para a engenharia de produção. *Gestão & Produção*, 20(4), pp. 741–761. Obtained from Design Science Research: método de pesquisa para a engenharia de produção. *Gestão & Produção*, 20(4), 741–761,; <https://doi.org/10.1590/S0104-530X2013005000014>
- Lopes, A. & Reis, L. (2021). Framework para avaliação de ameaças à segurança de informação com recurso a engenharia social no contexto organizacional. V International Forum on Management. Instituto Politécnico de Setúbal. Setúbal.
- Mitnick, K. D., & Simon, W. L. (2003). A Arte de Enganar - Ataques de Hackers: Controlando o Fator Humano na Segurança da Informação. São Paulo: Pearson Education.
- Mouton, F., Leenen, L., & Venter, H. (June de 2016). Social Engineering Attack Examples, Templates and Scenarios. *Elsevier Computers & Security*, 59, 186-209. doi:<https://doi.org/10.1016/j.cose.2016.03.004>
- Mouton, F., Leenen, L., & Venter, H. S. (2015). Social Engineering Attack Detection Model: SEADMv2. *International Conference on Cyberworlds (CW)*, pp. 216-223.
- Mouton, F., Leenen, L., Malan, M., & Venter, H. (2014). Towards an Ontological Model Defining the Social Engineering Domain, in Kimppa, K. et al. (eds) *ICT and Society* . (S. B. Heidelberg, Ed.) *IFIP Advances in Information and Communication Technology*, 266-279. doi:[https://doi.org/10.1007/978-3-662-44208-1\\_22](https://doi.org/10.1007/978-3-662-44208-1_22)
- Pais, R., Moreira, F., & Varajão, J. (2013). Engenharia Social (ou o carneiro que afinal era um lobo). doi:<http://hdl.handle.net/11328/1347>
- Pedro, S. (2015). Modelação de Processos para as principais áreas de Recursos Humanos. Nova Information Management School.
- Peppers, K., Tuunanen, T., Rothenberger, M., & Cha. (2007). A Design Science Research Methodology for Information Systems Research. *Journal of Management Information Systems*, 3(24), 45-78.
- Reis, L., Silveira, C., Péricles, C., Pires, G., Carvalho, L., & Mata, C. (2020). The potential of technology in transforming it into a more sustainable society model – The Homeless Person case. 20ª Conferência da Associação Portuguesa de Sistemas de Informação - CAPSI 2020. Porto, Portugal.
- Russo, N., & Reis, L. (2020a). Certificação de Programas de Faturação - Guia para a Continuidade de Negócio. Lisboa: FCA.
- Russo N., & Reis, L., (2020b). Methodological approach to systematization of Business Continuity in organizations, in L. Cagica Carvalho, L. Reis, A. Prata, R. Pereira (eds), *Multidisciplinary Approach to Entrepreneurship, Innovation, and ICTs*, USA: IGI Global.
- Roquete, M. (2018). Modelo de maturidade para apoio à implementação de uma filosofia de gestão orientada a processos numa organização. Nova Information Management School, Lisboa.



- Sêmola, M. (2014). *Gestão da segurança da informação: Uma Visão Executiva* (2ª ed.). São Paulo: Elsevier.
- Silveira, C. & Reis, L., (2020). Sustainability in Information and Communication Technologies, in L. Cagica Carvalho, L. Reis, A. Prata, R. Pereira (eds), *Multidisciplinary Approach to Entrepreneurship, Innovation, and ICTs*, USA: IGI Global.
- Srivastava, M., Walker, W., & Olson, E. (2015). *Social Engineering Protection*. QINETIQ North America, Inc.
- Thornburgh, T. (October de 2004). Social engineering: the "Dark Art". InfoSecCD '04: Proceedings of the 1st annual conference on Information security curriculum development, (pp. 133-135). doi:<https://doi.org/10.1145/1059524.1059554>

# GROWTH AND DEVELOPMENT OF THE COMPANY AS A FACTOR IN IMPROVING BUSINESS EFFICIENCY

Vuk Bevanda<sup>1</sup>   
Aleksandra Živaljević<sup>2</sup>   
Biljana Pejović<sup>3</sup> 

DOI: <https://doi.org/10.31410/LIMEN.2020.191>

---

**Abstract:** *In modern business conditions, companies must be ready to respond at any time to the challenges, requirements and limitations that come from the environment. The development of a company is often described as a set of changes, i.e. metamorphoses, which it experiences during the adaptation to the challenges and threats that come from the environment, which are constantly present in the business process of the company. Broadly speaking, the development of a company represents the totality of the changes that it experiences in its life cycle, during its existence and business. The growth of a company is a change in its size, which is reflected in the number of employees, profit size, size and strength of installed capacities, market opportunities, market share. The paper aims to analyze the role and importance of growth and development in the business of modern companies, as well as their impact on improving business efficiency.*

**Keywords:** *Growth, Development, Company, Business, Market, Factors.*

---

## 1. COMPANY'S GROWTH GOALS

If we look at the goal as a future situation or state to which the company aspires, then we can define growth goals as the company's effort to provide such a size, organizational structure and system of business relations with the environment, which will allow it to use available resources more efficiently, and that it more effectively achieves its economic role and goals.

The growth of a company is not a goal itself, but a path that leads the company to achieve higher profit, better market position and increase the material basis of development.

With the help of growth, the company is able to more efficiently implement existing goals and take on new tasks and jobs in performing its activities, work and business processes.

“A growing business is expanding in one or more ways. There is no single metric used to measure growth. Instead, several data points can be highlighted to show a company is growing. These include revenue, sales, company value, profits, number of employees, number of customers.” (<https://www.act.com/en-uk/business-growth>, accessed on 12.11.2020.)

---

<sup>1</sup> Faculty of Social Sciences, Bulevar umetnosti 2a, Belgrade, Serbia

<sup>2</sup> Higher Colleges of Technology, Department of Business, United Arab Emirates

<sup>3</sup> Faculty of Social Sciences, Bulevar umetnosti 2a, Belgrade, Serbia

Practice shows that the growth of a particular company should be focused on (Živković et al., 2014):

- increase of market share,
- elimination of bottlenecks in performing activities,
- more efficient integration into the international division of labor,
- reducing operating costs and increasing profits on that basis,
- reducing the effects of competition.

Growth goals are the primary management decisions in a company's development plans. Goals are the basis for defining growth strategies, and then individual plans. The goals of the company are set based on research and forecasting the future in the area in which the company exists and operates.

Achieving the goals of enterprise growth leads to the achievement of broader goals of social and economic development, ensures more effective use of existing capacities and resources, as well as an increase in overall social well-being (Posza, 2020).

Growth goals need to be realistically set and dimensioned on the basis of scientific and exact methods, taking into account previous experiences of company's practice. Carefully and precisely set goals for the growth of the company become its long-term obligation, but also a criterion for assessing the rationality of planning decisions and directions of business activities, as well as the standard of business control.

"Growth is interpreted as a sign of health, vitality and strength. In such dynamic and competitive environments, companies have to grow and develop continuously. The growth target is closely related to the utility function of the company's managers. The concept of development of the company goes a little further by proposing both quantitative and qualitative changes. It is broader than growth because it includes qualitative variations of the company." (<https://entrepbusiness.com/the-growth-and-development-of-a-company/>, accessed on 05.11.2020.)

## **2. COMPANY'S DEVELOPMENT POLICY**

In the broadest sense, politics implies the skill of governing a state or an organization. A policy is a set of attitudes, principles or criteria that guide decision-making and action in repetitive conditions.

Within the company as a business entity, the policy is formulated for its organizational parts (business units) or for certain areas of activity of special importance for the company.

Development policy is defined as a set of principles and criteria that a company applies in the process of managing its long-term business. It is based on long-term forecasting of market, technological and social components and trends. An important condition for a successful development policy of the company is that it is based on the longest possible period and on the widest possible spatial horizon.

Through development policy, the company forms the basis of its future work and business. Therefore, it provides the company with visions of development and the basic philosophy on the basis of which that vision will be realized.

With the set and defined development policy, the company determines future guidelines on (Živković et al., 2014):

- development financing methods,
- markets in which it will compete,
- technology and production program,
- attitude towards expected changes and requirements of the environment,
- development of its parts and subsystems, as well as their mutual relations,
- directions and dispersion of its future activity, business activities, etc.

Development policy begins with long-term forecasting, in order to experience its realization and application in the practice of business operations through a growth strategy and specific development projects.

Managing the growth and development of a company involves resolving a number of complex issues and making business decisions that are, by their nature, of a strategic character.

The growth strategy involves making decisions about the directions, methods, pace and flexibility of growth.

We can define strategy as a way to achieve future goals of the company. Once the company has set goals and business policies to guide it in achieving its goals, it approaches the definition of a strategy.

The strategy selection process itself takes place in several stages. First, an analysis of the influential environmental factors that affect the company's business is performed. Opportunities and threats from the environment are opposed to the resources and opportunities, i.e. the advantages and weaknesses of the company itself.

The choice of a specific strategy is made on the basis of a number of criteria and parameters. One of them relates to market coverage and the market position that the future strategy should provide (Pirić et al., 2020). The second criterion refers to the competitive position that the company can achieve by choosing a particular strategy. Through that market position, it occupies an appropriate place or market share.

The third criterion refers to the amount of return on invested funds (invested capital) that the given strategy brings to the company in the future.

An important criterion are the sources and resources (material and human resources) that are necessary for the realization of a certain strategy. The availability and use of these resources are factors in the realization of the development and business strategy of the company.

The chosen strategy must be in line with and correlated with the goals and policies of the company. Choosing an adequate development strategy means making decisions about the directions, methods and growth rate of the company. The chosen strategy implies the harmonization of these components and their actions in the period in which the strategy will be implemented.

### **3. COMPANY'S GROWTH DIRECTIONS**

There are many different views and approaches to growth directions and growth strategies: "Growth strategies usually start by identifying and accessing opportunities within your market.

They go beyond your business and marketing plans, which detail how you're going to meet specific business targets. Growth strategies are important because they keep your company working towards goals that go beyond what's happening in the market today. They keep both leaders and employees focused and aligned, and they compel you to think long-term.” (<https://www.prophet.com/2017/09/develop-successful-business-growth-strategy/>, accessed on: 15.11.2020.)

“Businesses aim to use their sources efficiently in order to gain advantages in competition and survive for many years. However, with this aim come several problems. Competitors, consumers, financial institutions, suppliers, trade-unions, technological developments, economical and judicial factors constitute impediments in the way of attaining objectives. Business management determines growth strategies following structures of businesses and the competitive environment by applying analysis and methods which will eliminate those impediments.” (Durmaz, Y., İlhan, A., 2015)

Starting from the characteristics of the markets and products as the basic components of the source of growth, there are four possible growth directions of the company (Živković et al., 2014):

- 1) increase in sales of the existing product on the existing market – penetration,
- 2) increase in sales of the existing products on new markets - market development,
- 3) introduction of new products on existing markets - product development,
- 4) introduction of new products on new markets - diversification.

**Table 1.** Combining products and markets

<b>Mission (Market)</b>	<b>Product</b>	
	<b>Current</b>	<b>New</b>
Current	Market penetration	Product development
New	Market development	Diversification

**Source:** Živković et al., 2014

Based on the above, we can identify two possible directions of company's growth:

(1) Expansion - which is based on the existing activity of the company and the following strategies:

- market penetration,
- market development,
- product development.

(2) The second direction of growth is diversification, which can be:

- horizontal,
- vertical,
- conglomerate.

Expansion and diversification as two directions of growth are not mutually exclusive, and their participation in the development of the company and its activities depends on the impact of a number of factors, as well as development opportunities and available resources of the company.

### 3.1. Expansion as a direction of company's growth

Expansion, as a direction of the company's growth, is based on the development of the existing market and the improvement of the existing assortments and products of the company.

Expansion implies constant competition with other, existing and new producers in the branch. A company that has chosen expansion as its direction of growth must continuously monitor and analyze the behavior and operation of the competition, market shares of individual companies in the economic branch, areas of operation and possible collisions with the competition. It is necessary to consider and anticipate the possibilities of increasing the primary demand for the product and whether it is possible to do so without significantly endangering competition.

A successful company strives to provide space for its growth through functional and adaptive innovations in its product assortment, which allows the existing product to remain in the production program as long as possible as an active resource for company's growth.

The expansion is based on the following strategies (Živković et al., 2014):

- 1) Market penetration strategy - which implies the development of the company on the basis of the existing product within the existing market. Penetration is based on increasing the sales volume of companies in the existing market and the existing market structure. If the market is more saturated with the existing product, the company must choose to stimulate selective demand, i.e. to attract consumers of products of the same purpose, which were previously purchased from the competition. If the market is not oversaturated with existing products, the company can increase sales by increasing the number of customers or by increasing the level of consumption or earnings per consumer.
- 2) Market development strategy - which is based on the introduction of an existing product into new markets. New markets can be: regional, national or international. The need to expand the market through territorial dispersion and increase exports affirms the orientation of companies to the international market. In this way, the company with its product assortment is more strongly involved in the international division of labor.
- 3) Product development strategy - within which the company seeks to increase profits in the existing market, relying on innovations in the existing production program and area of activity (production). Innovations include: changing the style, dimensions, design, quality or other components of the existing product and assortment.
- 4) Strategy of expanding production lines and assortment - is based on conquering, introducing and adding new products and models within the existing assortment and production program of the company.

### 3.2. Diversification

Diversification, as a direction of growth, implies an increase in the number of products in the existing product assortment of the company. They contain technological and market disparities among products, and as a consequence, the size of the company increases.

Diversification is a direction of growth that is characteristic for companies with a dynamic environment. Companies opt for diversification in order to ensure their market survival, stability of sales and revenues, more efficient use of material and human resources and adaptation to new, changed customer needs.



Before choosing diversification as the direction of growth, the company must perform a detailed analysis of a large number of influencing factors, which individually have opposite effects. Also, the company must be ready to face the actions of the competition on the market.

As it was mentioned earlier, diversification can be (Živković et al., 2014):

- horizontal,
- vertical,
- conglomerate.

Horizontal diversification implies that the production program of the company includes products that differ from each other in technological basis and market purpose, but belong to the same branch of activity. In this way, the company completes its offer and more efficiently uses its production capabilities for the acquired market positions.

Vertical diversification is the growth of a company that includes several successive, technological and business-separate phases of production and marketing of a particular product. The company itself begins to produce some materials, raw materials, energy, semi-finished products that it previously bought from suppliers, and later incorporates them into its final product.

Vertical diversification may include the introduction of new, additional processing stages, as well as new sales channels.

Conglomerate diversification means that a company produces products that belong to different types and branches of activity. Technological, market and production diversification are present in practice.

An economic incentive for a company to opt for conglomerate diversification can be antitrust legislation related to the maximum volume of supply in one branch. Conglomerate diversification provides unlimited opportunities for company's growth in market conditions.

#### **4. METHODS OF BUSINESS GROWTH**

The method of growth is the way in which a company realizes its defined development needs and goals.

The choice of individual growth methods is influenced by a large number of internal and external factors. Among them, a significant factor is the amount of financial resources that the company can provide or invest. Its significance is reflected in the fact that the growth of the company is always conditioned by an appropriate material, i.e. financial investments.

Possible methods of company's growth are (Živković et al., 2014):

- internal growth method,
- external growth method,
- combined growth method,
- joint venture.

The method of internal growth implies that the company decides to build its own new capacities and to develop new products. This method implies building new capacities and new financial investments.

The need for internal growth most often arises in response to increasing demand for existing company's products.

For the realization of this method of growth, it is necessary for the company to have significant own financial resources, to have the appropriate personnel research and development potential, and to be ready and able to take the risk on the market.

The method of external growth comes down to integration, i.e. merging with other companies that already have the appropriate capacity and produce certain types and assortments of products.

In order to achieve integration, there must be a willingness and mutual economic interest of the company to merge with the integrating company. Integration is always motivated by economic goals and the perspective of increasing profits. It implies the mutual benefit that is achieved by merging companies.

Integration as a method of company's growth provides a number of positive effects:

- use of the existing sales network, as well as existing sources of supply,
- achieving a higher total mass of profit,
- savings in common costs,
- using the effects of the existing positive market position and reputation of the product,
- the possibility of using patents, etc.

The combined method of growth is achieved by a combination of internal and external methods of growth. This method combines the internal capabilities of the company and interested business partners, subcontractors and others.

The combined method is the most efficient way to optimize the size and structure of the company, as well as the business of a particular economic branch.

Joint Venture is a cooperation between companies from different countries, which is based on joint investment in a particular project, i.e. the establishment of a joint company, joint production and market appearance. This method optimizes the advantages of domestic and foreign companies in certain markets.

Joint ventures are now used mainly by large international corporations. In that way, they penetrate the markets they are interested in, provide themselves with the access to rare natural resources, avoiding the provisions of the antitrust laws of the country in which their headquarters are located. They use the cheap labor of the host country as well as its market. Through joint investment, the host country gets the necessary funds for its development, increases its presence and participation in the foreign market, provides "know-how" and the like.

External growth can also be provided by creating mergers, acquiring other companies or joining several companies in joint research and development projects.

## **5. GROWTH STIMULATING FACTORS**

"A business is defined by various factors, however, the prime element that recognizes and brands a business is its growth. Every company desires growth to secure a strong market

presence irrespective of whether the company is a startup or a well-established organization. Growth is a need to keep the legacy going. Numerous factors affect the growth and development of a company, that foster a position in the lead.” (<https://cioviews.com/factors-that-affect-the-growth-of-a-business/>, accessed on 16.11.2020.)

There are different classifications of influential factors that have a positive and stimulating effect on the growth and development of the company. They can come from the company itself or from its business environment (Živković et al., 2014):

- 1) According to the nature of action, incentive factors are divided into: market, technical - technological, social and personnel-organizational.
- 2) According to certainty, factors are divided into: state factors and development factors. Factors of the situation are: achieved business volume, the position of the company on the market, structure of production and technology, existing location, available funds (capital). Development factors include: market development perspectives, communications, technology, research, raw materials base, state economic policy instruments and the like.
- 3) Internal and external factors

Internal growth factors of the company include: available financial resources, the need to harmonize capacities in order to optimize them, level of development of existing research, the need to complete the assortment, goals set in development plans, management initiative, staff availability, decision-making system, organizational culture and climate development, and more.

External factors refer to challenges, threats and opportunities that arise as a consequence of social, market and technological factors of business. These factors include: development of science and technology, market development, state policy measures (stimulating economic policy), development of economic relations with foreign business partners, traffic development, and others.

It is extremely important for a company to anticipate and measure external factors and to anticipate their impact on the company's future operations. This is significant because the company has almost no influence on many of these factors.

Incentive factors cause an increase in financial, personnel, research and development, market and other opportunities and indicators of the company.

The growth of the company is based on the harmonization of various interests and working conditions of its components - subsystems.

With the increase in the size of the company, there is a change in its economic strength concerning competing companies and environmental factors. This creates conditions for further and continuous growth and expansion of the company.

With the help of incentive factors from the environment, the company can grow as long as it finds ways and mechanisms for its operations in the market, and the creation of additional profit within the existing activity.

Theoretically, a company can grow as long as it finds strategies and ways that allow it space and engagement activities, while making additional profit. However, in practice, many limits slow down the growth of a company or make it economically unprofitable. The natural limit

of growth consists of human, organizational and technical-technological characteristics of the process in certain areas of business.

## 6. LIMITING FACTORS OF COMPANY'S GROWTH AND DEVELOPMENT

In practice, many factors appear as a constraint on the further growth of the company, whether they slow it down, or are economically unprofitable and redundant.

Restrictive factors of company's growth and development are divided into external and internal (Živković et al., 2014).

a) External factors include:

- the existence of legal restrictions on further growth (antitrust regulations, etc.),
- difficult procurement of necessary material components and resources,
- impossibility or poor conditions of securing financial resources,
- insufficient development of traffic and trade network,
- inability to conquer new markets due to existing strong competition,
- reducing demand and narrowing market opportunities,
- disincentive measures of state economic policy (restriction of imports and exports, exchange rate changes, etc.).

b) Internal limiting factors include:

- inadequate human and work potential in terms of the number of employees, their expertise, motivation to work, etc.,
- the wrong strategy of the company's growth so far (it can also be an incentive factor),
- technical-technological solutions in performing the activities of the company. At a certain degree of capacity utilization, their further expansion can become too expensive and cost more than building new capacities.

The company and its management bodies should make a realistic assessment of the actions of both incentive and limiting factors - in order to make appropriate decisions about the future directions of growth development of the company. These assessments and decisions are the basis for undertaking managerial actions of companies in the field of growth and development.

## 7. CONCLUSION

Growth and development of a company should not be viewed separately, but as processes that take place simultaneously and synchronized. Growth and development of a company arise as a consequence of its constant aspiration to adapt to changes in the environment, to take advantage of new market opportunities, avoid dangers, and ensure the continuity of efficient business.

In order for a company to take advantage of the effect of size and economies of scale that are a consequence of the growth process, it must make changes in the internal organizational structure, as well as in the business structure of its activities.

Managing the growth and development of a company means making decisions about the goals, sources, directions, methods and pace of enlargement of its size, in accordance with internal and external factors and circumstances that affect the growth of the company.

The consequence of the growth and development of the company should be constant improvement of the management system and the establishment of more harmonious relations

between the company and the environment. That way, further preconditions are created for improving business efficiency and successful business results.

## REFERENCES

- Durmaz, Y., İlhan, A. (2015), Growth Strategies in Businesses and A Theoretical Approach, *International Journal of Business and Management*; Vol. 10, No. 4; 2015, ISSN 1833-3850 E-ISSN 1833-8119, Published by Canadian Center of Science and Education, pp. 210-214
- Factors that Affect the Growth of a Business*, <https://cioviews.com/factors-that-affect-the-growth-of-a-business/>, accessed on 16.11.2020.
- Jovanović, P. (2013), *Upravljanje investicijama*, VŠPM, Beograd
- Jovetić, S. (2015), *Merenje performansi preduzeća*, Ekonomski fakultet, Kragujevac
- Pirić, V., Martinović, M. & Koričan Lajtman, M. (2020) Socio-demographic Variables Forming a Perception of Corporate Image Brand in the Croatian Banking Industry, *Balkans Journal of Emerging Trends in Social Sciences*, Vol. 3, No. 2, 2020, ISSN 2620-164X, Published by Association of Economists and Managers of the Balkans, pp. 96-111, DOI: 10.31410/Balkans.JETSS.2020.3.2.96-111
- Posza, A. (2020), Real Option Analysis of Venture Capital Investments, *Balkans Journal of Emerging Trends in Social Sciences*, Vol. 3, No. 1, 2020, ISSN 2620-164X, Published by Association of Economists and Managers of the Balkans, pp. 64-77, DOI: 10.31410/Balkans.JETSS.2020.3.1.64-77
- Sloman John, Garratt Dean (January 1, 2019), *Essentials Of Economics*, 8th New edition, ISBN-10: 1292239271, ISBN-13: 978-1292239279, United Kingdom: PEARSON
- Sloman John, Garratt Dean, Guest Jon, Jones Elizabeth (May 9, 2016), *Economics For Business*, 7th edition, ISBN-10: 1292082100, ISBN-13: 978-1292082103, Philadelphia, Pennsylvania, USA: Trans-Atlantic Publications, Inc.
- Successful Business Growth Strategies: 5 Key Components*, <https://www.prophet.com/2017/09/develop-successful-business-growth-strategy/>, accessed on: 15.11.2020.
- Ten Key Factors in developing company Growth Strategies*, <https://endeavor.co.za/2017/02/ten-key-factors-in-developing-company-growth-strategies/>, accessed on 13.11.2020.
- The growth and development of a company*, <https://entrepbusiness.com/the-growth-and-development-of-a-company/>, accessed on 05.11.2020.
- Todorut, A. V., Cirnu, D. & Niculescu, G. (2011), *Management of business processes through reengineering*, Proceedings of the 12th WSEAS international conference on Mathematics and computers in biology, business and acoustics in Transylvania University of Brasov, Romania in April 11-13, 2011, World Scientific and Engineering Academy and Society WSEAS Press, Bucharest, pp. 237-242.
- What is business growth and why is it important?* <https://www.act.com/en-uk/business-growth>, accessed on 12.11.2020.
- Živković, M., Ilić, S., Bevanda, V. (2014), *Ekonomika poslovanja*, sedmo izmenjeno i dopunjeno izdanje, Megatrend, Beograd

# CHALLENGES AND PROBLEMS THAT FAMILY BUSINESSES FACE

Lidija Stefanovska<sup>1</sup>   
Taip Jakupi<sup>2</sup>

DOI: <https://doi.org/10.31410/LIMEN.2020.201>

---

**Abstract:** *It is a fact that the family business is becoming increasingly interesting for researchers in the field of management. From here the initial basis for their special treatment is drawn, since their holistic treatment with other MSMEs still does not emphasize their uniqueness in many aspects. If the importance of these family businesses is supported by the fact that they participate with 70% in the GDP of Europe as well as the fact that they employ up to 60% of the labor force in Europe, then it is more than clear that the scientific community should pay much more attention to these businesses.*

*The paper aims to cover the biggest challenges and problems faced by family businesses, especially in terms of their management, inheritance, organizational communication and vision for their development, as segments where the biggest problems are observed.*

**Keywords:** *Management, Specifics.*

---

## DEFINING AND SIGNIFICANCE OF FAMILY BUSINESSES

There is no doubt that family businesses are an important segment of a country's overall economy. They can be of various sizes and types and occur in several legal forms. Although there are numerous definitions in literature, none of them can fully capture their diversity, so very often the treatment of these businesses is equated with other MSMEs. As regards the number of definitions for family business, a group of authors concluded that due to the unique institutional-legal contexts in countries around the world, it makes no sense to come up with a definition that could be universally applicable. However, each study must explicitly state what is meant by family business, as different definitions lead to different findings (Carney, 2005). Nevertheless, in order to exit this vicious circle, a broader general definition of a family business is accepted today, which states that "a family business is a company where one family has enough capital to be able to control the management strategy of the family business." (Colli, Rose 2008).

In this regard, the model of the three circles for family businesses is accepted, according to which it can be noticed that family businesses form unions and subsets of three main factors, which are: family, business and property.

These three basic elements of family businesses are the foundation not only for their good ongoing functioning, but also for their continued existence in future generations. In essence, caring for the sustainable growth of these businesses, families should be equally careful about preserving family and emotional relationships, which, if not nurtured, can have lasting and fatal consequences, disrupting all three circles: family, business and property.

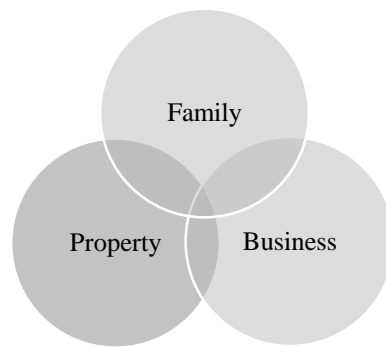
---

<sup>1</sup> Business Academy Smilevski – BAS Skopje, North Macedonia

<sup>2</sup> Business Academy Smilevski – BAS Skopje, North Macedonia



**Figure 1.** The model of the three circles for family businesses



**Source:** Michail Harvey, Rodney E. Evans: Family business and multiple levels of conflict  
Family business review, Vol.7, No.4, Winter 1994, p. 335.

## **FAMILY AND BUSINESS**

The data that 85% of companies in Europe are family businesses, as well as the fact that they account for 70% of GDP in Europe and employ up to 60% of the workforce in Europe, presents that special interest should still be shown in creating guidelines on how to manage family businesses (adapted according to Vadjal, 2020).

The main feature of family businesses is the close relations between the employees. When it comes to family businesses, for the most part it seems that these are small businesses that start modestly and very often remain so. Nonetheless, it is not uncommon for family businesses to grow into real business empires, among which we can mention: Motorola, Koch industries, Bechtel, Facebook.

The main advantages of running a family business are: strong family ties, knowing each other and good communication, respect for family values, commitment to success for the good of the whole family, long-term goals. One of the major drawbacks of this business is that some personal disagreements can reflect on the harmony in the business. Sometimes people are overwhelmed with each other because they spend a lot of time together, both at work and at home (<https://biznisinfo.mk/semeen-biznis-koi-se-prednosti-i-nedostatoci/>).

Given this set-up, it is more than clear that these businesses need to nurture the long-term dimension much more, at the expense of short-term effects that are unfavourable both to the family and to the society. That is, family businesses tend to focus on the long-term sustainability of the company, the realization of generational changes in ownership and management, rather than making short-term profits and are considered one of the driving forces of post-industrial growth. Furthermore, they are credited with nurturing generational entrepreneurial talent, sense of loyalty and success in business and long-term strategic commitment (Poposka, Stanceva Gigov, 2018).

Research and theory suggest that there are, however, certain related components that need to be managed interchangeably if the family business tends to successfully adapt to the family on the one hand and the demands of the business on the other.

According to Shuklev (Shuklev. 2006) there are four components to successful family and business coordination.

- Maintaining an adequate border between the emotional issues of the family and the tasks necessary for successful development and operation of the business;
- Developing a justified structure that supports organizational cohesion;
- Developing a process and mechanisms that enable the family to resolve their own emotional issues;
- Developing a structure of tasks and processes that are tailored to the requirements of the business environment and are not dependent on unresolved family issues.

## INHERITANCE AND ENSUING CONFLICTS

Inheriting a family business is an inevitable activity that raises many questions, but also many opportunities. In this context, it can be emphasized that the next generation inherits not only the business, but also countless opportunities for its development. It is not uncommon for many of the heirs to change the way of doing business after inheriting the business, and some of them to completely change the direction of the business.

Practice shows that there are positive and negative aspects to inheriting a family business. Namely, according to Vadjal (training materials, 2020), there are numerous negative aspects of inheriting family businesses such as:

- Pressure from parents (implicit and explicit) to inherit the business in a leadership position at any cost;
- Very often the choice of the firstborn from the family to inherit the family business;
- Recommendation from parents to complete business studies;

By analyzing the stories of successful family business inheritance, it can be emphasized that the successful ones do it in a different way:

- Work with their children from an early age (stories from the family tradition);
- Give them the opportunity to decide on their own future plans;
- Develop a strong motivational approach: gradual introduction to the family business and presentation of the fact of its importance for the family and employees;
- Where there is no interest, there is no beauty.

However, in order for a successful family business inheritance (succession) to occur, it is necessary to open and resolve the issue before serious reasons for it appear. Nevertheless, this is often not a top priority to address, primarily because of a lack of belief in the possibility of premature death or that the day of retirement or physical and mental inability to run the business will come. According to a report by IMD's Global Family Business Center, "the generational transition is statistically proven to be the highest risk for continuity and most families fail to cope with this effectively." (Schwass, Family Businesses: Successes and Failures).

The lack of interest of family members, their incompetence and lack of managerial knowledge greatly reduce the space for maneuver of the founder and narrow the options when thinking and making the decision to inherit the family business. If the family does not find an adequate person among its members to hold senior management positions, the owner can opt for a person who is not a member of the family, and with such a choice the family tradition is lost. Then, the best and most efficient way is for the heir of the family business to be a person who was positioned by the founder at higher executive levels and thus, together with him, that person was developing his/her business abilities and gained work habits and experiences. The family can recognize the heir of the family business and entrust him/her with corporate governance,

but it can also happen to recognize only a leader of the business and leave the management to someone who is not a family member. (Kruzlich, Bulog, 2012)

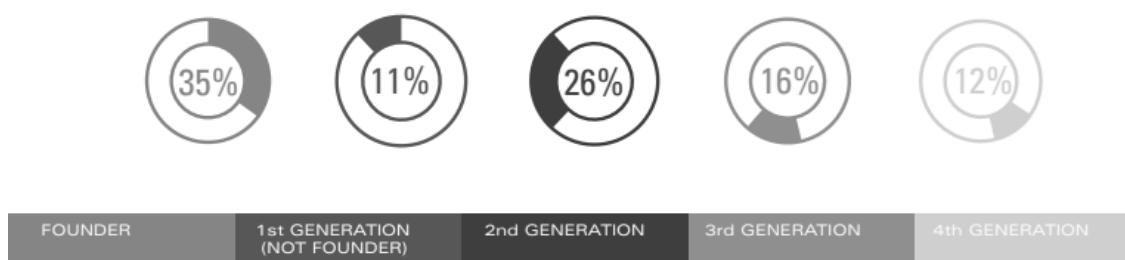
## RESEARCH DATA

Based on the research conducted in the period May-July 2017 by the National Youth Council of Macedonia and CEFÉ Macedonia and in which most of the respondents or 85% were from the second generation of heirs, most of them stated that they need business strategy skills, effective communication and consensual decision-making skills on key family business issues. The survey confirmed that about 74% of businesses are small and medium enterprises and about 3% have more than 100 employees, which tells us that family businesses are mostly of micro and small size. This research included organizations from eight planning regions in the Republic of North Macedonia.

It is a surprising fact that 44% of the 500 largest family-owned companies worldwide are run by the fourth generation or more. "But, in general, less than four percent of all family businesses manage to reach a similar stage. In fact, with each new generation, one third of the family companies disappear. At the latest, there are many failed family businesses at the transition point towards the third generation of heirs. (<https://faktor.mk> )

Based on a study conducted by Seidman College of Business (Family owned business survey, 2014) on a representative sample of 690 family businesses, it is particularly interesting to note that these businesses demonstrated an impressive range regarding the youngest generation of members working in the business. The concentration of family members in the second, third and fourth (and further) generations working in these businesses, provides an opportunity to continue and to maintain the business under the family leadership of future generations. The research showed that the highest percentage of the top position of family businesses, i.e. 35% of the surveyed organizations are from the first generation and are founders, 26% of the organizations are from the second generation, 16% the third generation, 12% of the fourth generation or further and the first generation but not founder 11% of the surveyed organizations.

**Figure 2.** Distribution of generations to the top positions in family businesses

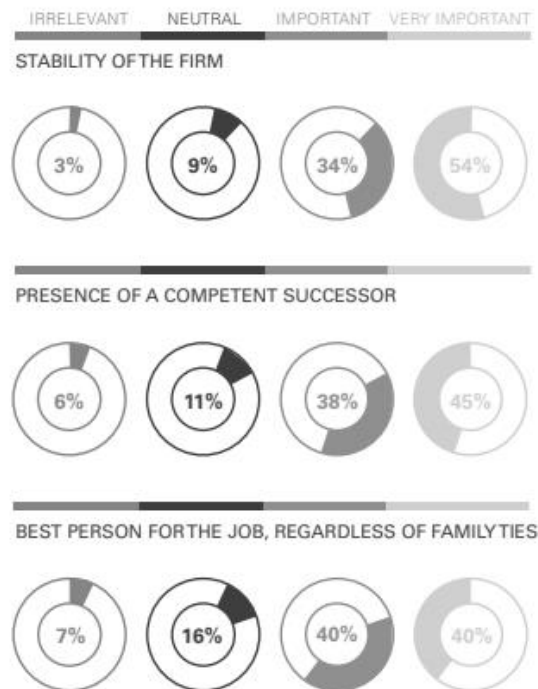


**Source:** Family owned business survey, (2014), Family Owned Business Institute, Seidman College of Business, pp.7

It is interesting to note that the average term of the top positions in family businesses is just over 17 years, and 15% of them are women. The survey has also shown that 79% of the surveyed family businesses are owned by one family. Other businesses are owned by more than one family with unequal representation (12%), while 9% had equal ownership by more than one family.

Regarding the planning of the succession, the respondents were asked to point out the importance of certain factors. The first three in order of importance are shown in the figure below.

**Figure 3.** Factors influencing succession planning in family businesses



**Source:** Family owned business survey, (2014), Family Owned Business Institute, Seidman College of Business, pp.22

From the picture above it can be concluded that in the process of succession the researched organizations from a significant representative sample indicate the existence of three factors, such as: stability of the organization, the presence of a competent successor and the best person for the job, regardless of family.

Research has also shown that the problems that often occur in family businesses are due to lack of communication. In this sense, the surveyed organizations most frequently address the family members for certain problems, and more than half of the surveyed organizations, i.e. 52% of them stated that they have not established specific procedures for this. A quarter of the surveyed organizations stated that they use family meetings for conflict resolution, 15% use an external consultant or mediator, while the other organizations use other measures such as advisory board and so on.

## CONCLUSION

Undoubtedly, family businesses are the main and important driver for the development of the economy not only in a country but also in the world. However, they have certain specifics, so they face a number of challenges, unlike businesses that do not have the family prefix.

In this sense, these businesses need to establish certain "rules of the game" much more than it is for others, i.e. special attention should be paid when conceptualizing the organizational

structure, with clearly defined rights, responsibilities, horizontal and vertical placement. The family and its members have a special responsibility to the business they manage, its employees, but also a special responsibility to nurture family relationships, i.e. to make a significant distinction between business and family relationships, if they want to achieve sustainable and long-term success in both fields. In this regard, special attention should be paid to family business members in top management positions as well as inheritance mechanisms. Determining the strategic direction of the organization will depend on this set-up, which requires well-trained staff, which is independent in its decisions, without pressure from the family and has the opportunity to realistically control the implementation of the strategy.

## REFERENCES

- Carney M., "Corporate governance and competitive advantage in family-controlled firms," *Entrepreneurship: Theory & Practice*, vol. 29, no. 3, May 2005, p. 249–265;
- Colli A., Rose M, *Family Business*, ch. 9, Jones G. and Zeitlin J. (eds.), *Business History: Forms of Business Organization*, Oxford University Press, 2008, UK, pp. 194-219;
- Family owned business survey, (2014), Family Owned Business Institute, Seidman College of Business, pp.7 – 22;
- Kruzich, D., Bulog, I., *Family Businesses-life cycles, inheritance and sustainability*, Faculty of Economy Split, 2012, p. 198., adapted from Poposka K., Stancheva Gigov I. and associates, (2018), *Family Businesses-situations, practices and perspectives*, Institute of Economy Skopje, UKIM Skopje;
- Schwass J, "Family Businesses: Successes and Failures," IMD Global Family Business Center website,  
[www.imd.org/uupload/IMD.WebSite/MicroSites/familybusiness/pdfs/Family%20Businesses%20%20Successes%20and%20Failures.pdf](http://www.imd.org/uupload/IMD.WebSite/MicroSites/familybusiness/pdfs/Family%20Businesses%20%20Successes%20and%20Failures.pdf);
- Vadnjal J., (2020), *Family Businesses, Key Entrepreneurship Model-What next? Training materials*, Entrepreneurship Support Agency of the Republic of North Macedonia;
- Westhead P., and Cowling M., "Family firm research: The need for a methodological rethink," *Entrepreneurship Theory & Practice*, vol. 23, 1998, p. 31–56;
- Harvey M., Evans R.: *Family business and multiple levels of conflict Family business review*, Vol.7, No.4, Winter 1994, p. 335;
- Shuklev B., (2006), *Small Business Management*, UKIM, Faculty of Economy Skopje, p 142;

## Internet sources:

<https://biznisinfo.mk/semeen-biznis-koi-se-prednosti-i-nedostatoci/>  
<https://faktor.mk/nauchete-kako-smejnot-biznis-sozdava-bogatstvo>

# SOME FACTORS OF CONTEMPORARY FINANCIAL BUSINESS OPERATIONS

Slobodan N. Bracanović<sup>1</sup>

DOI: <https://doi.org/10.31410/LIMEN.2020.207>

---

**Abstract:** *Contemporary forms of funding business entities are developed. Financial instruments of the capital market are built. Optimal financial strategies and tactical-operational activities are a necessity. Financial managerial management and decision-making structures are of special significance. Financial capital is dominant in contemporary conditions. A credit-monetary policy is an important economic policy system.*

**Keywords:** *Finance, Market, Mechanisms, Capital, Policy, Strategies, Managers.*

---

## 1. PRIOR DETERMINANTS

In contemporary business, social and public entities, the financial function (7) must necessarily perceive, take care of and monitor the current forms of funding that ever more pronouncedly appear in the domestic conditions of doing business profitably.

The capital market is being attributed special significance in the modern epoch. (6) This is the point where capital offer and capital demand face and confront each other. Diverse forms of financial mechanisms and/or instruments are manifested. A larger number of actors also appear (such as, for example, the state, investors, issuers, etc.). The market continuously develops.

Furthermore, conceptually, the market organizer is established as a joint-stock company managing and performing activities in connection with the functioning of the regulated market. A regulated market means a multilateral system, which is both organized and managed by the market organizer and which enables and improves the integration of the interests and goals of “third parties” in the domain of the purchase and sale of financial instruments.

The basic jobs on a regulated market are diverse and differentiated: establishing a link between entities’ (actors’) aspirations in transactions through financial mechanisms and instruments; the collection (concentration), storage and disclosure of information about the offer, demand and quotation of and the market prices for financial instruments. Additional jobs are also diverse and differentiated: the improvement of the development and promotion of the capital market; the licensing and sale of market elements, encompassing the formation, licensing, sale and trade of financial instruments; the investor’s education, and so forth.

The “market organizer” and a “regulated market” cannot perform the trade of financial instruments. Investment in the financial instruments issued by appropriate factors (the Republic of Serbia, the National Bank of Serbia, the units of local self-government, or certain foreign institutions) is, however, enabled.

---

<sup>1</sup> Faculty of Economics in Priština, Kosovska Mitrovica



An “investment company” (the “market maker”) transacts through the purchase and sale of financial instruments (for its own account, using its own property and assets, in accordance with the prices it establishes on its own). It is continuously present on financial markets.

The “patron” implies the investment company performing the services of sponsorship connected with the offer and sale of financial instruments and a repurchase obligation. On the other hand, an “agent” is the investment company performing services in connection with the offer and sale of financial instruments and without a repurchase obligation.

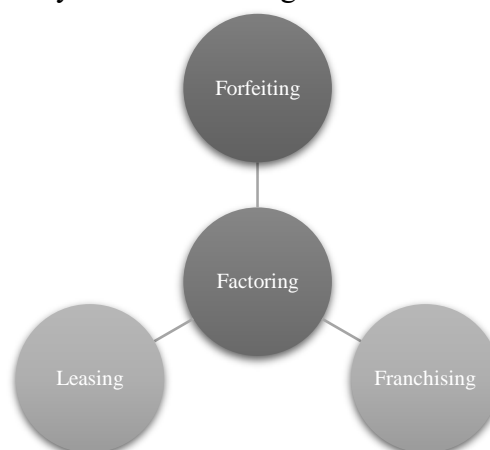
“Clearing” includes the procedure of the establishment of the mutual obligations of both the seller and the buyer (financial instrumentarium) with the aim and for the purpose of exchanging financial instruments and funds. The “settlement of accounts” reflects in achieving transactions via the final transfer of financial instruments and monies between the seller and the buyer as well. (3; 332-334).

A “multilateral merchant platform” signifies a multilateral system organized and managed by an “investment company” or the market organizer, the one which encourages the integral interests of “third parties” in the purchase and sale of financial instruments. There is also a “secondary market” for trading transactions with financial instruments based upon the buyer-seller negotiation flow system. The business operations of a regulated market in domestic conditions can only be managed by the “stock exchange”, i.e. the market organizer (authorized by a competent authority). The organizer of a multilateral merchant platform can be a “broker-dealer company” or the stock exchange. Furthermore, the stock exchange is obliged to organize the “listing” of securities (and at least yet another part, i.e. segment, of the regulated market for trading “operations” with owner’s securities). It is about a managed, regulated and controlled (supervised), rather than spontaneous, chaotic and anarchic market as is the state of the matters on the strong economic-financial collapse in the USA (2007/8). (3; 334).

## 2. MODERN FORMS OF FUNDING BUSINESS ENTITIES

Contemporary current (2) market forms and the forms of funding the enterprises that are not present in the domicile economic and systemic conditions are being developed, built and upgraded. The panoply of these relevant forms is broad, and it is simultaneously both rational and purposeful that certain forms of priority significance should also be crystallized.

**Diagram 1.** Some contemporary forms of funding business entities, i.e. enterprises:



**Source:** Own research

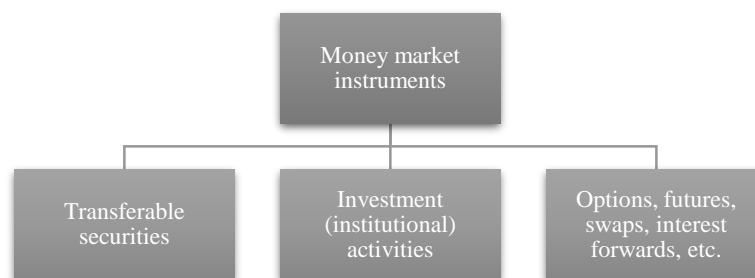
**Leasing** implies both an economic transaction and a legal transaction between two or more business entities that ensure the procurement of necessary business (basic and working) assets in a faster, dynamic, economic, and cost-effective manner through their contractual relationship. An enterprise (or an entrepreneur) is the lessee of the assets received from a lessor, who still remains the owner.

**Factoring** is a form of a loan placement and the “servicing” of the collection of receivables from buyers in the country. Business factors (enterprises) may assign and/or sell their own receivables from their buyers to a “factoring” firm at a discount (generating cash as well).

**Forfeiting** denotes a form of funding export loan arrangements, which is performed by selling an export receivable to a bank. It is about the sale of such receivables abroad. These receivables are of a long-term character. Capital turnover is also dynamized. The securities secondary market is also formed.

**Franchising** presupposes the sale of goods in a retail system/network to consumers based upon contractual and practical relationships between franchisors and franchisees. We may speak about manufacturing, transactional and (potentially) related franchising. Transactional (business, economic) franchising implies the sale of goods to end consumers. Apart from rights to the products of the franchisor, manufacturing (industrial) franchising also includes a right to the production of that product. (3; 333).

**Diagram 2.** The differentiated modalities (types) of indicative financial instruments:



(Note: All the diagrams in the paper are the author’s individual and independent creation.)

**Source:** Own research

To be more concrete, the money market instruments consist of the instrumentarium used to perform trading activities (transactions) on the money market (treasury bills and notes, and commercial papers and certificates of deposit, except for payment instruments).

There are options, futures, interest forwards and other derived financial instruments, which encompass securities, monetary units (currencies), interest rates, returns, financial indices and measures which are related to goods and which are possible to settle in cash (i.e. in value) or physically (i.e. in kind), loan risk transfer instruments, contracts (for differences), as well as other inflation elements (i.e. inflation rates), costs of transport, issued quotes, which further also relate to property, rights, obligations and so forth. There are broader financial instruments (not included in the previous concept) which are issued in connection with the sale of goods and/or services (a cheque, a bill, a written instruction (i.e. assignment), a bill of lading, a consignment note, or a warehouse warrant and so on). (3; 334-336).

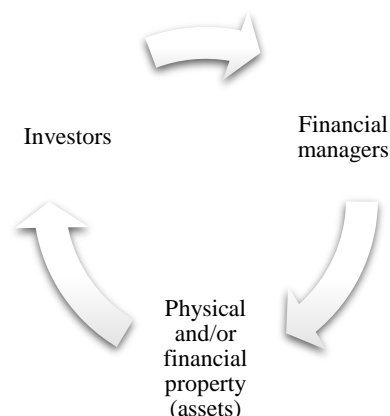
The capital market instruments (long-term financial instruments) imply instruments with a longer maturity period (i.e. a period exceeding one year). Long-term securities encompass a) the owner's securities (stocks and shares) and b) the debtor's securities (liabilities). They denote a right to the issuer's future return. Return from shares (a dividend) is not certain and the owner of a share does not have legal protection, either (unless such dividend is paid out by the issuer). Contrary to that, return from a bill (interest) is certain and the owner of such bill may request that the principal amount and/or interest should be paid out.

A share (of any type) gives the owner the right to control the operations of the enterprise, the right to a share in a potential profit, the right of "prior purchase" in the issuance of new shares, the right to the "residual" part of the liquidation estate of the enterprise and to a transfer of shares and so on. The (investor's return) capitalization rate expresses the temporal value of money and the riskiness of expected dividends.

When speaking about bonds (of the issuer type), the following bonds are possible to differentiate, namely state (public) bonds, the bonds of local and republic authorities, corporative bonds, mortgage bonds, and so forth. The return capitalization model is the method for valuing bonds. The model is based on discounting the monetary flows which the investor predicts he will achieve in the future based upon his ownership of a specific property. Market interest rates (inversely affecting prices) are given a role and they differ depending on a different term to maturity. State bonds are (especially) discount instruments realized as per prices lower than the nominal one. A discount (interest) rate is the return rate to maturity and represents an opportunity cost of capital, i.e. an internal rate of capital return. Future returns are reduced to the present, zero moment.

When making investment decisions, investors apply the "rating lists" of the issuer subjects, i.e. securities (published by specialized rating agencies), or the sectors for and departments of loan analysis in big investors. Securities of an investment character are higher-ranked corporate bonds, and securities of a speculative character are lower-ranked. (3; 337-338) The objectivity of a rank is often a fiction as well.

**Diagram 3.** The main financial and developmental concepts, strategies and managerial structure



**Source:** Own research

The financial function is effectuated by primarily bearing in mind the fact of the timely rational funding of the economic growth and development (5; 195-211) of business entities; the minimization of financial risks; the maximization (optimization) of the utilization of financial

possibilities on the capital market; the adaptability and ability to react in the cases of monetary deformations, fluctuations (oscillations), disturbances, recessions, depressions and crises, the maintenance of the ability to valorize (payments) and creditworthiness (financial reliability), as well as the efficient and effective financial business operations; business reputation (i.e. rating), and so on. Apart from said, the important goals and tasks on the part of financial managers inside the financial target function in a business entity (i.e. an enterprise) are as follows: adherence to the provisions and rules of the science of finance and/or the financial profession; the legislative normative regulations in the domains of the management, directing and coordination of cash and other assets, net business (basic and working) assets, inventories, buyers and suppliers and investments, (uncollected, suspicious and disputable) receivables, and so on. Besides, it is necessary that financial visions, ideas and leading ideas (“guiding stars”), projections, concepts and longer- and long-term strategies, as well as the tactical-operational activities of a shorter and short term should be established with respect to realistic possibilities, as well as the requirements of other business functions (in the domain of work in progress, finished products, inventories, credit conditions, “sponsorship”, distribution channels, the maintenance of the threshold and level of cost-effectiveness, the economical quality, tangible, intangible and combined instructions to employees and so on. It is also necessary that the external conditions of closer and/or more distanced environment and contemporary processes, procedures and/or techniques of transformation and restructuring (of funds, assets, securities, shares and stocks, the sale of a part of the enterprise or the division of the enterprise and the establishment of new ones; the purchase of such shares and stocks by the management, employees and groups; buying an enterprise by exchanging shares and stocks, and so on) should be perceived. (3; 339-340).

Contemporary financial conditions are characterized by virtual, parallel and fictitious or, also, realistically nonexistent finance (funds). Financial and speculative “bubbles” and pyramidal structures deprived of any cover at all are formed. (1).

Financial markets require regulation and state (public) management, control and supervision. Otherwise, in conditions to the contrary, there will be an unavoidable fall in and collapse of financial markets, which objectively is the condition in the case of the mortgage and economic-financial crisis generated in the USA (2007/2008), which overflowed into both western and other countries. (1).

### **3. SOME MONETARY INDICATORS IN SERBIA**

Observing the structure of the sources of the assets of the banking entities in Serbia, it is possible to see the prevailing share, i.e. the formative share, of lent assets (85.6% at the end of June 2020). In comparison with the very same period last year, and in relation to the previous month as well, the lent sources of assets have increased 1.6% and 0.3%, respectively. There is a rational orientation towards the growth of the structural share of own assets in total assets. Other more favorable tendencies (such as the growth of bank deposits of various types) are being crystallized as well.

The foreign exchange indicators of the institution of the National Bank of Serbia are achieving more favorable trends (they are achieving the growth of the foreign exchange reserve and the foreign exchange savings in the retail sector as well).

The NBS has reached the reference interest rate at a certain level (1.25% in June 2020). The comparable trends are lower in the institutions of ECB (0.00%) and FED (0.00-0.25%).

Certain inflationary trends have been achieved (1.6% at the interannual level in June 2020 and a significant impact of the oil derivative price descending trend). Inflationary tendencies in the indicative territory of the EU are pronounced (being 0.8% at the annual level).

When speaking about the Belgrade Stock Exchange, securities (bonds and stocks and shares) trading has substantially been reduced (June 2020) in comparison with the identical period last year (by 82.4%), which is partly also explained by the unfavorable conditions (caused by the epidemic).

To repeat once again, the special significance of state (issued) securities and investors (individual investors are the most pronounced bank factors) are indicative.

The economic-financial policy is undertaking measures (to mitigate the epidemic).

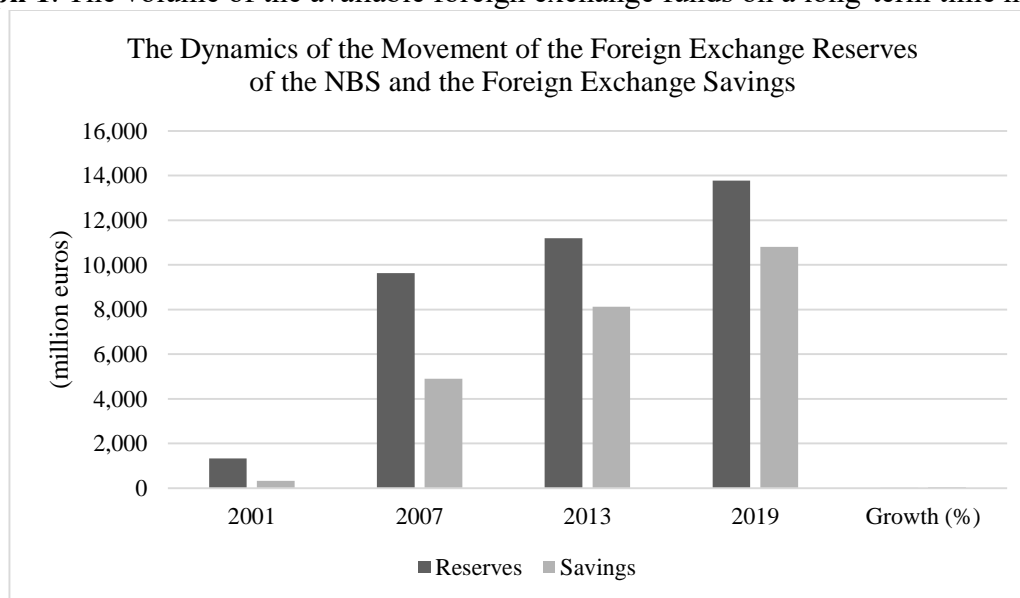
**Table 1.** The volumes of the movement of the foreign exchange reserves of the NBS and the foreign exchange savings (in million euros)

Elements	2001	2007	2013	2019.	Growth (%)
Reserves	1,325	9,634	11,189	13,779	13.89
Savings	330	4,903	8,118	10,801	34.06

**Source:** Ministry of Finance of the Republic of Serbia (June 2020), Belgrade Public Finance Bulletin, pp. 12 – 14

Note: According to the observed temporal semiannual interval (i.e. the period from January to June 2020), the foreign exchange reserves of the NBS are in the amount of 13,956 mill. euros, and the foreign exchange savings are 10,988 million euros.

**Graph 1.** The volume of the available foreign exchange funds on a long-term time horizon:



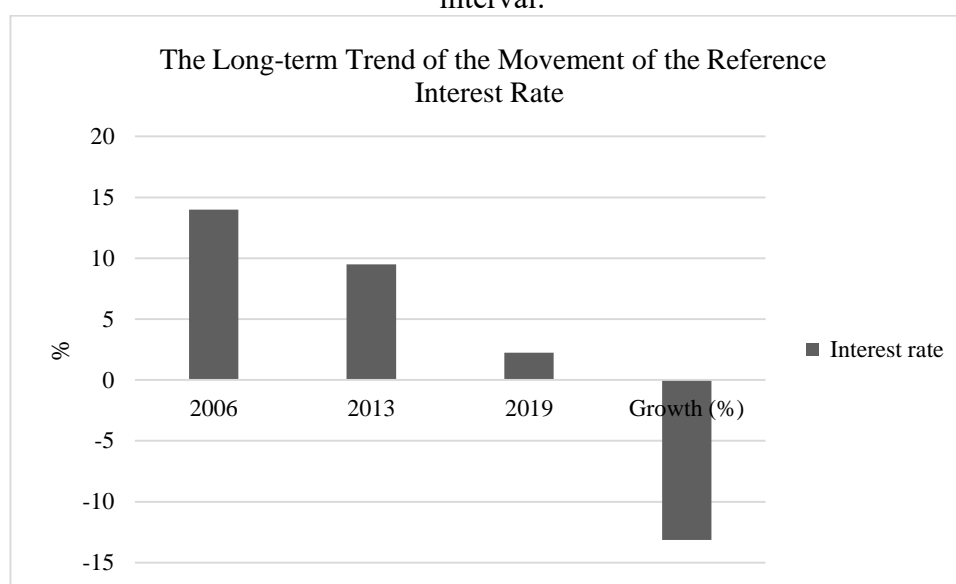
**Table 2.** The tendencies of the movement of the level of the reference interest rate of the NBS in a long-term period

Elements	2006	2013	2019	Growth (%)
Interest rate	14.00	9.50	2.25	-13.15

Note: The reference interest rate of the NBS is 1.25% in the semiannual period (from January to June 2020).

**Source:** *Ibid*, pp. 12 – 14

**Graph 2.** The characteristic trend of the volume of the reference interest rate in a longer interval:



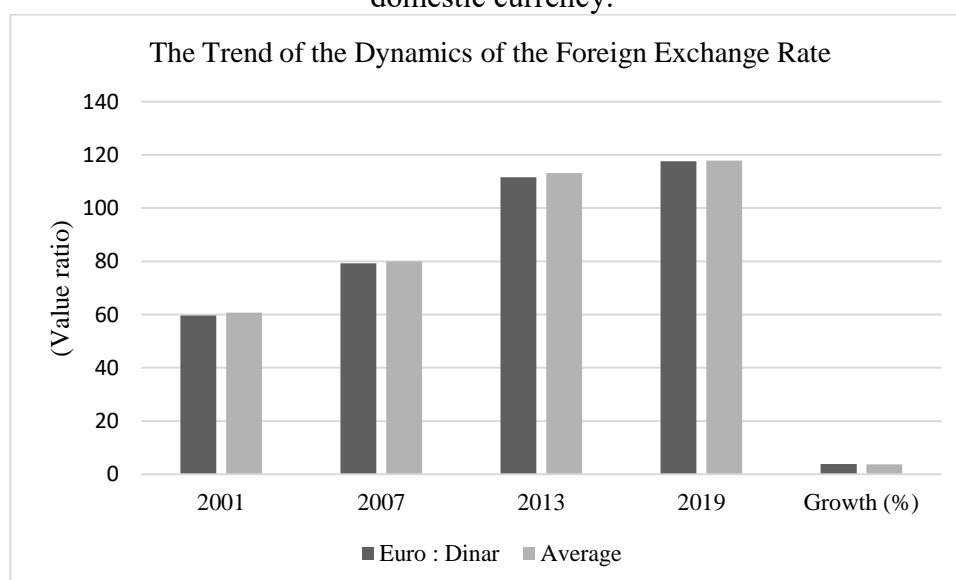
**Table 3.** The tendencies of the level of the foreign exchange rate, i.e. the ratio between the Euro Zone currency and the domicile currency:

Elements	2001	2007	2013	2019	Growth (%)
Euro : Dinar	59.71	79.24	111.61	117.59	3.84
Average	60.69	79.96	113.11	117.85	3.75

Note: In the semiannual period from January to June 2020, the value of the Euro Zone currency in relation to the domicile currency was 117.58, whereas the average level during this period was 117.59.

Source: *Ibid*, pp. 12 – 14

**Graph 3.** The crystallized long-term statistical relations of the movement of the euro and the domestic currency:





#### 4. CONCLUSION


From the practical credit-monetary standpoint, foreign exchange sources (50.6%, the same being reduced by 1.8% in comparison with the period in June 2019) have a predominant share in the currency structure of the asset (capital) sources in Serbia. The increased level of the foreign exchange reserves of the NBS is sufficient to cover the money supply (M1, 147%) and to cover more than the semiannual imports of goods and services. In comparison with the very same period last year, the foreign exchange rate has achieved a nominal appreciation and a real appreciation of 0.3% and 1.6%, respectively. With the aim of amortizing the enormous current fluctuations, the NBS intervened on the interbank foreign exchange market by the net sale of foreign exchange (in a volume of 155 million euros during June). The total market capitalization is significant (the same being 479.7 billion dinars at the end of June, reduced by 3.2% in comparison with the identical period in the year 2019). The price for oil (of the Urals type) has been reduced (since the beginning of the year 2020, in comparison with the very same period in the year 2019 by 40.2%). (4; 8-10).

#### REFERENCES

- Bulatović M. (2018), *Nevidljivi lanci - Moć nepostojećeg novca*, Laguna, Beograd;
- Đurić Z. (2011), *Menadžment porodičnog biznisa*, Beogradska poslovna škola, Visoka škola strukovnih studija, Beograd;
- Mašić B., Dželetović M (2015), *Uvod u menadžment*, Inovacioni centar Fakulteta bezbjednosti, Univerziteta u Beogradu, Akademska knjiga, Novi Sad, Beograd;
- Ministarstvo finansija Republike Srbije (jun, 2020), *Bilten javnih finansija*, Beograd. str. 12-14;
- Rikalović G. (2002), *Dugoročni ekonomski razvoj - Način stvaranja bogatstva*; Ekonomski zbornik Srpske akademije nauka i umjetnosti, Knjiga, 12, Beograd, str.195-211;
- Stojadinović D. (2006) *Ekonomski kalendar*, Akademska štampa, Beograd, Zemun;
- Štiglic, E. Dž., (2016), *Evro - Kako zajednička valuta ugrožava budućnost Evrope*, Akademska knjiga, Novi Sad.

# DETERMINING FACTORS OF INNOVATIVE PERFORMANCE: MULTIPLE CASE STUDY

Beatriz Corchuelo Martínez-Azúa<sup>1</sup> 

Pedro E. López-Salazar<sup>2</sup> 

Celia Sama-Berrocal<sup>3</sup> 

DOI: <https://doi.org/10.31410/LIMEN.2020.215>

---

**Abstract:** *The agri-food industry plays an important role in the manufacturing industry in the Autonomous Community of Extremadura (Spain). The objective of this research is to identify which factors influence the success of the innovative performance in this regional industry. For this, a case study methodology was designed to analyze, from an organizational point of view, which elements contribute to the ability of various companies to develop an innovative strategy. This study validates the proposed model in which Management, Strategy, Structure, Culture, Climate and Market Orientation are factors that determine innovative Performance.*

**Keywords:** *Agri-food industry, Innovative performance, Extremadura.*

---

## INTRODUCTION

The agri-food industry groups a set of very heterogeneous activities, ranging from the first transformation of animal and vegetable raw materials to the production of sophisticated products such as functional foods. The importance of the agri-food sector goes beyond the quantitative indicators of economic activity and job creation.

The agricultural and food industry is one of the main economic activities in the region of Extremadura (Spain) and plays a key role in the regional economy. The weight of the agricultural sector and its associated industries is substantially higher than the national average. Nevertheless its importance, the agri-food industry is undergoing substantial changes and needs to include innovation within its strategies, in addition to changing its products. On the one hand, the companies must adapt their products to the new consumers and the markets' food demands, in order to be more competitive and differentiate themselves from other producers. On the other hand, they must adapt their organizational structure, and especially their marketing strategies, to gain competitiveness and adapt to the international markets, which implies changes in non-technological innovation. As in other industries, innovation gives agri-food companies the possibility of generating higher incomes and increasing their productivity and competitiveness.

Based on this framework, the main objective of this study is to identify which business factors influence the success of the innovative performance in this industry. To do this, a multiple case study methodology was used to analyze, from an organizational point of view, which elements contribute to the ability of companies to develop an innovative strategy. The study validates

---

<sup>1</sup> University of Extremadura, Spain

<sup>2</sup> University of Extremadura, Spain

<sup>3</sup> University of Extremadura, Spain

the premises of the proposed model in which Management, Strategy, Structure, Organization, Culture, Climate and Market Orientation are factors that determine Innovative Performance.

This study aims to contribute to the existing literature by analyzing innovation in the agri-food industry, especially in a regional setting. Its main novelty and interest lie in the methodology used (multiple case study), the proposed model, and the fact that few studies have analyzed this issue. The main contribution of the study is oriented, on the one hand, at the promotion of the capacities and competences of the managers of the agri-food companies for the development of innovative activities favoring the knowledge, the external visibility and the competitiveness of the companies. On the other hand, it is useful for Public Administrations when developing policies to promote and encourage innovation in a sector of vital importance in rural and regional development.

## THE CONCEPTUAL MODEL

Both the economic and the organizational analysis coincide in highlighting the importance of innovation in the complex and changing world that organizations are currently faced with. On the one hand, innovation is a way of avoiding obsolescence, responding to changing market expectations, and is a source of competitive advantage. On the other hand, innovation takes different forms, each one as part of a multidimensional, multidisciplinary, and multifactorial process, as the product of interaction within the organization and with its environment, in a permanent and non-linear way.

In effect, innovation is a complex activity in an organization, in which multiple variables intervene both internally and externally. Therefore, there is a set of variables that intervene to make all of this possible. i) A Culture that drives an adequate mindset (Dabic et al., 2018; Padilha & Gomes, 2016) ii) A Structure that organizes work in a way that enhances human capital (Miles et al, 1978). iii) A Strategy that sets a course and establishes the "how to do" (Prajogo, 2016; Wei et al., 2019). iv) A Management that acts proactively, not only creating appropriate internal conditions but also external ones, in the management of complementary resources (Cabello-Medina et al., 2011; García-Morales et al., 2012; Hullova et al., 2019). v) A Market Orientation that establishes the environment-organization relationship as a source of ideas, recommendations, adjustments, and benchmarks (Ozkaya, 2015; Ho et al., 2018). vi) And, finally, a Climate capable of creating the enthusiasm and commitment necessary to achieve the objectives (Popa et al., 2017).

Based on these variables, the following research premises are established (Corchuelo et al., 2020):

- 1° There is a positive relationship between Management and Innovative Performance.
- 2° There is a positive relationship between Strategy and Innovative Performance.
- 3° There is a positive relationship between Culture and Innovative Performance.
- 4° There is a positive relationship between Structure and Innovative Performance.
- 5° There is a positive relationship between Climate and Innovative Performance.
- 6° There is a positive relationship between Market Orientation and Innovative Performance.

## METHODOLOGY

In order to validate the established premises, the present study uses a qualitative methodology based on a multiple case study. In accordance with Ruiz (2007: 57), a qualitative research

strategy “imposes a context of discovery and exploration”, a circumstance that fits our objective.

According to Yin (1989), this approach is appropriate because it fosters a broad understanding of the researched issue. Through case studies, an issue such as the factors that influence innovative performance can be fully appreciated, and its attributes can then be widely understood through a simultaneous analysis of all its aspects. There are several categories of case studies. Yin (1989) defines three categories: descriptive, exploratory, and explanatory. For this study, the exploratory approach was adopted.

Before carrying out an investigation using the case analysis methodology, the theoretical framework of the investigation must be defined, and an exhaustive compilation and review of the literature related to the topic must be done. Background from other researches, hypotheses, and experimentations were reviewed, which will facilitate the interpretation and analysis of the data at the end of the study.

A fundamental element of the design of this methodology is the elaboration of the semi-structured interview. To do this, a script (or protocol) was prepared, including the aspects related to the selected variables previously analyzed.

Another fundamental element of the design is the type of sampling to be carried out. In our case, the sample was selected in order to identify notable agri-food companies according to their management and performance in terms of innovation. The aim is to look for relevant examples of good practices to later extend the generalization to any type of company. Given the exploratory nature of the qualitative studies, neither the researchers nor the interviewees knew the totality of the type of information that they had to provide and collect. For this reason, the protocol was sent to the selected companies before the interviews.

Once the cases to be studied were selected, the interview was carried out and the relevant information obtained in the responses was collected. We also used other secondary information that would allow the study to be completed (date on which the interview takes place, the position of the interviewed person, organization address, duration, and method to do it).

Five Extremaduran agri-food companies of different sizes and branches of activity were contacted. Based on the diversity of the situation (age, size, with or without a formal R&D department), we prepared for different eventualities in order to validate the proposed model. The contact with the companies and the interviews started in late February 2020.

Finally, to analyze and interpret the information, an initial coding framework for the interview transcripts was developed. The data obtained through the literature and the interviews allowed the coding and analysis of the cases. Finally, the functional-structural analysis was carried out after revisiting the literature again.

## **RESULTS: CROSS ANALYSIS OF THE CASES AND VARIABLES OF THE PROPOSED MODEL**

### **Regarding innovative performance**

COMPANY A, a large company, develops process and management innovation, a product of the expansion dynamics that began in 2014. In addition, it started another process in its products by expanding its lines, in response to its customers in the development of sauces.

COMPANY B, a small young company, develops and patents new products, as well as innovation in marketing through the packaging of its products and its online marketing and management system.

COMPANY C, one of the most dynamic, develops through open innovation with the academic, public, and private business sectors, a new raw material for the cosmetics sector, in addition to products such as olive leaf tea. It also innovates in marketing, catering, wine tourism and strategic marketing mechanisms for its products.

COMPANY D, another small company, a relatively young wine producer, develops product innovations, differentiating itself with unique products in the market and by innovating in marketing through “virtual tastings” with its clients, achieving the positioning of its products both nationally and internationally.

COMPANY E, with a great position in the Extremadura wine sector, is initiating a process of innovation in its business model and product, entering the Cava sector.

### **Regarding the variables of the model**

The variables proposed in the research model have been validated formally, or informally in the case of the relatively smaller organizations. This is how all the premises have been positively valued as determinants of innovative performance, by all the participants in the multiple case study.

P1. There is a positive relationship between management and innovative performance: validated. Management that acts proactively, not only creating appropriate internal conditions, but also external ones, in the handling of complementary resources.

P2. There is a positive relationship between strategy and innovative performance: validated. A strategy that sets a course and establishes the "how-to".

P3. There is a positive relationship between culture and innovative performance: validated. A culture that encourages the right mindset.

P4. There is a positive relationship between structure and innovative performance: validated. A structure that organizes work in a way that enhances human capital.

P5. There is a positive relationship between climate and innovative performance: validated. A climate capable of creating the enthusiasm and commitment necessary to achieve the objectives.

P6. There is a positive relationship between market orientation and innovative performance: validated. A market orientation that establishes the environment-organization relationship as a source of ideas, recommendations, adjustments and benchmarks.

## **DISCUSSION**

### **Innovative Culture, Organizational Climate, Strategy and Structure**

Our findings are in line of the studies of Padilha and Gomez (2016) and Dabic et al (2018). In both of them, a multivariate model was proposed to explain the innovative performance in companies. Dabic et al (2018) outlined that the contextual factors related to the Organizational

Climate and the Innovative Culture are vital for the success of the company, adding that the biggest performance is positively related to higher levels of innovative culture.

Culture, Organizational Climate, Strategy and Structure are variables of vital importance for the achievement of innovative performance. The first one (Culture), is the driver of the action oriented at innovating. It is fed by a clear definition of the vision and the mission of the company (Strategy), the way the work is organized inside the firm (Structure-flexibility), and the establishment of support mechanisms (rewarding the success and the recognition). This combination of factors is contained in the model proposed by Padilha and Gomez (2016), and validated through a quantitative study in the textile sector, with a sample of 287 companies, demonstrating the influence of its model's variables on innovation.

Another important issue is that the level of formalization of the strategic process was higher in the bigger companies than in the smaller ones, although these maintained a similar approach in general. The most important difference might be the way the reference documents are treated on a day-to-day basis. Nevertheless, although the processes are not formalized within the organization, they are considered key in the projection of actions to reach the proposed objectives, considering the importance of flexibility and the appropriate adaptation to the characteristics of the environment.

This finding coincides with the studies of Prajogo (2016) and Wei et al (2019). Prajogo (2016) compared this aspect to the contingent character of the strategy. Wei et al (2019) contemplated the necessity of structuring a cooperative dynamic and a flexible strategy. In our case, both recommendations are present in the interviewed companies.

### **Management and Market Orientation (MO)**

Management is the driver, the catalyst, and the guide of the action, as well as being the center of the decision-making process. It is also the center of coordination both inside and outside the organization, assigning resources, giving guidance, and balancing the flows of resources in the ecosystem of which the organization is a part.

Management plays an important role in the identification and impulse/support of the product and process innovation complementarities (Hullova et al, 2019). Management not only responds to contingencies because of the dynamism of environmental or competitive intensity, but within its multiple responsibilities are also the management and coordination of the alliances and knowledge acquired from these (Cabello-Medina et al, 2019). Success mostly resides in the ability to manage these alliances; without a complete understanding of how they should be managed, companies could lose the opportunity offered by this kind of cooperation.

Regarding the innovation ecosystem, its complexity is due to the diversity of agents and geographical diversity. In this sense, Mei et al. (2019) found a positive correlation between the different types of linked organizations and the innovative performance, explaining that the role of the manager is important, not only regarding the solidification of the links, but in creating the necessary absorptive capacity in open innovation. García-Morales et al (2012) refer to another important function of management, highlighting its importance through the validation of the hypothesis that a positive association exists between transformational leadership exercised by management and organizational innovation. This management style emphasizes emotions, values, and it stimulates creativity in employees, establishing participative and collaborative management.



If Management is the action that orders all processes inside the organization, Market Orientation (MO) is the source that maintains the internal and external dynamics of the organization. MO facilitates the interaction with the buyer, the competition, the information administration, and the internal coordination (cross-functional coordination), focusing on solving problems and opportunities that are perceived in the environment.

The importance and positive relationship of MO with the innovative performance was perceived through the interviews of this study, coinciding with the findings of Ho et al. (2018), who used a sample of 190 actors in the value chain of the cattle raising to measure the relationship between MO and innovation (the innovative performance). This study showed that there is no positive relationship between OM and financial performance. But, if there were a positive relationship between OM and cross-functional coordination and, in turn, a positive relationship between the cross-functional coordination with innovation (innovative performance), then there would also be a positive relationship between innovative performance and financial performance.

On the other hand, Ozkaya et al. (2015), when referring to the importance of the variable MO in the firm's performance, concentrates only on two factors: The Client orientation and the Competitors orientation, as a source they called Market-based Innovation. This is a better criterion for small business and its dominant informality since it ignores the coordination between functional areas, and rather emphasizes the development of competencies based on Customer Knowledge and Competitor Knowledge, resulting in an innovation adjusted to the market reality. The authors concluded that the ability to generate and use knowledge about your customers and competitors increases the performance through market-based innovations.

Lastly, our study found that the level of formalization of the variables responds to the size of the organization. Neither the process informality nor the design diminishes the key role that all the variables play in the achievement of innovative performance.

## **CONCLUSION**

The multiple case study carried out has shown that there is a positive relationship between the factors proposed by the research model and innovative performance. The level of clarity and formalization of each of the factors is manifested as a function of the size and level of formalization and professionalization of the different companies.

The research, by expanding into other aspects, discovered the criteria of the interviewees. They considered that other variables should be taken into account to enhance innovative performance, especially the variables "training" and "attitude", to contribute to greater solidity and dynamism in the generation of results.

Finally, several aspects were also highlighted as possible obstacles to innovative performance, such as: failure to choose a correct market-oriented idea; more innovative competitors; lack of profitability in the project; too long development times; having a limited view of your client; lack of coordination; marketing and communication; a risk-averse culture; lack of support from public administrations; lack of funding or lack of staff training.

Likewise, aspects related to the dynamics of the public sector in its role of supporting the innovation of companies were pointed out, demanding the reduction of bureaucratic procedures and increasing public financial aid.

## ACKNOWLEDGMENT

This research was funded by the Junta de Extremadura (Spain) and European Regional Development Fund grant number IB18040 and GR18058 (SEJ022-Research Group INVE).

## REFERENCES

- Cabello-Medina C., Carmona-Lavado A., & Cuevas-Rodríguez G., (2019). A contingency view of Alliance management capabilities for innovation in the biotech industry. *Business Research Quarterly*, 1-17.
- Corchuelo, B., López-Salazar, P.E., & Sama-Berrocal, C. (2020). Determining Factors of Innovative Performance: Case Studies in Extremaduran Agri-Food Companies. *Sustainability* 12(21), 9098. <https://doi.org/10.3390/su12219098>.
- Dabic M., Laznjak J., Smallbone D., & Svarc J., (2018). Intellectual capital, organisational climate, innovation culture, and SME performance. *Journal of Small Business and Enterprise Development*, 26(4), 522-544.
- García-Morales V.J. Jiménez-Barrionuevo M.M., & Gutierrez-Gutierrez L., (2012). Transformational leadership influence on organizational performance through organizational learning and innovation. *Journal of Business Research*, 65, 1040-1050.
- Ho K.L.P., Nguyen C.N., Adhikari R., Miles M.P., & Bonney L. (2018). Exploring market orientation, innovation, and financial performance in agricultural value chains in emerging economies. *Journal of Innovation & Knowledge*, 3(3), 154-163.
- Hullova D., Simms C.D. Trott P., & Laczko P. (2019). Critical capabilities for effective management of complementarity between product and process innovation: Cases from the food and drink industry. *Research Policy*, 48, 339-354.
- Miles R.E., Snow C.C., Meyer A.D., & Coleman H.J. (1978). Organizational Strategy, Structure, and Process. *The Academy of Management Review*, 3(3), 546-562.
- Ozkaya E., Droge C., Hult T. M., Calantone R., & Ozkaya R. (2015). Market orientation, knowledge competence, and innovation. *International Journal of Research in Marketing*, 32, 309-318.
- Padilha C.K., & Gomes G. (2016). Innovation Culture and performance in innovation of products and processes: a study in companies of textile industry. *IMR Innovation & Management Review*, 13, 285-294.
- Popa S., Soto-Acosta P., & Martinez-Conesa I. (2017). Antecedents, moderators, and outcomes of innovation climate and open innovation: An empirical study in SMEs. *Technological Forecasting & Social Change*, 118, 134-142.
- Prajogo D.I. (2016). The strategic fit between innovation strategies and business environment in delivering business performance. *International Journal of Production Economics*, 171, 241-249.
- Ruiz, J.I. (2007). Metodología de la investigación cualitativa. 4ª edición. Bilbao: Universidad Deusto.
- Wei S., Zhang Z., Ke G.Y., & Chen X. (2019). The more cooperation, the better? Optimizing enterprise cooperative strategy in collaborative innovation networks. *Physica A*, 534, 1-12.
- Yin, R. K. (1989). Case Study Research: Design and Methods, Applied social research Methods Series. Newbury Park CA, Sage.



# SITUATIONAL LEADERSHIP AND ORGANIZATIONAL BEHAVIOR

Federico de Andreis<sup>1</sup> 

Federico Leopardi<sup>2</sup> 

DOI: <https://doi.org/10.31410/LIMEN.2020.223>

---

**Abstract:** *In the organizations and their management, an important fundamental role is played by the "leadership style", since administrating the working relationships in complex organizations, influences their final results.*

*The decision-making process, in fact, within the organization is influenced by managerial leadership.*

*Before going into the analysis of the various models through which we can propose to read the phenomenal complexity of leadership within business management, this research aims to identify what is leadership and also the roles and dimensions within an organization.*

*The goal of the analysis is to explore the study of leadership styles, from the more formal and authoritarian to the more participative, and to demonstrate the situational leadership approach, which does not presume a unique approach to every situation in order to be successful.*

**Keywords:** *Leadership, Organizational behaviour, Management.*

---

## INTRODUCTION

Working in a team is part of that skillset that students, practitioners, workers and managers should have when it comes to creating value for the company. Group experiences are daily occurrences since human beings are social animals, and those interactions with elements of the same species are normal. Diving more deeply into what our society is nowadays, it is possible to see that teamwork is omnipresent within a company's boundaries. The natural consequence in a team very often is the emersion of a leader and consequently, the success of a team is determined by good leadership.

It is not an easy task neither defining leadership, nor identify the various approach to leadership that it is possible to have. Over the years, academics have tried to study leadership in general and the winning model of the perfect leader, trying to determine the leader's features and the behaviours for the success of the organisation.

## METHODOLOGY

In the organizations' management, a fundamental role is played by the "leadership style", from the most authoritarian to the most participative, since administrating the working relationships in complex organizations, influence their final results. For this reason, the investigation of leadership, its approaches and its consequences cannot disregard a clear definition of organizational dynamics, structurally linked to the mission.

---

<sup>1</sup> Università Giustino Fortunato, Benevento (I), Italy

<sup>2</sup> University of Groningen, Groningen (NL), Netherlands

The research approach and the discussion, in order to facilitate understanding of the aforementioned dynamics and dimensions, follows a division by sections of the article in sections one, two... that identify organizational units, almost from a holistic point of view.

Through that methodology, it will be possible to explore the study of leadership styles, from the more formal and authoritarian to the more participative, and to demonstrate the situational leadership approach, which does not presume a unique approach to every situation.

## **DISCUSSION**

### **a. The team**

People's working life revolves mostly around the capacity to work in team, and managers are asked to control and understand teams' trends to better use them and achieve higher goals.

In today's world, companies tend more often to include their employees in the decision-making process, asking them to take responsibilities. These responsibilities are then translated into a group or a team.

By definition a group is composed of two or more people that identify themselves in a common identity, interacting using their rules and aiming at a common goal.

Each member of the group has the same goal and cooperates with the others in order to achieve it.

A group can exist only when people in the group recognise the existence of the group itself, hence, the presence of the leader – which will be seen later in the paper – can be made by everyone's agreement on the role of the leader. The mere physical presence in a small space does not make a group as one unless everyone recognise it.

A group can be spontaneously made based on people's interests such as political reasons, religion, ethnicity since the interaction within the members is easier if not imposed from above.

Therefore, in a working team values and opinions shall be shared. Setting a common goal is the main reason for group formation. The words group and team are frequently used interchangeably, although, they do not mean the same thing. A team is a limited number of people who have complementary capabilities, used for a shared goal, aiming objectives that have a similar approach (Spencer, 1993).

Due to internal conflicts between the members, and unstable relationships, many groups may not succeed and will not become teams.

### **b. Teams typology**

In general, groups can be divided into two macro-categories:

- Primary groups, at the beginning of everyone's life, individuals enter in on group (involuntarily) which is generally family, relatives, the neighbourhood, and the first friendships given by the circumstances.

- Secondary groups, entering adult life, individuals select in which group they want to belong, and it is then started a rigid and more accurate selection usually basing our preferences on as shared interests or common ideas.

Moreover, groups can be further divided into formal and informal organisations:

- Formal if the organisation was born to perform a specific activity within fixed deadlines (e.g., content creators, marketing campaigns, etc.)
- Informal if it is initially created by a personal need of the individual who connects and group peoples and engaging them for a shared goal.

Before the group is created, various phases are performed (Tuckman, 1965). Five well defined and phases are present (from the model of Tuckman of 1965 one more phase was added in 1977):

- Forming, the orienteering phase. In this phase, the group has not been created yet, but a defined amount of people is taking part in the organisation. Roles, scopes, and goals are defined as a first draft. At this moment members are trying to understand what their roles will be and where they can be in the hierarchy (if one there will be). The first leader is being identified, however, in this phase roles shift very easily.
- Storming, in this phase politics and argumentation of the leader are on a testing field. This is a turning point, within a group multiple sub-groups could take place in this phase which decrees whether the group will still be alive for the following phases or not.
- Norming, in this phase the cohesion is pursued. This phase is characterised by internal confrontation, this is a phase in which members are now mature and able to disengage any conflict, if not able to manage this phase again the group can hardly make it to the next one.
- Performing, in this phase, the group has a solid structure. Members are now part of a well- established group. Everyone has a specific role to perform and individuals are well synchronised. In this phase it is important to make wise use of feedback, in fact the group can only improve its performances if constructive comments are delivered.

### **c. Group size**

To create a group, it is important to select the appropriate number of group members. A work team, project team or task force are usually composed of a small number of people. Generally, four people create six relationships within the members of the team. In this way, cognitive processes are pursued, such as group think.

The maximum number of members is not well-defined; however, a cap of ten people is reasonable to think to be the maximum acceptable. A higher number would create unbalanced situations and too many people to express their thoughts and ideas.

On the one hand, people can be a resource but on the other hand, people are so precious that treating them shallowly would be degrading.

### **d. Roles in a group**

The roles and functions performed by the members are part of the organisation structure. By functions, it is intended the activities that are performed in the group, whilst roles are expectative that members build and develop while communicating with each other.



The decision-making process within the organisation is the main role of the management, which through proper leadership – authoritarian, or laissez-faire – handles work relationships within the organisation and influencing the result driven by the proper leadership style.

Therefore, the leadership within a group or organisation has the main purpose of serving the needs of a single person in order to reach the shared goal.

Members are a resource and using properly the resources the organisation can aim at increasing and improving the richness delivered to the stakeholders – via moving the resources, better allocating and changing them – so that the organisation can have a successful future. Moreover, the creating of value becomes the main goal that through the adequate management and inspiration of the team it is possible to achieve, if the management declares the strategies and the objective to reach, the leader decides how and in which way to achieve it respecting the boundaries set by the management.

#### **e. Conflicts**

Within a group, it is understandable that conflicts arise, and conflict resolution is surely another skill that team members and leaders must have in their skillset.

As above-mentioned providing feedback can be the key to success for a team. This can be translated into conflict resolution, which besides avoiding useless waste of resources, it can be constructive or disruptive.

The *disruptive* nature of a conflict can be seen when the efficacy of the team is affected by competitive behaviours within the group boundaries, which would divert the focus of the team from the main goal.

The *constructive* nature of the conflict takes place when members are aware that conflicts are naturally part of the group and for this reason, these moments can be seen and an enriching situation for all the members. This can be translated into recommended practices such as communication, attention to other's interests, ideas proposal and development, sharing points of views.

Areas in which there are most of the conflicts are:

- Project priorities,
- Management procedures of the group,
- New members implantation,
- Costs,
- Planning,
- Members' personality,
- Deadlines.

To reduce conflicts and manage better the members it is important to create a social environment without stress – or trying to reduce it to the minimum –one way of doing so can be entertainment. The entertainment must not be undervalued, it represents the first barrier against stress and consequently conflicts.

Working in a team is seen as something positive, although, it hides difficulties and crises that besides the conflicts a team must face.

Many teams fail and where those teams fail one succeeds. Usually, frustration is the reason why members leave the team, and most of the time frustration is caused by bad management.

Typical mistakes made by managers emerge when:

- When the team cannot overtake poor management plans;
- The work environment is hostile, and it presents a strong hierarchical structure of command;
- The team lacks communication;
- The training is poorly performed, and the personnel selection is inadequate.

Moreover, a common mistake is to consider teamwork as something that can easily tackle any issues, overloading the members with multiple tasks and missions to complete, with unrealistic expectations. For a successful team three basic ingredients are necessary:

- Cooperativity,
- Trust,
- Cohesion.

For this reason, it is important to build the “dream team” and when not available, members of the team must be well-synchronised with each other.

Therefore, we introduce the team building process, which defines the process of training and learning through the use of methods and multidisciplinary teaching aimed at improving cooperation, communication and lowers conflicts.

The team building scope is to obtain from the team the best performance, to do so, simulations are performed, and analysis are then discussed to identify the main issues.

We then propose based on papers review a few characteristics that a team should have to have high performance:

- Participative leadership,
- Shared responsibility,
- Strong communication skills,
- Goal-driven,
- Creativity,
- Nimbleness.

To perform the best, managers must include team-building sessions in their training process (Mollo et al., 2005). By the years the leaderships shifted from the leader instructing the single individual to instruct the group as a whole.

It was then coined the expression “group leadership”, it was created after the necessity to distinguish “leading a group” and “leading people”. Dynamics are quite different and for this reason, express a different concept was necessary since also the dynamics within the group boundaries are different. The leadership is different.

Leadership is the guiding role in the team, the leader manages the other individuals – led or followers – inspiring them to trust and instructing them towards the goal. Holding the leadership role is not an easy task. It means leading the followers through a journey in which not only one approach is valid. The leader must be able to detect and understand whether to

apply one leadership style or the other, how to modulate it and how to adjust one specific style to the situation.

## **f. Leadership**

In the previous sections, it has been extensively explained how effective teambuilding can remarkably improve the team's performances.

Applying an effective, versatile, flexible and understanding leadership can enlarge the scope of the group and ease the dynamics within the organisation itself.

The use of proper leadership is not optional. It is needed in a team; it is an organisational requirement and one of the fundamental yet effective forms of social control over the members. Leadership is defined as a process through which a subject influences a group of individuals in order to reach a common goal (Running et al., 1999), therefore, during this process, the leader influences his/her collaborators to pursue voluntarily pre-set objectives.

This takes into account some aspects:

- It is a process between leader and followers,
- It is strictly bonded to social influences,
- It is manifested throughout a different level of the organization,
- It revolves around the goal achievement.

However, it is difficult to simply define leadership with these four aspects and a few words as a conceptual definition. Leadership is something very broad. It was the beginning of the past century academics started to make research in the field of management. The researchers were mostly focused on defining the peculiar traits of the leader. In the 1950s and 1960s, more careful and in-depth studies on leadership styles were tackled. Finally, in the 1960s and 1970s, finding it difficult to analyse and precisely define specific leadership styles, academics focused on contingent studies, aiming at identifying the most effective leadership behaviours.

Nonetheless, it is important to properly distinguish between management and leadership, these two concepts do not overlap. In fact, managers handle situations and leaders guide the situation and the two activities are not synonyms (Mollo et al., 2005). In general, management involves functions related to planning, whilst leaders inspire the members and find the motivation to pursue the plan designed by the management.

Tracing back the first study about leadership, the theory of traits defines the "trait" of a leader as the characteristics physical or of the personality that can be developed by training or with experience (Rosenbach & Robert J., 2018). Furthermore, we define the traits of "bad leadership":

- Incompetence,
- Lack of nimbleness,
- Insensible,
- Narrowminded,
- Malice.

We now introduce the leadership styles that are effective in influencing the followers. Firstly, contingency leadership in which the efficacy of a particular style can be adjusted according to the situation, there are not universal valuable styles that fit any situation. Situational control

and control over the relationships between members of the group is fundamental when it comes to a “good leader”. A leader in order to have good situational control should master the following three variables(Tuckman, 1965):

- Relationships between leader and followers;
- Clarity in roles;
- Who has the authority.

Usually, different styles of leadership are the outcome of the fusion of different styles, using authority and involving the members.

Leadership approaches:

- Full range, in this approach the leadership can vary a lot from a laissez-faire approach to a transitional leadership and even transformational leadership;
- Laissez-faire, it is intended those behaviours that let the members of the group take responsibility, providing precise indications but leaving the individuals to process the information and act consequently;
- Transitional leadership, it is based on rewards and penalties in order to promote motivation and performance;
- Transformational leadership, it is the kind of leadership with more involvement of the members with trust, loyalty and effort between all the levels of the organisation. The transformational leader is very intelligent, and they can inspire, give attention to the single entity, and stimulate intellectually each member of the group.
- Leader-collaborator exchange, it is an approach based on a quality- relationship between leader and follower. There are different grades within the group, and they are treated differently according to the relationship built with the leader.
- Servant leadership, it was theorised in the 1970s. the idea was that when a leader has a position of service towards his/her collaborators, taking care of their needs before of his/her. A servant leader is capable of empowerment, hence, to work on himself/herself in order to make the others work better. This type of leadership involves understanding, listening and working together as a very interwoven team.

Various studies have proved that followers respect more leaders that promote respect and have some sort of empathy towards the team.

### *Emotional intelligence*

A respectful leader must have in his/her skillset emotional intelligence. A leader that is firstly able to control himself/herself and then the other can provide a shared and mutual respect in the group and the organisation. For emotional intelligence is intended the ability to manage relationships in order to ease the process of goal achievement.

### *Resilience*

Resilience is another capability that is defined as the ability to adapt positively to different contexts and facing disruptions, to find solutions and design plans that are then put into practice successfully.

### *Empathy*

The capacity to detect and analyse the mood of the group members, establishing a connection with the other person. It is developed by actively listening.

## CONCLUSIONS AND SUGGESTIONS FOR FUTURE RESEARCH

To conclude, situational leadership is not easy to achieve, nonetheless, it is a mixture of different types of leadership since there is not one unique valid style.

After we discussed what a group is and how it is created, what are the characteristics of a group and what are the roles of the leader within the organisational structure, we can conclude and provide suggestions for future research.

The success of a leader is strictly related to personal skills which are possible to develop – mostly the leader is born with those skills, he/she just need to develop more- managing the group.

Thus, we can state that in the organizations management of a business, a fundamental role is played by the "leadership style", from the most authoritarian to the most participative, since administrating the working relationships in complex organizations, influence their final results.

In fact, within an organization, the leadership has, as demonstrated, therefore the function of uniting the needs of the individual to the needs of the group and vice versa, to achieve the final objective of the organizational mission. The leadership approach does not presume a unique approach to every situation, but it must be calibrated in time and space, taking into account interpersonal relationships, the internal environment, the external environment, the personality of the members, their attitudes, etc.

The person or those who hold the leadership, but also the organization itself, must in fact be able to know and understand how and when to modulate their managerial style to achieve the desired results, always bearing in mind that leadership is a complex phenomenon and that the behavior of its members, therefore, depends very much on the leadership attitude that guides them.

We focused on the leader features and leadership styles, future research can focus on the inner structure of an organisation or what the forces are within an organization.

## REFERENCES

- De Andreis F., Lo stile di leadership nella direzione d'impresa, Youcanprint, Lecce, 2017
- Mollo, S. M., Stanz, K., & Groenewald, T. (2005). Leadership Competencies In A Manufacturing Environment. *SA Journal of Human Resource Management*, 3(2), 34–42. <https://doi.org/10.4102/sajhrm.v3i1.56>
- Rosenbach, W. E., & Robert J., A. (2018). Bad Leaders. *Contemporary Issues in Leadership*, 215–223. <https://doi.org/10.4324/9780429494000-24>
- Running, D. M., Ligon, J. B., & Miskioglu, I. (1999). Leadership, Theory and practice. *Journal of Composite Materials*, 33(10), 928–940.
- Spencer, K. L. (1993). The Wisdom of Teams: Creating the High-Performance Organization. *Academy of Management Perspectives*, 7(3), 100–102. <https://doi.org/10.5465/ame.1993.9411302368>
- Tuckman, B. W. (1965). Developmental sequence in small groups. *Psychological Bulletin*, 63(6), 384–399. <https://doi.org/10.1037/h0022100>

# INNOVATIVE DESIGN CONCEPTS FOR QUALITY HPO ORGANIZATIONS

Srdjan Tomic<sup>3</sup>   
Jelena Rajković<sup>4</sup> 

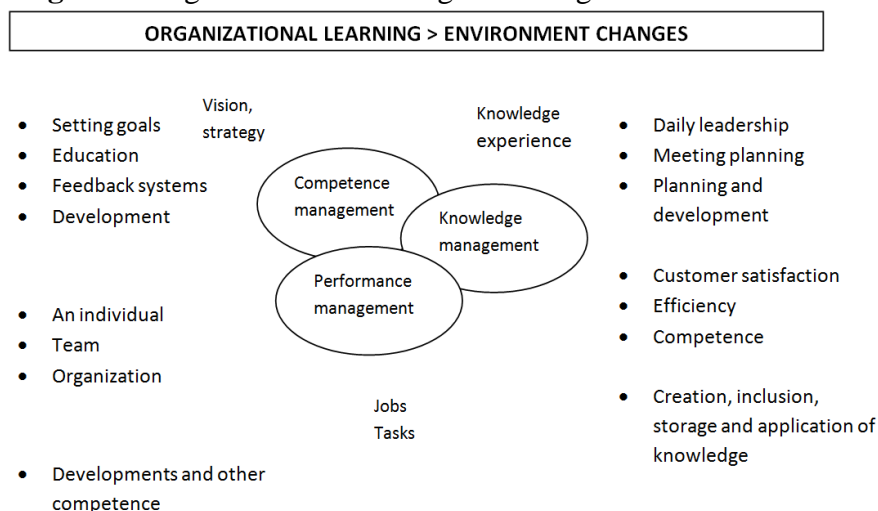
DOI: <https://doi.org/10.31410/LIMEN.2020.231>

**Abstract:** *The business of organizations, in the conditions of globalization, radically changes the market, conditions, and strength of competition, requiring managers to change the way they react and solve problems using quality. The most successful business entities become those who continuously encourage creativity and create new knowledge. In order to be competitive in an uncertain and unpredictable market, high-performance organizations must be innovative, generating new knowledge and new technologies. These are organizations that, by managing quality, have the ability and skills of continuous recognition of challenges and changes. The paper is based on showing how an organization needs to manage change and apply concepts, methods, and techniques that can pave the way for us to design OVP. The concept of a synergistic approach to the design of OVP organizations is necessary for an unpredictable and uncertain global environment.*

**Keywords:** (HPO) organization, Market, Quality, Competition, Globalization.

The concept of "organizational transformation" gained importance in the theory and practice of management during the eighties and nineties of the XX centuries. Accelerated changes affect discontinuities in many industries. Faced with such challenges, organizations cannot be successful if they use incremental change. Organizations need major, radical - transformational changes. This is the way to create and design OVP organizations. (Ansof, 1990.p.384)

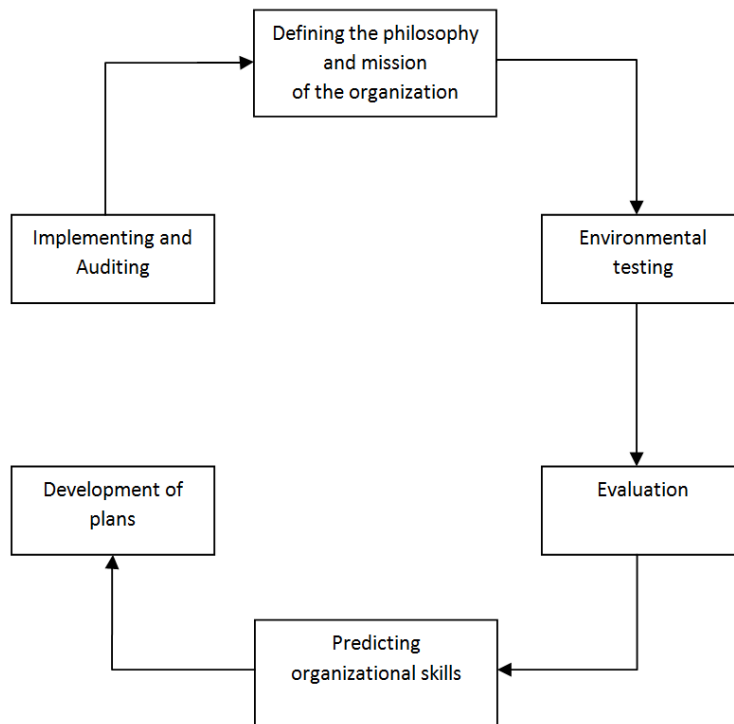
**Figure 1.** Organizational learning and changes in the environment



<sup>3</sup> School of Engineering management, Bulevar Vojvode Mišića 43, Belgrade, Serbia  
<sup>4</sup> School of Engineering management, Bulevar Vojvode Mišića 43, Belgrade, Serbia

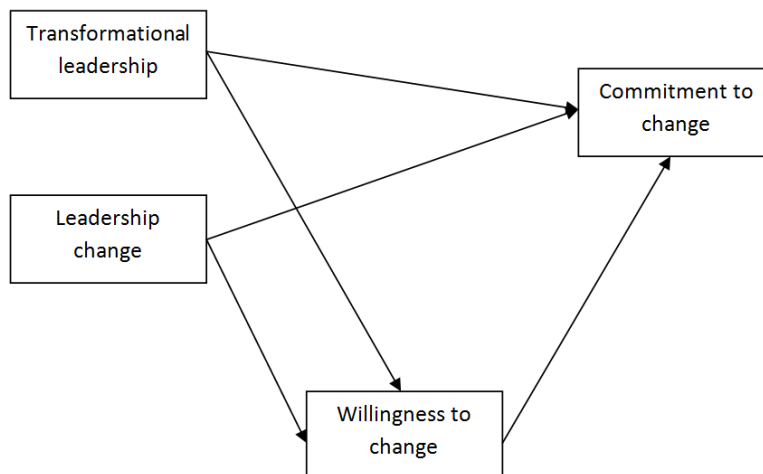


**Figure 2.** Examining the philosophy of the organization



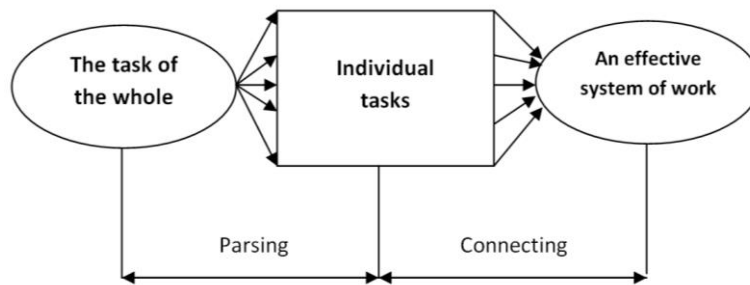
Transformational change must be supported by appropriate change processes (Bennis, 1997.p. 223).

**Figure 3.** Transformational changes



In a discontinuous, turbulent environment, it is not always easy to recognize the driving forces of change identify important strategic issues, and use the right critical success factors in decision-making. The characteristics of a turbulent environment are: growth is impossible to extrapolate, earlier strategies become unreliable, profitability is not accompanied by an increase in business activity, and the future becomes uncertain. (Certo, 2000, p. 128) A planned approach to such a situation is necessary to assess the effects of the enterprise. Based on that, it is possible to define a planned response and choose a way that has a positive effect on the achievement of the company's business goals (Deming, 1996, p. 254).

**Figure 4.** Breakdown into linking organizational tasks



The causes of transformation processes in the literature are most often stated:

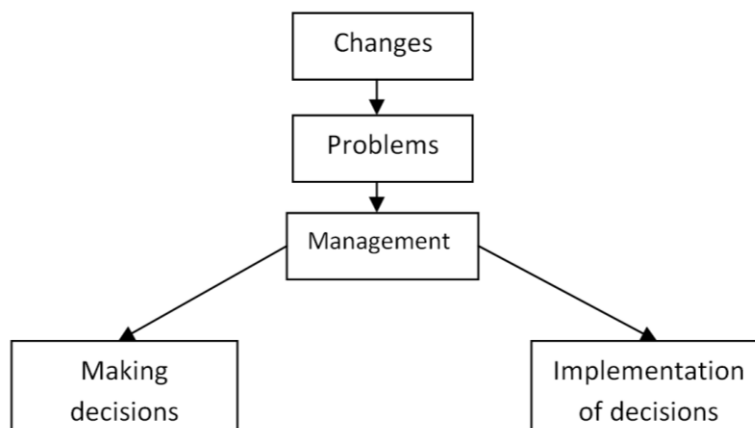
- increasing the globalization of business,
- acceleration of the rhythm of change,
- increasing the level of competition,
- variability of technologies (especially information),
- an increasingly diverse workforce,
- the transition from industrial to the knowledge society,
- market instability and economic conditions,
- quality and innovation as a managerial imperative,
- increase in demand by stakeholders,
- an increasingly complex managerial environment (Drucker, 1993, p. 198).

It is quite certain that the business of a company in conditions of discontinuity requires a re-examination of the current theory of business. P. Drucker states that business theory has three essential parts that must be at the heart of management:

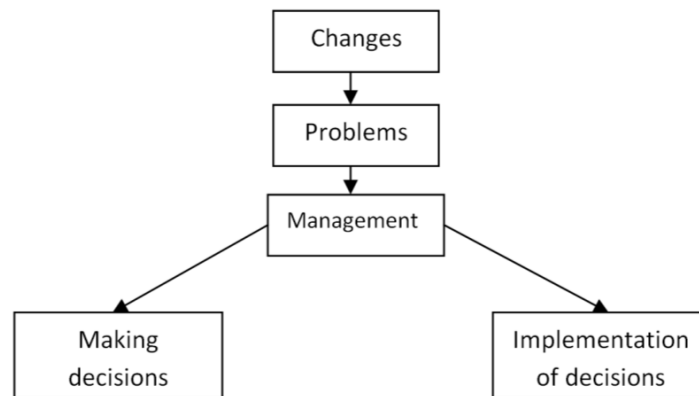
- Assumptions about the company's environment,
- Assumptions about the specific mission of the company,
- Assumptions about the core (essence) of competence needed to accomplish an organizational mission (Kotter, 1998, p. 214).

The organization must continuously create new ways of competitive advantage. Therefore, incremental changes are insufficient, and changes of a transformational character are required.

**Figure 5.** Competitive advantage



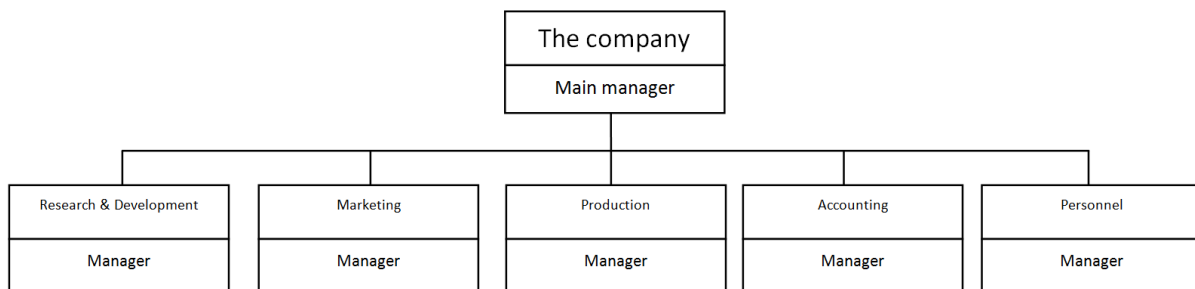
**Figure 6.** Discontinuous change



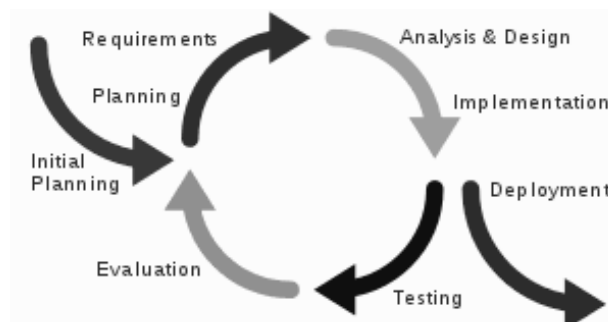
"Cotter suggests new rules that companies that want to be successful should follow. First, not relying on conventions, how profits were made in the twentieth century do not yield more results. Secondly, it is necessary to monitor globalization and its effects; everything is changing, offering new opportunities and gambling. Third, move towards a smaller and entrepreneurial, and away from a large and bureaucratic company. Speed and flexibility bring success in a changing world. Fourth, help large businesses outside the company, using consultants and others who offer new opportunities. Fifth, it is not enough just to have management, but also leadership to achieve success. Sixth, many jobs allow companies to show their willingness. Seventh, it is necessary to increase the ability to compete; to have high standards, as well as the desire to win is important both now and in the future. Eighth, never stop trying to ensure growth, and lifelong learning becomes increasingly important for business success." (Cotter, 2001, p. 256)


Organizations that want to be successful must be so-called "Innovative organizations" and "learning organizations".

**Figure 7.** Innovative organizations



**Figure 8.** Adaptive changes





Changes are not welcome and they are avoided, and when a reaction is necessary, the action is aimed at preserving the existing situation. The solution to the problem is fragmentary and the first satisfactory solution is accepted. These changes do not change the key components of the company. They have a low level of innovation in the organization because they change the peripheral components of the organization that are not crucial for its identity, survival, and development.

The discontinuous equilibrium model is based on the assumption that changes in the environment in their frequency, extent, and level of turbulence exceed a framework that can be filled by adaptation through constant incremental changes (Stoner, 2002, p. 251).

This model of change does not include cumulative change. Radical changes are independent of incremental ones. The assumption of equivalence does not apply here. In terms of organizational learning, the broken balance model includes both adaptive and generative learning.

## **TRANSFORMATIONAL LEADERSHIP VS CHARISMATIC LEADERSHIP**

"A charismatic leader transforms the needs, values, and aspirations of followers from personal interests to common interests. They enable followers to become very willing to personally commit and sacrifice for the realization of the leader's mission and to work beyond what is their obligation. The assessment is that charismatic leadership differs from other types of leadership based on the following factors by a set of behaviors, a set of personal traits, specific perceptions and attributes attributed by followers, and specific effects on followers (Williams, 2010, p. 362).

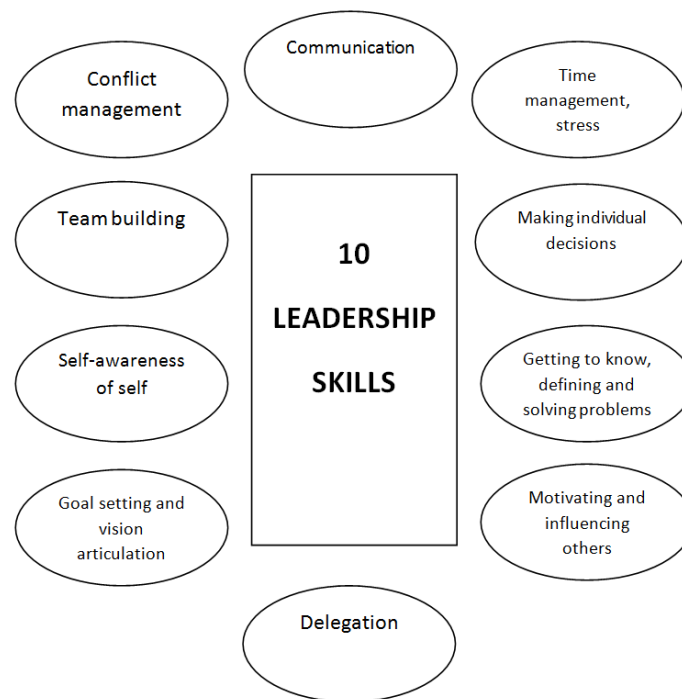
Charismatic leadership is possible under certain conditions:

- the beliefs of the followers must be similar to those of the leader,
- unconditional acceptance and commitment to the leader,
- members of the group or organization must be willing to listen to the leader,
- the emotional involvement of the group or organization in the mission of the charismatic leader and their own goals,
- the strong desire of followers to identify with the leader,
- leaders must use personal power and successful persuasion,
- followers attribute charisma to leaders who possess self-confidence, self-confidence, and enthusiasm.

Transformational leaders arouse interest in company transformation, inspire and encourage employees to focus on change. All employees must understand that incremental improvements will not lead to the desired state and that transformation as a basic qualitative change is of great importance for increasing the competitiveness of the company.

Resistance to change in many cases is not ignorance and misunderstanding of the need for change. This is a normal reaction of employees who want to protect some of their interests that they assume are threatened by change. It is often considered that change is not necessary or necessary; but that the situation is not favorable to start changes and that the costs of change are too high to the possible effects.

**Figure 9.** Transformational leadership - types of leaders



The process of transformation is the change of the company from what it is to what the leader wants to be. Transformational leadership is a complex and difficult task. A transformation leader has a clear vision of the future state of his organization. He is a kind of social architect of his organization, he creates trust among associates by making his position clear and maintaining it throughout the entire transformation process. He is a strong role model for his associates. He not only creates a vision but is also an actor of change (Živković, 2008, p. 278).

## CONCLUSION

In a changing environment, an organization cannot achieve a competitive advantage if it relies solely on market strategy or strategic management of available resources. DSSA organizations must necessarily accept the importance of innovations creating ideas and knowledge and expand it through situational strategy, as part of the company's strategy. They also need to gather and develop new knowledge through creative methods and thus build new skills in order to achieve sustainable competitive advantage.

The situational approach or as many authors still call it the "contingent approach" or the uncertainty approach occurs in parallel with the growing changes in the organization environment. The contingent approach emphasizes that there is no "best way", but the way of organizing depends on the specific situation.

In the comparison of the systemic and situational approach, certain differences can be noticed. The system approach has developed a model of the organization as an open, complex, dynamic, and organic system, which contains general frameworks for understanding all organizations. A systems approach is a way of thinking about organizational variables and relationships. The situational approach concretizes the application of the system concept in specific conditions.

## REFERENCES

- Ansof, H. I., Edward, J. McDonnell, *Implanting Strategic Management*, Prentice Hall, 1990., p. 384
- Bennis W. and Mische M., *The 21st-century organization: reinventing trough reengineering*, Jossey-Bass Publishers, San Francisco 1997.
- Certo C. S., *Modern Management*, 8th edition, Prentice Hall, Upper Saddle River N. J. 2000.
- Deming, W. E., *Kako izaći iz krize*, Grmeč – Privredni pregled, Beograd 1996.
- Drucker, P. F., *Post- capitalist Society*, Butterwort-Heinemann, 1993
- Kotter, P., J., *Vođenje promene*, Želnid, Beograd 1998
- Kotter, P., J., Cohen D., S., *The Hart of Change*, Harvard Business School Press 2001.
- Robbins P. S. *Organizational Behavior*, seventh edition, Prentice Hall, Englewood Cliffs, NJ 1996.
- Stoner A. F, R. Edvard Friman, Danijel R. Gilbert, Jr, *Menadžment*, Želnid, Beograd 2002.
- Williams C., *Principi menadžmenta*, Data status, Beograd 2010.
- Živković S., *Strategijski menadžment- upravljanje transformacionim promenama*, Alfa univerzitet, FTB, Beograd. 2008.





# A SYSTEMATIC REVIEW: SOFTWARE SOLUTIONS FOR TIME-MANAGEMENT IN REMOTE WORK SETTINGS

Ivan Gjorgjievski<sup>1</sup>   
Daniela Karadakov<sup>2</sup> 

DOI: <https://doi.org/10.31410/LIMEN.2020.239>

---

**Abstract:** *Ever since the onset of the Internet and the rapid development in communications, a paradigm shift has been occurring between the human resources and the management systems in place. That shift has already rendered plenty of legacy management systems obsolete and ineffective. Evidently, the acceleration of data transfer speeds has produced a side effect in decreasing the location dependency of the average worker in certain industries, which in turn created a new challenge for the contemporary manager especially when dealing with remote teams and time-management of the same. This work-location decoupling meant that new systems had to be created, new studies to be introduced and plenty of modernization to the legacy control systems had to be implemented. And fast! This paper contains a systematic review of available software solutions for time management, location independency, virtual work and work teams and will provide analytic insight.*

**Keywords:** *Time-management, Software solution, Remote work.*

---

## INTRODUCTION

Time itself represents a substantial resource in the deliverance of goals and objectives. As a resource, it cannot be archived, contained or changed but it can only be used productively and effectively. To manage time is to have developed competences in setting and achieving goals in a given time frame. Efficient time management directly correlates to the health and personal effectiveness on oneself. When control over the time is lost, then it becomes a source of stress, anxiety, depression, worsened results, behavioural changes and so on.

Time management in business terms represents the competency to determine priorities, function effectively and properly delegate (Karadakov & Tasevska, 2021). A proper time management will enable increased productivity and efficacy, will show professionalism, will lower stress, increase improvement opportunities and in turn will support achievement of personal and professional goals.

The ever-developing technology have so far surpassed all expectations in every field. Smart phones, smart watches, tablets, social media, etc., have dramatically changed the personal and the work environment. If utilized properly, the technology undoubtedly improves all functions, which in turn improves time-management (Karadakov & Tasevska, 2021).

There are plenty of available applications and software solutions on the market today which assists the time-management effectiveness. With their help one can drastically lower the effort

---

<sup>1</sup> Business Academy Smilevski – BAS, Jane Sandanski 111/2, Skopje, North Macedonia  
<sup>2</sup> Business Academy Smilevski – BAS, Jane Sandanski 111/2, Skopje, North Macedonia

put in to time planning, to monitor task fulfillment dynamic, to create schedules and priorities, do notify and remind for important tasks, etc. (Karadakov & Tasevska, 2021).

An individual is able to improve time management competence through the use of technology. He or she will need to utilize the power of technology while also taking care not to become “a slave” of it.<sup>3</sup>

There is an increasing number of managers that recognize the benefits and the advancements gained with the utilization of personal digital assistants. Those may come as a small form devices or software solutions and applications that enable the archiving, exporting, importing and creating data, extrapolating information, create calendar appointments, lists, tasks, etc. At the same time, the aforementioned solutions enable collaboration between stakeholders (employees, clients, partners, managers, etc.), and collaboration on certain tasks, activities or locations. Such solutions will enable time measurement, monitoring and control over tasks, archive information and data, scheduling, reporting and improving communication.

Although there are plenty of benefits (pros) on using the technology and the technological solutions to effectively and efficiently manage time, certain shortcomings (cons) can emerge as well. The table below contains a short overview of pros and cons.

**Table 1.** Overview of pros and cons

<b>Pros</b>	<b>Cons</b>
Simplicity of use	Possible data-loss or data-leak
Compactness	A solution can become expensive
Scheduling and monitoring functionality	Can become cumbersome to use
Archiving and extrapolating information	May come with a steep learning curve
Search and find information functionality	Technology advancement can render it obsolete
Flexibility and reporting	May not be accepted by older generation workers

## SYSTEMATIC OVERVIEW OF SOFTWARE SOLUTIONS

The process of digitalization, especially accented during these pandemic times, for some organizations meant significant restructuring of certain business processes, where some managers noted that the paradigm of distrust in technology is slowly fading away. This has become apparent mostly in the field of time management and replacing human efforts with digital solutions. As stated previously, the market offers a plethora of software solutions for time management and monitoring, and as such, this paper will contain their research on the 10 most developed and recognized software solutions in 2020. All of the software solutions will be assessed in accordance with the aforementioned pros and cons and graded on the provided scale. The authors concur that all software solutions have the core functionalities implemented such as:

- Scheduling, monitoring and control of projects, activities, processes and tasks,
- Time-monitoring per task, user, location and project,

<sup>3</sup> Karadakov, D., & Tasevska, G. (2021). *Personal management (In publishing)*. Skopje: Business Accademy Smilevski - BAS.

- User creation and administration,
- Calendar attachments,
- Data storage and archiving functionalities,
- Reporting capabilities.

A table of criteria that stem from the pros and cons mentioned previously is created and will be use as a measuring tool. The assembly of software solutions will be assessed in accordance with the criteria and rated on a scale of compliance. The established measuring criteria is as follows:

- Simplicity of use (UX/UI design, intuitiveness, etc.),
- Wearables applicability (Feature that enables use with smartwatches and other wearable tech),
- Flexibility (Adjusting the software interface to look and work as per needs or wants),
- Collaborative functionality (Messaging or chat between stake holders, ability to create teams and combine tasks/activities/projects, etc),
- Price of use or purchase,
- Data security and GDPR compliance,
- Reporting.

All of the software solutions will be graded by the scale below in accordance to the established criteria. The scale is as follows:

- FC – Full compliance (+2 points),
- PC – Partial compliance (+1 point),
- N/A – Not available or not applicable (-1 point),
- X – No data (No points).

According to one of the leading IT industry web authorities PCMAG, the best software solutions on the market are as follows:

**Table 2.** Best software solutions on the market

Software solution	Price (lowest price option)	PC MAG Score
<b>BQE Core</b>	27.90\$/month/user	4.5
<b>TSheets</b>	10\$/month/user	4.5
<b>Zoho Projects</b>	5\$/month/user	4.5
<b>HubStaff</b>	7\$/month/user	4.0
<b>Time Doctor</b>	10\$/month/user	4.0
<b>VeriClock</b>	15\$/month	4.0
<b>Wrike</b>	24.8\$/month/user	4.0
<b>MavenLink</b>	39\$/month/user	3.5
<b>FunctionFox</b>	35\$/month initial payment + 5\$/month/additional users	3.0
<b>TimeSolv</b>	19.95\$/month/user	3.0

**Source:** (Martinez & Horowitz, 2020)

The matrix table correlating the given criteria with assessments per software solution is as follows:

**Table 3.** Matrix table correlating the given criteria with assessments per software solution

Software	Criteria						
	Simplicity of use	Wearables application	Flexibility	Collaboration	Security +GDPR	Reporting	TOTAL
BQE Core	FC	PC	PC	FC	FC	FC	<b>10</b>
TSheets	FC	PC	FC	PC	FC	FC	<b>9</b>
<b>Zoho Projects</b>	FC	FC*	FC	FC	FC	FC	<b>12</b>
HubStaff	FC	PC	PC	PC	FC	PC	<b>8</b>
Time Doctor	PC	PC	PC	PC	FC	FC	<b>8</b>
VeriClock	PC	PC	FC	PC	FC	FC	<b>9</b>
Wrike	FC	PC	FC	FC	FC	FC	<b>11</b>
MavenLink	PC	N/A	PC	PC	FC	FC	<b>6</b>
FunctionFox	FC	PC	PC	PC	FC	FC	<b>9</b>
TimeSolv	PC	PC	PC	PC	FC	FC	<b>8</b>
<b>Legend:</b>				<b>FC</b> – Full compliance (+2 points) <b>PC</b> – Partial compliance (+1 point) <b>N/A</b> – Not available or not applicable (-1 point) <b>X</b> – No data (No points)			

\*through separate application.

The results show that most of the solutions comply more-or-less with the given criteria and at the beginning a credit is due in the cyber security and the GDPR compliance criteria of all the solutions. According to the table, more than half of the solutions (6/10) are compliant with our assessment of **simplicity of use**. A certain degree of obsolete and unintuitive interfaces were monitored at the rest of the solutions.

**Wearable application** was noted only through a specific, additional solution for only one of the solutions, yet all solutions (except one) offer a smartphone integration of some kind. Additionally, it was noted that all of the solutions offer a certain degree of integration within popular calendar applications which in turn can be utilized by the majority of the wearable technology.

**Flexibility** as criteria assesses the software capabilities and options for adjusting the interface, reports, templates, etc., in accordance to the needs of the business, manager, process, project or task. It is noted that all of the software solutions measured, are having this functionality within the core, however certain number of them (6/10) require knowledge of higher computer skills such as programming or UI/UX competences. Additionally, the majority of the software

solutions required higher tier subscriptions to enable the full flexibility options which may in turn become costly and expensive for a small to mid size business.

Only a small percentage (3/10) of the software solutions were featuring means of direct communication (chat tools, message boards, task messages and comments, etc.). The rest of them (6/10) were offering either communication within rigid structures (task or period comments only or logs) or no communication between stakeholders whatsoever (1/10). Yet, as these solutions are intended for lessening the impact of planning, organization and monitoring on the time itself, they all offer a specific frame of **collaboration** within a project, activity, task, function or location, therefore it can be concluded that all satisfy the criteria either partially or fully.

It is commendable that 10/10 of the software solutions have fully implemented **cyber and data security and GDPR protocols compliance**.

**Reporting** is a key feature for the core of all the software solutions of this kind, as in the end, a manager would like to be able to monitor, control and extrapolate conclusions on the data provided and generated by the completion of tasks, time frame compliance and expected results. There is an easily noticed focus on the reporting features which lead to increased requirements for flexibility, yet some of the solutions offer reporting flexibility as part of higher tier subscriptions and others require certain degree of programming skills. Yet there is a 9/10 compliance with this criteria.

The table shows that one of the solutions that have been assessed is one of the most criteria compliant software solutions.

## **FUTURE RESEARCH DIRECTIONS**

Core management functions are planning, organization, control and leadership of people, teams and processes. As with any organizational changes, the pandemic has accentuated the development and digital restructuring of the business processes, which in turn resulted in increased popularity of software solutions. The market offers a huge spectrum of software solutions that can aid the contemporary manager, however the organizational wisdom cautions: *Even the most expensive and extravagant software solution will prove cumbersome and an obstacle instead of assistance or lessening the work if not utilized properly.*

With the rapid development of technology, the need for future research in aspects of bridging the work and software is further accentuated. One of the key filters within the research and implementation in the business processes should be the management team. As noted in the book *Operations Management*, 7th Ed by (Slack, Brandon-Jones, & Johnston, 2013) all managers need to be able to comprehend and implement the technology in three stages as follows:

- Stage 1:** Understand the process technology,
- Stage 2:** Evaluate the process technology,
- Stage 3:** Implement the process technology.

Therefore, all managers need to be able to understand how a software solution will work, will help or will optimize and streamline the processes. Next, the managers ought to be able to evaluate the impact the software solution is or will be creating by its utilization and at the end,



it requires them to be able to implement it within the business processes, people, teams and projects.

## CONCLUSION

A key factor in achieving organizational goals is the time itself. Efficient time management is done by the utilization of the contemporary technology advancements and solutions that exist on the market. The use of devices or software solutions bring certain pros and cons which were touched upon on the pages of this paper. What is important for the modern organizations is to be able to evaluate its needs and find or create a software solution to comply with their organizational goals or objectives. Based on the results and the discussion in this paper, a conclusion can be extrapolated.


This paper offers a systemic overview on the digital tools present and established on the market for time-management assistance and improvement. The overview should be able to assist any organization in their decision making efforts on which software solution would work best, what to look for in such a tool and what is there to be understood and expected by utilizing such a technology. The overview is expanded further in the final paragraphs by a notice on what should the modern managers understand, do and do not do when dealing with these technologies.

## REFERENCES

- Hoover, J. (n.d.). *Time management - Set Priorities To Get The Right Things Done*. Harper Collins E-books.
- Karadakov, D., & Tasevska, G. (2021). *Personal management (In publishing)*. Skopje: Business Accademy Smilevski - BAS.
- Mancini, M. (2003). *Time management*. New York: McGraw-Hill.
- Martinez, J., & Horowitz, B. T. (2020). *The Best Time Tracking Software for 2021*. From PCMag: <https://www.pcmag.com/picks/the-best-time-tracking-software>
- Slack, N., Brandon-Jones, A., & Johnston, R. (2013). *Operations management* (7th ed.). Harlow, United Kingdom: Pearson Education Limited.
- Tracy, B. (2013 ). *Time management*. New York: Amacom.

# MODEL FOR ASSESSMENT OF THE COMPETENCE OF PRODUCTION MANAGERS

Krasimira Dimitrova<sup>1</sup> 

Tanya Panayotova<sup>2</sup> 

Neli Veleva<sup>3</sup>

DOI: <https://doi.org/10.31410/LIMEN.2020.245>

---

**Abstract:** *This publication presents an experimental model for assessing the competence of production managers, which is based on classical management and modern mathematical tools. The research was done in response to a real practical need set as a research task by the business. As a result, a model for selection of specialists and experts for solving complex management problems related to production management in industrial enterprises and an algorithm for application of this model is proposed. Key indicators for assessing the competence of production managers have been identified. To create the model, surveys conducted among functional experts in the field of production management were used. The model can be successfully applied in other functional areas of management, modifying the key indicators so that they are applicable in these areas.*

**Keywords:** *Competency assessment, Competency assessment model, System of indicators, Main indicators, Secondary indicators, Delphi method.*

---

## INTRODUCTION

The present study is provoked by a specific need in production management, related to the analysis and planning of production capacity in industrial enterprises and the solution of complex problems and crisis situations. In the course of the research some summaries and conclusions were made regarding the universal applicability of the obtained results.

Production capacity is a key complex economic parameter of the enterprise and its effective planning and management is the basis of success and competitiveness of any production organization. This raises the need to put on a scientific basis the selection of specialists who will make important management decisions.

The study aims to develop a model for determining the competence of a team of specialists to make management decisions related to the identification, analysis and evaluation of key factors influencing the capacity of industrial enterprises. The model treats the selection and assessment of the competence of experts in forming teams to solve specific production problems related to the management of the production capacity of enterprises. The model provides the definition, selection and ranking of factors influencing the interaction and relationships between them, as

- 
- |              |  |  |
|--------------|--|--|
| <sup>1</sup> | Technical University of Varna, Faculty of Management, Studentska str. 1, Varna, Bulgaria | Mechanical Engineering, Department of Industrial |
| <sup>2</sup> | Technical University of Varna, Faculty of Management, Studentska str. 1, Varna, Bulgaria | Mechanical Engineering, Department of Industrial |
| <sup>3</sup> | Technical University of Varna, Faculty of Management, Studentska str. 1, Varna, Bulgaria | Mechanical Engineering, Department of Industrial |

well as their influence and role in decision-making related to the management of production capacity.

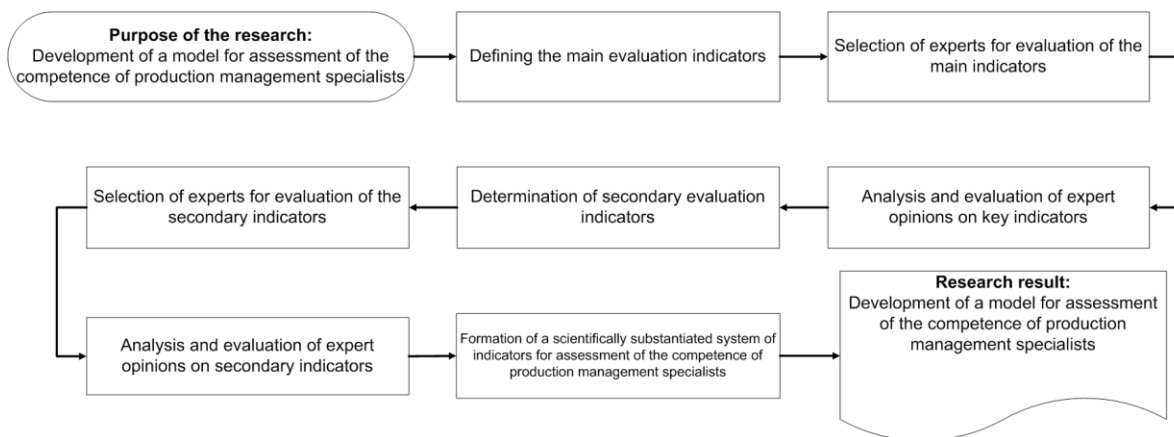
Various indicators, tools and methods are analyzed to identify trends, problems and challenges in the formation of expert teams. Current data and various methods for analysis of the generated information are used.

## RESEARCH RESULTS

Based on an in-depth literature review and personal interviews with various functional managers from industrial enterprises, the need to determine an index of competence of experts in the field of production management has been established. In order to obtain real and objective results of the study, 15 experts from 10 production and research organizations were involved to propose criteria for evaluation of experts who must form a team to solve complex problems in the field of production management.

The study was conducted in three stages. The Delphi method, widely used in management, is applied as a method for making decisions based on a certain amount of information collected and analyzed (Rao J., Anderson L., Sukumar B., Beauchesne D., Stein T., Frankel R. (2010), pp. 5-7). Geng Y, Zhao L, Wang Y, Jiang Y, Meng, K, Zheng D (2018) used Delphi method to construct a competency model for dentists in China. Their idea is used in this study, but it is adopted and applied for the purpose of forming an expert team for decision making in the field of Production management. (pp. 9-11)

**Figure 1.** Flowchart of the study



**Stage 1.** Determination of the primary indicators for assessment of the competence of the specialists, which should be included in the team for solving production problems.

The received expert opinions from the respondents are processed and systematized. At the first level, nine primary indicators are defined:

1. Professional skills,
2. Prevention of production risks,
3. Management skills and skills for collecting and processing information,
4. Professional knowledge and ability to learn throughout life,
5. Interpersonal communication skills,
6. Team work skills,

7. Research opportunities,
8. Basic values of managers.
9. Professionalism of managers.

The defined primary indicators are decomposed into secondary ones, which will guarantee objectivity in the assessment and selection of the specialists in the future team. Secondary indicators are the further development of primary indicators. The aim is to select the really important criteria and indicators for assessing the competence of the experts who will be selected to solve important management tasks and problems. The indicators have been adjusted and supplemented according to the comments of the experts participating in the study. A different number of secondary indicators are defined for each main indicator (Table 1).

**Table 1.** System of indicators - main and secondary indicators for assessment of the competence of experts in the field of production management

Basic indicators		Secondary indicators
<b>1. Professional skills</b>	1.1	Knowledge of management theory.
	1.2	Knowledge and experience in applying theoretical management methods in practice.
	1.3	Ability to properly select appropriate process monitoring tools.
	1.4	Ability to report to a senior manager on standard production problems encountered and ability to analyze and explain problems.
	1.5	Ability to make management decisions based on facts.
	1.6	Ability to identify potential risks.
	1.7	Independence and objectivity in making decisions related to direct responsibilities.
	1.8	Ability for multidisciplinary comprehensive analysis.
	1.9	Ability to combine theoretical knowledge with production practice.
	1.10	Proper use of production equipment and resources.
	1.11	Ability to standardize basic operations.
	1.12	Ability to handle heavy loads.
	1.13	Ability to perform independent analysis in special circumstances (difficult cases).
	1.14	Possession of skills and knowledge of basic technologies.
	1.15	Ability to predict the results of its decisions, risks, benefits and the expected effect of various actions aimed at a specific goal.
	1.16	Skills in using professional terminology, developing and discussing production plans, cost estimates, time requirements and responsibilities.
	1.17	Ability to deal with crisis situations.
	1.18	Using management methods and techniques to deal with current problems and their consequences.
	1.19	Ability to identify the psychological and social factors of the work environment and the ability to properly deal with the adverse effects of psychological and behavioral factors.
<b>2. Prevention of production risks</b>	2.1	Identification and timely response and reporting of problematic situations
	2.2	Ability to take preventive action.
	2.3	Understanding of their responsibilities and ability to cooperate with other functional areas of management.

	2.4	Understanding the structure and function of the management system.
	2.5	Rational use of resources.
	2.6	Ability to actively participate in educational and training programs.
	2.7	Abilities for planning and implementation of maintenance of production equipment.
	2.8	Objective assessment of the short-term and long-term effects of the policy and strategy of the production organization.
	2.9	Ability to assess risk factors.
<b>3. Management skills and skills for collecting and processing information</b>	3.1	Use of various databases and other means to extract, collect and analyze information.
	3.2	Effective use of information technology for communication with managers, employees.
	3.3	Ability to control production costs.
	3.4	Effective organization of own work and good planning of work of production units.
	3.5	Skills to self-manage and deal wisely with their own activities.
	3.6	Continuous improvement of organizational coherence and leadership in practice
	3.7	Possession of certain professional skills in a foreign language.
	3.8	Skills to create and use accurate, consistent and clear production management documentation.
	3.9	Reasonable and efficient management of the production process.
	3.10	Skills to use modern information technologies.
<b>4. Professional knowledge and ability to learn throughout life</b>	4.1	Basic knowledge in other functional areas as well.
	4.2	Knowledge of behavioral and social sciences, professional ethics and laws.
	4.3	Knowledge and application of basic professional knowledge.
	4.4	Constant updating of knowledge and professional skills
	4.5	Active participation in continuing education.
<b>5. Interpersonal communication skills</b>	5.1	Careful collection of information related to the analysis and synthesis of various problems.
	5.2	Understanding, trust and respect for colleagues and their families.
	5.3	Protection and observance of confidentiality.
	5.4	Ability to work with confidential information.
	5.5	Dealing with ethical issues that arise in the process of work.
	5.6	Conflict management skills.
	5.7	Active conflict prevention and resolution.
	5.8	Ability to create a friendly work environment.
	5.9	Creating safe working conditions.
	5.10	Opportunities for effective communication, transmission of information when assigning tasks.
	5.11	Opportunities for effective communication with representatives of external organizations and other stakeholders.
<b>6. Team work skills</b>	6.1	Skills to work with colleagues and respect their abilities and contribution.
	6.2	Skills to develop action plans.
	6.3	Care for colleagues willing to help colleagues.
	6.4	Understanding the roles and responsibilities of others in the team.
	6.5	Good coordination with team members to avoid conflict.
	6.6	Ability to establish good relations of cooperation with other teams.
	6.7	Ability to train and be trained.

<b>7. Research opportunities</b>	7.1	Possessing skills for critical thinking in professional activities and decision making.
	7.2	Understanding the complexity and uncertainty of activities in conditions of uncertainty.
	7.3	Ability to review specific (required) literature and ability to apply and share knowledge.
	7.4	Abilities for conscious development of one's own creative thinking and innovations.
	7.5	Active participation in research activities.
	7.6	Commitment to the goals of the organization
<b>8. Basic values of managers</b>	8.1	Protecting the interests of the organization.
	8.2	Self-discipline to achieve sustainable development of the organization.
	8.3	Ability to predict.
	8.4	Good psychological setting.
	8.5	High capacity for emergency response.
	8.6	Discipline
	8.7	Ability to negotiate, prove and defend a personal position.
<b>9. Professionalism of managers</b>	9.1	Care for subordinates.
	9.2	Cultivation and empathy for basic organizational values.
	9.3	Strong sense of responsibility, with a positive attitude to work and professionalism.
	9.4	Fair and prudent use of resources
	9.5	Awareness of health and safety at work and professional protection, to actually reduce hazards at work.
	9.6	Professional competence and self-assessment.
	9.7	Validation of assessments and expertise.

**Source:** Geng Y, Zhao L, Wang Y, Jiang Y, Meng, K, Zheng D, 2018

**Stage 2.** After the systematization of the primary and secondary indicators, a system for overall assessment of their importance and severity has been developed (Table 2).

The assessment is made for all primary and secondary indicators in three aspects: importance, feasibility and sensitivity. A scale of 1 to 10 is used, with 1 being the lowest grade and 10 being the highest. The ability of the specific expert to understand problems and problematic situations is also assessed, using a scale from 1 to 5, where 1 is the minimum grade and 5 is the maximum. The assessment of the ability of experts for objective assessment is based on four aspects: practical experience, ability for theoretical analysis, logical thinking and ability to understand the situation, ability for objective assessment and intuition. A scale of 1 to 3 is used for these scores, where 1 is the lowest score and 3 is the highest.

As a result, a scientifically based and working system of indicators is formed, so that a model for assessing the competence of production managers can be built, which will ensure the formation of objective expert opinion in decision-making related to the management of the production process in any production organization.

The model has been tested in real conditions.



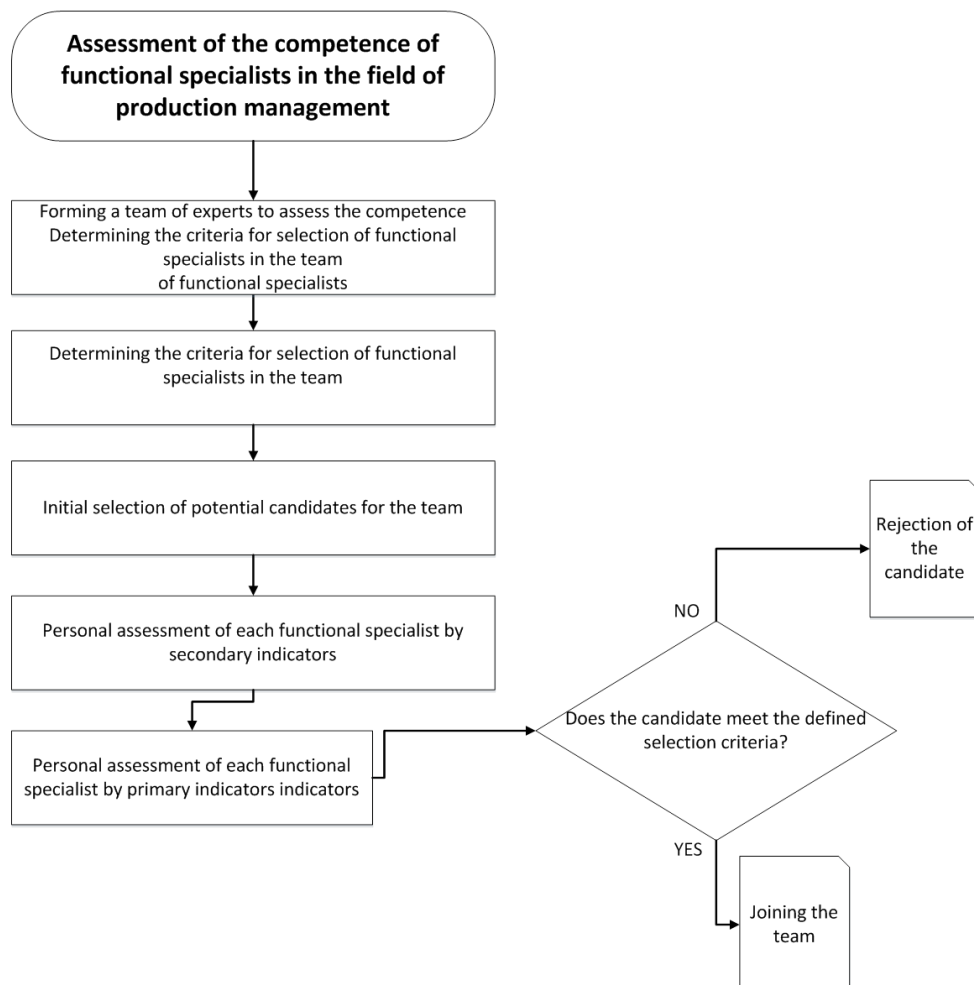
**Table 2.** Expert evaluation of the indicators

Basic indicators	№	Secondary indicators	Importance (1-10)	Feasibility (1-10)	Sensitivity (1-10)	Familiarity:	Basis of assessment and degree of influence (degree of influence divided into three levels 3 = great, 2 = average, 1 = little)			
						5 = very good knowledge				
						4 = good knowledge				
						3 = general knowledge				
						2 = poor knowledge				
						1 = ignorance				
							Practical experience	Theoretical analysis	Reasonable Understanding of the situation and objective assessment	Intuition

Source: Geng Y, Zhao L, Wang Y, Jiang Y, Meng, K, Zheng D, 2018

**Stage 3.** Creating a model for assessing the competence of each expert and an algorithm for applying the model.

**Figure 2.** Block diagram of model A for assessment of the competence of production managers



## **FUTURE RESEARCH DIRECTIONS**

The present study is the first stage of a larger-scale research study in another research project related to the analysis and assessment of the factors influencing the effective planning and management of production capacity. It is related to the need to redefine policies and priorities in business development strategies - in particular on the planning and management of production capacity, so that industrial enterprises can successfully adapt to the dynamically changing conditions of the global environment and increasing competition. The competence of production managers is also having an increasing influence on the achievement of this goal. The project aims to expand the range of scientific results achieved in this study by developing a model for assessing the impact of various factors on the effective planning and management of production capacity.

## **CONCLUSION**

In the current economic, financial, communication and social environment, there is the pressure on markets and consumers from the dynamic growth of business, the interdependence between resources and processes, the oversupply of uniform goods and services, the economic leadership of high-tech companies and their strategic impact on national economies and business practices. In this extremely dynamic environment, businesses must not only maintain their competitive advantages, but balance them according to societal expectations and needs, express a positive attitude to change and take concrete long-term action to adapt and withstand the challenges around them. In the ages of globalization, the need for a new model for assessing the competence of production managers is growing, which determines the relevance and importance of the research and the practical benefits it brings to business.

## **REFERENCES**

- Geng Y, Zhao L, Wang Y, Jiang Y, Meng, K, Zheng D (2018) Competency model for dentists in China: Results of a Delphi study. PLoS ONE 13 (3): e0194411. <https://doi.org/10.1371/journal.pone.0194411>
- Rao J., Anderson L., Sukumar B., Beauchesne D., Stein T., Frankel R. (2010) Engaging communication experts in a Delphi process to identify patient behaviors that could enhance communication in medical encounters, BMC Health Services Research 10(1):97 DOI: 10.1186/1472-6963-10-97

## **ADDITIONAL READING**


- Brown B. Delphi process: a methodology using for the elicitation of opinions of experts. The Rand Corporation. 1986; 9: 3925. 22. Powell C. The Delphi technique: Myths and realities. J Adv Nurs. 2004; 15): 376–382.
- Grime M., Wright G., Delphi Method, (2016) DOI: 10.1002/9781118445112.stat07879
- Landeta, J., Barrutia, J., and Lertxundi, A. (2011) Hybrid Delphi: a methodology to facilitate contribution from experts in professional contexts. Technol. Forecast. Soc. Change, 78, pp. 1629–1641.
- Linstone H. A., Turoff, M. (2002) The Delphi Method: Techniques and Applications, <http://www.is.njit.edu/pubs/delphibook/index.html> (accessed 02 February 2016).
- Loo, R. (2002), "The Delphi method: a powerful tool for strategic management", Policing: An International Journal, Vol. 25 No. 4, pp. 762-769. <https://doi.org/10.1108/13639510210450677>

Williamson K. Research Methods for Students, Academics and Professionals, Information Management and Systems, A volume in Topics in Australasian Library and Information Studies Book Second Edition 2002, Chapter 12 - The Delphi method <https://doi.org/10.1016/B978-1-876938-42-0.50020-4>; pp 209-220

# REGIONAL HUMAN CAPITAL MANAGEMENT – ASPECTS OF INTERACTION WITH THE ECONOMIC DEVELOPMENT OF THE TERRITORY

Georgi Nikolov<sup>1</sup> 

Elka Vasileva<sup>2</sup> 

Veselina Lyubomirova<sup>3</sup> 

DOI: <https://doi.org/10.31410/LIMEN.2020.253>

---

**Abstract:** *The development and modernization of societies define new approaches in managing human resources and, in particular, their characteristic - human capital. There is a growing need for its study and characterization and analysis of the extent to which it is crucial for the economic development of European regions, particularly Bulgaria. Human capital is a specific public resource phenomenon that creates added value based on education, knowledge, skills, intelligence, acquired professional experience, and many other components. The object of study is the targeted promotion of these components through public policies, programs, and initiatives, which creates prerequisites for improving the regions' overall economic performance. The authors set the task to analyze the stated public policies presented in the integrated territorial strategies to develop the planning regions, emphasizing the specific dimensions of human capital management in the different territories.*

**Keywords:** *Human capital, Planning regions, Integrated territorial strategy.*

---

## INTRODUCTION

Human capital formation is a complex and lengthy process that must be managed following public policy principles aimed at human resources. People must be able to withstand the challenges of the present and, at the same time, become a decisive factor for the economic prosperity of the country. The need to define the terms "human capital" and "human resources" is dictated by their particular importance for socio-economic development. In the process of integration and membership of Bulgaria in the European Union, in the conditions of globalization, these circumstances become more and more critical for the realization of strategy and policy of catching up economic development (Angelov, 2003).

The relationship between human capital, human resources, and economic development is complex and interdependent. Investments in human capital are fundamental and decisive for the directions and dynamics of human resources development. Investments in human capital should be the subject of a long-term government policy that reflects the government's economic growth intentions in the medium and long term.

An essential condition is that the interventions focus on education, healthcare, science, culture, and personal development, which have the most direct participation in human capital formation.

---

<sup>1</sup> University of National and World Economy, Sofia, Bulgaria

<sup>2</sup> University of National and World Economy, Sofia, Bulgaria

<sup>3</sup> University of National and World Economy, Sofia, Bulgaria

The policy for stimulating human capital must be continuously updated, given the growing challenges affecting the living and business environment in different countries' regions. Given the focus of government policy on overcoming harmful disparities in regional development, issues related to the development of appropriate mechanisms and tools to support regional human capital improvement are becoming part of society's current agenda.

Human capital is a specific public resource phenomenon that creates added value based on education, knowledge, skills, intelligence, acquired professional experience, and several other components. The object of study is the targeted promotion of these components through public policies, programs, and initiatives, which creates prerequisites for improving the regions' overall economic performance. The authors set the task to analyze the stated public policies presented in the integrated territorial strategies to develop the planning regions, emphasizing the specific dimensions of human capital management in the different territories. The research's methodological tools include using a systematic method, a formal-logical and deductive method, and an analysis of the content of publicly available literature. Their integrated usage analyzes and evaluates the human capital defining components following the general theoretical, methodological, and normative statement.

## **1. THEORETICAL DEFINITION OF HUMAN CAPITAL IN THE CONTEXT OF REGIONAL DEVELOPMENT**

The category "human capital" is the subject of study by various scientific fields and schools. With the complication of social and economic reality, globalization, the transition to industrial and digital development, the interest in its utilization and improvement will continue to grow. In scientific theory, many definitions of the category "human capital" are protected, which, depending on their conceptual task, emphasize one or another of its essential characteristics.

Despite historical sources that the origin of the theory of human capital must be sought in the emergence of classical economic theory in the seventeenth and eighteenth centuries, the idea that we support is that "human capital appeared long before knowledge was has ruled for him."

For the present study, the authors perceive Kazakov's (2010) definition of human capital as "an economic category that is related to a living human person and is the result of investment in knowledge, qualifications and production experience, skills building and other acquisitive properties, which increases the opportunities for work as a factoring service and enriches the properties of the person holding the job function."

Schultz (1961) was the first among economists to define human capital as an additional income source provided by the knowledge, skills, and abilities of the human person, and education as one of the forms of human capital. In this sense, the funds invested by people in education, increasing their professional productivity in working life, in the long run, are treated not as costs but as an investment, the rate of return of which is expressed in more significant employment opportunities and future income. To provide an adequate response to future ever-modernizing societies' needs, some human capital development planning is needed. This planning should take place at both the regional and national levels. However, it is impossible to fully anticipate the need for the qualities, skills, and knowledge applicable and needed, even in the nearest future.

As part of human activity, cultural heritage creates real notions of value systems, beliefs, traditions, and lifestyles. The role of state institutions is to develop and implement public

investment projects to promote regional Culture, build an overall favorable environment and conditions on encouraging private investment, and develop successful public-private partnerships for the country's sector's sustainability (Botseva, Tsolov&Vasileva, 2020, p.180).

The human capital theory development presupposes the concept's renewal and its connection with many scientific disciplines and categories. One of the strict guidelines for measuring this capital is its manifestation as an individual, company, regional or national and assesses its return in a future moment or period. As a result of the differences in the natural conditions and the degree of development of the human activity in different parts of the countries, they have formed regions with different economic development levels (Tanakov&Kazakova, 2018, p.515). This calls for the need for regional policy to overcome regional economic imbalances.

## **2. CONTEMPORARY ASPECTS OF REGIONAL HUMAN CAPITAL MANAGEMENT**

Significant structural changes in the world economy due to the growing role of scientific and technological progress for economic growth lead to a new approach to human capital analysis.

The focus of developed countries' socio-economic policy at the beginning of the XXI century is increasingly shifting to investing and promoting human capital development. This fact is due to many factors, the main one being the increasingly important role that knowledge and technology play in economies' competitiveness. The investment in human capital itself affects several public sectors, mainly education, training, and science. They largely determine the competitiveness of the workforce and the achievement of sustainable economic growth. Thus, the elucidation of the role of education, health status, and lifestyle in the current permanent trend of globalization of the economy and the decisive penetration of information and communication technologies is usually argued with human capital theory.

The opportunities and challenges for enhanced territorial governance in Bulgaria come to the fore. It is essential to define and understand the government's broader goals for regionalization and the country's path in the long run. Adopting a mechanism to ensure increased involvement at the regional level in the planning and implementation of regional policy actions can strengthen the regional dimension of development efforts. It can also lead to the creation of a critical mass of experts and administrative and technical capacity at the NUTS 2 level, which could pave the way for successful decentralization efforts in the foreseeable future (Nikolov&Lyubomirova, 2019).

Human capital is a major driving force for the promotion of cultural heritage. Population policies are prepared in the interest of the public good and are designed to mitigate and, if possible, regulate perceived population problems by adapting population size and age structure to people's rights, needs, and aspirations. Good population policies require awareness of the issues involved and a consensus on the actions to be taken (Botseva, 2019, p.612).

The workforce's educational and professional level determines the potential for regional growth regional development management, and it is essential to formulate goals and priorities following each of the region's specific needs and internal potential. A fundamental issue is how the state policy for regional development would support human capital's competitive advantages, a key sector for the regional economy.



Public institutions need to respond to current and future challenges by building competencies in the following way: hiring new workers, signing temporary services contracts with organizations or individuals, or training the current employees. Human Resource Management in public institutions should rely on human resource practices that provide efficient and effective working. Organizational success and overall work performance depend on employee engagement and discretionary effort. The employees are the most productive when they possess competencies, have access to available resources, proper organizational conditions, and career development opportunities (Chatleska, 2018, p.284).

### **3. ANALYSIS OF THE STRATEGIC FRAMEWORK FOR HUMAN CAPITAL DEVELOPMENT IN THE PLANNING REGIONS**

The complex strategic framework, through which the main priorities of the public policies for human capital development are implemented, comprises a package of political documents developed for the period 2021-2027. This paragraph aims to present how the government's intentions to formulate precise mechanisms and tools to support human capital elements are inscribed in its specific regional dimension.

*The National Development Program: Bulgaria 2030* occupies a fundamental place, which defines the vision and general goals of development policies in all government sectors, including their territorial dimensions. One of the program's key priorities is to increase the quality of human capital (National Development Program: Bulgaria 2030, p.9) through the formation of highly educated, innovative, and active individuals, able to realize themselves successfully as professionals and citizens. In this way, they are expected to contribute to their well-being and the sustainable development of all social spheres.

Emphasis is placed on improving the health status of the population as a critical determinant of quality of life and as a necessary condition for its inclusion in employment and social activity (National Development Program: Bulgaria 2030, p.38).

In the current planning period for strategic documents, Spatial and Regional Development strongly emphasizes their focus oriented towards "achieving balanced spatial development based on local potential and cohesion of the regions in territorial, economic and social aspects." In this regard, the framework for strategic planning is the Updated National Concept for Spatial Development (2013-2025) and the Integrated Territorial Strategies for Development of Planning Regions (2021-2027) [1].

*The National Concept for Spatial Development of Bulgaria*, updated in March 2020, retains its role of spatial coordinator of the territory and sectoral policies' processes but pays more attention to the planning regions, to the higher degree of manageability of their development.

The document's analysis as opposing challenges highlighted "demographic stagnation and depopulation, expressed through prolonged population decline and depopulation, depopulation of peripheral areas, the emigration of mostly young and qualified personnel" (Updated National Concept for Spatial Development, 2019, p.55). This conclusion undoubtedly justifies the formulation of goals and priorities, focused directly on more effective support of human capital and human resources management.

*The integrated territorial strategies for developing the planning regions in the period 2021-2027* are strategic documents that define medium-term goals, priorities, and perspectives for

sustainable integrated regional and local development on the territory of the respective planning region. These documents coordinate the sectoral strategies and documents at the regional level in economic development, health, education, science, social services, transport, water sector, energy, broadband communications, tourism, and environment and take into account their regional specifics and territorial dimensions.

The author's study showed that each integrated territorial strategy is directly related to activating and stimulating human capital development. The specifics and nuances arise from the peculiarities of the available demographic potential and needs of the respective territory population.

For example, in the highest economic and social development of the *South-West Planning region*, the priority orientation is towards “preservation and development of human capital by ensuring access to quality services” (Integrated Territorial Strategy for Development of the South-West Planning Region, 2020, p. 151).

The specific characteristics and significant differences between the areas in terms of human capital reproduction in the South-West region determine this priority's important role. Improved quality and access to public services of paramount importance - health care, social services, active social inclusion of vulnerable groups, and effective implementation of the labor market lead to the preservation of regional demographic resources and improve the quality of life, social cohesion, and attractiveness for the residence of each territorial community. Highlights of the priority are:

- education and training for a highly qualified workforce,
- promotion of employment,
- ensuring equal access to quality health services,
- improving social services and social inclusion,
- protection,
- development and promotion of cultural heritage,
- provision of quality public services.

In contrast to the South-West region is the least developed *North-West Planning region*. However, the priority supporting the improvement of human resources is present by defining “preservation and development of human capital” (Integrated Territorial Strategy for Development of the North-West Planning Region, 2020, p.136). This priority is fundamental for the North-West region, which is characterized by some of the most unfavorable demographic trends and migration processes, and characteristics of human capital. Well-planned investments in human resources are a powerful stimulator of growth, becoming increasingly important in national policy. The concentration of policies, activities, and measures for implementing this goal in the field of human resources development is justified by the need to address the identified, persistent problems in demographic and social development, which put the region at a disadvantage compared to other regions in the country. The priority activities are oriented towards expanding the access to quality education; achieving greater flexibility of the education system in response to changes in the labor market; creating conditions for quality employment, guaranteeing social inclusion; construction of adequate infrastructure for education and healthcare, sports, and cultural infrastructure; ensuring better health and cultural status of the population and improving social inclusion.

The focus of the second priority of the Integrated Territorial Strategy for Development of the *North Central Planning Region* is placed on developing human resources as the most

important for the vitality and prosperity of the region. The emphasis is twofold: “development of human potential and achievement of social growth” (Integrated Territorial Strategy for Development of the North Central Region, 2020, p.139). Significant problems for the region are the negative demographic processes, especially in certain parts of its territory, the educational characteristics of a significant part of the population, the degree of satisfaction of the social needs of the population, the presence of pronounced interregional and intraregional differences in the conditions for human resources development. The priority activities are oriented towards expanding the access to quality education; achieving greater flexibility of the education system in response to changes in the labor market; construction of adequate infrastructure for education and healthcare, sports and cultural infrastructure; ensuring better health and cultural status of the population and improving social inclusion.

The Integrated Territorial Strategy for the development of the *North-East Planning Region* states (2020, p.133) that “A key factor for the integrated development of the region is the preservation and optimal use of human potential by improving education, improving skills, ensuring equal access to quality health care and social services, and by raising the general cultural level, leading to the formation of an active, enterprising and well-educated civil society, with a clear vision and aware of its mission for the development of the region”. This argument again justifies the formulation of a priority aimed at improving human capital and ensuring equal access to education, healthcare, social services, labor market, as well as improving the quality of public services of paramount importance - health care, social services, and effective implementation of the labor market.

The Integrated Territorial Strategy for Development of the *South-East Planning Region* (2020, p.153) also highlights a priority factor for the region's integrated development to improve the quality of human capital through improved education, health and social, cultural, and sports services. These pillars of regional prosperity are accompanied by increased attention to the territorial balance in their development and actions to improve the quality of the economic and social environment and the material living environment in the settlements and throughout the region.

The measures envisaged in this priority aim to lead to better educational outcomes for learners; reducing early school leaving and raising the educational level of the population; increasing employment, especially youth employment, respectively reducing unemployment; better health care and a healthier lifestyle; improved educational, qualification and health characteristics of the workforce; higher productivity; poverty reduction, meeting the cultural and spiritual needs of the population.

The overall goal of improving the quality of human capital has found its place in priorities given in The Integrated Territorial Strategy for Development of the *South Central Planning Region* (2020, p.139). Analyzes report problems with the shortage of qualified staff and entrepreneurial skills, which have different territorial intensities, as well as deficits in terms of the use of growth and competitiveness factors - research, technology and innovation, high value-added products, internationalization, and regional specialization according to the specifics of local potentials in the South Central region. To overcome these weaknesses to improve the quality of human potential, several specific goals can be identified, including good education, professional development and new knowledge; creating opportunities for professional employment; ensuring equal access to quality health services; equal access to specialized long-term care and social inclusion; support for local cultural centers and protection of cultural heritage; improved access to sports and sports services.

## CONCLUSION

The comparative analysis of the 6th Integrated Territorial Strategies for Development of each of the planning regions of Bulgaria allows to deduce several regularities:

*Firstly*, one of the most critical factors in terms of their role in economic growth is the high quality of human capital. Unfortunately, the analyses consider the presence of specific alarming trends in the development of human potential in the country's regions. Not only is its number declining, but there are severe deficits in educational characteristics and skills.

*Secondly*, the integrated territorial strategies for developing the planning regions address critical challenges related to the dynamics of global and regional processes and phenomena, which are the basis for the functioning of the respective region's natural and social system.

*Thirdly*, human capital's most essential characteristics that increase its efficiency are knowledge, qualifications, and professional skills. In various forms, they are subject to future interventions in all planning regions.

*Fourthly*, strengthening human capital and improving the quality of life lead to social cohesion and increase of the attractiveness for living in any territorial community.

## NOTE

- [1] The Territorial Classification adopted by Bulgaria introduces three-level zoning corresponding to the NUTS 1, NUTS 2 and NUTS 3 territorial units' requirements under Regulation (EC) No 176/2008. of 20th February 2008 amending Regulation (EU) No 1059/2003 on the common classification of territorial units for statistics (NUTS- French origin: Nomenclature des unités territoriales statistiques) applied by EUROSTAT for the regions of the European Union. The 6th Planning Regions are NUTS 2 level territorial units.

## REFERENCES

- Botseva, D. (2019). Development of Human Resources in the new Demographic Reality – Manifestation of Paradoxes, *Regional Development and Cross-Border Cooperation*, Paper presented at III International Scientific-Expert Conference, Piro, December 2019, Book of Proceedings, pp.611-621.
- Botseva, D., G. Tsolov & E. Vasileva (2020). Improvement of the Business Environment for Development of Cultural Regions, Paper presented at XIV International Turkish Culture, Art and Protection of Cultural Heritage Symposium Art/ Activity “In Honour of 2020 UNESCO Bilge TONIUKUK Year”, Book of Proceedings, pp.178-184.
- Chatleska, V. Z. (2018). Human Resource Management in the Centers for Development of the Planning Regions in the Republic of Macedonia, Paper presented at Fourth International Scientific Business Conference LIMEN 2018, Conference Proceedings, pp.279-284.<https://doi.org/10.31410/limen.2018.279>
- Hyuseinov, B. (2017), Razvitie na choveshkiya kapital – ikonomicheski efekti i pazarni aspekti. (Human capital development - economic effects and market aspects). Narodnostopanski arhiv (Economic Archive journal). Vol.1, pp.41-60.
- Kazakov, At. (2010), CHoveshkiyat kapital: kontseptualna ramka i funktsionalna metodologiya (Human Capital: Conception Frame and Functional Methodology), Research Papers, Vol.1, UNWE, Publishing Complex, rr.7-52.
- Mazelis S.L., K.I. Lavrenyuk, A.A. Krask, & O.N. Zagudaeva (2018), A Conceptual Model of The Regional Human Capital Development. *International Transaction Journal of*

- Engineering, Management, & Applied Sciences & Technologies*, Vol. 9 No.4, pp.477-494, <http://TuEngr.com>
- Nikolov, G. & V. Lyubomirova. (2019) Building an Integrated Regional Approach in the new Programming Period 2021-2027, *Regional Development and Cross-Border Cooperation*, Paper presented at III International Scientific-Expert Conference, Pirot, December 2019, Book of Proceedings, pp.631-638.
- Tanakov, N. & M. Kazakova (2018). Impact of Human Resources on The Development of the Regions. Paper presented at II International Scientific Conference Regional development and cross-border cooperation, Pirot, Serbia, pp 513-521.
- Schultz, T. W. (1961). Investment in Human Capital. *American Economic Review*, March, pp.1-17. [https://drive.google.com/file/d/1g9xy\\_J5b5VbXMF-BwnkIctky9t66idhH/view](https://drive.google.com/file/d/1g9xy_J5b5VbXMF-BwnkIctky9t66idhH/view)
- Ikonomikata na Balgariya i Evropeyskiya sayuz. Strategiya za dogonvashto ikonomichesko razvitie do 2020 godina (The economy of Bulgaria and the European Union. Strategy for catching up with economic development until 2020) (2003). Research project, leader I. Angelov, Institute of Economics, BAS, Sofia, Bulgaria.* <https://www.iki.bas.bg/english/CVita/angelov/prognosis2020/010Chapter08.htm>
- National Development Program: Bulgaria 2030.* Council of Ministers of the Republic of Bulgaria, Sofia, 2019. <http://www.strategy.bg/PublicConsultations/View.aspx?@lang=bg-BG&Id=4682>
- Updated National Concept for Development of Bulgaria (2013-2025).* Council of Ministers of the Republic of Bulgaria, Sofia, 2019. <http://www.strategy.bg/PublicConsultations/View.aspx?@lang=bg-BG&Id=4894>
- Integrated Territorial Strategy for Development of the North-West Planning Region.* National Center for Spatial Planning, Ministry of Regional Development and Public Works, Sofia, 2020. <https://drive.google.com/file/d/1M3tuTtCD0Ylwf7-sapLQovrMIFPE71TH/view>
- Integrated Territorial Strategy for Development of the North Central Planning Region.* National Center for Spatial Planning, Ministry of Regional Development and Public Works, Sofia, 2020. <https://drive.google.com/file/d/1hd73EjaZP9wZCnNsjiBT9LngpYAQlij0/view>
- Integrated Territorial Strategy for Development of the North-East Planning Region.* National Center for Spatial Planning, Ministry of Regional Development and Public Works, Sofia, 2020. <https://drive.google.com/file/d/1uZcGgz7lnPe-dRcc7REEk3sVVkbHDcYd/view>
- Integrated Territorial Strategy for Development of the South-East Planning Region.* National Center for Spatial Planning, Ministry of Regional Development and Public Works, Sofia, 2020. <https://drive.google.com/file/d/1PQHitXvH1w5HJ1GzUcQid0gLqGwOgYMM/view>
- Integrated Territorial Strategy for Development of the South Central Planning Region.* National Center for Spatial Planning, Ministry of Regional Development and Public Works, Sofia, 2020. [https://drive.google.com/file/d/1Zs0ByPWioPaXx\\_HmIRWXuQJpcGReGhEP/view](https://drive.google.com/file/d/1Zs0ByPWioPaXx_HmIRWXuQJpcGReGhEP/view)
- Integrated Territorial Strategy for Development of the South-West Planning Region.* National Center for Spatial Planning, Ministry of Regional Development and Public Works, Sofia, 2020. <https://drive.google.com/file/d/1lxDLrdvhhfrngi5FikAB1ua03D--QZuT/view>



# IMPLEMENTATION OF MANAGERIAL INNOVATIONS IN RUSSIA: DECISIONS' BACKGROUND, MAJOR AREAS AND FREQUENCY

Natalia Guseva<sup>1</sup>   
Yaroslav Sovetkin<sup>2</sup> 

DOI: <https://doi.org/10.31410/LIMEN.2020.261>

---

**Abstract:** *Unpredictable, complex and ambiguous business environments compel local and multinational companies to be more flexible and innovative in managerial practices. Nowadays managerial innovations (MI) are becoming a prevailing research area in management worldwide. This study investigates the key aspects of MI implementation in Russia from theoretical and empirical perspectives. The empirical study involved 1 025 employees from 791 companies operating in Moscow and the Moscow region as the major business centers of Russia. The results showed that companies operating in the Russian market base their decision to implement MI mostly on “proprietary investigation” (29% respondents). It was revealed that the major areas of MI implementation for such companies are “motivation” and “effective communication”, which are part of the “soft managerial practices”. Finally, the results of the study showed that in the majority of companies operating in the Russian market, the implementations of MI are made occasionally, without a systematic approach (39% respondents).*

**Keywords:** *Implementation of managerial innovations, Key aspects of managerial innovations, Implementation process, Management innovations, Managerial innovations process, Russian companies, Multinational companies.*

---

## INTRODUCTION

Nowadays the academic community devotes close attention to the research of managerial innovations' implementation process (Khosravi, Newton, Rezvani, 2019; Zhang, Khan, 2019; Guzman, Espejo, 2019, etc.). Heij and Volberda state that management innovations are “a key moderator in explaining firms' effectiveness in transforming R&D into successful product innovation” (Heij, Volberda, 2019, p. 277).

The analysis of literature on managerial innovations based on the Scopus database showed a significant publication increase throughout the last decade (fig. 1). This increase is mainly driven by publications based research done in the US, China and the UK - the most dynamic economies in the world.

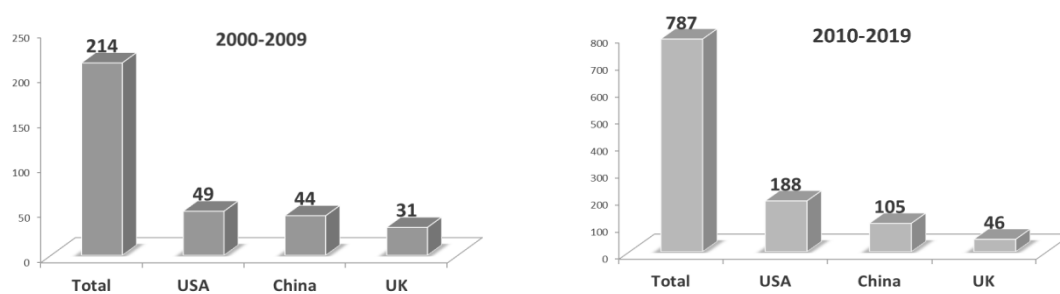
---

<sup>1</sup> National Research University Higher School of Economics, 20 Myasnitskaya ulitsa, Moscow 101000 Russia

<sup>2</sup> National Research University Higher School of Economics, 20 Myasnitskaya ulitsa, Moscow 101000 Russia



**Figure 1.** Number of publications on the topic of managerial innovations: SCOPUS database, 2000-2019



The definition of “managerial innovation” was firstly proposed by Kimberly as “any program, product or technique, which represents a significant departure from the state of the art of management at the time it first appears and which affects the nature, location, quality, or quantity of information that is available in the decision-making process” (Kimberly, 1981, p. 86). Hamel proposed a simple but precise definition: “management innovation changes how managers do what they do” (Hamel, 2006, p. 75).

A theoretical overview of related studies published during the last five decades allows to highlight two main processes of managerial innovations:

1. The process of **MI generation** (Burns, Stalker, 1961; Duncan, 1976; Van de Ven, 1986; Roberts, 1988; Miron, Erez, Naveh, 2004; Damanpour, Schneider, 2006; Damanpour, Aravind, 2011; Batkovskiy, Kalachikhin, Semenova, Telnov, Fomina, 2016; Omelchenko, 2017; Khosravi, Newton, Rezvani, 2019),
2. The process of **MI implementation** (Van de Ven, 1986; Roberts, 1988; Damanpour, 1991; Miron, Erez, Naveh, 2004; Damanpour, Aravind, 2011; Batkovskiy, Kalachikhin, Semenova, Telnov, Fomina, 2016; Omelchenko, 2017; Khosravi, Newton, Rezvani, 2019).

Within the framework of this paper, the authors **investigate the process of MI implementation** through its key aspects such as: **decision’s background** and **major areas and frequency of MI implementation**. The object of the study are MNCs and domestic companies operating in Russia.

The article is structured in five sections. The first section presents the theoretical background of MI implementation process. In the second section, methodology and empirical databased are described. Key aspects of the MI implementation process analysis among multinational and domestic companies operating in Russia are given within the third section. The fourth part shows research strengths and further directions for MI implementation. The last section describes the most significant peculiarities of the MI implementation process among companies operating in the Russian market, showing the major outcomes of conducted research.

## THEORETICAL BACKGROUND

The theoretical framework of this study is based on the three-stage bibliographic analysis of scientific literature:

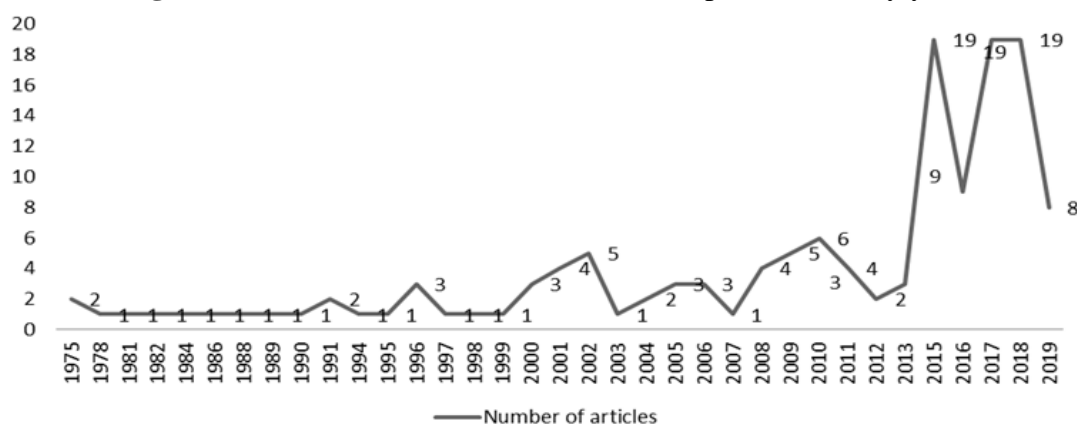
**Step 1.** By using keywords such as “*Innovation*”, “*Management innovation*”, “*Managerial Innovation*”, articles with the highest citation index within databases “Web of Science” and

“Scopus” were selected. The sampling period was not restricted. Key words have been selected based on the authors’ perception.

**Step 2.** By using keywords “*Organizational innovation*”, “*Administrative innovation*”, “*Innovation diffusion*”, “*Innovation Implementation*” articles with the highest citation index within databases “Web of Science” and “Scopus” were selected. The sampling period was not restricted as well. Keywords have been selected based on the analysis of the articles from stage 1.

**Step 3.** By using keywords from stages 1 and 2, articles throughout period from 2014 to 2019 with the highest citation index within databases “Web of Science” and “Scopus” were selected. As a result, 140 scientific publications were identified and analyzed for the period from 1975 to 2019, covering citation indexes from 0 to 12 476 within the “Web of Science” citation database and from 4 to 2 185 within the “Scopus” database (fig. 2).

**Figure 2.** Distribution of identified scientific publications by year



The conducted theoretical research has revealed two main components of MI term definitions detected in scientific sources:

- **New managerial practices, processes, structures or techniques for the organization** (Kimberly, 1981; Damanpour, Evan, 1984; Grebnev, 1985; Abrahamson, 1996; Titov, 1998; McCabe, 2002; Birkinshaw, Mol, 2006; Hamel, 2006; Hamel, Breen, 2007; Birkinshaw, Hamel, Mol, 2008; Walker, Damanpour, Aravind, 2011; Damanpour, Devece, 2011; Evans, 2013; Volberda, Van den Bosch, Heij, 2013; Zhang, Khan, 2019; Ceptureanu 2019; Khosravi, Newton, Rezvani, 2019; Wang, Zatzick, 2019; Janka, Heinicke, Guenther. 2019),
- **Further organizational goals** (Hamel, Breen, 2007; Birkinshaw, Hamel, Mol, 2008; Chechurina, 2010; Damanpour, Aravind, 2011; Safiulin, Maratkanova, 2011; Vaccaro, Jansen, Van Den Bosch, Frans, 2012; Volberda, Van den Bosch, Heij, 2013; Evans, 2013; Fartash, Davoudi, Baklashova, 2018; Zhang, Khan, 2019; Cho, Lee, Shin, 2019).

Within the framework of this research, it is proposed to use the latest definition of managerial innovations as the process of implementation of management practices, processes, structures and techniques, which are new to the subject of implementation, defined by the level of analysis. The peculiarities of the developed definition in comparison to the existing understanding of managerial innovations are based on the exclusion of the two following components:

- creation of something new to the state of the art,
- advancement of organizational targets.

The first exclusion is based on the understanding that the newness of MI is a subjective characteristic of the innovation itself, depending on the level of analysis. A similar position is presented by Guzman and Espejo, who distinguished the managerial innovation process on business units' (BU) level and pointed out that newness was the MI characteristic towards a specific BU (Guzman, Espejo, 2019).

The argument for the second exclusion is that the advancement or the underachievement of organizational targets is the result of the MI implementation processes, which depends not only on MI per se but also on numerous other factors such as the external environment, motivation of employees, current priorities in organizational objectives etc. In this regard, including this component in the MI definition would associate the concept of managerial innovations with results of its implementation, which appears wrong. This position is related to the opinion mentioned in certain articles where the complexity of the MI implementation process and ambiguousness of its results are highlighted (Teece, 1980; Birkinshaw, Hamel, Mol, 2008).

The conducted theoretical overview allows emphasizing two consequential sub-processes of the MI implementation process:

1. **The process of decision-making for the use of MI** (Zaltman, Duncan, Holbek, 1973; Daft, 1978, Angle, Van de Ven, 2000; Damanpour, Schneider, 2006; Damanpour, Aravind, 2011; Omelchenko, 2017; Chung, Choi, 2018),
2. **Implementation of MI per se** (Daft, 1978; Klein, Sorra, 1996; Angle, Van de Ven, 2000; Damanpour, Schneider, 2006; Damanpour, Aravind, 2011; Omelchenko, 2017; Chung, Choi, 2018).

The second sub-process of MI implementation per se is the major research interest for this paper. Damanpour and Schneider state that decision making for MI implementation is finished when top managers decide to go ahead with the new idea and allocate resources to it (Damanpour, Schneider, 2006, p. 219). Conversely, the implementation in their opinion requires cooperation and commitment from non-managers (Damanpour, Schneider, 2006). Such position seems to be a development of the innovation implementation process described by Daft, who states that freedom and exposure of employees at lower organizational levels enable innovative ideas to enter the organization and be put forward. The leader role is to set innovation goals, encourage innovation initiatives from lower-level employees, and approve or disapprove innovation proposals (Daft, 1978, p. 194).

## METHODOLOGY AND DATABASE OF THE EMPIRICAL RESEARCH

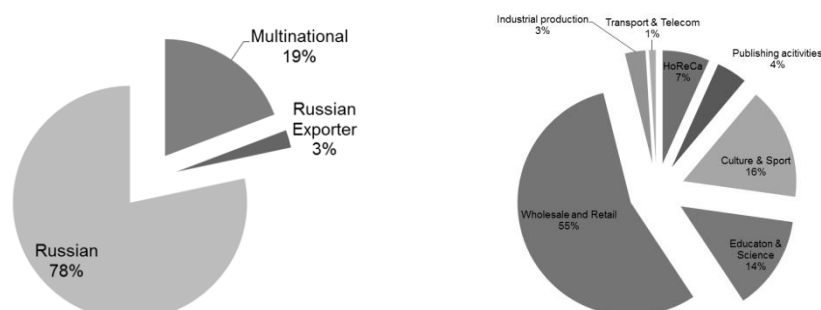
Based on the results of the theoretical research, the authors consider the implementation of MI as a decision-making process for the adaptation and direct application of new management practices, approaches, processes and techniques within the organization. As the key aspects of MI implementation, the authors highlight the **background for decision-making, areas of its implementation** and **frequency of MI implementation**. These aspects characterize the major peculiarities of MI implementation process for companies operating in the Russian market.

Three research questions have been developed:

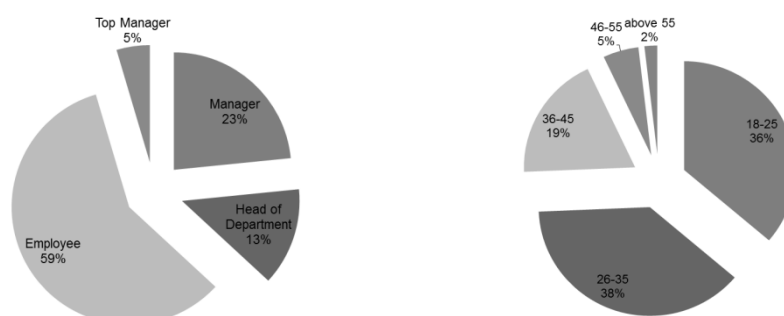
- RQ 1:** What is the background for decision-making of managerial innovations' implementation?
- RQ 2:** What are the major areas of managerial innovations' implementation?
- RQ 3:** What is the frequency of managerial innovations' implementation?

In order to answer these research questions, the empirical study has been conducted in 2019-2020 involving 791 companies operating in Moscow and the Moscow region being the major business centers in Russia (fig 3). Quantitative methods such as employee surveys have been used to gather the data (fig 4).

**Figure 3.** Companies' profile involved in the research



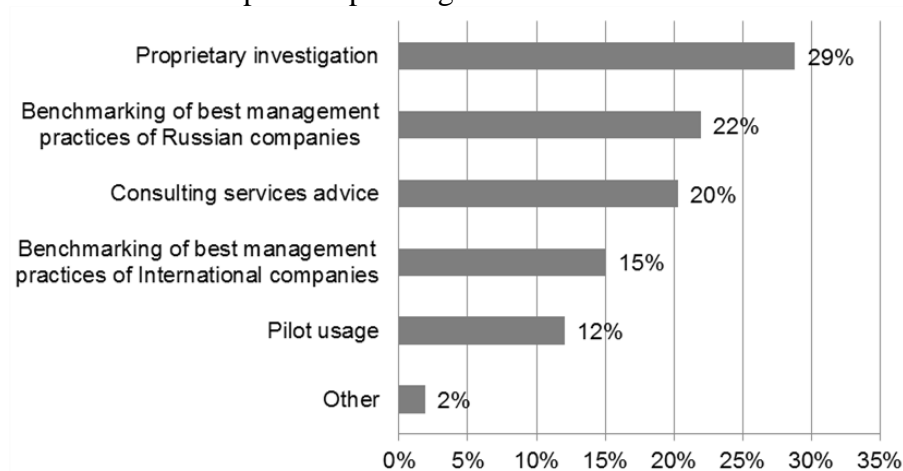
**Figure 4.** Employees' profile by job position and age



## RESEARCH FINDINGS

The first part of the empirical research was focused on **the background for decision-making** of managerial innovations implementation (RQ1). The results obtained revealed that global and domestic companies operating in the Russian market base their decision to implement MI on “proprietary investigation”- 29% respondents, “benchmarking of best management practices”- 22% and “consulting services advice”- 20% (fig. 5). “Pilot usage” appears as the least significant reason for MI implementation decision-making among companies operating on the Russian market (12% respondents). Obtained data demonstrates that in the decision-making process related to MI implementation global and domestic companies rely mostly on their own experience and resources. As for the interaction with the external business environment, it is mostly limited to local companies' cooperation and usage of consulting services. Lack of widespread practices of interaction between Russian and multinational companies limits the understanding of world's best practices in terms of MI implementation, which slows down the development of modern managerial practices in Russia. Very low significance of pilot usage as a background for MI implementation decision-making could be explained by the observation that Russian companies are more likely to implement the entire innovation or not to implement it at all. Such “all or nothing” approach increases the risks and impedes the process of MI implementation. Decisions made in this way affect the whole company or at least its significant part, which forces managers to perform a comprehensive analysis of MI implementation outcomes.

**Figure 5.** Background for decision-making of MI implementation for global and domestic companies operating in the Russian market



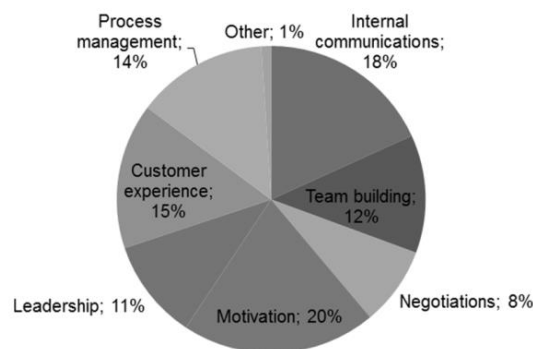
Based on the gathered data an inverse correlation between grounding the decision for MI implementation on “consulting services advice” and on “pilot usage” was observed (Pearson’s index -0,72). This finding shows that pilot-usage reduces the necessity for external validation of decisions made, forming individual understanding of new managerial approaches and practices being implemented. In this respect pilot-usage as a background for MI implementation decision-making can not only leverage the risks of this process, but decrease requirements for external validation as well, which could be directly reflected on costs reduction.

**Areas of managerial innovations implementation** (RQ2) were the focus of the second part of the conducted empirical research. Motivation (20%) and efficient communication (18%) were found to be the major areas for MI implementation (fig. 6).

One of the main findings of this section was that companies operating in the Russian market focus more on motivation and internal communications, which belong to “soft managerial practices”. In this regard, two special aspects could be highlighted:

1. Customer experience and process management are important, but not the most significant areas of MI implementation for companies operating in the Russian market,
2. There is a lack of attention to managerial innovations in the negotiation process among companies, operating in the Russian market.

**Figure 6.** Areas of managerial innovations implementation for global and domestic companies operating in the Russian market

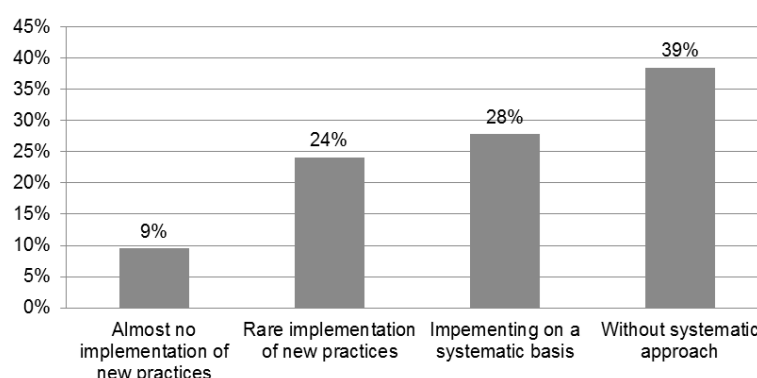


These arguments highlight the finding that managers in Russian companies remain uninterested in the use of modern management technologies in commercial processes, such as customer experience and negotiations. This situation can generate significant obstacles for business development within competitive markets and business segments.

**Frequency of managerial innovations implementation (RQ3)** was analyzed in the third part of the empirical research.

Analysis of acquired data revealed that for majority of companies operating in the Russian market implementations of MI are made occasionally and “without systematic approach”- 39% respondents (fig. 7).

**Figure 7.** Frequency of managerial innovations implementation in global and domestic companies operating in the Russian market



Despite of the majority of Russian companies implementing MI without a systematic approach, a significant part of respondents mentioned the implementation being done on a systematic basis (28% of respondents) and nearly the same importance was shown for the answer “rare implementation of new practices” (24% of respondents). This data demonstrates contradictory trends in implementation of managerial innovations among companies operating in the Russian market, where the share of companies implementing new practices on a regular basis and the one with rare implementation are nearly identical. It is also worth mentioning that the lowest significance was observed for the answer “almost no implementation of new practices” (9% of respondents), which confirms the readiness of the overwhelming majority of companies operating in Russia to implement new managerial approaches and practices., However, implementations are mostly made occasionally and without a systematic approach for the time being.

## FUTURE RESEARCH

The conducted research has some limitations that present opportunities for future studies on the MI implementation topic. The first research trajectory is the comparison of decision-making backgrounds, areas and frequency of managerial innovations implementation between different types of companies. The second trajectory is related to the application of the case-study method for best MI implementation practices.

The study also entails practical implications. Global and domestic companies operating in the Russian market can compare their approach to MI implementations in terms of decision’s background, major areas and frequency. Such comparison can provide insights for the development of strategic capabilities for successful operation in Russian market.



## CONCLUSION

This research focuses on the key aspects of MI implementations in Russia from theoretical and empirical perspectives.


The theoretical framework was based on the analysis of 140 scientific publications for the past 45 years with high citation indexes within “Web of Science” and “Scopus” databases. The authors considered the implementation of MI as a decision-making process for the adaptation and direct application of new management practices, approaches, processes and techniques within the organization. The decision background, areas and frequency of MI implementation were selected as key research questions for the MI implementation study.

Seven interesting findings emerge from the empirical part of the research, which was based on the survey of 1,025 employees from 791 companies operating in Moscow and the Moscow region:

- Companies operating in the Russian market base their decisions related to managerial innovations implementation mostly on proprietary investigation (29% of the respondents);
- The absence of widespread interaction practices between Russian and multinational companies limits the understanding of world’s best practices in terms of MI implementation, which impedes development of modern managerial practices in Russia.
- Very low significance of pilot usage as a background for MI implementation decision-making (12% of the respondents) shows that Russian companies are more likely to implement the innovation entirely or not to implement it at all. Such approach increases the risks and slows down the process of MI implementation. Decisions made in this way affect the whole company or at least its significant part, which forces managers to make a comprehensive analysis of MI implementation outcomes.
- Pilot-usage requires less external validation for the decision-making. In this respect pilot-usage as a background for MI implementation decision-making can not only leverage the risks of this process, but also decrease a necessity for external validation, which could be directly reflected on costs reduction.
- The major areas of MI implementation among companies operating in the Russian market are motivation and effective communication (20% and 18% of the respondents respectively), which belongs to the “soft managerial practices” category.
- Managers of Russian companies remain uninterested in the use of modern management skills such as negotiations (8% of the respondents), which could create significant problems for business development within competitive markets and business segments.
- The majority of companies implement new managerial approaches and practices occasionally, without a systematic approach.
- Finally, managers could use key findings and practical implications presented in this article to gain new insights on the strategic capabilities’ development.

## REFERENCES

- Daft, R. L. (1978). A dual-core model of organizational innovation. *Academy of Management Journal*, 21 (2): 193–210.
- Damanpour, F., Schneider, M. (2006). Phases of the adoption of innovation in organizations: Effects of environment, organization, and top managers. *British Journal of Management*, 17 (3): 215–236.

- 
- Hamel, G. (2006). The why, what and how of management innovation. *Harvard Business Review*, 84 (2): 72–84.
- Heij, C.V., Volberda, H.W., Van den Bosch, F.A.J. (2019). How to leverage the impact of R&D on product innovation? The moderating effect of management innovation. *R and D Management*, 50 (2): 277-294.
- Kimberly, J.R. (1981) Managerial Innovation. In: Nystrom, P.C. and Starbuck, W.H., Eds., *Handbook of Organizational Design*, Oxford University Press, New York, Vol. 1, 84-104.



# (AB)USE OF GOLDEN PARACHUTES IN STATE-OWNED COMPANIES IN THE FORMER YUGOSLAVIA

Nebojša R. Mitić<sup>1</sup>  
Slaviša M. Đorđević<sup>2</sup> 

DOI: <https://doi.org/10.31410/LIMEN.2020.271>

---

**Abstract:** *Golden parachutes represent one of the preventive defence antitakeover measures based on which contracts are concluded with the engagement of team of managers of the target company, promising them the payment of profitable compensation in case of occurrence of transactions related to takeover of control (purchase of a certain percentage of shares or direct offer to shareholders for a certain percentage of company shares). Contract rights called the golden parachutes are activated by the creation of one or more alternative events, or "triggers."*

*(Un)intentional incorrect application of the golden parachutes may have not only significant negative consequences on the future performance of companies, but it can also deter potential investors from the decision to invest their capital in companies that have entered into such agreements with the engaged team of managers. Numerous cases of incorrect application of the golden parachutes can be found in the former socialist countries, as well as in the countries that emerged from the dissolution of Yugoslavia.*

**Keywords:** *Antitakeover defences, Preventive measures, Golden parachutes, (Ab)use.*

---

## INTRODUCTION

The 'hostile takeovers' term was introduced during the 1980s, to explain the merger and acquisition processes in which there is no consent of the shareholders and/or the management of the prospective target corporations with the transaction proposed by the acquirer. On one hand, such situations forced the acquirers to develop certain takeover tactics, whereas, on the other hand, the target corporations were forced to develop measures to help them maintain their independence. The golden parachute represents one of the relatively broadly implemented measures, both in corporations in the countries with the developed market economy, and in corporations in the countries formed after the dissolution of the so-called Socialist Bloc and/or countries formed after the dissolution of the former SFRY. The essence and characteristics of this antitakeover defence, and some of its (ab)uses typical for our region will be further discussed in this paper.

## ANTITAKEOVER DEFENCES

Many antitakeover defences were developed by the US investment banks in the 1970s and 1980s. The defences were used even by the companies in Germany and France that are wary of belligerent corporations. For example, together with J. P. Morgan, Deutsche Bank, the Daimler-Chrysler investment bank, took part in the development of the defence strategy of the aforementioned company at the beginning of 2001 (Sudarsanam, 2003, p. 466).

---

<sup>1</sup> Academy of Vocational Studies of Southern Serbia, Blace Department

<sup>2</sup> Faculty of Economy Priština-Kosovska Mitrovica

The dilemma whether the corporation managers actually act as true agents of the owner, trying to generate satisfactory revenue for the shareholders, or they manage the corporation in order to realize their own interests (target function) is fully expressed when it comes to the adoption and implementation of antitakeover defence measures.<sup>3</sup> On one hand, supporters of implementation of antitakeover defence measures by the target corporation management point out that the resistance to takeover will increase the amounts of compensation the acquirer offers to the target corporation shareholders, which *de facto* is in the interest of the (co)owners (hypothesis on protecting the interest of shareholders).<sup>4</sup> On the other hand, the opponents of adoption and implementation of antitakeover defence measures emphasize the protection of interests of target corporation management and their status, position and privileges they have (hypothesis on preservation of managerial chairs) (Bragg, 2014, p. 122).<sup>5</sup>

The fact that the managers not only manage, but frequently (co)own the companies they are tasked with managing impacts their conduct with hostile offers, as the intensity of their resistance to takeover is significantly lower in the situations when their share in the target corporation capital is significant. This happens because the managers expect that they will be able to cover the negative consequences occurring after takeover of the company they manage (loss of job and/or loss of status and privileges) with the premium paid by the acquirer above the prevailing market price of the target company shares. Contrary to that, the intensity of the resistance will be higher in the situations of a lower ownership share of the existing target corporation management, so the loss caused by the loss of job and status cannot be completely covered by the premiums obtained in case of a takeover (Ruback, 1988, p. 53).

From the point of view of the shareholders of both companies engaged in a transaction, particularly the target corporation shareholders, the managers need to try “to resist the offer to the point where the premium will be increased to the maximum, without endangering the chance to realize a successful transaction.” (Sudarsanam, 200, p. 507)

There are numerous antitakeover defence measures, and different authors classify them in different ways.<sup>6</sup> For example, the most frequently used one is the division of all measures depending on whether they have been adopted in order to defend the target company from a

---

<sup>3</sup> For more details on agency issues, see: Predić, B., Ivanović-Đukić, M., “Metod za rešavanje agencijskog problema,” *Ekonomске teme*, **1/10**, Ekonomski fakultet, Niš, str. 1-12, Radović, V., “Uticaj agencijskih problema na pravo akcionarskih društava i korporativno upravljanje,” u: Vasiljević, M., Radović, V., (urednici), *Korporativno upravljanje*, Zbornik radova, Pravni fakultet, Beograd, 2008., str. 235-65.

<sup>4</sup> Apart from the assumption that the resistance to takeover will increase the price the prospective acquirer offers to the target corporation shareholders for their ownership shares, the frequent argument for the implementation of antitakeover measures is the existence of the hidden values that the target corporation owns, that are not available to the public (plans, strategies, ideas, patents, etc.), as well as the perception of managers that the company they manage is underestimated by the securities market. According to Ruback, R. S., “An Overview of Takeover Defenses,” in Auerbach, A. J. (ed.), *Mergers and Acquisitions*, National Bureau of Economic Research, The University of Chicago Press, Ltd., London, 1988., p. 51.

<sup>5</sup> The author emphasizes two basic reasons to oppose the takeover bids: valuation, or sale of target company shares at higher price, or generating higher revenues in future by implementing the strategy to be developed by the existing management; and the power, reflected in the desire to defend the position held by the existing management in the attacked target company.

<sup>6</sup> For more details on antitakeover defence measures, see: Bragg, S. M., op. cit., p. 122-9; DePamphilis, D. M., *Mergers, Acquisitions, and Other Restructuring Activities*, Eighth edition, Academic Press, San Diego, 2015., p. 108-23; Đorđević, S. M., *Poslovne kombinacije – Računovodstveni aspekt*, monografija, Ekonomski fakultet Priština-Kosovska Mitrovica, 2007., str. 93-107; Gaughan, P. A., *Mergers, Acquisitions, and Corporate Restructurings*, Sixth edition, John Wiley & Sons, Inc., New Jersey, 2015., p. 189-247; Ruback, R. S., op. cit. 53-65; Sudarsanam, S., op. cit., p. 507-23.

takeover attempt, the target company has already been attacked, or it has already received a takeover offer, and it is forced to defend through the implementation of appropriate measures. In this regard, all the defence measures can be divided into:

- Preventive, preparatory, strategic, pre-bid or pre-offer defences – the essence of which is reflected in attempts to deter the prospective acquirers from attempting to attack the target corporation. The most frequently mentioned antitakeover defences are the following: corporate charter amendments, poison pill, golden parachutes, and many others, and
- Active, reactive, tactical, post-bid or post-offer defences – a reaction of target corporation management and shareholders to the already sent takeover bid. The most significant active measures are: greenmail or targeted share repurchase, white knight, capital structure changes, litigation, and counter-tender offer or Pac-Man defence.

We will try to explain the essence of the golden parachutes in more detail below, as we believe it is one of the most significant preventive measures of antitakeover defence. We will then present certain specificities of the (un)intentional abuse of the golden parachutes in the Republic of Serbia, and the neighbouring countries (the Republic of Croatia).

## PREVENTIVE ANTITAKEOVER DEFENCE MEASURES

The prospective target corporation attempts to deter possible acquirers from a possible takeover in many ways. Different authors usually use the same names, although they classify them in different ways, but there are attempts to rename certain preventive defence measures.<sup>7</sup> For example, Sudarsanam divides the preventive defence measures into internal and external (Sudarsanam, 2003, p. 507-8). *Internal defence measures* are the actions or decisions resulting in the change of internal structure or nature of business of the prospective target corporation. *External defence measures* are the actions aimed at impacting the perception of possible acquirers on the adopting company, as well as providing early warning signals on prospective acquirers. On the other hand, Bragg classifies all preparatory or preventive measures into four separate groups, depending on whether they impact certain integrative processes of the target corporations (*preparatory defences - acquisitions*), they are focused on installing or complying with certain legal regulations (*preparatory defences - legal*), they impact a significant change of the target corporation financial structure (*preparatory defences - financial*) or they are focused on changes in the production process (*preparatory defences - operational*) (Bragg, 2014, p. 123-6). Gaughan mentions an interesting observation, stating that the adoption and implementation of defences seems like “building the walls of a house, as higher and more resistant ramparts need to be built time after time, as the attackers (the acquirers – authors’ note) ... dedicate a lot of time to overcoming these obstacles.” (Gaughan, 2015, p. 189-247) Without trying to accept any of the aforementioned divisions of antitakeover preventive or preparatory measures, we will further elaborate only on the golden parachutes, noting that the companies simultaneously use several measures to make their attempts of defence as successful as possible (Brealey, Myers, & Marcus, 2007, p. 586-8).<sup>8</sup>

<sup>7</sup> For example, some authors consider all preventive antitakeover defences aimed at making the target company shark repellent, whereas others believe that the adoption of the amendments to the corporate articles of association actually represents the defence measure to make the company shark repellent and help deter the sharks from attempting to attack attempts.

<sup>8</sup> There are numerous examples to support the aforementioned statement on the implementation of several defence measures that would lead to withdrawal of bidder, or sending an offer to target corporation shareholders and management to meet their interests. One of them is the example of Oracle that managed to gain control over PeopleSoft only after struggling for 18 months (6 June 2003 -13 December 2004).



## GOLDEN PARACHUTES

The essence of a preventive antitakeover defence called the golden parachute is concluding the contracts stipulating the rights of an engaged team of managers of the prospective target company and guaranteeing the payment of profitable compensation in case of occurrence of transactions related to takeover of control (buyoff of a certain percentage of shares or direct offer to shareholders for a certain percentage company shares). The fact that there are alternative events that may cause the implementation of this agreement made the difference between the golden parachutes that may be caused by a single “trigger”, and those that may be caused by a double “trigger.” The parachutes that may be caused by a double “trigger” are more efficient, whereas those caused by a single “trigger” are thought to be related to the rights that the employees and/or the members of the board of directors and the engaged team of managers grant themselves, without the shareholders’ consent, representing one of the most flagrant examples of unlawful acts in a modern takeover age (Gaughan, 2015, p. 488).

As well as all other defences, that apart from being illegitimate are also considered to be designed to protect the interests of the engaged team of managers, the golden parachutes have their own supporters and critics. The *pro et contra* attitudes about the adoption of agreements called the golden parachutes can be summarized in the following manner (Radović, 2008, p. 42-5).

The author specifies the following reasons justifying the introduction of the golden parachutes:

- Promising high compensation in case of control change represents a wish to attract and retain qualified and competent individuals, able to lead a company in the most preferable direction;
- High compensation in case of control takeover represents a way of equalization of interests of shareholders and board members after the takeover procedure initiation;
- The golden parachutes increase the negotiating power of the management, leading, as a rule, to higher premiums of the target company shareholders, and
- The results of several empirical researches confirm the justification of the introduction of golden parachutes because of the following reasons: there is a positive correlation between the golden parachutes and takeover activity; the market price of shares of the corporations that adopted this kind of plan increases by an average of 3% after the disclosure, and the amount of compensation promised to the engaged team of managers is in direct proportion to the amount of the takeover premium.<sup>9</sup>

The opponents of the implementation of golden parachutes as an antitakeover defence present the following arguments:

- High compensation promised encourage board members to initiate takeover of the company they manage, even in cases when it is not economically justified, or in the best interest of shareholders. As the right to compensation arises from the control takeover, the management will be interested to enable the takeover, particularly in cases when the compensation earned on the basis of golden parachutes is higher than the difference of the anticipated compensation in the target corporation and the compensation on the basis of future earnings in another corporate entity;

---

<sup>9</sup> For more details on the impact of golden parachutes on share price see: Lambert, R. A., Larker, D. F., “Golden Parachutes, Executive Decision Making and Shareholders Wealth,” *Journal of Accounting Economics* 7, 1985., p. 179-203; Machlin, J., Choe, H., Miles, J., “The Effects of Golden Parachutes on Takeover Activity,” *Journal of Law and Economics* 36, 1993., p. 861-76.

- Introduction of golden parachutes is counterproductive, as it mostly includes rewarding the poor management (Lukić, 2020.).<sup>10</sup> That is why there are suggestions that, in case of control takeover, the condition for payment of compensation to the engaged team of managers should be that over the past several years the corporation has not operated below that industry's average;
- Instead of giving the total amount of takeover premium to the target corporation shareholders, one of its parts would thus be redirected to the golden parachute holders, and
- High compensation to the golden parachute holders exclusively serves the interest of the management and board members (hypothesis on preservation of managerial chairs), making the position of the director untouchable and inviolable. That is why the opponents frequently call this defence measure 'golden handcuffs', as it ties the hands of a company, giving a great freedom to their holders.

The dissolution of Yugoslavia and the transition of the so-called Socialist Bloc of Eastern European countries from the planned and controlled to the market economy resulted in the development of the corporate forms of company organizing, and use of experience related to takeover tactics and/or antitakeover measures implemented by the corporations in the countries with the developed market economy. The lack of experience, or the intent to acquire certain unlawful benefits enabled conclusion and activation of the arrangements with an engaged team of managers even in the situations that, to say the least, had no relation with the intent to acquire or takeover the control over such companies, as those companies were mostly owned by the state. The following examples of the (un)intentional incorrect application support the critics of the golden parachutes, as there are several sources<sup>11</sup> of texts claiming that some discharged directors and/or board members of both corporations and state-owned companies secured the mentioned rights for themselves, and in the developed market economy countries, those rights are usually granted to the directors of world-renowned corporations.

The first two mentioned texts refer to the application of the golden parachutes in NIS. The first text "Not employed, but earning EUR 5,000!" emphasizes that the "golden parachute managerial contract is usual in the largest and most successful global companies. These contracts protect the interests of managers on the highest positions even after the termination of their employment. At the same time they are protecting interests of the companies, as the managers may not transfer to another competitor in that period." Regardless of the fact that NIS is basically a state-owned company that almost holds a monopoly in the Republic of Serbia, its directors provided golden parachutes for themselves, so that "for two years after leaving their positions they will earn huge salaries on the basis of managerial contracts equal to the contracts of the directors of the largest global corporations like Sony, Toyota,..."<sup>12</sup>

The "Managerial contracts: "Golden parachutes" in a state-owned company, too" article deals with the "case" of the former director of the Novi Sad Fair, Dragan Lukač. His managerial contract specified that his salary would be "the fantastic EUR 2,600 in RSD equivalent

<sup>10</sup> "These are the multimillion-dollar severance pays to managers leaving the companies after destroying them. The bosses do not want to accept the failure and therefore scare the shareholders, so they bribe the managers to leave because of "personal reasons"."

<sup>11</sup> For more details, see the following articles: "Ne radi, a zarađuje po 5.000 evra," ([www.pressonline.rs](http://www.pressonline.rs), accessed on 10 November 2020), "Šeik od NIS-a," ([www.politika.rs](http://www.politika.rs), accessed on 10 November 2020), "Menadžerski ugovori: "Zlatni padobran" i u državnoj firmi," ([www.bizlife.rs](http://www.bizlife.rs), accessed on 10 November 2020).

<sup>12</sup> [www.pressonline.rs](http://www.pressonline.rs), accessed on 10 November 2020

according to the middle exchange rate of NBS, and the “golden parachute“ will be “activated“ if the Supervisory Board discharges the director out of any reason.“ In case of discharge, the director would be entitled to the compensation in the amount of 12 gross salaries, to be paid in full to the discharged director within no more than 30 days from the date of termination of the directorial office. It would be interesting to mention that the director provided such benefits for 38 working hours a week, less than full-time working hours, as he simultaneously performed the function of the president of the Regional Chamber of Commerce.<sup>13</sup>

We found similar examples in the Republic of Croatia, too. Last year, the Croatian Association of Journalists (HND) protested against the fact that Goran Radman, former director of the Croatian Radio Television (HRT), prepared the golden parachutes for the selected managers and editors, ensuring a preferential status. The statement of HND claimed, among other, that the “special agreements for the selected editors and managers of HRT are unacceptable, as no criteria were published, and the agreements were made before the announced systematization of the jobs entered into force“ and invited the colleagues who were granted golden parachutes in accordance with the director’s criteria not to sign such agreements, and that such a move would be the only “moral and ethical act, not only to the colleagues, but more importantly, to the public.“<sup>14</sup> There is also an interesting text about the discharges of the president and two board members of the *Hrvatske autoceste* road company. The discharged managers will cost this company more than one million HRK, on the basis of rights arising from their contracts, although their discharge is not related to takeover, but to the unlawful acts (adverse contracts on tunnel painting; fictive employment; purchase of luxury cars for the company, etc.) (Pandžić, 2020.).

We would like to conclude the discussion about the golden parachutes with the statement that “they do not represent efficient means against takeovers, and that together with other measures, they may play a deterrent role.“ (Gaughan, 2015, p. 490)

## CONCLUSION

The development of measures against the takeover implemented by the prospective target companies is the consequence of the development of new and more sophisticated takeover tactics used by the acquirers. The preventive takeover defence called the golden parachute represents one of the most significant, efficient and frequently used measures, even in the companies operating in the countries that do not have sufficiently regulated and developed corporate control markets. Establishing and complying with the system of values characterized by ability and competence, and not only political party affiliation, nepotism and other anomalies, will probably contribute to overcoming of issues occurring in the implementation of this measure in the companies and state-owned enterprises in former SFRY countries. Regardless of all deficiencies in the implementation of the golden parachute method in our conditions, we believe that the inclusion of this corporate governance mechanism is positive, and that the mentioned irregularities and (ab)uses in its implementation will be eliminated over time.

---

<sup>13</sup> [www.bizlife.rs](http://www.bizlife.rs), accessed on 10 November 2020

<sup>14</sup> According to “Nedopustivi su „zlatni padobrani“,“ posebni ugovori za odabrane urednike i rukovoditelje na HRT-u,“ (ezadar.rtl.hr, accessed on 10 November 2020).

## REFERENCES

- Auerbach, A. J. (ed.), (1988.), *Mergers and Acquisitions*, National Bureau of Economic Research, The University of Chicago Press, Ltd., London.
- Bragg, S. M., (2014.), *Mergers & Acquisitions: A Comprehensive Guide*, Accounting Tools, Inc., Colorado.
- Brealey, R. A., Myers, S. C., Marcus, A. J., (2007), *Fundamentals of Corporate Finance*, Fifth edition, McGraw-Hill.
- Ćirović, M., (2004.), *Fuzije i akvizicije*, Prometej, Novi Sad.
- DePamphilis, D. M., (2015.), *Mergers, Acquisitions, and Other Restructuring Activities*, Eighth edition, Academic Press, San Diego.
- Đorđević, S. M., (2007.), *Poslovne kombinacije – Računovodstveni aspekt*, monografija, Ekonomski fakultet Priština-Kosovska Mitrovica.
- Gaughan, P. A., (2015.), *Mergers, Acquisitions, and Corporate Restructurings*, Sixth edition, John Wiley & Sons, Inc., New Jersey.
- Lambert, R. A., Larker, D. F., (1985.), “Golden Parachutes, Executive Decision Making and Shareholders Wealth,” *Journal of Accounting Economics* 7.
- Lukić, S., „Od Borisa do večnosti,” (pescanik.net, accessed on 10 November 2020).
- Machlin, J., Choe, H., Miles, J., (1993.), “The Effects of Golden Parachutes on Takeover Activity,” *Journal of Law and Economics* 36.
- Pandžić, I., “Smjena uprave HAC-a stajat će najmanje milijun kuna,” (www.ncs.hr, accessed on 10 November 2020).
- Predić, B., Ivanović-Đukić, M., (2010.), “Metod za rešavanje agencijskog problema,” *Ekonomске teme*, 1/10, Ekonomski fakultet, Niš.
- Radović, V., (2008.), “Zlatni padobranci, korporativno upravljanje i tržište korporativne kontrole,” *Pravo i privreda* 1-4, Udruženje pravnika u privredi Srbije, Beograd. [https://www.harmonius.org/sr/publikacije/clanci/vuk\\_radovic/Vuk\\_1-4\\_2008.pdf](https://www.harmonius.org/sr/publikacije/clanci/vuk_radovic/Vuk_1-4_2008.pdf)
- Ross, S. A., Westerfield, R. W., Jordan, B. D., (2006.), *Corporate Finance: Fundamentals*, 7<sup>th</sup> Edition, Mc Graw-Hill International Edition.
- Sudarsanam, S., (2003.), *Creating Value from Mergers and Acquisitions, The Challenges*, Prentice Hall, London.
- Vasiljević, M., Radović, V., (urednici), (2008.), *Korporativno upravljanje*, Zbornik radova, Pravni fakultet, Beograd.
- www.bizlife.rs, (accessed on 10 November 2020).
- www.pressonline.rs, (accessed on 10 November 2020).
- www.politika.rs, (accessed on 10 November 2020).
- ezadar.rtl.hr. (accessed on 10 November 2020).



# FORMAL AND NON-FORMAL EDUCATION IMPACT ON DEVELOPING MARKETING MANAGER COMPETENCE IN THE DIGITAL AGE

Gordana Tasevska<sup>1</sup>  
Dijana Ivanovska Przo<sup>2</sup>

DOI: <https://doi.org/10.31410/LIMEN.2020.279>

---

**Abstract:** *Digital marketing enables companies to be virtual, in relation to customers. Modern working conditions require skillful and knowledgeable digital managers, developed competence, as well as great motivation for lifelong learning.*

*Digital marketing managers collect potential customers' data, conduct online research and direct development, implementation and management of online campaigns that promote a particular company and its products or services.*

*This paper will give a deep insight into the competence of digital managers as a result of an acquired degree in this field or as a result of additional courses, training and online activities of a determined person.*

*The combination of both alternatives is a third option that contributes to the goal of the scientific proof in the paper.*

**Keywords:** *Competence, Digital marketing, Manager.*

---

## INTRODUCTION

The transfer of theoretical working knowledge into practical knowledge stresses the need for a workforce that not only possesses specialized knowledge relevant to the work post but will also possess developed generic knowledge and skills in order to adapt to new technologies and change the reality into which it manifests itself. Today, within the frames of digital age, more than ever, it is of crucial importance for all employees in organization to receive high quality education and training in order to be equipped with key competencies needed to be virtual in relation to users. Digital marketing is a form of marketing promotion and sales of goods and services on the Internet. It represents a process of utilizing a range of network marketing channels such as search engines, social media networks and e-mail to reach the target audience.

Digital marketing managers collect details for potential clients, conduct online research, are responsible for the development, implementation and management of online campaigns that promote a particular company and its products or services.

The contemporary working conditions require digital managers to have considerable knowledge and skills, developed competencies, as well as great motivation for lifelong learning. In the Key Competencies For Lifelong Learning - A European Reference Framework (2007), competencies are defined as "a combination of knowledge, skills and attitudes relevant

---

<sup>1</sup> Business Academy Smilevski BAS, Skopje, North Macedonia

<sup>2</sup> Business Academy Smilevski BAS, Skopje, North Macedonia



to the context. Key competencies are those that each individual needs for personal fulfilment and development, active citizenship, social inclusion and employment."

## **DEVELOPMENT OF KEY COMPETENCIES THROUGH NON-FORMAL AND FORMAL EDUCATION**

In accordance with a large number of international studies, "competencies" are most often defined as a combination of knowledge, skills and attitudes that will be the basis for personal development and fulfillment, for active citizenship and inclusion, as well as for employment.<sup>3</sup> People should develop their competencies throughout their lives. The foundations of lifelong learning will be laid during the basic upbringing and education which should help the students to acquire the key competencies and to enable them to live in the modern society. The competencies framework should be observed from a long-term perspective. At the European level, it will move towards identifying a balanced list of key competencies that will be necessary for:

1. Self-realization and development throughout life (cult capital). Key competencies must enable individuals to realize individual goals based on personal interests and aspirations and with a desire to continue lifelong learning,
2. Active civic awareness and involvement i.e. social inclusion (social capital). Key competencies should enable each individual to participate in society as an active citizen,
3. The ability for employment (human capital). Capacity building of each person to find a decent job in the labor market.<sup>4</sup>

Key competencies are a transferable, multifunctional package of knowledge, skills and attitudes that are necessary for all, for personal realization and development, inclusion and employment. They should be developed by the time compulsory education or training ends and should be the basis for further learning as part of lifelong learning.<sup>5</sup>

When we talk about learning, without exception, we concentrate on the processes that take place in schools and universities. However, a significant part of the process of acquiring knowledge takes place outside the classrooms, i.e. outside the formal education system. UNESCO defines the term education as any deliberate and systematic activity designed to meet the learning needs, including what in some countries is referred to as cultural activity or training.<sup>6</sup> The main goal of this education/learning is to acquire competencies for a job.

Formal education is a systematic, organized educational process based on a defined educational model and established educational levels and subsystems. This type of education is structured and administered according to a given set of laws and norms, based on the presentation of a rather inflexible program in relation to the goals, contents and methodology, which must include the teacher, the student and the institution. For the completion of levels of formal education, one receives a certificate as a document that ensures continuing the education at higher education level (certificate for completed primary education and enrollment in

---

<sup>3</sup> Rizova, E. (2015), Lifelong learning (internal material), Skopje: Faculty of Philosophy, p.17

<sup>4</sup> European Commission.(2004). Key competences for lifelong learning, European reference framework, implementation of "Education and training 2010" work programme, Brussels, p.3.

<sup>5</sup> Pandilovska, S. (2011), Key Competences for Lifelong Learning in the Context of Secondary Education (doctoral thesis), Skopje: Faculty of Philosophy, p.16

<sup>6</sup> <https://nfoaktiv.wordpress.com/2010/06/10/>

secondary education), i.e. a diploma for completed education which enables entry into the labor market or continuation at higher levels of education.<sup>7</sup>

Informal education was defined by UNESCO in 1972 as "educational activity, outside the formal system, which aims to meet the needs of users, but also the goals of learning." Today, informal education and learning become a necessity as it enables adults and young people to keep up with the development of society and compensates for what lacks in formal education and learning.

Lately, the importance of recognition and validation of competencies in a larger number of European countries has been increasingly emphasized. People often start a certain learning process and then abandon it. During that time, they acquire certain knowledge and skills, which are lost in the space of educational abstinence. Young people and adults acquire knowledge and skills in a formal, informal and non-formal way. Significant funds, energy and time are invested in this process, which are not evaluated and which do not enable meeting of the formal conditions for employment and/or work. Such a reality, that knowledge and skills are created outside formal education and training, has caused almost all countries in Europe to develop legal provisions for their recognition, regardless of whether they are acquired in formal, informal or non-formal ways. Such a policy encourages employment and inclusion, while strengthening the self-confidence of individual users. On the other hand, the new framework for the recognition of informal learning requires reforms to introduce a quality assurance system and strengthen the necessary trust: to build new forms of competency-based assessment and flexible and modularized training, and to empower individuals and institutions who are prepared to participate in and benefit from this new paradigm.

## COMPETENCIES OF MARKETING MANAGERS IN THE DIGITAL AGE

One of the most dynamic fields within the management arena in which the market continuously presents new challenges, and to which companies must respond, is strategic marketing. Therefore, it is not surprising that new market ideas are constantly on the surface to meet new market challenges. The marketing strategy is a long-term plan to achieve the goals of the organization.

The evolution of strategic marketing as a field of study over the past few decades can be seen as a set of perspectives, paradigms, theories, concepts, frameworks, principles, methods, models and parameters of a number of related study areas. Until today, this field is expanding. A digital marketing strategy provides the owners of organizations with the best chances for competition, survival and even business growth. Digital marketing encompasses all marketing efforts using electronic devices or the Internet. Businesses use digital channels such as search engines, social media, e-mail and other websites to connect with current and potential clients.

Within each organization, there should be a management team that will work effectively on the way of developing and implementing and realizing functional digital marketing strategies.

A team that will be responsible for developing, implementing and overseeing long-term digital marketing campaigns, as well as short-term advertising techniques. Being skilled in improving brand awareness, increasing website traffic and generating sales leaders is just some of the

<sup>7</sup> Petkovski, K., Terzioska, V., Stefanovska, L. (2014), Active Bitola: PEN-KM Bitola, HerakliKomer Bitola, p.3.

knowledge that must be possessed. The digital marketing manager oversees the marketing team and provides support in several areas, such as:

- Identifying and testing new digital platforms and tools;
- Using web analytics tools to track site traffic;
- Optimizing marketing campaigns, including e-mail marketing, social media marketing and digital advertising;
- Monitoring consumer behavior.

Today, in this dynamic labor market society, apart from diplomas, certificates and qualifications are an important reference for digital marketing managers. Knowledge, skills, abilities are the most important thread they need. In terms of soft skills, digital marketing managers need to:

**Think strategically** - This skill involves understanding customers, i.e. directing, advertising and optimizing campaigns.

**Manage time** - Digital marketing managers need to create a system for timely task completion.

**Communicate** - Digital marketing managers must possess powerful, clear and concise communication skills to succeed in their field. A qualified communicator uses features such as active listening, positivity and patience, as well as verbal and written communication skills.

**Possess interpersonal skills** - These skills are often a combination of written and verbal communication aimed at facilitating clear, respectful communication with the media, sales leaders, colleagues and customers.

**Acquire technical skills** - Digital marketing managers must keep pace with the forms of technology they use in a daily set of tasks. They must acquire the technical skills to use the equipment, software and online platforms needed to carry out their work effectively.

Digital managers need to be adaptable, interested in learning new digital techniques, innovative in their work and following trends, be leaders, take initiatives, be creative problem solvers and be focused on doing business.

## CONDUCTED RESEARCH

For the purposes of the research, the test method has been used. That is, as a technique, a survey has been conducted with a structured questionnaire. 30 managers in organizations from different industries and sectors in the Republic of North Macedonia have been surveyed in order to determine how formal and informal education affect the competencies of digital marketing managers. The analysis of the obtained data from the questionnaires has been processed in the statistical software package SPSS Statistic and a discriminatory non-parametric procedure has been used, i.e.  $\chi^2$  test to determine the quality of eligibility (deviations from the expected and observed statements frequencies).

According to the results obtained from the conducted research on the attributive indicators, deviations have been determined, i.e. statistically significant differences in three indicators, and they have not been observed only in one, indicated by the obtained values:

- ✓ Formal education, with Sig. = .001;
- ✓ Informal education, with Sig. = .000;
- ✓ Digital trends, with Sig. = .000;
- ✓ Digital platforms and tools, with Sig. = .238;

**Table 1.** Formal education VAR00001

	Observed N	Expected N	Residual		VAR00001
<b>1,00</b>	29	18,6	10,4	Chi-Square	18,129 <sup>a</sup>
<b>2,00</b>	20	18,6	1,4		
<b>3,00</b>	15	18,6	-3,6		
<b>4,00</b>	5	18,6	-13,6	df	4
<b>5,00</b>	24	18,6	5,4		
<b>Total</b>	93			Asymp. Sig.	,001

**Table 2.** Non-formal education VAR00002

	Observed N	Expected N	Residual		VAR00002
<b>1,00</b>	10	13,0	-3,0	Chi-Square	20,462 <sup>b</sup>
<b>2,00</b>	9	13,0	-4,0		
<b>3,00</b>	17	13,0	4,0		
<b>4,00</b>	25	13,0	12,0	df	4
<b>5,00</b>	4	13,0	-9,0		
<b>Total</b>	65			Asymp. Sig.	,000

**Table 3.** Digital trends VAR00003

	Observed N	Expected N	Residual		VAR00003
<b>1,00</b>	1	10,3	-9,3	Chi-Square	36,065 <sup>a</sup>
<b>2,00</b>	4	10,3	-6,3		
<b>3,00</b>	25	10,3	15,7	Df	2
<b>Total</b>	30			Asymp. Sig.	,000

**Table 4.** Digital platforms and tools VAR00004

	Observed N	Expected N	Residual		VAR00004
<b>1,00</b>	8	13,5	-5,5	Chi-Square	4,222 <sup>b</sup>
<b>2,00</b>	17	13,5	3,5		
<b>3,00</b>	17	13,5	3,5	df	3
<b>4,00</b>	12	13,5	-1,5		
<b>Total</b>	54			Asymp. Sig.	,238

## CONCLUSION

The significance of this research can be seen through several theoretical and practical aspects. The theoretical significance can be seen precisely through the research so far that emphasizes the importance of the competency building process itself with digital marketing managers.

The direct application of the data from the research gives us the opportunity to conclude that digital marketing managers, in addition to formal education, acquire skills and competencies for digital trends mostly in informal education. The majority attend digital training, and some need to attend it more actively to acquire greater competencies in using equipment, software and online platforms and tools needed for effective work performance.

Digital marketing is an innovative concept of the 21st century. Through this form of marketing, many products and services are promoted through the use of distribution data base driven

network channels to reach customers in an appropriate, relevant, individual and profitable manner.

The competencies of a digital manager are not only a result of the degree obtained in this field but also a result of additional courses, training, internet optimization activities, analytics, advertising, business practices, social media, e-mail marketing, web development and writing texts.

Digital marketing managers are responsible for developing and overseeing Internet marketing strategies, ranging from small startups to large organizations. They are responsible for overseeing projects and ensuring that digital marketing campaigns run smoothly from start to finish, and are a key point of contact for customers.

## REFERENCES

- Anderson, P. F. (1982). Marketing, strategic planning and the theory of the firm. *The Journal of Marketing*, pp.15-26.
- Armstrong, G., Adam, S., Denize, S., & Kotler, P. (2014). *Principles of marketing*. Pearson Australia.
- Chaffey, D., Smith, P. R., & Smith, P. R. (2012). *eMarketing eXcellence: Planning and optimizing your digital marketing*. Routledge.
- Draganidis, F., & Mentzas, G. (2006). Competency based management: a review of systems and approaches. *Information management & computer security*
- European Commission. (2004). Key competences for lifelong learning, implementation of "Education and training 2010" work programme, Brussels, p.3.
- Eaker, A. D. (2011). *Strategic Market Management*, Ars Lamina
- Petkovski, K., Terzioska, V., Stefanovska, L. (2014), *Active Bitola: PEN-KM Bitola, HerakliKomerce Bitola*, p.3.
- <https://www.indeed.com/career-advice/careers/what-does-a-digital-marketing-manager-do>
- <https://www.clickatell.com/articles/digital-marketing/7-skills-digital-marketing-manager/>
- <https://nfoaktiv.wordpress.com>

# SOCIALLY RESPONSIBLE MARKETING IN THE "NEW NORMAL"

Marina Guzovski<sup>1</sup> 

DOI: <https://doi.org/10.31410/LIMEN.2020.285>

---

**Abstract:** *Given the fact that we are in a time of uncertainty, when we cannot predict how a coronavirus-induced pandemic will affect community life, socially responsible behaviour as well as the impact of socially responsible marketing come to the fore in particular. The goal of socially responsible marketing is to educate and take actions that will positively affect the change of behaviour, and all participants from business entities to individuals must be aware of their responsible behaviour towards themselves and others in order to improve well-being and benefit the society we live in.*

*The paper presents models of socially responsible marketing communication in the "new normal" as well as their impact on raising awareness of responsible behaviour and the adoption of new habits among consumers.*

**Keywords:** *Responsible behaviour, Social responsibility, Marketing communication, "New normal".*

---

## 1. INTRODUCTION

At the beginning of the year, no one could have imagined that a pandemic of COVID-19 disease caused by coronavirus would completely change the way of doing business, as well as the lifestyle people were used to. We followed what was happening in the world and thought it was happening to someone else so it will bypass us. But then everything stopped one day, people started working from home, business was being done online, and the digital environment quickly became "the new normal" for work, studying, socializing, business, etc. The whole situation caused changes in all business segments as well as it affected the change in our lifestyle. The influence of socially responsible marketing on the development of awareness of socially responsible behaviour in the "new normal" in these circumstances is especially evident in all forms of marketing communication aimed at education and action that will positively affect behaviour change of all stakeholders and adopt some new habits to improve the quality of life in "the new normal". This is one of the most difficult tasks of socially responsible marketing - changing and creating new habits because people do not like to change their habits when they already have built attitudes and lifestyle, and behaviour change requires a great sacrifice in terms of the usual lifestyle. And no matter how much the importance of responsible behaviour is pointed out, no matter how much the dangers of irresponsible behaviour are pointed out, there will always be those who are against that, those who will go against everyone and endanger themselves, and thus others.

The paper discusses the communication models of socially responsible marketing in the "new normal" through marketing communication, and the research shows how much the messages of socially responsible marketing have influenced the raising of awareness of responsible behaviour, creating some new habits and lifestyle changes.

---

<sup>1</sup> Libertas International University, Trg J. F. Kennedy 6b, Zagreb, Croatia



## 2. CHARACTERISTICS OF MARKETING COMMUNICATION

Social marketing is a discipline that improves life in the community (Kotler, Lee, 2007, p. 189), and implies the application of marketing in the process of realization of social goals which as a basic or derived starting point do not prioritize profit, but meets the needs of society, i.e. social character (Meler, 1994, p.42). Ultimately, the goal of social marketing is to influence the behaviour and development of individuals and targeted groups to benefit them, which are related to health, education, general social well-being and more (Guzovski, 2018). In communication with the society stakeholders through social marketing, we try to change the disbelief to belief, change the opinion, attitude, values and everything that has an impact on behaviour and will ultimately result in a positive change in behaviour for the benefit of society as a whole. This is exactly the most difficult marketing task because people are asked: to give up pleasure, to get out of their comfort zone, to give up aesthetics, to change their routine, to resist the pressure of the environment, to spend more time and money, to hear bad news, to establish new habits, to give up old habits, to change a comfortable lifestyle, risk rejection, learn new skills and more. It is a real problem and the big difference is that one cannot give, show or promise the user something tangible in return - especially in the short term (Kotler, Lee, 2007, pp. 190 -191).

The coronavirus disease pandemic COVID-19 affects not only individuals and does not require responsible behaviour only from individuals but also from business entities, and also includes all business segments. The usual ways of doing business have changed, more and more people are doing business online and business is being transferred to the digital environment, which will leave consequences and affect the business in the future as well. Developing a digital marketing strategy to attract customers in the online market, gaining market share, positioning, increasing brand value, meeting customers and determining segments according to the principles of privacy, measurability, availability, profitability and operability, achieving business goals and shaping marketing mix strategy with planned activities, goals and ways of advertising become an indispensable part of marketing planning (Smoljić, Guzovski, Rudančić, 2020, p. 427). Marketing communication in a "new way" more than ever must be creative and innovative, appropriate to the situation, flexible but customer-oriented, authentic and optimistic. The emphasis of communication is on security and responsibility for both customers and employees with the application of all measures and recommendations in force in the fight against the virus: from the use of masks, social distance, number of customers in stores, contactless payment options, business through web store and other. Communication with consumers is realized through social networks and other forms of communication in the digital environment, and is aimed at targeted advertising, connecting with others, but also connecting companies and products as a brand. Databases on consumers and their characteristics as well as data processing in digital form are becoming an important business segment for communication with end users (interactive two-way communication) and transmission of socially responsible marketing messages with emphasis on connectivity, compassion, timely and accurate information, availability (responsiveness to consumer requirements), topicality of information and more.

Only those who are flexible, agile, visible online (SEO optimization and native advertising, social media marketing), who monitor and develop their business in both real and online environment, know who and what their users want and can overcome the situation in which we currently are, hence can plan the future activities.

### **3. THE INFLUENCE OF HEALTH INFORMATION ON HEALTH CARE AWARENESS - HEALTH PREVENTION AND PROMOTION**

Health information to help consumers protect their health is more important than ever, as is developing awareness of preventative health care activities such as boosting immunity, physical activity, hand washing, keeping your distance, healthy diet, and other activities we can protect ourselves with. Self - healthy behaviour and consumer's decisions about such behaviour are influenced by information and knowledge gained by consumers through media campaigns, portals of health institutions, website [koronavirus.hr](https://koronavirus.hr) and other verified sources with health-based content, in which emphasis is placed on the benefits of such behaviour or consequences of the opposite behaviour. All these activities are an incentive for a certain action, or in other words, the motivation to make a positive change in person's behaviour in order to protect themselves and others. Positive changes depend on the degree of motivation and the very understanding and processing of the message. In cases of low motivation or inability of an individual to accept the message, the peripheral way of elaboration is used, the impact of which is much smaller (Kesić, 2006, p.270).

According to the model of health assurance, it is necessary to understand the conditions necessary for a change in behaviour to occur. An individual will take measures to prevent, investigate, or control a disease or particular condition based on the following perceived factors: vulnerability, severity, benefit, barrier, action, and self-efficacy (Guzovski, 2018). Health promotion includes measures and messages of health education and upbringing aimed at health, and allows individuals and communities greater control over the factors that condition health, highlighting the positive potentials and abilities of individuals and communities to influence people's attitudes to health care and behaviour change in lifestyle. Health promotion is carried out through health actions (campaigns) that affect the spread of health messages in the community and encourage people to carry out certain health tasks (Guzovski, 2013).

The goal of marketing communication is to inform, persuade and remind, where persuasion aims to change attitudes or behaviours as a result of the action of communication appeals on the cognitive or affective part of consumer consciousness through influences via communication sources and message content. Attitudes arise as a result of the socialization of the individual where the concepts are thought structures, knowledge, beliefs, values, etc. and maintain a positive or negative tendency, a feeling to take action for or against in relation to different situations or objects. The degree of emotional involvement is enhanced by emotional appeals that are processed on a general level or a holistic approach. It is feelings that play a key role in changing attitudes in certain situations. The theory of the learning process explains the influences of persuasion on the behaviour of consumers (service users) (Kesić, 2003, p.146). In the educational function, the mass media appear as an additional component of educational institutions. The messages of this communication are based on social experience interpreted in accordance with scientific achievements, i.e. the principles of moral and political practice or socio-economic heritage (Kesić, 2003, p. 20).

Disease prevention means all procedures by which the disease is prevented, i.e. it is impossible to timely identify the disease and carry out treatment that prevents death, disability, impairment and reduced quality of life. The common goal of disease prevention and health promotion is the preservation and improvement of health, which is related to positive human and life values (Bočina, 2018).

#### 4. RESEARCH - THE IMPACT OF MARKETING COMMUNICATIONS AND MESSAGES OF SOCIALLY RESPONSIBLE MARKETING ON CONSUMERS

The results of the research on the impact of marketing communication of socially responsible marketing on consumers and the change of their habits during the pandemic in the period from 15<sup>th</sup> to 25<sup>th</sup> of November 2020 in the Republic of Croatia on a random sample are presented in tabular and graphical form followed by interpretation of results. 76 respondents participated in the study, of which 49 were women (64%) and 27 were men (36%). 20 respondents (26%) participated in the age group ranging from 20 to 30 year olds, 21 respondents (28%) in the age group from 31 to 40 year olds, followed by 25 respondents in the age group from 41 to 50 year olds (33%), which is also the largest number of respondents, and in the age group from 51 to 60 year olds participated 10 respondents or 13%. Considering the level of education, 20 respondents (26%) have completed secondary education (SSS), 18 respondents (24%) have completed higher education (higher education), 25 respondents (33%) have a university degree (VSS), and 13 respondents (17%) have a master's degree or doctorate (M.Sc./Dr.Sc.). 52 (68%) respondents are employed while 24 (32%) respondents are unemployed. The first question in the survey questionnaire concerned the importance of socially responsible marketing information related to the safety of the respondents themselves, and others. Out of 76 respondents, 53 (or 70%) answered that the information was important to them, while for 23 respondents (or 30%) this information was irrelevant. Furthermore, respondents rated the impact of socially responsible marketing messages on them on a scale from 1 to 5 where 1 indicates no impact and 5 indicates a strong impact on the world and changes in behaviour. The table 1. shows that the messages had an impact on most respondents and caused the change in their behaviour, related to their safety and the safety of others in combat.

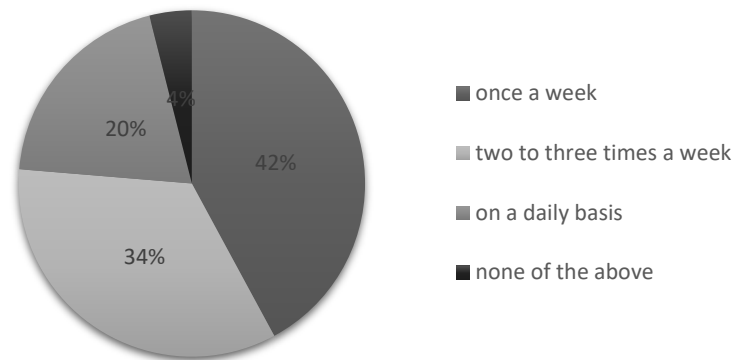
**Table 1.** The impact of socially responsible marketing messages on the awareness and behaviour of respondents

Message	1	2	3	4	5
<b>Stay home</b>	7,89%	11,84%	15,79%	18,42%	46,05%
<b>Stay responsible and keep your social distance</b>	10,53%	13,16%	22,37%	27,63%	26,32%
<b>Buy from the safety (comfort) of your own home</b>	23,68%	17,11%	13,16%	19,74%	26,32%
<b>Wear a protective mask</b>	7,89%	10,53%	11,84%	30,26%	39,47%
<b>Messages about proper hand washing</b>	3,95%	6,58%	14,47%	32,89%	42,11%

Source: author's work

The next questions in the questionnaire related to the change in consumer habits. 58% of respondents said they had changed their consumer habits, while 42% of respondents had not changed their consumer habits. The changed habits were related to the reduced number of shopping trips, as well as the transition to online shopping. The largest number of respondents, 42% of them go shopping once a week, and 34% three to three times a week. 20% of the other respondents go shopping every day. The structure of responses is shown in Figure 1.

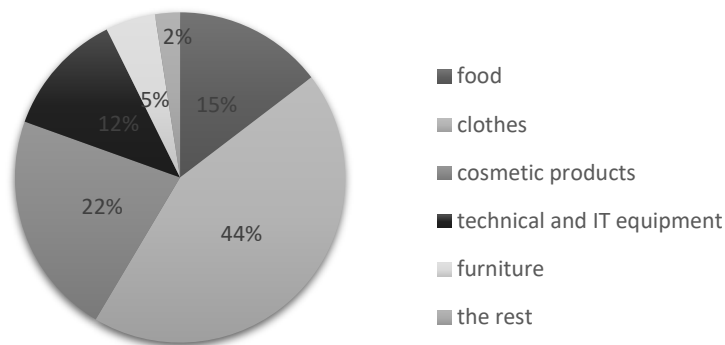
**Figure 1.** Frequency of shopping trips



Source: author's work

In addition to the reduction of shopping trips, 54% of the respondents also started shopping online. The products they buy the most are: clothing, cosmetics, food, technical and IT equipment, furniture and other products. The structure of responses is shown in Figure 2.

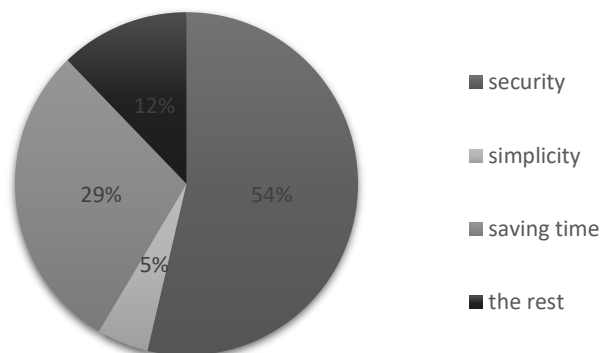
**Figure 2.** The products that are most often purchased in the online shop



Source: author's work

Messages of socially responsible marketing influenced the change of behaviour and adoption of different consumer habits, as well as the start of online shopping for some respondents. The reasons they cited are primarily security and safety (for 54% of respondents), time save (29%) and other reasons for 17% of respondents. The structure of responses is shown in Figure 3.

**Figure 3.** Reasons for online shopping

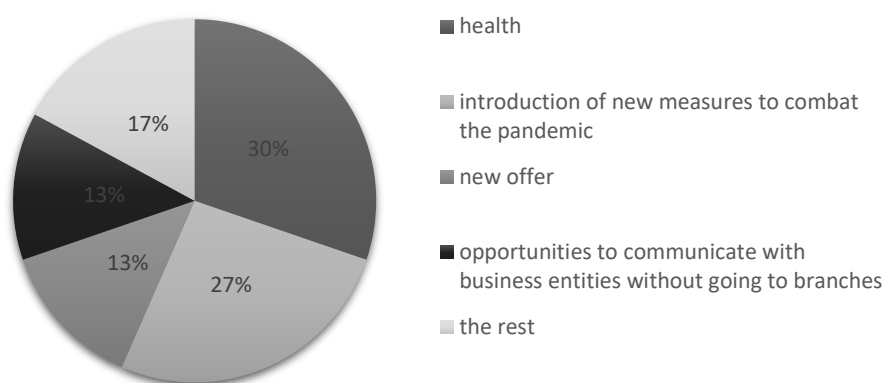


Source: author's work

At the time of the pandemic, the most important to the respondents are health information (30%) as well as information on the introduction of new measures and recommendations for health and safety (27%) which are transmitted through various media. Among the media through which they receive information that is important to them, respondents state: television (26%), the official website koronavirus.hr (21%), social networks (17%), websites of health institutions and public health (16%), daily newspapers (13%) and others (7%).

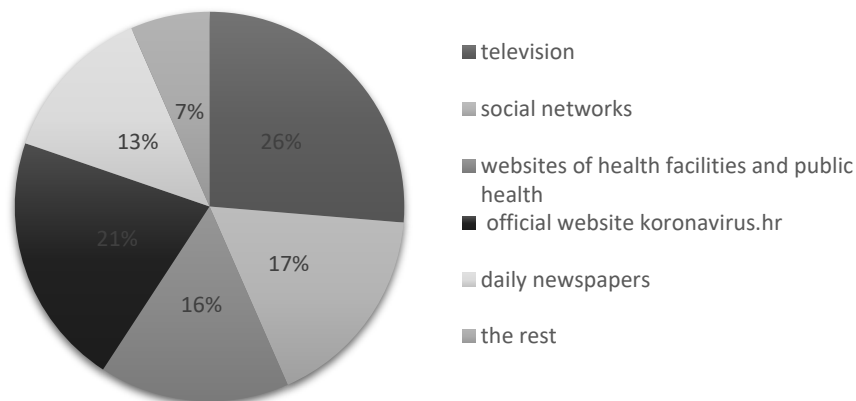
The structure of the answers on the importance of certain information as well as the media used by the respondents are shown in Figure 4. and Figure 5.

**Figure 4.** Information which are subjects important during a pandemic



Source: author's work

**Figure 5.** Media for information transmission



Source: author's work

## 5. CONCLUSION

The messages of socially responsible marketing seek to influence the change of behaviour and adoption of new habits as well as socially responsible behaviour of all stakeholders during the pandemic through education, informing, reminding, persuading, and taking certain actions to protect themselves and others or create safer conditions in society we live in. The research shows that the messages of socially responsible marketing such as: stay at home, stay responsible and maintain a social distance (2m), wash your hands, wear protective masks, buy from the safety of your own home, etc. have influenced the change of habits for more than half of the respondents who participated in the survey, and the changes relate to the reduced number

of shop trips as well as the more frequent use of online stores. Respondents say that the health information that is transmitted to them through various media is also very important for maintaining health and safety.

The "new normal" is becoming a normal environment for living, working, doing business where it is important to maintain health and life safety, and the changed habits we adopted in the pandemic are likely to remain in part permanent.

## REFERENCES


- Babić, D., & Babić, M. (2020). *Kako se sačuvati od stresa za vrijeme pandemije koronom*. Zdravstveni glasnik, 6(1), 25-32 <https://hrcak.srce.hr/239141>
- Bočina, I. *Prevenција bolesti i promicanje zdravlja; Bolje spriječiti nego liječiti* dostupno na <http://www.zzjzpgz.hr/nzl/50/promicanje.htm> (15. 12. 2018.)
- Guzovski, M. (2014) *Marketing pristup zdravstvu* Paper presented at 4th International conference Development of public administration, April 25 and 26, 2014. College of Applied Sciences, „Lavoslav Ružička“ in Vukovar
- Guzovski, M. (2018). *Promjena stavova i ponašanja potrošača posredstvom integrirane marketing komunikacije* Paper presented at 4th International Scientific Conference Business Conference LIMEN 2018, 13 December 2018 (pp. 450-454). Belgrade: Association of Economists and Managers of the Balkans. <https://doi.org/10.31410/limen.2018.450>
- Kalebić Maglica, B. (2010) *Teorijski pristupi u ispitivanju rizičnih zdravstvenih ponašanja*, Psihologijske teme, 19(1), 71-102. <https://hrcak.srce.hr/56830>
- Kesić, T. (2003). *Integrirana marketinška komunikacija*, Zagreb: Opinio d.o.o.
- Kesić, T. (2006). *Ponašanje Potrošača*, Zagreb: Opinio d.o.o.
- Kotler, P. & Lee, N. (2011). *DOP - Društveno odgovorno poslovanje: suvremena teorija i najbolja praksa. 2. izd.*, Zagreb: M.E.P Consult.
- Kotler, P. & Lee, N. (2007). *Marketing u javnom sektoru; Put do bolje izvedbe*, Zagreb: Mate d.o.o.
- Meler, M. (1994). *Društveni marketing*, Osijek, EFO.
- Ozretić Došen, Đ. (2007). *Osnove marketinga* Zagreb: Adverta.
- Smoljić, M., Guzovski, M., Rudančić, A. (2020). *Važnost razvijanja digitalne marketing strategije*, Paper presented at 4th International Scientific Conference Business Conference EMAN 2020, 3 September 2020 (pp. 423-431). Belgrade: Association of Economists and Managers of the Balkans. <https://doi.org/10.31410/EMAN.2020.423>





# IMPACT OF METAPROGRAMS ON THE PURCHASE DECISION-MAKING PROCESS

Biljana Galovska<sup>1</sup> 

Maja Kochoska<sup>2</sup> 

DOI: <https://doi.org/10.31410/LIMEN.2020.293>

---

**Abstract:** *Each of us processes our own experience in a special way. There is no right or wrong way to handle it. Different people have different thinking structures and often do not understand each other. But, on the other hand, exactly that complexity of the human being is one of the biggest challenges in communication as a universal process. Discovering and adapting the identity of individuals becomes the number one priority.*

*Consumers are exposed to many stimulants that motivate them to behave positively or negatively, react and decide.*

*As processes in our mind that clarify the decision-making structure, as well as how individuals are motivated to take action, are metaprograms that are unconscious schemes for ordering information. They act as filters and allow only what is important to the individual to be taken into account.*

*The main goal of this paper is to emphasize the knowledge about the existence of metaprograms, their understanding, application in terms of motivation to achieve a result by recognizing them allows us to become more influential and more able to touch in a way that is appropriate for people around us.*

**Keywords:** *Meta-programs, Consumer behavior, Buying.*

---

## INTRODUCTION

Neuro-linguistic programming is a methodology that is a leading person development methodology in the world. It considers the subjective experience of the individual and thus explains the way people function. It includes their experience of the world, the way they process or memorize information, the way they plan, make decisions and behave both towards themselves and towards others. Understanding the way people function and structure their experiences increases our empathy potential endlessly, as well as our influence, development and change capabilities. The process of discovering the way successful people function in order to model their behavior was the primary work motivation of the students, Richard Bandler and John Grinder, in the 70s of the 20<sup>th</sup> century, when they set up the model of excellence or success. Since then, the strategies and techniques known in neuro-linguistic programming have been growing and developing and, today, they are applied in therapy, education, work, sport, supervising, sales, management, etc.

The most modern software in the world exists in the human head, it is our mind. If every computer has an operating system that allows it to communicate with the outside world, the human mind operates similarly. If by a click of the computer mouse an icon is opened, i.e. any program is opened, we can move on toward the interpretation of that operating system without

---

<sup>1</sup> Business academy Smilevski BAS, bul. Jane Sandanski N. 111/2, Skopje, North Macedonia

<sup>2</sup> Business academy Smilevski BAS, bul. Jane Sandanski N. 111/2, Skopje, North Macedonia

which we could not communicate with the computer. Although this comparison is not the most appropriate, it gives a vivid picture of the way the brain works. Leslie Cameron-Bandler, Richard Bandler's wife, one of the "culprits" for the discovery of NLP, in her advisory work wondered if there was anything similar to computers in our brains. Namely, she examined whether there is a certain set of processes that occur on an unconscious level and are automatic, and have a significant impact on the conscious processes. Studying a considerable number of people through her work, Cameron had the unique opportunity to find, identify and discover the meaning of metaprograms in humans. Her work has been further developed by Roger Bailey and Shelly Rose Charvet defining a total of 14 metaprograms, which are currently being studied through the standard part of NLP (Neurolinguistic programming) training.

## **METAPROGRAMS-THE FUNDAMENTAL HUMAN BRAIN SOFTWARE**

**“Learning to recognize the filters which you and others use is the first step towards flexibility development” (Knight 2002/2010)**

Metaprograms are the basic "software" of our brain. Regardless of how we consciously process information, deep in our subconsciousness, processes occur outside our will and consciousness and affect our thoughts, feelings, and decisions. Metaprograms resemble glue between values and beliefs, i.e. why something is important and what a person believes about him/herself, about life and everything that happens to him/her, consequently they cause subconscious emotional reactions to environmental stimuli that affect the overall communication. The combination of metaprograms is unique to each person. They provide you with automatic ways to sort and organize your experience, your thinking and your behavior. Although you share your metaprograms with other people, the combination that each individual possesses is unique to that person. That combination influences decision-making and even buying items.

In neurolinguistic programming, metaprograms are the key to the information processing method. In essence, NLP metaprograms mean how you form your mental representations and direct your behaviour.

The knowledge of metaprograms will help you in:

**Achieving a pleasant relationship:** metaprograms are something through which you can make the interlocutor feel comfortable with you.

**Self-awareness:** if you are aware of your own metaprogram, i.e. if you know your thinking preferences, you will have a better idea of how to place and sell a certain product and, at the same time, you will use your strengths knowing the interlocutor's meta-program.

**Employment:** each job has an ideal metaprogram profile. The sales employee, if the metaprograms are known, will be able to better play his role in terms of influencing through verbal speech and intriguing the interlocutor. Namely, you will know how to compose a text about the features of the products or service that will intrigue the counterpart.

**Sales:** You can help the people in the team or yourselves to present a purchase decision by following the basic metaprograms in the course of the presentation or the interlocutor's program if it is known to us.

Depending on the specific metaprogram, you can detect them by the words people use, the structure of their language patterns and the way they speak, the way they behave, their history, the change of job and so on.

## THE MOST IMPORTANT METAPROGRAMS

**EXTERNAL/INTERNAL**-Metaprograms explain the decision-making structure and how individuals are motivated. If the question arises: "How do you know you did a good job?" some people will respond "by inner feeling" while others will say "based on results, on certain indicators, according to customer satisfaction, when I see their faces, etc." Or when it comes to buying, someone will say, "it is used by everyone around me", while another will state "I bought it because I feel good when I use it, and I came across it by chance". According to this example, one can conclude that some people have the answer inside them, while others find the answer from reactions or indicators from the environment. Those acquiring results outside of NLP are called **EXTERNAL**, while the others are **INTERNAL**. Those who are internal will be guided by the inner feeling when buying a product or service, and this feeling will determine their decision, while the external types will ask for feedback, they will give and receive feedback, they will look for recommendations from others, statistical indicators, maybe certain criteria, etc. When an internal seller and an external buyer meet in the buying and selling process, a misunderstanding can occur in the communication, because one of them is satisfied with the explanation and his/her inner feeling that will motivate him/her to make a decision, while the other searches for feedback. If the buyer is an external type, he/she will need feedback and indicators outside of him/her in order to be able to orient and motivate him/herself to make a decision. Therefore, primarily, it is good for the seller to be aware that there are metaprograms and that by their recognition he/she will be able to harmonize with and motivate the buyer for what is offered. It offers the opportunity to those who know them to be more influential and to be able to motivate co-workers, employees, the team and the like in the right way.

**PRIMARY INTEREST**-One of the basic metaprograms is the **PRIMARY INTEREST**. Each person has preferences that reveal the focus of attention. This is essential in team forming, especially sales teams, because the knowledge of this metaprogram can aid the creation of a compatible team that will be aimed towards the customers, activities, information, products and location.

**TOWARDS/AWAY FROM**-This metaprogram deals with the way people are motivated. People with **MP-towards** are motivated by prizes and aims and they move towards them, while people with an **MP-away from** are motivated by moving away from a problem, difficulty or punishment. For example, one salesperson with an **MP-AWAY FROM** will not motivate by a bonus, he/she will express a cold reaction to it. The bonus causes an opposite reaction with the salesperson with an **MP-TOWARDS**, hence it will truly motivate him/her. It is extremely easy to recognize this MP in the interlocutor in the course of the conversation-whether they talk about what they want to achieve or which problems they want to avoid.

**PRIMARY ATTENTION**-this MP primarily refers to caring for oneself and caring for others. Namely, persons with this metaprogram, self-care first, concentrate on themselves, are aware of their needs, can work independently of others. They will strive to find an environment in which they can work and do their best. They are quite sensitive to their needs, but they are not egotistical. This preference in thinking is often very important in professions where results are very important. Individuals with **MP-care for others**-put other people first. These people are perceived by the environment as careful, empathetic and responsive, but often put their needs last. The well-being of team members or clients is imperative to them. The desire for domination can be found at the core of this MP. Every flight, people learn from the flight attendant that first they must put a mask on themselves so that they can help others around them. If they help themselves, they can help others. In essence, the client who has this MP,

when buying a product or service, will always be guided by what the people he works or operates with would say about it. Thus he will make a decision. Basically, salespersons that are trained and use NLP in their work, most often recognize this MP, and are focused on what the team, organization and so forth gains with what is procured.

**SIMILARITIES/DIFFERENCES**-this is one of the most important metaprograms and represents the most dominant aspect of our personality. Some people need to find similarities, for example when buying a new product, with an old item they use and it still serves them, while others focus on differences between products. This metaprogram has its advantages and disadvantages. People who have MP-only similarities-see only similarities and almost 10% of the people primarily use this metaprogram. These are people who have been in the same line of work for decades or they have been buying and using a product because "everything is the same". They almost never have a good enough reason to change something. They need something that does not change or changes only if necessary. If the planned changed, they would become nervous or aggressive.

People who use MP-only differences-immediately notice when something is new, they are capable of searching all the information, discovering everything that is different. They rarely stay in one job post for more than two years. It is very difficult to motivate them to make decisions because when you say "I don't know", they say "I know". If you say "if you do that", they will answer "I won't do that anyway..." People who apply the NLP methodology and recognize this metaprogram will often say "I don't know if you are going to do this or not ". They are aware that this "or not" freezes their system and they may reveal their information without much resistance.

**REACTION, FOR (CONSENSUS)/AGAINST**-this pattern of thinking shows how the person will react to external influences and to what extent he/she is ready to confront. People who are in the MP-for-react by agreeing often, it is natural for them to agree with other people. People with preferences in thinking-against-have a pronounced individuality and independence. Usually, if they repeatedly get the same advice, it can cause an opposite reaction on their part. This preference rarely occurs in pure form (5 to 10% of the population).

**WORK ORIENTATION-RELATIONSHIP/TASK** People who are relationship oriented, focus their attention on the people around them. The organizational climate and the well-being of other people are important to them. On the other hand, with persons having a thinking preference-task-their focus is on the goals, tasks. They strive to complete the task, meet all deadlines and sometimes put extra pressure on co-workers. Organizational climate is not always important to them.

**GENERAL OVERVIEW/DETAILER**-this program plays a vital role in human communication. Everyone has way of processing information. Some prefer a general overview, while others go into detail.

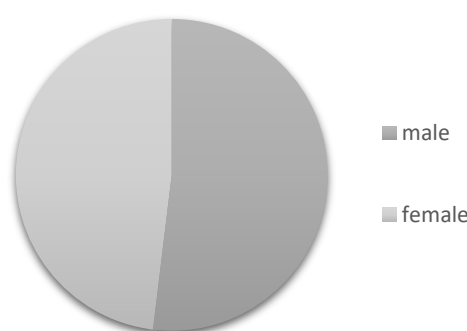
## **ANALYSIS OF THE RESEARCH RESULTS**

In the new age, when people deal with changes in the way they work, putting the world to a halt due to the pandemic and when confronted with a rush of existential fears managers "run" after profit, they often forget the most important ones - human resources. The justification of the research arises from the necessity of having adequate support for the employees who need to cope with the changes and the accompanying resistance, which would primarily teach them

about themselves, and then about the people they work with. The research aims to identify the factors that influence the creation of a different approach that will facilitate the decision of the buyer and give communication precision and conciseness. This would increase the influence of the individual, as well as the competitiveness of the organization. The research has been conducted on individuals in our country, as well as in Serbia, Montenegro and Croatia, who work in sales and are trained in NLP, regardless of the fact who was financed by-themselves, the organization or a training team within the organization who applies this methodology.

1. A number of the respondents-The total number of respondents is 51. The survey was distributed in electronic form.
2. Gender structure of the respondents-when determining the respondents, the equal gender structure was taken into consideration.

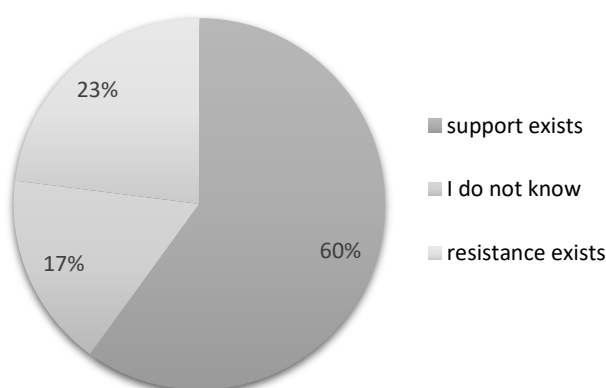
**Figure 1.** Number of the respondents



## ANALYSIS OF THE SURVEY RESPONSES

**A) Does your organization support informal education and NLP methodology?**-The response to this question has shown that 60% of the respondents state that support of this kind exists in the organization, 17% of the respondents do not know or have not paid attention to that, while 23% of the respondents occasionally face resistance towards informal education.

**Figure 2.** Does your organization support informal education and NLP methodology?

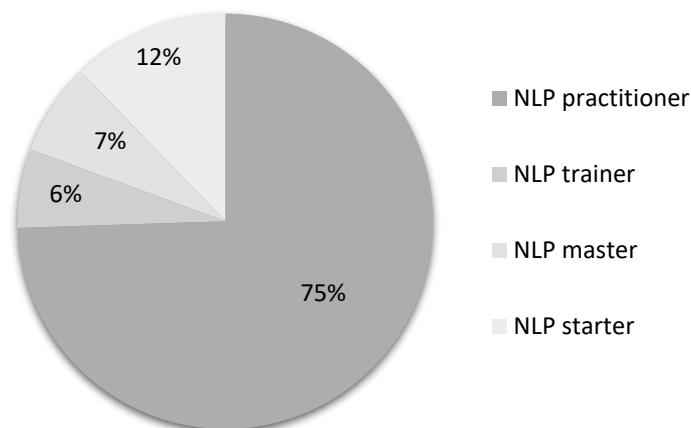


**B) Which level of NLP have you completed?** -The results from the conducted research have shown that 73% of the respondents have completed NLP practitioner level, the basic level of neurolinguistic programming, 6% of the respondents have already become NLP trainers and



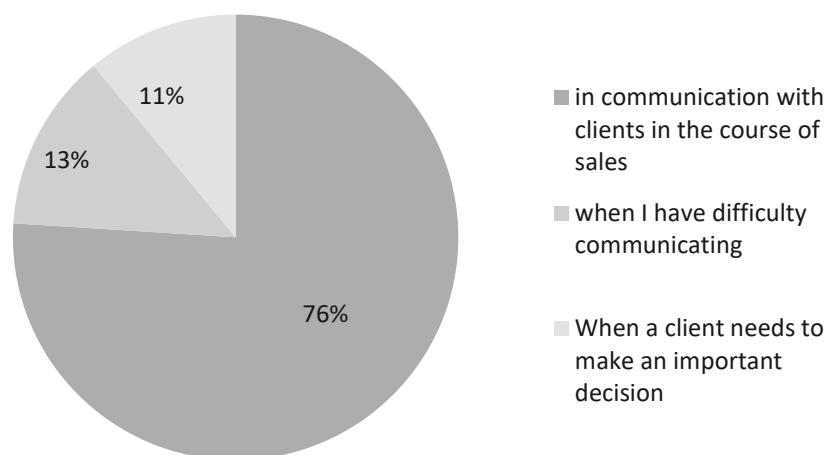
have completed all the levels of training, 7% of the respondents have had only one or two short introductions to the methodology, 12% of the respondents have completed an advanced, master NLP level. Nearly all of them have job posts that include sales and communication with clients.

**Figure 3.** Which level of NLP have you completed?



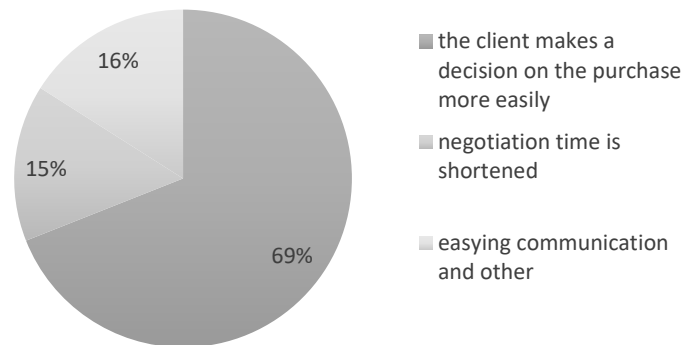
**C) How much do you use metaprograms in your line of work?** -The results from the conducted research have shown that 76% of the respondents use metaprograms in communication with clients, especially in sales, 13% of the respondents stated they use metaprograms only when necessary and when they have difficulty in communication, while the remaining 11% utilize them as an aid when the client needs to make an important decision.

**Figure 4.** How much do you use metaprograms in your line of work?



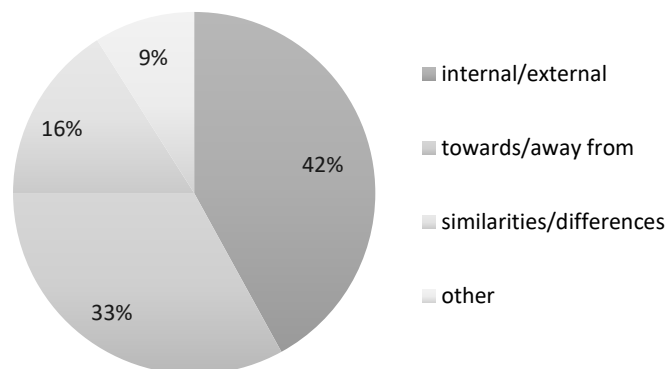
**D) When you adapt the communication to the metaprogram of the interlocutor, what benefits do you gain?** 69% of the respondents answered that clients make purchase decisions more easily, 15% of the respondents stated that it shortens the negotiation time and they gain on clarity, 16% chose other, of which mostly relating to communication support.

**Figure 5.** When you adapt the communication to the metaprogram of the interlocutor, what benefits do you gain?



**F) Which metaprogram contributes clients' decision making the most?**-The results from the conducted research have shown that 42% of the respondents stated it is the internal/external metaprogram, 33% of the respondents that it is towards/away from, 16% similarities/differences and the remaining 9%-other.

**Figure 6.** Which metaprogram contributes clients' decision making the most?



## CONCLUSION

Although through formal education we earn a degree that should provide us with a job, the fact is that informal education is what facilitates our work process. In this regard, in order to create opportunities to become more influential in our work, especially to facilitate communication that leads to better results, achieving goals, as well as decisions making, it is obvious that informal education is more than necessary. Nevertheless, the practice also shows that it is insufficient only to attend training without applying the acquired knowledge. This research has shown the importance of theoretical soundness concerning metaprograms, and their usefulness in the application. Respondents confirmed that decision making by customers as well as facilitating communication are some of the benefits of applying the NLP methodology, which is the world-leading methodology for personality development. However, much needs to be done about raising the awareness of employers and employees, especially in the sales sector, about informal education and its contribution to work and, ultimately, about raising the results to a higher level.

## REFERENCES

- Tool book for mind*, NLP institute Slavica Squire, Nlp practitioner sertifikacioni trening program IANLP, NLP institute D.O.O.
- Squire S., (2013) *NLP u svakom uspehu mirodija*, Vulkan, Beograd.
- Dz. O'Konor, Dz. Sejmur (2017) *Uvod u NLP*, Kontrast Beograd
- L. Todorovic , (2016) *NLP Carobna radionica zivota po meri vlasnika*, Leo comerc, Beograd
- Galovska B., Petrovska B., Petrovska N., (2018) *Information for management personal about terms coaching and neuro-linguistic programming*, Macedonian international journal of marketing, vol. 4, No. 8, 127-134, Macedonian Marketing Association "Marketing"-Skopje, ISSN-005.95-057.17:151.92
- Bandler, R., Grinder, J. (1981), *Reframing: Neuro-Linguistic Programming and the Transformation of Meaning*, Real People Press. ISBN 0-911226-25-7

## INTERNET SOURCES

- <https://budisvoj.eu/blog/metaprogrami/>
- <https://www.nlpworld.co.uk/nlp-glossary/m/metaprograms/>
- <https://sourcesofinsight.com/seven-meta-programs-for-understanding-people/>
- <https://www.study365.co.uk/wp-content/uploads/2018/08/NLP-Module-8-Meta-Programs.pdf>

# THE IMPORTANCE OF BUSINESS CULTURE FOR INTERNATIONAL BUSINESS

Dijana Grahovac<sup>1</sup>  
Biljana Radenović-Kozić<sup>2</sup>

DOI: <https://doi.org/10.31410/LIMEN.2020.301>

---

**Abstract:** *In modern, global economic relations, interstate borders are minorized by the strong influence of economic interest. National business is becoming almost negligible because modern economic activities are, in most areas, within the framework of international business. Knowledge of the elements of culture in international business has become increasingly important, and it's reflected in the fact that it is necessary to know and respect the rules of the manner of business entities in certain cultures, which is both theoretically and practically confirmed as the only path that permanently provides long-term stability and successful business development in an international framework. For successful business cooperation with foreign partners, it is necessary to know their culture and how to adapt to it. Empirical researches in this area emphasize that depending on the culture business entities belong to, there are different business goals, relationships, different ways of business negotiation, business culture itself, and the values that come from it. Knowing and respecting diversity affects understanding and attitudes to (potential) business partners, which is the first step of business cooperation, and therefore has a significant impact on achieving positive results in negotiations in international business.*

**Keywords:** *Global economic relations, International business, Importance of different business cultures and values.*

---

## INTRODUCTION

Differences in religion, languages, cultural context, non-verbal communication, humor, giving, aesthetics, and many other areas, are significant and they can be a barrier in international business if they are not researched and accepted, respected, and incorporated into the strategy of going out to foreign markets. Basic knowledge of business style, work philosophy, and life of a potential partner helps to establish successful business relationships. A large number of researches were conducted in order to make the business more successful and they pointed out that depending on the culture to which managers belong, they have different business goals, relationships with the company, and others colleagues. Knowing and respecting dissimilarity affects the sympathy of business partners, which is also the first step of business cooperation; it is important to know the facts of the country you do business with and mainly refers to the full name of the state, capital of the state, name of the president of the state, it is useful to know the religion and religious customs, public and religious holidays, cultural differences in diet and similar.

---

<sup>1</sup> University of Business Studies, Banja Luka, Bosnia and Herzegovina

<sup>2</sup> University of Business Studies, Banja Luka, Bosnia and Herzegovina

## 1. LITERATURE REVIEW

Hofstede has developed five independent dimensions of national culture. He started by conducting research from 1967 to 1973 in two survey rounds initially regarding only four dimensions and produced answers to more than 116,000 questionnaires from 72 countries to examine country differences in values and attitudes. The initial analysis was limited to 40 countries, with more than 50 respondents each. In a later stage, data from 10 more countries and three multi-country regions were added (Hofstede, 2001. p. 41). When it comes to empirical research on the impact of culture on consumer choice in foreign markets, some international marketers have predicted a final convergence of culturally different markets into a “one world culture” that would facilitate standardized marketing activities. This, however, has turned out to be an illusion of too many hard factors, and cultural soft factors still exist or arise as constraints on international marketing that have to be dealt with continuously, utilizing various strategies of adaptation or localization.

The cultural value dimensions proposed by Hofstede have been extensively used in marketing and advertising literature to study cultural differences. This dimensional model provides country scores that can be used to analyze consumption and consumer behavior.

Marieke de Mooij applied his model to consumption-related values and motives. Mooij explained in her book “Global Marketing and Advertising” how appeals in advertising reflect the core values of culture. “Markets are people, not products. There may be global products, but there are no global people”. Even though consumers of different countries use the same products, their motivations for buying products vary depending on their cultural differences.

Managers, researchers, and academics are exploring the potential of using the World Wide Web as a marketing tool. According to Singh et al, “web is not a culturally neutral medium”. Therefore, website designers and advertisers must consider their audiences and respect cultural differences. When customizing a website to appeal to a different culture, it is not enough merely to translate the text.

## 2. DOING BUSINESS IN GLOBAL TERMS

If a term was chosen that symbolizes the spirit of today, it would be the term »globalization«. There is no precise or generally accepted understanding of the concept of globalization. Hopkins cites as the most acceptable, and probably the most neutral definition, the one according to which globalization is a process that rearranges (transforms) economic, political, social, and cultural relations between countries, regions, and entire continents while expanding, strengthening, and accelerating (Hopkins, 2002).

Globalization is a dynamic process that progresses, develops, and leads to unstoppable integration of national markets, states, and technologies, to the extent that has never been recorded in economic history (Jovancevic, 2005). According to the *Oxford Dictionary of New Words*, the meaning of the word is a consequence of the influence of *Marshall McLuhan's thesis*<sup>3</sup> about the global village. Globalization is also defined as a “process of overcoming historically formed borders”.

---

<sup>3</sup> Herbert Marshall McLuhan (Edmonton, Alberta, Canada, 1911 - 1980) was a professor of English literature, a philosopher, a communication theorist and a literary critic. McLuhan can be considered the first theorist of media philosophy and the originator of the current that puts the problems of media and media mediation in the forefront of the research. McLuhan is best known for saying “media is the message”

In the conditions of market globalization, the rapid development of technologies, and changing consumer requirements, new markets are opening up and creating greater opportunities for businesses to run multiculturally. Doing business in different cultures requires a new way of doing business and new strategic and tactical views.

### 3. BUSINESS CULTURE

The United Nations Educational, Scientific and Cultural Organization described culture as follows: “culture should be regarded as the set of distinctive spiritual, material, intellectual and emotional features of society or a social group, and that it encompasses, in addition to art and literature, lifestyles, ways of living together, value systems, traditions, and beliefs”.

Hall (1959) defines culture as the way of life of a people: the sum of their learned behavior patterns, attitudes and materials things. Culture is often subconscious; an invisible control mechanism operating in our thoughts (Hall, 1983). In his view, we become aware of it by exposure to a different culture. Members of a certain society internalize the cultural components of that society and act within the limits as set out by what is “culturally acceptable” (Hall, 1983, 230).

Culture consists of patterned ways of thinking, feeling, and acting, acquired and transmitted mainly by symbols, constituting the distinctive achievements of human groups, including their embodiments in artifacts; the essential core of culture consists of traditional (i.e. historically derived and selected) ideas and especially their attached values.

In the marketing literature, culture has been predominantly measured by cultural values. A value is defined by Rokeach, as an enduring belief that one mode of conduct or end-state of existence is preferable to an opposing mode of conduct or end-state of existence. Values are often measured on polar scales, for example; active versus passive, modern versus traditional.

Specific cultural variables, such as common beliefs, values, and attitudes determine basic attitudes of value towards the notions of time and materialism, as well as attitudes in relation to change, individualism, work experience and thus significantly affect the business planning and decision making (Radić, 2008).

A key impetus in the development of the study of cultural influences on organizations was represented by the mentioned research of Hofstede conducted in the period from 1967 to 1973 on a sample that included more than 116,000 respondents in the forty national branches of the multinational company IBM. The basic notion - the notion of Hofstede culture (Hofstede, 2001) is defined as “collective mind programming that distinguishes members of one group or category of people from another.” Researches have shown that national culture has a greater impact on employees than organizational culture, so for example, German workers at IBM in Germany will be more influenced by German culture than the corporate culture of the company (Robbins, 2005).

---

and for the term “global village”. He also predicted the Internet and the World Wide Web thirty years before its discovery. In the 1960s, he was at the height of his fame, and quickly forgotten after his death. But, with the advent of the internet McLuhan emerges from oblivion and interest in his work reappears.



#### 4. BUSINESS COMMUNICATION AND BUSINESS NEGOTIATION

Negotiation is constantly present in everyday life, and according to some theorists represents one of the skills needed for survival (Gosselin, 2007: 100). That is especially expressed in the business environment. The Latin root of the word *negotiat* means “to do business”, whence the present-day word in Spanish *negocio* comes from, which means “business”. The golden rule of negotiation is: People will not negotiate with you if they do not believe that you can help them or if they believe that you can harm them (Sharpe, 1990., 21).

According to Stephen Cohen (Cohen, 2002: 3) “negotiation is a process in which two or more parties work together to reach a mutually acceptable solution to one or more issues, such as a commercial transaction, contract or agreement of any kind.” International business negotiation is significantly different from negotiation in the domestic environment and requires different and extended knowledge on various issues.

According to Salacuse, “doing business in your country is about the same attitude towards international business as the domestic policy of the country with international diplomacy.” (Salacuse, 1991: 252) For international business negotiations to be successfully led in the direction of achieving the desired goals, it is necessary to know well the conditions and the partner with whom negotiations are conducted. It requires knowledge on not only the job but also negotiating environment, partner culture that is extremely important for the course and outcome of negotiations, ideology, foreign partner bureaucracy, foreign government regime, environment, etc.

The complexity of international negotiations and business is equally pronounced with partners from different business environments. The origin of both partners has a great influence, if they are culturally closer and closer to civilization, the more likely it is to lead negotiations successfully. On the other hand, in the case of significantly different partners in cultural and business ways, it is necessary to implement detailed activities to get to know the partner and his culture before the negotiations. Differences in religion, languages, cultural context, non-verbal communication, humor, giving, aesthetics, and many other areas, are significant and they can be a barrier in international business if they are not researched and accepted, respected, and incorporated into the strategy. In global business, the differences between cultures create great difficulties in the negotiation process. Differences in the negotiation process from country to country include: (Deresky, 2003:158)

- Course and duration of preparation for negotiations,
- The relative importance of specific issues in relation to interpersonal relationships,
- The importance of general principles about specific problems,
- The number of people in the negotiating team and their position.

#### 5. CASE STUDY

As already mentioned, national culture is a significant determinant of business success in the foreign market.

During their appearance on the international market, many companies faced initial failures due to insufficient knowledge of the cultural elements of the target markets. Some examples are: (Rakita 2003: 180)

- American Airline in Brazil promoted rendezvous lounges in their planes, which in Portuguese had the unpopular meaning of a room rented in a brothel.

- In many regions of Southeast Asia, nibbling nuts is an elite habit, and black teeth a matter of prestige. Pepsodent's promise of white teeth through the message "*Wonder where the yellow went*" was considered a failure.
- The Mc Donnell Douglas Corporation printed a brochure with its plane, intended for users in India, showing a man with a turban. The Indians kindly thanked, emphasizing that the turban is characteristic of Iran, not India.
- Pepsi Cola Co. once published an ad in the Taiwanese edition of Reader's Digest, with the slogan "*Come alive with Pepsi!*". But in Taiwan, it was associated with the return of ancestors from the dead, and in Germany to rise from the grave.
- When Kentucky Fried Chicken used his well-known slogan in Iran - "*It's finger-licking good*" (It is so good to lick your fingers) in the local language it had quite a different meaning (It's so good to eat your fingers).
- General Motors dealers in Puerto Rico were not happy with the name "Chevrolet Nova" because "nova" in Spanish means that something isn't going well. Then very quickly the name was changed in "Caribe" by G.M.
- Microsoft and Telefonos de Mexico have joined forces in the Mexican market to launch a new internet portal in Spanish [www.tlmsn.com](http://www.tlmsn.com). However, Microsoft faced the problem with the online dictionary. When alternatives to the word "an Indian" are requested, the thesaurus generated the terms cannibal and savage. In Mexico most of the population is of indigenous origin and that caused resistance among users, because it has been politically incorrect. "I see this as very much dangerous because respect for our pride as Mexicans and our native roots lacks" said Adriana Luna, a Mexican congresswoman. One representative called the dictionary "fascist and conservative." For Microsoft, it meant a downfall in public relations.

Due to all the above, in international marketing special attention is paid to a thorough translation of the slogans or messages into the local language. The basic problem with translation is to keep the meaning and significance of the message.

Wrong translations can sometimes ruin even the best products or business ventures. It is possible to make cardinal mistakes when translating an advertisement from one language to another (Cateora 2002:491):

- *Use of homonyms*, that is words that have the same or similar form with different meanings. E.g., *Irish Mist* liqueur has been translated into German as *Irischer Mist*. "Mist" in English means haze, and in German cow dung. Rolls Royce changed the name of his model "Silver Mist" to "Silver Shadow" - before entering the German market.
- *A literal translation* that does not convey the intended meaning, e.g., an inscription in one Swiss restaurant "Our wines leave you nothing to hope for", which means "You don't have what to hope for when you drink our wines."
- *Use of a symbol*, e.g., an owl shown in an advertisement in India, where it is a symbol of misfortune.
- *Unintentional message*. An example is an ad that should provide easier "reading" in underdeveloped countries, because it was made in the form of a comic strip with three pictures - dirty clothes on the left picture, then soap and in the end clean clothes. But what an idea got consumers in Arab countries that read from right to left?

International business negotiation is significantly different from domestic negotiation environment and requires a diverse and expanded knowledge of various issues. According to

Salacuse, “Doing business in your country is about the same as international business and the domestic politics of a country with international diplomacy”.

Some cultures start from general principles when negotiating, while others deal with individual problems. The speed of negotiations and decision-making styles also differ in different cultures, as well as making a concession. Researches have shown that reciprocity of concessions is more important in individualistic cultures (e.g., the USA) than in collectivist ones (e.g., Vietnam). Namely, negotiators from collectivist countries largely cooperate with other parties, regardless of the behavior of the opposing negotiator, while for individualists it is important the behavior of the other party (Parks, 1998). Of course, generalization should be avoided, because not all individuals follow cultural stereotypes.

Parochialism and stereotypes are two major dangers in international negotiating. Parochialism refers to the notion that due to globalization all business people behave similarly (mostly on the American model). This leads to stereotypes, and that is generalizations about any nation or state. Positive and negative stereotypes will have the opposite influence on the negotiation process. For example, due to negative stereotypes of the company, an exporter may require a low-risk billing method, such as a letter of credit (Czinkota, & Ronkainen, 2004).

In Graham’s research (1985), based on the classification of the various units, percentages of each bargaining category were calculated for each participant, for each negotiation. These findings are summarized in Table 1. As the data indicate, the percentages of each category are surprisingly consistent across 3 groups. The only substantial discrepancies are that the Brazilians appear to make fewer promises and commitments and more commands than either the American or Japanese business people.

Theory suggests that the process of marketing negotiations differs across cultures. More specifically, this author (1980) reported that the "pattern" of interaction in Japanese sales negotiations differs from that of American sales negotiations. Pattern here is defined as a time-ordered sequence of events. One way to view the "pattern" of interaction is through the perspective of content analysis - the various bargaining behaviors being the “specific events” referred to above. The summary data presented in Table 1 provides some information about the pattern.

**Table 1.** Behavior during negotiations: Japan, USA, and Brazil - percentages of each bargaining category

Bargaining Behaviors and Definition	Japan	USA	Brazil
Promise. A statement in which the source indicated his intention to provide the target with a reinforcing consequence which source that anticipates target will evaluate as pleasant, positive, or rewarding	7	8	3
Threat. Same as a promise, except that the reinforcing consequences are thought to be noxious, unpleasant, or punishing.	4	4	2
Recommendation. A statement in which the source predicts that a pleasant environmental consequence will occur to the target. Its occurrence is not under the source's control.	7	4	5
Warning. Same as a recommendation, except that the consequences are thought to be unpleasant.	2	1	1
Reward. A statement by the source that is thought to create pleasant consequences for the target.	1	2	2
Punishment. Same as a reward, except that the consequences are thought to be unpleasant.	1	3	3

Positive normative appeal. A statement in which the source indicates that the target's past, present, or future behavior was or will be in conformity with social norms.	1	1	0
Negative normative appeal. Same as positive normative appeal, except that the target's behavior violates social norms.	3	1	1
Commitment. A statement by the source to the effect that its future bids will not go below or above a certain level.	15	13	8
Self-Disclosure. A statement in which the source reveals information about itself.	34	46	39
Question. A statement in which the source asks the target to reveal information about itself.	20	20	22
Command. A statement in which the source suggests that the target performs a certain behavior.	8	6	14

**Source:** Graham J. L. (1985) "The Influence of Culture on the Process of Business Negotiations: An Exploratory Study", *Journal of International Business Studies*, Spring 85, Vol. 16, Issue 1, p. 88

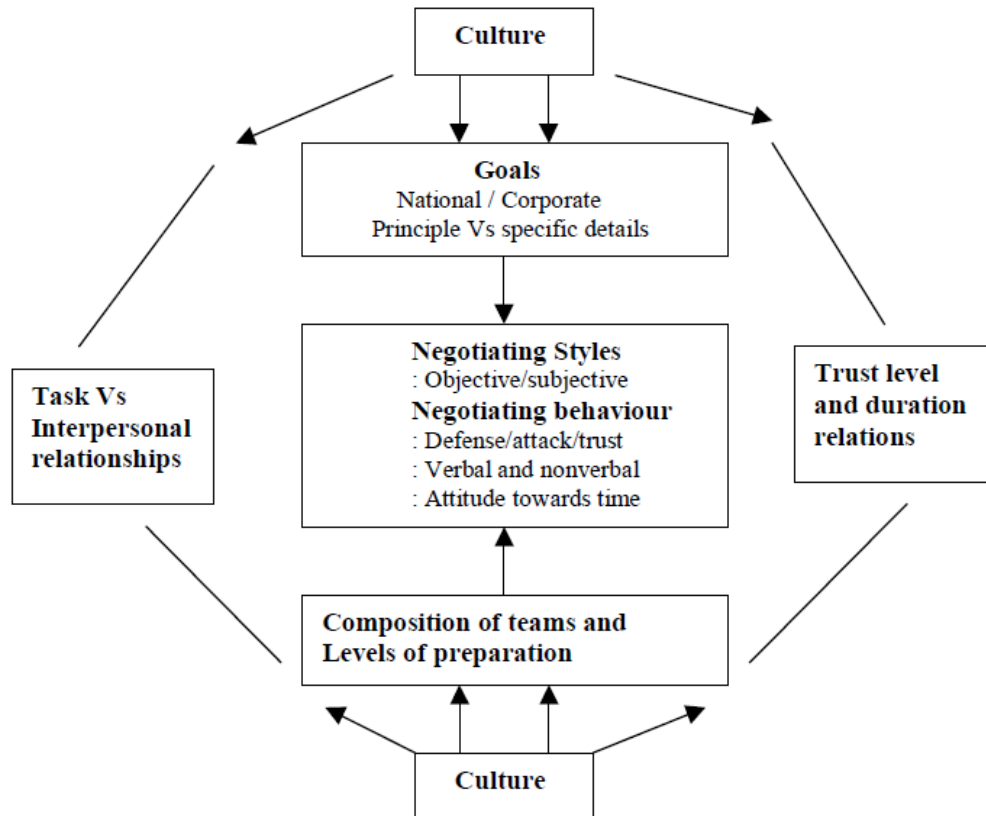
Elements of non-verbal communication are also a very important segment of any culture and they are expressed through cross-cultural differences (table 2).

**Table 2.** Differences in the interpretation of non-verbal communication (Rakita 2003:194)

Non-verbal Behavior	Country	Meaning
Outstretched thumb	USA Middle East, Japan, Germany	OK/gesture of approval
A finger circling the ear	Argentina USA	Phone "That's silly"
Waving a raised hand	USA India, South America Europe	"Goodbye" Summoning  Sign "NO"
A circle formed by the index finger and thumb	USA Turkey	"Very good" Offensive sign / Homosexuality
Crossing the first two fingers	USA Taiwan	Good luck No smoking
Eye contact	USA Japan Asian States	A sign of showing interest Bad attack on privacy Disrespect for the elderly
Spreading the eyes	USA China Latin America	Surprise Anger Request for help
Nodding head left and right	West countries Bulgaria	Sign of disagreement - NO  Stacking sign – YES
Nodding head up and down	West countries Greece and Bulgaria	Stacking sign – YES  Sign of disagreement - NO

Differences in culture and philosophy between countries have led to differences in negotiation styles. Below is a model, established by Deresky, describing several variables impacting cross-cultural negotiation. The differences in style as a consequence of these different variables should be noted when considering some of the distinctions made between the different countries in later sections.

**Graph 1.** Variables that have an impact on cross-cultural negotiation



**Source:** Deresky, H. (2003) *International Management – Managing Across Borders and Cultures*, Prentice-Hall, Upper Saddle River, New Jersey, p. 173

Negotiation style is influenced by the attitudes, expectations, and usual behavior of negotiators. Czinkota & Ronkainen (2004) highlight the following points in which the manager should modify his style during negotiating with foreigners:

- **Team support.** The team should have specialists in various fields so that the problems can be seen from all sides. For inexperienced team members, observation of experienced colleagues during negotiations would be welcome. Besides, even when there are disagreements between team members, it is very important to solve them in a closed circle, and in front of strangers to show agreement.
- **Tradition and customs.** It is necessary to use the services of local representatives in order to negotiators become familiar with the business procedures and status of the opposing team. It is desirable to use informal means of communication to find out the status of the title of those with whom it will be negotiated. Even the simplest rituals can be a problem, e.g., it is common in Asia for the first business meeting to end with the exchange of business cards which must have translated text on one side into the host language. They are given with both hands.
- **Language skills.** Ideally, the negotiator should speak the language of a host, but this is not always possible. As part of the negotiating team, it is mandatory the presence of a

qualified translator, who also knows the culture of the host well, so that nothing would be lost in translation from a linguistic or cultural point of view. Using the translator also allows the negotiator longer to think. In a speech, jargon and idiomatic phrases should be avoided.

- **Determination of authority.** It is expected from negotiators from Europe and North America to have full decision-making authority when negotiating in the Far East, although no one from the opposing team has one. Acknowledgment that none of the teams has the final word in the decision-making process can negatively affect the negotiation process, but sometimes it is used as a tactic to get a better insight into the intentions of the opposing team. In Russia, a foreign negotiator must be certain who has the final word in the negotiations - the central or local government.
- **Patience.** In many countries, such as China, negotiations can take up to three times longer than in Europe and the United States. In Brazil and Thailand, showing impatience may only prolong negotiations instead of speeding it up.
- **Negotiating ethics.** Attitudes and values differ between cultures. Somewhere cunning is valued, and somewhere it is not. For example, negotiators from the West often remain confused by Russians' requests for last-minute concessions.
- **Silence.** Negotiators must properly understand every type of communication, even silence, although for Americans it is a negative sign. For example, Finns sit during a meeting without movement, without facial expression. In that way Finns generally show respect for the speaker, listening to him carefully.
- **Persistence.** Insisting on agreement and results is considered in some cultures a threat because they see negotiations as establishing long-term relationships, not as an event with winners and losers.
- **Holistic approach.** Concessions should be avoided until the end of the negotiations, especially when it talks about prices. If the price is agreed upon too early, the other party may insist that too many things are included in that price.
- **Meaning of agreement.** What the final agreement consists of will depend on the culture. Contrary to the importance of the contract for the Americans, for the Chinese, it is just a work plan for developing relationships in the future.

## 6. COMPARATIVE ANALYSIS

From all the above, it can be concluded that every appearance on the international market must follow all the elements of national culture. Basic cultural values determine the way of presenting information, whether and when concessions are made, the general nature and duration of the relationship between the negotiating partners. However, certain styles that are common to several countries can be “pulled out”, as well their comparison (table 3).

**Table 3.** Comparison of different negotiation styles

Region/Style	North America	Arabs	Russians
Primary style and process of decision-making	Factual: invoking logic	Emotional: invoking feelings	Axiomatic: invoking ideals
Way of response to the contradictory arguments of the opposite side:	Objective facts	Subjective facts	Proven ideals
Making compromises	Small compromises are given early to slow down the relationship	Compromises are made during negotiations as part of the process	It is done very few compromises



Response to opponent's compromises	It is usually answered with reciprocal compromises	Almost always corresponds to reciprocal compromises	Compromises are considered as the law of weakness
Relationship	Short-term	Long-term	No permanent relationship
Authority	Wide	Wide	Limited
Starting position	Moderate	Extreme	Extreme
Adherence to deadlines	Very important	Relaxed	Ignored

**Source:** Glenn, E. S., Witmeyer, D., Stevenson, K. A. (1984) "Cultural Styles of Persuasion", *International Journal of Intercultural Relations*, No. 1, taken from Deresky, H. (2003) *International Management – Managing Across Borders and Cultures*, Prentice-Hall, Upper Saddle River NJ, p. 168

#### **a. Doing business in Turkey**

The success of business negotiations in Turkey depends on trust and mutual relations between negotiators. The process of making important decisions is quite slow. It is unacceptable to put pressure and set deadlines because otherwise, they will threaten to break off negotiations and cancel business (Rumenčić, 2008: 236). The essence of negotiations is not always just profit, but honor is also important, influence and respect for others. Pride is the base of all relationships in the family, society, and country (Rumenčić, 2008: 238), persistence and bargaining are expected. Relation to time is flexible.

#### **b. Doing business with the Arabs**

Characteristics, features and cultural customs, which are part of the business culture of this people, to a greater or lesser extent are based on the theological and theoretical bases of Islamic Sharia (religion) (Veselinov, 2008).

During business conversations with Arabs, it is common to shake hands at a meeting and parting, being late for a meeting is not considered rude, unpleasant topics (such as politics and religion) should be avoided as well as questions about private life, should not be sat down so that the soles of the shoes can be seen (this is considered as a great insult), meetings last a long time – impatience must not be shown.

Setting deadlines is considered rude, and jobs will be done once "when it is the will of Allah." The Arabs pay a lot of attention to hospitality, they are very polite with business partners and they try to prove themselves as good hosts.

The most unacceptable business action in the Arab business world is the interest rate (Rahman, 2010). Interest rate, by definition, represents the additional income that the lender requires from the borrower. Islam forbids all kinds of interest for the reason that it implies oppression and exploitation. A clear distinction is made between the original business profit (which is desirable) and interest (an undesirable form of acquisition).

Since the beginning of business negotiations, it is expected to generally discuss the history and background of the company, expectations, ways of achieving results, the expected profit, and the overall agreement, and to gradually introduce details related to the job itself (Patai, 2002). If the idea or business project is presented in such a way, Arabs will consider you a reliable and responsible business partner.

### c. Doing business with the Japanese

Japan's religious tradition embodied in Confucianism, Buddhism, and Shintoism is a remarkable basis for the acceptance of scientific and technical achievements because it is based on a high degree of education of people in Japan and it is the basis of Japanese culture.

The basics of Confucian Human Science and the essence of its moral base is reflected in the following principles: collectivism and cooperation & desire for learning and cognition, whose basics are (Varley 2000):

- humanism (zen),
- sense of duties and obligations (ji),
- respect for the elderly (xiao).

Western culture values the principle of the superiority of the individual over the group. In Japanese culture, it's exactly the opposite. The loyalty of an individual to his immediate group is the highest, and not even own interests cannot be above the commitment to the welfare of the immediate community. Firmly advocating attitudes and not deviating from them, even in unimportant matters, in the West represents a strong personality.

The Japanese have the opposite. Ultimatum "either he or I" is completely incomprehensible to them. Managerial style and decision-making in Japanese companies emphasize the information flow and initiatives from lower structures to higher ones, making top management facilitator more than a source of authority, while middle management serves for shaping initiatives and additional stimulus. Basic rules of work code to the Japanese are: never do something that is the job of someone above you, never do anything that jeopardizes the status of others, and never jump over hierarchical barriers (Alston 2005).

### d. Doing business with the Chinese

China is the country with the oldest civilization, which lasts over 6,000 years and is one of the most populous countries in the world. As such, it is rich in different ethnic and cultural heritage influenced by Confucianism and Taoism as dominant philosophical, ethical, and religious directions.

In the business culture of this country pride and honor is an extremely important factor. Both personal reputation and social position depend on it, and its loss would have severe business consequences (Flower, 2010). In Chinese business culture, collectivism is still represented, that's why the other party during the negotiations may have to make a presentation to different people at different levels of the company. It is good that the material for the presentation is black and white because different colors have different connotations to Chinese. The Chinese side will expect the meeting to be led by people at top positions in the company, and interrupting the speaker and breaking into the word is considered indecent (Wenier, 2007).

## CONCLUSION

From everything presented in this paper, it can be concluded that respect for all elements of national culture is very important when entering a certain market. There has been strong evidence to suggest that understanding the behaviors, attitudes, values, beliefs, arts, and artifacts of the host country nationals is a key success factor for organizations operating in different countries. Managers working in different cultures have to explore and identify what

is hidden in the behaviors and actions of people from different cultural backgrounds and value orientations.

There are no uniform rules, nor unique strategies are possible. Differences in cultures are expressed through different relationships to certain concepts, such as time, money, attitude to work, as well as interpretations of non-verbal communication. Also, language barriers are very pronounced, through which even large experienced multinational companies can experience failures, which is evident from the above examples. Therefore, different performance strategies are required, business and market communication, respecting all the differences of a particular culture, which primarily determines the behavior of both business partners and consumers in a particular market.

Knowing the characteristics of business culture and the way of negotiation is an essential precondition for the realization of successful cooperation with foreign partners, and thus appear on the foreign market. Only that way it is possible to achieve successful business cooperation, without the occurrence of any misunderstandings, which may affect the negative outcome of the negotiations. Good intercultural communication ensures dissemination and business development, as well as generating higher levels of profit.

## REFERENCES

- Alston, J. (2005). *Japanese Business Culture and Practices: A Guide to Twenty-First Century Japanese Business*, iUniverse, Inc.
- Cateora, P. R. & Graham, J. L. (2002). *International Marketing, Eleventh Edition*. Irwin McGraw-Hill
- Cohen, S. (2002). *Negotiating Skills for Managers*. McGraw-Hill. Madison. Wisconsin.
- Czinkota, M. & Ronkainen, I. (2004) *International Marketing, 7th Edition*, Thomson South-Western, Mason, Ohio
- Deresky, H. (2003). *International Management – Managing Across Borders and Cultures*. Prentice-Hall, Upper Saddle River, New Jersey
- Flower, K. (2010). *China – Culture Smart!*. The Essential Guide to Customs & Culture.
- Gosselin, T. (2007). *Practical Negotiating: Tools, Tactics and Techniques*. John Wiley & Sons
- Graham J. L. (1985) “The Influence of Culture on the Process of Business Negotiations: An Exploratory Study“, *Journal of International Business Studies*, Spring 85, Vol. 16, Issue 1
- Hall, E. (1959). *The silent language*. New York: Doubleday.
- Hall, E. (1983). *The dance of life: The other dimension of time*. New York: Doubleday.
- Hofstede G. (2001). *Culture’s Consequences, Thousand Oaks*. CA: Sage Publications.
- Hopkins, A.G., (2002). The History of Globalization – and the Globalization of History, A. G. Hopkins (ed.) *Globalization in World History*, Pimlico, Sydney
- Jovančević, R., (2005). *Economic Effects of Globalization and the European Union*, Macron Traffic, Zagreb,
- Parks, C.D., Komorita, S.S. (1998). Reciprocity Research and Its Implications for the Negotiation Process, *International Negotiation*, Vol. 3, Issue 2
- Patai, R. (2002). *The Arab Mind*. Hatherleigh Press.
- Radić, R. (2008). *Strategic Management*. UPS, Banja Luka.
- Rahman, A. Y. (2010). *The Art of Islamic Banking and Finance*. Wiley.
- Rakita, B. (2003). *International Marketing*. Faculty of Economics, Belgrade.
- Robbins, S. (2005). *Essentials of Organizational Behavior*, VIII ed., Pearson Prentice

- Rumenčić, N. (2008). *Business Negotiations with Foreign Partners*. Construction book.
- Salacuse, J. (1991). *Making Deals in Strange Places: A Beginner's Guide to International Business Negotiations*, John Wiley & Sons.
- Sharpe, M., (1990), Harmonizing ethical values in the global village: The public relations professional challenge!, *International Public Review*, Tom 13
- Varley, P. (2000). *Japanese Culture*. University of Hawaii Press.
- Veselinov D.(2008). *Islamic Political Economy*. FPN, Belgrade.
- Wenier, R. & Eagan, A. (2007). *Culture Shock! China: A Survival Guide to Customs and Etiquette*, Marshall Cavendish Corp.



# J. A. SCHUMPETER, A THEORIST OF INNOVATION AND A HISTORIAN OF ECONOMIC SCIENCE

Petr Jiříček<sup>1</sup>   
Zdeňka Dostálová<sup>2</sup> 

DOI: <https://doi.org/10.31410/LIMEN.2020.315>

---

**Abstract:** *The paper commemorates the 70th anniversary of the death of Joseph Alois Schumpeter, the world-renowned economist of Czech-Austrian origin and creator of innovation theory. It analyses Schumpeter's work from the perspective of two aspects, complementing each other in his work: historical economic analysis and entrepreneurial innovation theory. The introduction reveals the genesis of his relation to enterprise, innovation, and the historical economics concept. The historical approach to economics appears in his scientific works at the time of his work at the European universities in Chernivtsi, Graz and Bonn, as well as in his later work at Harvard University. The paper also studies the rise of his innovation theory, first appearing during his work in Graz, Styria, and its gradual reflection in his professional work. The paper shows how these approaches merge in his economic teaching, which is very specific and includes both purely economic and technological and social aspects.*

**Keywords:** *J. A. Schumpeter, Innovation theory, Historical approach.*

---

## INTRODUCTION

The aim of the paper is to commemorate a great Czech-Austrian economist, who was, in addition, endowed with highly appreciated legal historical, and sociological education. For that reason, Schumpeter could become probably the most renowned historian of the economic science. His significance and foresight in the area of future development of the economic science is testified also by the fact that, despite having no systematic mathematical education, he was, together with Irving Fisher, the founder and one of the chairmen of the American Econometric Society (Christ, 1983). He broadened the perspective of the economic science also into the field of applied sociology, initiating further development and influencing a number of students and followers. He is highly regarded and admired especially in the USA where he had eminent followers, a number of them Nobel laureates in economics. Besides, he is considered the founder of the innovation theory, in which entrepreneurs dynamically shift economic development by applying the results of technological research and development. His postulate of the so-called creative destruction found continuation in modern economic growth theories. He is also respected in Japan where, as Japanese scientists themselves admit, his innovation theory stimulated the Japanese technological and economic miracle. Although still underappreciated in Europe and his native country, he is regarded one of the largest economists of all times.

Josef Alois Schumpeter was born in an old entrepreneurial family in Třešť in Moravia. Since the Middle Ages, there had been a strong entrepreneurial environment, consisting especially of

---

<sup>1</sup> College of Polytechnics Jihlava, Tolsteho 16, 58601 Jihlava, Czech Republic  
<sup>2</sup> College of Polytechnics Jihlava, Tolsteho 16, 58601 Jihlava, Czech Republic



textile production – weaving, fulling, dyeing, but also silver mining and traditional agriculture, pond farming, and forestry. The entrepreneurial spirit had been brought there by the rich Münzmeisters of Kutná Hora, later ennobled Protestant entrepreneurs Venclíks of Vrchoviště, who were later the owners of the Třešť domain. After the destruction caused by the Thirty Years' War, the enterprise development continued during the dominion of the Styrian family of the Counts of Herberstein and in the 19<sup>th</sup> century during the reign of the Tyrolean family of barons of Sternbach. The Schumpeter family, whose members had repeatedly held the post of mayor, was of a mixed German-Czech origin. Since the Middle Ages, the community in Třešť had been characterized by ethnic and religious diversity: there was a strong Jewish business community, both Catholic and Lutheran German population, and Evangelical and later Catholic Czech majority.

The economic environment of the market town, which utilized the proximity of the rich royal mining town Jihlava for its sales, the entrepreneurial spirit of his ancestors, and also inherited genes undoubtedly influenced young Schumpeter and his future scientific orientation strongly. His great grandfather Josef Schumpeter founded the first textile factory in Třešť in 1832 and his grandfather Alois Schumpeter, with whom he was frequently in contact in his childhood, expanded the factory and innovated the production. His uncle Karel Schumpeter even expanded to foreign markets when he, together with the Jewish businessman Bethold Münch, founded the first textile factory in Serbian Paraćin, which produced Oriental cloths and supplied them to Turkey. Schumpeter's uncle Karel Schumpeter also contributed exceptionally to the economic development of the region when in 1899 he initiated the establishment of a joint-stock company that built a railway from Kostelec u Jihlavy through Třešť and Telč to Slavonice, later linked over the border to the Austrian railway from Fratres to Vienna (Shionoya, 1990).

Born on 8 February 1883, Josef Alois Schumpeter leaves Třešť for Jihlava with his mother at the age of four, after the death of his father. Later, they move to their relatives to Austrian Gratz. Then he is accepted for studies at the prestigious Theresian Academy in Vienna, which he graduates from with honours, and continues to study at the Faculty of Law of the Vienna university. However, during his studies at the Faculty of Law and Political Science, he already attends seminars of a renowned economist of Moravian origin, Eugen von Böhm-Bawerk (born 1851 in Brno, his ennobled great uncle was an economic administrator in the Kostelec domain in Bohemia), who was a representative of the so-called *Austrian Neoclassical School*. He graduates there in 1906 and gains a Doctor of Law degree, but his interest in further work of the Austrian School members (e.g. Carl Menger, a son of a Czech businessman from Cheb) brings him to deeper studies of economics in England with Alfred Marshall and Francis Edgeworth. Graduation from Theresianum, where the languages of instruction were Latin, Greek, Italian, and English, and profound knowledge of the law, political science, and history from his studies at Vienna university foreshadow his further direction in the economic science. By his scope of classical knowledge, he differed from his great contemporaries, the macroeconomically oriented J. M. Keynes or the mathematically oriented Irving Fisher.

After the study stay in England and legal practice in Cairo, Egypt, he returns to Austria and in Leipzig, 1908, publishes his first extensive publication in the style of the Austrian Neoclassical School called *Das Wesen und der Hauptinhalt der theoretischen Nationalökonomie* (Schumpeter, 1908). This book serves for Schumpeter's habilitation at the Vienna university. After habilitation, in the autumn of 1909, J. A. Schumpeter gains a position of a professor of political economy at the Faculty of Public Administration and Law of Frans Joseph University

in Chernivtsi (Czernowitz), the capital of the Ukrainian region of Bukovina, then part of the Austro-Hungarian Empire.

## LITERATURE REVIEW

In the Czech Republic, the work of J. A. Schumpeter is studied from the perspective of its dynamic conception of economic cycles caused by innovations by Sirůček (2016) within his analysis of the long Kondratiev waves theory in relation to the present globalisation. He clarifies economic cycles as the impact of fluctuations caused by unevenly distributed entrepreneurial innovations. A brief analysis of Schumpeter's teachings and their position within economic science is presented by Holman (2017), who regards him, due to his thorough classical education and a wide overview, a strong and unique individuality independent of other schools of economy and trends. The relationship of Schumpeter and the Austrian school is analysed by Klaus (2008), who also highlights his importance in the analysis of the history of economics. Storožuk and Djačuk (2011) analyse the origins of Schumpeter's innovation theory and his scientific research at the Czernowitz University, the centre of Austro-Hungarian Bukovina before the World War I. A complete bibliography of Schumpeter's work, including reviews, is presented by Hedtke (2004) within Schumpeter archive held on the website. Shionoya (2006), who also studied the history of the Schumpeter family in Třešť, regards him as one of the founders or inspirators of evolutionary economics. The relationship of sociology and economics in Schumpeter's work was studied by Swedberg (1991), who appreciates his complex approach within social sciences. The latest compendious capture of the life and work of J. A. Schumpeter was carried out by Allen (2017), who refers to the magisterial and paradoxical Schumpeter and claims that his work is equalled in its monumental significance only by his personal trials and tribulations.

## RESULTS

The first work that contains both Schumpeter's approaches to scientific research is the book *Theorie der wirtschaftlichen Entwicklung* (The Theory of Economic Development), that opened a door to the international academic world for him. As Schumpeter himself mentions in the introduction to its English translation by Redvers Opie, he started to conceive it in Czernowitz and finished it after moving to Styrian Gratz. Here, he teaches at Karl-Franzens-Universität (University of Graz) and at Technische Universität Graz (Graz University of Technology). Compared to the static concept of Walrasian equilibrium on the market, the book arrives at a dynamic concept of economy when the equilibrium is only one of the possible states and moving towards the static equilibrium is regularly deflected by dynamic market forces, represented by the behaviour of entrepreneurs-innovators (Sirůček, 2016). This new Schumpeter's dynamic concept of economics appears in the period of revolution in theoretical physics and the new dynamics in the form of Planck's quantum theory and Einstein's special theory of relativity appear on the scene, implying the scientific advancement and technological development of the industry in the 20<sup>th</sup> century. In the Schumpeter's definition of the dynamic conception of the capitalist market economy, the entrepreneur-innovator plays the central role. By combinations (as Schumpeter originally called innovations) of production factors, i.e. by 1) new goods production, 2) new production method introduction, 3) new market acquisition, 4) new raw material or mineral acquirement, and 5) organisation change or obtaining monopoly, this dynamically acting entrepreneur can then decrease production costs and make profit. On the other hand, an exceptional success of an innovating entrepreneur attracts also the other entrepreneurs not only in the same field but also from other industries, where the demand conversely decreases due to the negative development of factors. The arrival of both groups of

these entrepreneurs, who have the necessary financial capital, leads to a boom of the innovated field, and, multiplicatively, of the entire capitalist economy. After some time, however, these innovations are exhausted and the whole cycle is repeated in the capitalist economy at a new, higher level. In the book, Schumpeter does not omit his historical approach, when in Chapter III, devoted to capital and credit, he evaluates the risk in innovation funding. He compares it to the Greco-Roman *foenus nauticum*, nautical interest, that an Antique investor required when funding a hazardous sea voyage to find new markets. Next in Chapter V, devoted to the relation of capital and interest, he writes about the Antique (Aristoteles) and medieval conception of the interest (Schumpeter & Opie, 1934). Schumpeter's thoughts on the profit of entrepreneur-innovator presented in the work are newly discussed by Nordhaus (2004).

In 1912 Schumpeter abandons theoretical economics and starts focusing on the social aspect of economics. For the first time, he also turns in more detail towards the history of economic science when he publishes *Epochen der Dogmen – und Methodengeschichte* (Economic Doctrine and Method). There he analyses the economic thinking of great minds of Antiquity (Plato, Aristoteles) and the Middle Ages (Thomas Aquinas, Albert Magnus, Duns Scotus), whose work he could read in the original. He deals in detail with the thoughts of great philosophers and economists of the modern age (i.e. Hobbes, Bentham, Locke, Hume, Quesnay, Adam Smith, Mill, Ricardo, Malthus, and Marx) and concludes by an analysis of the thoughts and opinions of founders of various trends of the neoclassical school (Jevons, Menger, Wieser, Marshall, Böhm-Bawerke, Pareto, Walras). At the end, he returns to his reflections on the capitalistic society development, mentioning Juglar, the author of one of the economic cycle theories, which he later engaged in himself in his scientific work (Schumpeter, 1954). In his work, he endeavours to define the relations between economic theories and social sciences, showing deep knowledge of works and ideas of philosophers and economists from Antiquity to the present.

After a break caused by the World War I when he deals with the theory of the state finance and published anti-war memoranda (Hedtke, 2004), Schumpeter continues in his professional orientation at the social aspect of economics. At that time, in 1919, he published his for a long time last extensive scientific work *Sociology of Imperialism*. In the book, he responds to the impact of imperial efforts of monarchies on the political, economic, and social world order. Again, he goes far back into history and analyses ancient and medieval empires, and examines in detail British imperial policy after 1688. He arrives at a conclusion that the absolutist monarchies are outdated and the development is moving towards a modern capitalistic state that uses free trade and free capital movement. His penchant for social economics continues when he examines social classes that become the bearer of economic progress under the given conditions. Based on an examination of the functioning of the economy of the ancient empires (Egypt, Persia, Assyria, Rome, the Carolingian Empire), he characterizes the economies of these absolutist states as warring economies that would have collapsed if further territories had not been exploited (Schumpeter, 1919). Here, Schumpeter returns to his innovation theory, pinpointing the innovating entrepreneur as the stimulus of the economic growth of the capitalist society, as opposed to absolutist empires. He states, foreshadowing the concurrent *path dependency* theory of the institutionalist school (North, 1990), that the economy of a national state and the level of its development are influenced by the social structure of the society and by cultural tradition.

In 1927, Schumpeter publishes another extensive work, which links the social and economic aspect of the social sciences, called *Social Classes in Ethnically Homogenous Environment*. The work, which Schumpeter highly appreciates personally, builds on his previous publication

*Sociology of Imperialism.* Once again, Schumpeter uses the historical approach to deal with the topics of the origin of the antique nobility (Byzantium, Mongolia), the medieval nobility in Norman southern Italy, the Saxon nobility in Germany, and the aristocracy in England. The analysis continues with the topic of the origins of ownership (capitalistic) class in France and England (Schumpeter, 1955). In the work, Schumpeter summarizes the causes of the rise of social classes, one of the basic causes being the tendency towards innovations. If a successful innovation occurs, the innovator succeeds, which influences the overall success of his family and gradually of the entire social class his family belongs to.

The book *Business Cycles*, published in 1939, was conceived as a continuation of the 1911 *Theory of Economic Development*. It has a distinctive subtitle “A Theoretical, Historical and Statistical Analysis of the Capitalist Process”. Here, Schumpeter continues developing his innovation theory in a much more conceptual way. He again highlights his concept of an unbalanced economy, different from the neoclassical school. He arrives at a definition of the four basic economic cycles that disturb the equilibrium – boom, recession, depression, and recovery. The historical approach is manifested in this work as well, especially in Chapters 6 and 7 (Historical Outlines I and II), where Schumpeter analyses the development of the capitalistic society in Great Britain, Germany, and in special detail in the USA after 1780 to prove that cyclical development is the basic attribute of capitalistic economy. In the topic of the innovation theory evolution, he unfolds his view of the dynamic conception of the capitalistic economy development, now in relation to cyclic waves of its development, and builds on works presented by Kondratiev, Kuznets, Juglar, and Kitchin. In Chapter 4 he already talks about the innovation theory, he distinguishes between the concepts of invention and innovation, and defines their relationship. He presents the idea of clustering and time cumulation of innovations, which upset the considered transition to a static state of equilibrium in economy, which leads to a period of conjuncture. The depression stage is then considered an adaptation to the already exhausted previous innovations (Schumpeter, 1939). When explaining the cyclical development of economy, Schumpeter applies the historical approach again: each period of the economic cycle in history always has a specific cluster of innovations. We can find inspiration by this work in the modern Neo-Schumpeterian theory of growth (Aghion, Howitt, 1992) and in publications dealing with the so-called evolutionary economics (Fagerberg, 2003; Aghion, Festré, 2017).

His work *Capitalism, Socialism and Democracy* from 1934 is already characterized by an interdisciplinary approach and we can see that it unites all the three Schumpeter’s research methods – historical, sociological, and theoretical economic view. To provide the context of contemporary economic theories dealing with innovation, we can mention that in the relatively short Chapter 7, Schumpeter defines the process of creative destruction. He considers it a phenomenon inherent in capitalism, related to qualitative changes that occur in economy as well as in biological evolution (Schumpeter, 2004). In the next part of the work dealing with the topic of monopolies the author comes to a conviction that innovations occur more often in monopolist structures than in the economic fields where free competition prevails. Large and economically strong companies have easier access to finance and can innovate on a larger scale than small and medium-sized companies. A monopoly can also protect itself better against innovative product imitation and keep the technological lead for a longer time (Sirůček, 2016). The European Union cohesion policy, in fact, adheres to this Schumpeter’s thesis by supporting financing programmes to promote innovation especially for the segments of small and medium-sized companies and micro-companies. As for the author’s historical approach to the topic, it is applied in detailed analysis of the capitalist society evolution.

The culmination of his scientific work is the posthumously published monumental work *History of Economic Analysis*, presenting the genesis of economic science development from antiquity to the present. It is not possible to briefly cover all the topics, thoughts and reflections contained in this work of 1322 pages. One of the basic topics permeating the work is the relation of economics and psychology, economics and philosophy, and economics and sociology. As for the content, the historical analysis is done consistently in the phasing Schumpeter used in the previous works. The five parts contain the economic analysis methodology, history of economic doctrines from the antiquity to the economic modern era, the analysis of economic knowledge evolution from the beginnings of capitalism in 1776 – 1870, the development in 1870 to the World War I onset in 1914, and the analysis of economic schools in the modern capitalistic era from 1914 to Schumpeter's present day (Schumpeter, 1994). To this day, the book is rightly considered a foremost work in the field of research on the economic thinking evolution.

## **FUTURE RESEARCH DIRECTION**

Another part of Schumpeter's scientific interest was the area of monetary economics and banking. Future research should therefore be directed towards the analysis of his scientific approach to the role of money in the economy. This topic permeates his scientific work. His book *Das Wesen des Geldes*, planned for publication in reaction to Keynes's theory of capital and interest but only published posthumously in 1985 with an English translation called *Treatise on Money* published in 2014 (Schumpeter, 2014), was to become the climax of his monetary theory. Further research should deal with the question of how his work reflected the theoretical foundations of monetary economics, influenced by the Austrian School and Schumpeter's post gradual studies with Alfred Marshall, his teaching of monetary economics and banking at the University of Bonn and at Harvard University, and this practical experience with investing in the financial market in Vienna and with managing private Austrian banks—Biederman Bank and Kaufman Bank.

## **CONCLUSION**

The work of Josef Alois Schumpeter is characteristic by its wealth of thoughts. It combined deep education, an undying desire for knowledge, practical experience, and possibly also the inherited gift of his family for the enterprise. The above analysis demonstrates that his historical approach, based on his in-depth knowledge of history in the areas of economics, political science and law, blends in all his major works with the practical knowledge of the entrepreneurial environment functioning, enhanced by Schumpeter's contacts with top executives of the Japanese, European and American industry. Through the synergy of both the approaches, his innovation theory gradually evolved and was refined in accordance with the economic wave theory in the conceptually conceived book *Business Cycles*. The culmination of the multidisciplinary conception of his economic understanding of history can be found in his work *Capitalism, Socialism and Democracy*, which, apart from both the above-mentioned aspects, includes also an original sociological approach. Both his work and his approach to scientific research and study of the topic inspired his numerous famous students, Nobel laureates in economics, and his followers from the field of new, modern schools of the economic thought.



## ACKNOWLEDGMENT

The paper was supported by the College of Polytechnics Jihlava grant No. 117004/2007 “Ekonomický výzkum inovativních firem v regionu” (*Economic research of innovative companies in the region*).

## REFERENCES

- Aghion, P. & Howitt, P. (1992). A Model of Growth through Creative Destruction. *Econometrica*, 60(2), 323–351.
- Aghion, P. & Festré, A. (2017). Schumpeterian growth theory, Schumpeter, and growth policy design. *Journal of Evolutionary Economics*, 27(1), 25–42. <https://doi.org/10.1007/s00191-016-0465-51>
- Christ, C. F. (1983). The founding of the Econometric Society and *Econometrica*. *Econometrica*, 51, 3–6.
- Fagerberg, J. (2003). Schumpeter and the revival of evolutionary economics: an appraisal of the literature. *Journal of Evolutionary Economics*, 13(2), 125–159.
- Hedtke Ulrich (2004). Schumpeter archive. Forschungsbericht zu Schumpeters friedenspolitischen Initiativen in den Jahren 1916–1918, <http://www.Schumpeter.info>
- Nordhaus, W. D. (2004). Schumpeterian Profits in the American Economy: Theory and Measurement. *Working Papers from National Bureau of Economic Research, Inc.*, No 10433, <https://EconPapers.repec.org/RePEc:nbr:nberwo:10433>
- NORTH, D. C. (1990). Institutions, Institutional Change and Economic Performance. Cambridge: Cambridge University Press.
- Shionoya, Y. (1990). Schumpeterova rodina v Třešti. *Politická ekonomie*, 38 (11), 1378–1386.
- Schumpeter, J. A. (1908). Das Wesen und der Hauptinhalt der theoretischen Nationalökonomie. Leipzig: Duncker&Humblot.
- Schumpeter, J. A. (1919). Sociology of Imperialism. Germany: Archiv für Sozialwissenschaft und Sozialpolitik.
- Schumpeter, J. A. & Opie, Redvers. (1934). Theory of Economic Development: an inquiry into profits, capital, credit, interest, and the business cycle. New Brunswick: Transaction Books.
- Schumpeter, J. A. (1939). Business Cycles. A Theoretical, Historical and Statistical Analysis of the Capitalist Process. New York: McGraw-Hill Book Company.
- Schumpeter, J. A. (Ed.). (1954). Economic Doctrine and Method. New York: Oxford University Press.
- Schumpeter, J. A. (1955). Social Classes in Ethnically Homogenous Environment. Cleveland: Meridian Books. The World Publishing Company.
- Schumpeter, J. A. (Ed.). (1994). A History of Economic Analysis. New York: Routledge.
- Schumpeter, J. A. (Ed.) (2004). Kapitalismus, socialismus a demokracie. Brno: Centrum pro studium demokracie a kultury.
- Schumpeter, J. A. (Ed.). (2014) Treatise on Money. Aalten: Wordbridge Publishing
- Sirůček, P. (2016). Polozapomenuté postavy ekonomického myšlení – J. A. Schumpeter. *Acta Oeconomica Pragensia*. 24 (3), 78–86. <https://doi.org/10.1826/j.aop.538>
- Swedberg, R. (2007). J. A. Schumpeter, his Life and Work. Cambridge: Polity Press.





# CHALLENGES IN DEVELOPMENT OF SMART CITIES IN WESTERN BALKANS

Vladimir Tomašević<sup>1</sup>   
Luka Latinović<sup>2</sup>

DOI: <https://doi.org/10.31410/LIMEN.2020.323>

---

**Abstract:** *Western Balkans have several definitions depending on the lens through which this concept is observed. The definitions can be economic, political or economic. The analysis is further complicated by the partial presence of the European Union, various economic treaties and unresolved conflicts as well as the fact that the largest urban populations are scattered without definitive trends. Cities continue to attract new arrivals as a result of the direct centralization tendencies throughout the region and result in an unsustainable growth of cities that in turn result in economic and social complications. This article uses a matrix classification model to classify the existing literature on cities in Western Balkans, identify specific conditions for particular groups and proposes different approaches for groups of cities in order to maximise the effects of smart cities projects so that doubling and significant overlapping in financing are avoided.*

**Keywords:** *Western Balkans, Smart cities, Challenges, Urban development, Infrastructure.*

---

## INTRODUCTION

The Balkan Peninsula, geographically speaking, is region of Southeast Europe bounded by the Adriatic Sea to the west, the Mediterranean Sea (including the Ionian and Aegean seas) Marmara Sea to the south, Black Sea to the east, and rivers Sava, Kupa, and Danube to the north (Jelavich, 1999). This is the only parameter with which all nations that are in this region agree. In fact, there is no wide consensus on what the nations are<sup>3</sup>. Geographically speaking, Western Balkans are comprised of the following countries: Slovenia, parts of Croatia, Bosnia and Herzegovina, parts of Serbia, Montenegro, North Macedonia, and Albania (De Agostini, 2004). Politically, Slovenia and Croatia are traditionally exempt from this categorization as they are members of the European Union (De Munter, 2020). Therefore, it can be concluded from the aforementioned that a model for defining “Western Balkans” is needed before further studies can be conducted.

Cities as a social phenomenon are another dimension to this research. Given that it is estimated that over 72% of European inhabitants live in urban areas, several studies have been conducted in order to classify them, and traditionally, the focus has been on large metropolitan areas (Taylor, 2003). However, Giffinger et al. (2007) correctly identify that there is “a deficit in literature ... by exploring medium-sized cities and their perspectives for development” (p.3), and thus have provided a model for evaluating generic European cities, particularly as their research focuses on cities with 100,000-500,000 inhabitants which constitute approximately

---

<sup>1</sup> Faculty of Engineering Management, Belgrade, Bulevar vojvode Mišića 43, Belgrade, Serbia

<sup>2</sup> Faculty of Engineering Management, Belgrade, Bulevar vojvode Mišića 43, Belgrade, Serbia

<sup>3</sup> Kosovo is an integral part of Serbia and its designation is without prejudice to positions on status, and in line with UNSCR 1244 and the ICJ Opinion on the Kosovo Declaration of Independence.

44% of the urban population in Europe (Nordregio et al., 2004). Additionally, Lopez & Oliviera (2017) prove that “beyond doubt that small and medium sized cities do not lag behind the large ones when it comes to “smart cities” and that they have huge potential to make their mark in this concept” (p. 624). Therefore, it can be concluded from the aforementioned that a specific model for defining and assessing cities in the “Western Balkans” is needed before further studies can be conducted.

## DEFINING THE WESTERN BALKANS

In order to achieve a certain regional identity and cooperation, it is important to understand common features and challenges that each country has to overcome. Achieving consensus on these common factors is one of the conditions to pave the way for overcoming common obstacles. The Balkans geographically include a large number of countries (bordering Italy in the West, Ukraine in the Northeast and Turkey in the Southeast) involved in numerous historical and political processes in the region. The Balkans have a very turbulent history associated with wars and ethnic conflicts. In the historical literature, one can find the Balkans described even as a "European part of Turkey". Delevic (2007) argues that “This has inhibited a sense of belonging to a particular regional community, and hence also the development of any regional strategy” (p. 11). A great number of dividing lines, spheres of interest and integration projects make it difficult to talk about clear boundaries in the same categories like, for example, in South America. Geographically, the Western Balkans are comprised of the following countries: parts of Serbia, parts of Slovenia, parts of Croatia, Bosnia and Herzegovina, Montenegro, North Macedonia, and Albania (De Agostini, 2004). Such provisional notion as ‘Western’ is not uncommon in literature. To more accurately determine the set of countries and common factors in question, researchers often add additional notations. Therefore, in modern literature, determinants such as Southeast Europe, Western Balkans, Western Balkan Six are most often encountered. However, each of these notions, as Entina & Pivovarenko (2020) argue, “include different sets countries depending on the political contextualisation”. Kolstø (2016) noted that the term ‘Balkans’ was reinserted into the official political lexicon of Europe from the late 1990s onwards, however with the aforementioned specifier ‘Western’. As he argued “‘The Western Balkans’ became the correct designation in the EU for non-members located in the south eastern part of Europe. At that time the word ‘Balkan’ was used increasingly less for countries in the southern, eastern and northern parts of the peninsula: they had become EU members” (Kolstø, 2016). Bulgaria and Romania became EU members in 2007. Among the other post-communist European states, Croatia, as ‘late transitionist’, was also able to successfully follow this path and became a member in 2013. This observation by Kolstø can be reflected in research by Croatian authors. An example would be research by Devetak (2019) who used the term Western Balkans to denominate the geopolitical area that includes the former republics of Yugoslavia (Bosnia and Hercegovina, North Macedonia, Montenegro, Serbia and Albania). Furthermore, Devetak (2019) argues that the Western Balkans corresponds to “neither to geographic nor geopolitical realities” and that “it was “invented” by the EU in order to divide Bulgaria and Romania that were supposed to become the EU members from other Balkan countries”.

Similarly, on a question of whether the Western Balkans can be classified as a separate region, theorists from the Copenhagen School, Barry Buzan and Ole Waever, in 2003 also gave a negative answer. They stated that “Due to the asymmetry of power between the actors in and around the Balkans, it is in the hands of the external powers to ‘force’ the Balkans into the European complex” (p. 377). They argued that there were no strong regional or global powers here, which would be the key political and security “stakeholder”. However, although Slovenia

e.g., joined the EU in 2004 and only partially belongs to the Balkans, geographically both Slovenia and Croatia still belong to the Western Balkans and share similar challenges with neighbouring countries. Furthermore, if things are viewed through this perspective, of the common challenges that these countries need to overcome in order to prosper economically in these economically volatile times, it could be argued that there are more than enough elements going in favour of cooperation voluntarily. If the Western Balkans were seen as an emerging region in transition, then it is obvious that the economic development is underway and, in such an environment, cooperation should be seen as an obvious choice, rather than the last option imposed externally by geopolitics. In addition, the Regional Cooperation of the Western Balkans is one of the cornerstones of the European Union's policy of conditionality towards this part of Europe. This means that regional cooperation is the *conditio sine qua non* for the accession of countries to the EU. Having that in mind, the paper by Beširević & Cujzek (2013) defines the Western Balkans as a region that includes the countries of the Stabilization and Association Process, which are Albania, Bosnia and Herzegovina, Montenegro, Croatia, Kosovo under UN Declaration 1244, Macedonia and Serbia. Although different countries, as shown, try to tailor the region to suit their own political agendas, for the purpose of this paper the Western Balkans will be regarded as the region comprised of all countries of the former Socialist Federal Republic of Yugoslavia with the addition of Albania. This includes Serbia, Slovenia, Croatia, Bosnia and Herzegovina, North Macedonia and Albania.

## DEFINING THE SMART CITY CONCEPT

Abandonment of rural areas in favour of cities has led to the unprecedented challenges of urban sustainability (Han et al., 2017). Information and communication technologies (ICT) have already emerged as pivotal tools in coping with these challenges. These three major trends: urbanisation, sustainability and ICT are constituents of a long-term vision called 'Smart City'. Although there is no generally accepted definition, the concept of a smart city could be described as a comprehensive and long-term approach towards sustainable urban living, while respecting the environment. It is a paradigm related to cities that develop cyber-infrastructure ("smart grids", ICT, intelligent transport systems, etc.) with the aim to foster sustainable economic growth and better quality of life (Bibri & Krogstie, 2019); reduce generated pollution; improve natural resources and waste management (Bueno-Delgado, 2019), while preserving competitiveness in an increasingly globalised environment (Miłaszewicz, 2014). The importance of this concept is also reflected in regional and urban development policy of the European Union, where the "greener" technology is recognized as an advantage in reducing greenhouse gas emissions and promoting the city's collective intelligence and innovation. However, due to different economic and geographical characteristics, each urban environment has different resources and specific local problems. Therefore, the methods for the development and implementation of the smart city concept also differ. Mattoni et al. (2015) believe that the Vienna Polytechnic University and the University of Ljubljana developed a definition of Smart City that seems to have led to the first change of perspective and introduced a new paradigm of urban living. Six "axes" were introduced, along which the "level of smartness" of seventy Central European cities could have been evaluated, not only in terms of ICT implementation but also in terms of mobility, environmental quality, social life, governance, economy and in general, the quality of life. Different cities have developed different methods, strategies, models and frameworks for their implementation of this concept. It is foremost necessary to understand which determinants make the main bottlenecks in existing urban practices. As Bibri & Krogstie (2019) explain, "this involves identifying the stumbling blocks on the way and the key stakeholders that should be involved to drive change, as well as developing and assessing the policy pathway in terms of planning practices and

development strategies necessary to achieve the future outcome". Additionally, it should be noted that despite the common belief, "smart" does not necessarily mean or include "ICT".

## FRAMEWORK FOR SMART CITIES CLASSIFICATION

In order to provide a theoretical contribution to the intercity and regional cooperation and "know-how" dissemination between Western Balkans' cities, this paper classifies them based on their common sustainability challenges. There are also several sustainability problems common for all Western Balkans' countries and cities such as population aging and decline (Eurostat, 2021), increased social cohesion problems, political instability and economic recession. Cities were classified into four major groups: capitals, ports, coastal cities and, former communist industrial centres. It should be noted that Table 1 does not include all, but the most representative cities, regarding the common challenges and that the former communist industry centres also include all Capitals.

**Table 1.** Matrix of Western Balkan cities based on common attributes and challenges in smart city transition

	Cities	Common challenges
<b>Capitals</b>	Belgrade (RS) Zagreb (CRO) Ljubljana (SLO) Sarajevo (BiH) Podgorica (MN) Skopje (MK) Tirana (AL)	Excessive immigration leading to the undirected expansion beyond long-term city plans. The pace of urbanisation with traffic congestion and pollution leads to deteriorating quality of life. Frequent intertwining of city and state interests and jurisdictions leading to inefficient investing in projects needed by these cities.
<b>Ports</b>	Novi Sad (RS) Koper (SLO) Split, Rijeka (CRO) Bijela, Tivat, Kotor (MN) Durrës (AL)	Port management needs to introduce environmental and social objectives. Intertwining of terminals and railway, road and ship traffic. Emphasis on logistics and traffic organisation in already congested areas.
<b>Coastal cities</b>	Koper (SLO) Rijeka, Pula, Split, Dubrovnik (CRO) Herceg Novi, Kotor, Tivat (MN) Durrës (AL)	Sustainability of coastal cities highly threatened by the climate crisis and mass tourism. Cruise tourism creates large influx of tourists in a short time creating significant logistical problems. Water consumption and waste management issues. Excessive dependence on tourism, which proved to be serious disadvantage during the COVID19 pandemic.
<b>Former communist industrial centres</b>	Valjevo, Smederevo, Cacak, Kragujevac, Krusevac (RS) Velenje, Maribor (SLO) Buje, Karlovac, Bjelovar, (CRO) Banja Luka, Mostar, Bihac, Tuzla (BiH) Cetinje, Niksic (MN)	Former communist industry went through a mass privatisation. New companies are not interested in investing in infrastructure and regarding cities as a one-time resource to extract money while creating an ecological Ponzi scheme. The major challenge is to force companies to invest in long-term infrastructure projects that go in line with the smart city concept.

## CONCLUSION

The outcome of urbanisation can be perceived positively, with urban areas being considered as the backbone of the Western Balkans economy and development, boosting creativity and innovation. However, it can be perceived negatively, with overcrowded and congested living and traffic areas, excessive use of resources, irrational consumption patterns, overproduction of waste, air pollution, unemployment, poverty, rural decay, migration, etc.

## REFERENCES

- Beširević, N., & Cujzek, I. (2013). Regionalna politika Europske unije prema Zapadnom Balkanu - dosezi i ograničenja. *Politička Misao: Croatian Political Science Review*, 50(1), 155–179.
- Bibri, S. E., & Krogstie, J. (2019). Generating a vision for smart sustainable cities of the future: a scholarly backcasting approach. *European Journal of Futures Research*, 7(1), N.PAG. <https://doi.org/10.1186/s40309-019-0157-0>
- C:\home\luka\pCloudDrive\Fakultet\Naucni radovi - Luka\TomaĀjeviĀ\Challenges in Develpoment of Smart Cities in Western Balkans2.doc
- Bueno-Delgado, M.-V., Romero-Gázquez, J.-L., Jiménez, P., & Pavón-Mariño, P. (2019). Optimal Path Planning for Selective Waste Collection in Smart Cities. *Sensors*, 19(9), 1973. <https://doi.org/10.3390/s19091973>
- Buzan, B., & Waeber, O. (2013). Regions and powers: The structure of international security. In *Regions and powers: The structure of international security* (pp. 377-378). Cambridge: Cambridge University Press.
- Delevic, M. (2007). Chaillot Paper n° 104 - Regional cooperation in the Western Balkans. Paris: Institute for Security Studies.
- Devetak, S. (2019). Reconciliation - a Prerequisite for the Integration of Western Balkans in the Eu Stream of Values. *Balkan Social Science Review*, 14, 179–201.
- Entina, E., & Pivovarenko, A. (2020). Russia's Foreign Policy Evolution in the New Balkan Landscape. *Politička Misao*, 56(3-4), 179–199. doi:10.20901/pm.56.3-4.08
- Eurostat. (2021). Selection of figures on the Western Balkans. Available at: <https://ec.europa.eu/eurostat/news/themes-in-the-spotlight/western-balkans-2019> Accessed: 2/27/2021.
- Han, J., Meng, X., Zhou, X., Yi, B., Liu, M., & Xiang, W.-N. (2017). A long-term analysis of urbanization process, landscape change, and carbon sources and sinks: A case study in China's Yangtze River Delta region. *Journal of Cleaner Production*, 141, 1040–1050. <https://doi.org/10.1016/j.jclepro.2016.09.177>
- Kolstø, P. (2016). 'Western Balkans' as the New Balkans: Regional Names as Tools for Stigmatisation and Exclusion. *Europe-Asia Studies*, 68(7), 1245–1263. <https://doi.org/10.1080/09668136.2016.1219979>
- Mattoni, B., Gugliermetti, F., & Bisegna, F. (2015). A multilevel method to assess and design the renovation and integration of Smart Cities. *Sustainable Cities and Society*, 15, 105–119. doi:10.1016/j.scs.2014.12.002
- Miłaszewicz, D. (2014). Sustainable Competitiveness – Analysis Of Economies At Various Levels Of Development. *Ekonomia I Prawo*, 13(4), 511. doi:10.12775/eip.2014.036

## ADDITIONAL READING

- De Munter, A. (2020). *Fact Sheets on the European Union* (11). European Parliament. [https://www.europarl.europa.eu/ftu/pdf/en/FTU\\_5.5.2.pdf](https://www.europarl.europa.eu/ftu/pdf/en/FTU_5.5.2.pdf)



- Giffinger, R., Fertner, C., Kramar, H., Kalasek, R., Milanović, N. & Meijers, E. (2007) *Smart cities - Ranking of European medium-sized cities*. Vienna, Austria: Technical University Vienna
- Istituto Geografico De Agostini (Ed.) (2004), *L'Enciclopedia Geografica – Vol. I*, Italia: De Agostini
- Jelavich, B. (1999). *History of the Balkans: Eighteenth and Nineteenth Centuries*. Cambridge: Cambridge University Press.
- Nordregio et al. (2004). *ESPON 1.1.1: Potentials for polycentric development in Europe, Project report*, Stockholm/Luxembourg: Nordregio/ESPON Monitoring Committee
- Taylor, P.J. (2003) *World City Network: a Global Urban Analysis*. London: Routledge.

# ROMANIA: THE EFFICIENCY AND PERSPECTIVE FOR TRANSPORT OF PASSENGERS ON RAILWAYS

Clara Elena Muț<sup>1</sup>  
Ciprian Beniamin Benea<sup>2</sup>  
Adrian Negrea<sup>3</sup>  
Săcară-Onita Adina<sup>4</sup>  
Catargi Andra<sup>5</sup>

DOI: <https://doi.org/10.31410/LIMEN.2020.329>

---

**Abstract:** *As main premises related to transport generally indicate, all the more so in Europe, where the prosperity of continent will depend on the capacities of all European regions to maintain full integration in the world economy, competitively; and efficient transport systems are cornerstones to achieve this. In this perspective, this paper is an analysis of the main performance parameters which are necessary to sustain an efficient railway transport system at the national level. The study is based on data and information centralized by The Authority for Railway Reform (Autoritatea pentru Reforma Feroviara – ARF) during three years, when there were in force contracts of public transport services related to people transport on railways (January 2016 –September 2019).*

**Keywords:** *Railway transport, Land transport, Sustainable future.*

---

## INTRODUCTION

The railway transport system is a very important resource for a national economy benefitting from a series of natural advantages as great transport capacity, safety, energy efficiency, less harmful for the environment. These advantages place railway transport in a position with greater competitiveness related to costs in the structure of the transport system in general. Only water transport – maritime and inland waterways – is cheaper. As a direct consequence, the economic efficiency of a national transport system is bigger when railway transport is better valued and used.

With all these arguments for railway transport development, the market of land transport is negatively influenced by economic distortions giving an incorrect competitive advantage to road transport face-to-face with railway transport. The main way these distortions act is related to the way these two modes of transport receive public financing. This differentiation is observable in the number of funds to be allocated from public money, or it can be observable in the way the recovering money policy of public costs from the clients of different modes of transport is established. What all types of transport have in common is that they all generate great costs which are used to cover the building and maintenance related to transport infrastructures and the acquisition and maintenance of the necessary means of transport. Having in mind that transports are key components of a national economy, the dimension of

---

<sup>1</sup> SC Interregional SRL - (private railway transport operator), Romania

<sup>2</sup> University of Oradea, Strada Universității nr. 1, Oradea 410087, Romania

<sup>3</sup> University of Oradea, Strada Universității nr. 1, Oradea 410087, Romania

<sup>4</sup> University of Oradea, Strada Universității nr. 1, Oradea 410087, Romania

<sup>5</sup> University of Oradea, Strada Universității nr. 1, Oradea 410087, Romania

these great costs determines that a great part of costs generated by the transport system to be covered from public financing sources.

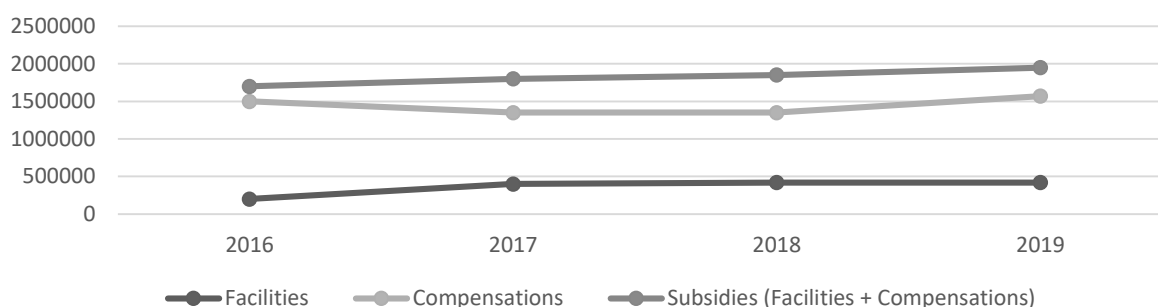
Public financing of railway transport is directed at two main areas:

- railway infrastructure, because the owner is the state and it must provide the necessary funding for development, maintenance, and renewal of railway infrastructure;
- public services related to peoples' transport on railways, when the state imposes a maximum limit on tariffs demanded for public transport services, assuming to compensate the differences between railway transport operators incomes and their operative costs, adding to this difference a profit share of 3%.

## THE EVOLUTION OF FINANCIAL COMPENSATION AT THE NATIONAL LEVEL

In the following table 1, it is presented the financial compensation of railway transport companies from public funds to support passengers' transport on railways and the quantum of facilities given to specific social categories of passengers (retired persons, war veterans, students, revolutionaries, and other special categories). The passengers' railway transport operators in Romania are National Railway Transport Company for Passengers (SNTCF), CFR Calatori, SC Regio Calatori SRL, SC Interregional Calatori SRL, SC Transferoviar Calatori SRL, SC Softrans SRL, SC Astra Trans Carpatic SRL.

**Graph 1. The Evolution of Public Subsidies for 2016-2019 (thousands RON)**



**Source:** <http://arf.gov.ro/web/wp-content/uploads/2019/10/Octombrie-2019-Studiu-analiza-indicatori-OTF>, p. 3

The statistical data indicates a positive funding evolution. For the 2016-2017 period there was a contraction of national compensation quantum, while the total amount of subsidy and facilities had been relatively stable. Starting with 2017, there was a noticeable slow increase, since gratuities for students using railway transport were introduced.

**Table 1. Compensation Allotted to Railway Transport Operators (OTF) for 2016-2019 (thousands RON)**

OTF/Year	2016	2017	2018	2019
SNTFC CFR Calatori	1,060,767,880	1,091,123,810	1,071,738,310	1,141,670,796
Regiotrans	141,549,867	125,590,237	-	-
Regio Calatori	-	6,867,518	138,176,591	146,820,415.30
Transferoviar Calatori	74,471,615.65	69,651,900	75,068,265	83,492,077.50
Interregional Calatori	23,615,425.27	25,525,150	31,273,279	38,390,999.40
Astra Trans Carpatic			9,615,260	14,092,480.60
Softrans	11,680,359	9,414,183.97	8,999,663	11,533,231.20

<b>TOTAL</b>	<b>1,312,085,146</b>	<b>1,328,172,798</b>	<b>1,334,871,368</b>	<b>1,436,000,000</b>
--------------	----------------------	----------------------	----------------------	----------------------

**Source:** <http://arf.gov.ro/web/wp-content/uploads/2019/10/Octombrie-2019-Studiu-analiza-indicatori-OTF>, p. 4

It is important to mention that yearly differences regarding compensation's value directed to railway transport operators of passengers in Romania depend on performance indicators reached by each operator and it is influenced by train/km, passengers/km and minimum mandatory incomes to be achieved.

### The evolution of train/km indicator

The diminution of train-km indicator in 2018 related to 2017 is a direct consequence of a 10% reduction of compensation introduced in October 2017 because of Romania's national budget rectification through government's ordinance no. 63/September 13, 2017, which had allotted for compensation purposes for the year 2018 a quite similar amount as it had been in 2017.

**Table 2.** The Evolution of Train-Km Indicator for 2016-2019

Transport Railway Operator	2016	2017	2018	2019
SNTFC CFR CALATORI	52,146,260	52,229,969.20	49,881,389.40	50,206,425.20
REGIOTRANS	5,993,803.60	5,618,640.60		
REGIO CALATORI	0	327,452.70	6,148,266	6,040,672.30
TRANSFEROVIAR CALATORI	3,273,320	3,404,763.90	3,436,753.10	3,478,431
INTERREGIONAL CALATORI	1,160,330	1,448,714	1,488,369.70	1,734,540.20
ASTRA TRANS CARPATIC			612,593.20	858,984.20
SOFTRANS	643,232.39	636,276.30	544,904.70	646,331.80
<b>TOTAL</b>	<b>63,216,945.99</b>	<b>63,665,816.70</b>	<b>62,112,276.10</b>	<b>62,965,384.70</b>

**Source:** <http://arf.gov.ro/web/wp-content/uploads/2019/10/Octombrie-2019-Studiu-analiza-indicatori-OTF>, p. 7

As a result of this diminution, railway operators had been forced to reduce the numbers of the train they used, and in some cases, some of them had to completely abandon specific portions of un-interoperable sections of circulation.

### The evolution of passengers-km indicator

We can observe an important increase of passengers-km indicator in 2017 after Romania's Government decided to allot transport facilities for students using metro and trains.

**Table 3.** The Evolution of Passenger-Km Indicator for 2016-2018

Transport Railway Operator	2016	2017	2018
SNTFC CFR CALATORI	52,898,759	56,927,403	53,738,628
REGIOTRANS	5,961,396	5,861,407	0
REGIO CALATORI	0	347,81	6,230,398
TRANSFEROVIAR CALATORI	4,350,010	4,536,842	4,745,940
INTERREGIONAL CALATORI	940,675	998,474	1,323,221
ASTRA TRANS CARPATIC	0	0	162,475
SOFTRANS	326,757	359,209	311,924
<b>TOTAL</b>	<b>64,477,597</b>	<b>69,031,145</b>	<b>66,512,586</b>

**Source:** <http://arf.gov.ro/web/wp-content/uploads/2019/10/Octombrie-2019-Studiu-analiza-indicatori-OTF>, p. 8

Main private railway transport companies moving passengers have registered an increase of send travelers in 2016-2018 period related to public railway operator SNTCF CFR Calatori, which had registered a decline on this indicator in 2018 related to 2017, especially due to shortages in rolling material area, overlapping its decision to reduce its number of trains in use, as a consequence of decision regarding the public financing reduction.

### The evolution of trains in use

Observing the precedent tables regarding the number of operated trains and send passengers, the five private railway operators in comparison with the public operator, registered an increase of send passengers

**Table 4.** The Evolution of Trains in Use Indicator for 2016-2019 Period

OTF	2016	2017	2018	2019
SNTFC CFR CALATORI	409,224	414,329	394,775	381,527
REGIOTRANS	85,698	80,821		
REGIO CALATORI		5,071	89,421	86,317
TRANSFEROVIAR CALATORI	47,896	48,149	43,896	43,876
INTERREGIONAL CALATORI	17,425	23,024	23,720	27,904
ASTRA TRANS CARPATIC			1,655	3,472
SOFTRANS	3,149	3,438	2,067	1,674
<b>TOTAL GENERAL</b>	<b>563,392</b>	<b>574,832</b>	<b>555,534</b>	<b>544,770</b>

**Source:** <http://arf.gov.ro/web/wp-content/uploads/2019/10/Octombrie-2019-Studiu-analiza-indicatori-OTF> p. 9

Even they registered a reduction in train-km indicator, after they had taken measures to optimize the use of their available rolling material, rising the degree of occupancy rate for their trains in use.

**Table 5.** The Evolution of send passenger' numbers/operated trains 2016-2018

OTF	2016	2017	2018
SNTFC CFR CALATORI	129.27	137.40	136.12
REGIOTRANS	69.56	72.52	0
REGIO CALATORI	0	68.59	69.67
TRANSFEROVIAR CALATORI	90.82	94.23	108.12
INTERREGIONAL CALATORI	53.98	43.37	55.79
ASTRA TRANS CARPATIC	0	0	98.17
SOFTRANS	103.77	104.48	150.91
<b>TOTAL</b>	<b>447.40</b>	<b>520.58</b>	<b>618.78</b>

**Source:** <http://arf.gov.ro/web/wp-content/uploads/2019/10/Octombrie-2019-Studiu-analiza-indicatori-OTF>, p. 10

It is important to mention that companies whose activity is focused on operating trains with rank Interregio (longer distances) had registered higher value than those operating trains of Regio rank (short distances).

**Table 6.** The evolution of send passengers/exploited km (2016-2018)

Transport operator	2016	2017	2018
SNTFC CFR CALATORI	1,01	1,09	1,08
REGIOTRANS	0.99	1,04	0,00
REGIO CALATORI	0,00	1,06	1,01
TRANSFEROVIAR CALATORI	1,33	1,33	1,38
INTERREGIONAL CALATORI	0.81	0.69	0.89
ASTRA TRANS CARPATIC	0,00	0,00	0.27
SOFTRANS	0.51	0.56	0.57
<b>TOTAL</b>	<b>4,66</b>	<b>5,78</b>	<b>5,20</b>

**Source:** <http://arf.gov.ro/web/wp-content/uploads/2019/10/Octombrie-2019-Studiu-analiza-indicatori-OTF>, p. 11

Transport operators mainly activating trains ranking in Regio classification on un-interoperable (secondary) lines, had registered much higher values for this index related to companies that activate Interregio trains on interoperable lines (main lines). As a matter of fact, InterRegio trains (IR) stop in middle and great cities, while Regio trains (R) stop in all train stations, even in the smallest.

## EXPENDITURES AND INCOMES REGISTERED BY RAILWAY OPERATORS DURING 2016-2019

**Table 7.** The Evolution of average cost (RON)/used kilometer indicator for 2016-2019

OTF	2016	2017	2018	2019
SNTFC CFR CALATORI	39.47	43.20	46.63	52.43
REGIOTRANS	28.03	29.11		
REGIO CALATORI		35.04	28.05	32.53
TRANSFEROVIAR CALATORI	30.71	32.80	31.60	31.47
INTERREGIONAL CALATORI	24.11	25.98	25.29	25.45
ASTRA TRANS CARPATIC			34.74	34.05
SOFTRANS	28	30.03	32.23	31.72

**Source:** <http://arf.gov.ro/web/wp-content/uploads/2019/10/Octombrie-2019-Studiu-analiza-indicatori-OTF>, p. 13

There had been registered a steady increase of costs/used km in the case of SNTCF CFR Calatori, a public railway operator, in comparison with other private operators, which registered relatively stable costs.

**Table 8.** The Evolution of Average Income (RON/km) during 2017-2019 for Trains Ranked as Regio

OTF	2017	2018	2019
SNTFC CFR CALATORI	4.23	5.03	5.58
REGIOTRANS	0	5.41	0
REGIO CALATORI	5.75	5.37	5.51
TRANSFEROVIAR CALATORI	5.63	6.24	5.10
INTERREGIONAL CALATORI	2.51	4.33	0
ASTRA TRANS CARPATIC	0	0	0



SOFTRANS	1.68	1.46	0
----------	------	------	---

**Source:** <http://arf.gov.ro/web/wp-content/uploads/2019/10/Octombrie-2019-Studiu-analiza-indicatori-OTF>, p. 24

For 2017-2019 period the highest average incomes for trains ranking in Regio category were registered by Transferoviar Calatori SRL and Regio Calatori SRL.

**Table 9.** The Evolution of Average Income (RON/km) during 2017-2019 for Trains Ranked as InterRegio

OTF	2017	2018	2019
SNTFC CFR CALATORI	28.65	41.48	41.58
REGIOTRANS	7.89	0	0
REGIO CALATORI	0	9.50	15.46
TRANSFEROVIAR CALATORI	10.40	11.24	16.30
INTERREGIONAL CALATORI	3.24	0	0
ASTRA TRANS CARPATIC	0	14.95	12.81
SOFTRANS	14.04	16.10	14.70

**Source:** <http://arf.gov.ro/web/wp-content/uploads/2019/10/Octombrie-2019-Studiu-analiza-indicatori-OTF> p. 25

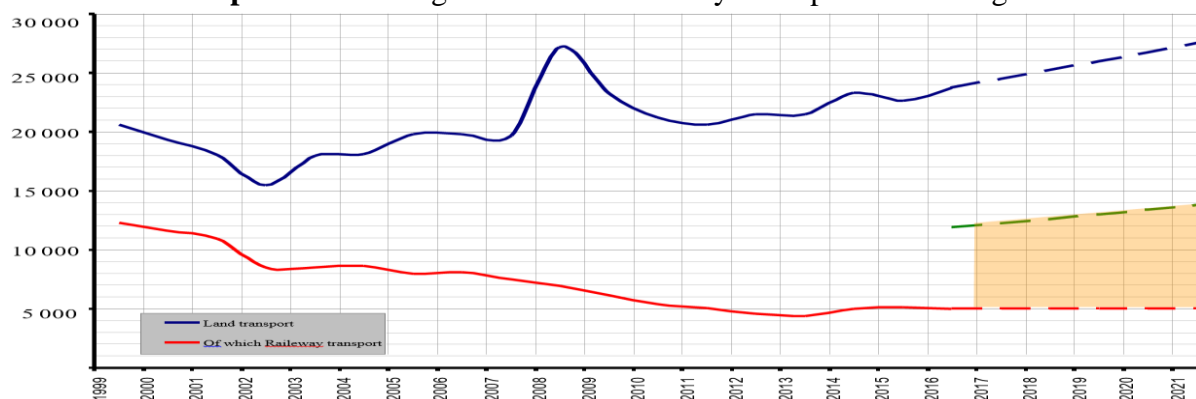
For 2017-2019 period the highest average incomes for trains ranking in Interregio category were registered by SNTCF CFR Calatori SA.

### Perspectives: potential for development

The analysis of performance parameters in need for providing a competitive railway transport at the national level points to the idea that there is possible a rehabilitation and revitalization of passengers railway transport; there manifests at the domestic market level a great degree of expectancies on customers' part, and this is because of:

- demand for public transport directly depends on the domestic economy's evolution, and as economic trends indicate, there could manifest a rising demand for transport services in the period ahead;
- lack of attractiveness and competitiveness of Romanian railway system is *reversible*, as we can observe from the evolution of operators capable to offer performing and suitable services in accordance with customers' expectancies.

**Graph 2.** The Rising Potential for Railway Transport of Passengers



**Source:** Strategia de dezvoltare 2018-2020 Ministerul Transporturilor, pag 43

This graph indicates that there is a potential increase in the number of passengers transported on railways in Romania, based on the assumption there would be registered a trend of economic development in the future. As a consequence, the existence of room for future development could justify the employment of supplementary efforts, but there should be considered some specific actions first.

In order to develop passengers railway transport, there must:

- be provided a higher amount of public money directed to railways, in comparisons with allowances directed to road transport sector;
- be ensured a higher level of performance for trains circulation, from both commercial speed point of view and of punctuality;
- promote of specific services characterized by higher frequency;
- promote high-speed railway transport;
- provision of higher accessibility to and from train stations;
- be ensured a higher level of quality of services in train stations, and on board;
- maintain and develop supplementary projects in order to create a dense railway network.

The rising demand for population mobility is more than obvious, which is due to both technological evolution and population's incomes, and it is triggered by the necessity to provide higher efficacy on the labor market. The society which will move faster can gain more: in this framework, it is needed the implementation modes of transport which can move together more passengers in a time unit using the most efficient types of transport.

Railway transport must become a major component for making trips, on short and medium distances, but for longer distances, too. It will come as a sustainable solution for road infrastructure's decongestion, with all advantages related to transport and environmental costs.

It must be arranged suburban railway transport in important metropolitan areas, in connection with its integration with the urban public transport system, in order to provide comfortable and affordable intermodal transport.

Rising accessibility for train stations through efficient intermodal interfaces related to other types of transport, including privately owned cars (which means parking places available close to train stations) can become part of the solution aiming at rising railway attractiveness.

At the international level, there must be a consolidated international railway transport in order to provide attractive services for passengers who want to travel on long distances; higher speed trains with higher accessibility, because train stations are constructed especially inside the cities, can become a source of higher competitiveness face-to-face with airway transport. As sitting at an important crossroads, Romania can promote the development of longer-distance transport on railways, facilitating in this way the connection between Central Europe and Black Sea, and Northern Europe to Istanbul. This will transform Romania into an important hub in the European transport network.

## CONCLUSION

It is absolutely necessary to consolidate public passengers railway transport services in order to provide the framework for a viable and attractive alternative to road transport using privately owned cars, which would contribute immediately to reducing road infrastructure overloading, rising the flow on national roads; this would bring lower pollution, higher economic efficiency

at domestic level, smaller risk of accidents.

## REFERENCES

- CFR Calatori, <http://www.consiliulferoviar.ro/>; Studiu de piață în transportul de călători  
Development strategy 2018-2020, Ministry of Transport, Bucharest, Romania  
Gherasim T. (2007) Sisteme de transport, Transporturi feroviare, Editura Bacovia, Bacău,  
Romania  
Railway Handbook (2014) - Energy Consumption and CO2 Emissions - Focus on  
Infrastructure European Environment Agency  
Studiu-analiză-indicatori-OTF, Autoritatea de Reformă Feroviară <http://arf.gov.ro/web/wp-content/uploads/2019/10/Octombrie-2019-Studiu-analiza-indicatori-OTF>

# FINANCIAL MANAGEMENT ELEMENTS SPECIFIC TO INVESTMENTS APPLICABLE IN EDUCATIONAL SYSTEMS

Daniela Alice Luta (Manolescu)<sup>1</sup> 

Adrian Ioana<sup>2</sup> 

Daniela Tufeanu<sup>3</sup> 

Daniela Ionela Juganaru<sup>4</sup> 

Bianca Cezarina Ene<sup>5</sup> 

DOI: <https://doi.org/10.31410/LIMEN.2020.337>

---

**Abstract:** *Our starting point is the definition and classification of investments, both financial and accounting. Thus, in a financial sense, an investment represents the change of an existing and available amount of money, with the hope of obtaining a higher but probable income in the future. In the accounting sense, an investment is the allocation of an amount available for the purchase of an asset, which will determine the future financial flows of income and expenses. Investments can be classified into two categories: domestic investments - consist of the allocation of capital for the purchase of machines, equipment, constructions, licenses, patents, etc. Their purpose can be to reduce costs, increase production, improve quality, increase market share, etc.; foreign investments - consist of capital investments in shares in other companies. They are also called financial investments and aim to increase the value of the company and diversify sources of income. We also analyze in this article the investment decision. The investment decision is the most important financial decision which a manager has to make. An investment usually involves allocating large sums of money in the long run, with a relatively high degree of risk. We also present and analyze both the stages of establishing an investment decision and the methods of evaluating an investment project. The article also presents management elements regarding the investment recovery term; discounted net value method, investment risk assessment.*

**Keywords:** *Financial management, Investments, Educational systems.*

---

## 1. INTRODUCTION

An investment can generally be defined as the process by which something is bought in order to make a profit or interest. In a financial sense, an investment represents the change of an existing and available amount of money, with the hope of obtaining higher incomes in the future (Ioana et al., 2019; Nicolescu et al., 2000). In the accounting sense, an investment represents the allocation of an amount available for the purchase of an asset, which will determine the future financial flows of income and expenses.

Investments can be classified into two categories:

- 
- <sup>1</sup> University Politehnica of Bucharest, Spl. Independentei 313, Bucharest, Romania
  - <sup>2</sup> University Politehnica of Bucharest, Spl. Independentei 313, Bucharest, Romania
  - <sup>3</sup> University Politehnica of Bucharest, Spl. Independentei 313, Bucharest, Romania
  - <sup>4</sup> University Politehnica of Bucharest, Spl. Independentei 313, Bucharest, Romania
  - <sup>5</sup> University Politehnica of Bucharest, Spl. Independentei 313, Bucharest, Romania

**Category 1:** domestic investments - consist of the allocation of capital for the purchase of machines, equipment, constructions, licenses, patents, etc. Their purpose can be to reduce costs, increase production, improve quality, increase market share, etc.;

**Category 2:** foreign investments - consist of capital investments in shares or social parts in other companies. They are also called financial investments and aim to increase the value of the company and diversify sources of income.

## 2. INVESTMENT DECISION

The investment decision is the most important financial decision a manager has to make (Ioana, et al., 2015; Ioana, 2009). An investment usually involves allocating large sums of money in the long run with a relatively high degree of risk. Hence the question: Why invest?

Here are some of the reasons behind the decision to invest:

Reason 1: maintaining or increasing the level of profit;

Reason 2: increasing production capacity in order to meet the demand for products or services;

Reason 3: maintaining or increasing the advantage held over the competition;

Reason 4: maintaining or increasing market share;

Reason 5: exploiting the advantages of new technologies;

Reason 6: demand for new products and services.

**The stages of establishing an investment decision.** In order to decide if you will start investing, we recommend that you go through the following steps (Nicolescu, 1993):

**Step 1:** Determine the cost of the project.

Make a list of all the costs that will be generated by the investment, from the design to the commissioning of the investment. If you purchase a new machine, be sure to include the training costs of the personnel who will work on that machine. Also, don't forget to include costs for the raw material that will be used at the beginning to adjust the machine (the first products are usually scrapped until the machine is adjusted). If you can afford it, we recommend that you use investment specialists to ensure the success of the project.

**Step 2:** Determine the financial sources with which the investment will be made.

Will you use your funds or do you need borrowed funds?

**Step 3:** Forecast estimated cash flows resulting from the investment.

How much money do you estimate you will get over the life of the investment?

**Step 4:** Determine the total cost of the investment.

Add up the cost of the investment and, if applicable, the cost of the borrowed capital.

**Step 5:** Compare the total value of estimated cash flows (receipts) with the total cost of the investment.

If the total value of the estimated cash flows is greater than the total cost of the investment, then you can invest. Otherwise, the investment must be abandoned.

## 3. METHODS OF EVALUATING AN INVESTMENT PROJECT

The methods of evaluating an investment project take into account three variables, namely:

- liquidity,
- the time factor, and
- risk.

There are two main categories of methods for evaluating an investment project:

*A. Methods without updating* - are quick and simple, but do not take into account the change in the value of money over time.

*B. Update methods* - are more cumbersome and involve more calculations, but take into account the change in the value of money over time, which is very important especially in an economy with a high annual inflation rate, such as Romania.

The following are two of the most useful methods of evaluating the draft investigation: the investigation recovery period and the net present value method.

### **1. The return on investment**

It is the non-updating method of calculating the number of years required to recover the initial investment from the cash flows generated. The term of the investment recovery highlights the measure of the liquidity of an investment and the speed with which the invested money is recovered.

### **2. Net Present Value Method (VNA)**

It is the updated method that starts with the idea that the initial investment and the annual cash flows must be converted into values expressed at the same time.

## **4. INVESTMENT RISK ASSESSMENT**

The last step you need to take before starting an investment is to assess the risk. All investment experts agree that a low-risk investment has a low rate of return, while a high-risk investment can lead to a high rate of return. The inclusion in a certain degree of risk of the investment is made based on the purpose pursued.

Here are some risk factors to consider when making your checklist:

1. Market forecasts (market exists or not),
2. Technology,
3. Products of the competition,
4. Impact on current activity,
5. The management team,
6. Financial risks,
7. The impact of the legislation,
8. Country risk,
9. Political risk,
10. Environmental risk.

## **5. SELECTION OF INVESTMENT PROJECTS**

Selection of investment projects includes the following steps:

**Step 1:** Formulation of potential investment projects;

**Step 2:** Application of financial selection criteria; and

**Step 3:** Investment tracking and control.

**Formulation of investment projects.** For the selection of proposals, we recommend you to adopt a procedure for analyzing potential decentralized investment projects, with two levels:

- The lower level (section, division, branch), regarding the replacement and modernization investments, as well as the investments for the development of the activity;



- The upper level, of the company's management, regarding the strategic, human, and social investments.

**Feasibility calculation.** Each investment proposal must be accompanied by a feasibility calculation, highlighting mainly the capacity of the project in question to bring profit and, consequently, to allow the recovery of the initial investment.

## 6. TYPES OF INVESTMENTS

We recommend that, in the procedure of choosing an investment project, you take into account the characteristics of that project. These will place it in one of the following categories.

**Category 1:** Replacement and modernization investments - are investments intended to replace physically and morally used tangible assets. These investments have the same use-value as the replaced ones.

**Category 2:** Development or expansion investments - are those investments that lead to the growth and development of the company. These investments can be made in the form of:

- internal growth, which involves the development of the company (its production capacity) through actual investments;
- external growth, which involves the development of the company through the acquisition of another company.

**Category 3:** Strategic investments - are those investments related to the strategic option of the company. For example, a research project related to the exploitation or creation of a new product, the decision to merge with another company, etc.

**Category 4:** Investments in human capital - are the expenses regarding selection and hiring of staff, specialists, management team; and permanent formation of human capital.

These investments are of great importance because they can avoid large expenses, generated by hiring inadequate staff, dismissal, and hiring new staff.

## 7. CONCLUSION

Educational systems, at any level, are in dire need of investment. After investing in human resources, which is the most important, material investments also have a very important role. Efficient material investments in educational systems ensure the necessary (and not sufficient) conditions for increasing the quality of the respective educational process. Hence the need for scientific knowledge about investments.

The starting point of this knowledge must be the understanding of the five types of definitions of an investment (which is also a classification of investments): investment in the general sense, investment in a financial sense, investment in an accounting sense, internal investment, and external investment.

The investment decision is also very important. This decision must be made on a scientific basis, including a good feasibility study. Among the arguments underlying the decision to invest, we mention: increasing the educational capacity to be able to satisfy the demand for services, maintaining or increasing the advantage held over the competition, maintaining or increasing market share, and exploiting the advantages of new technologies.

Knowing the stages of establishing an investment decision and its scientific application are also very important. These steps are as follows: determine the cost of the project; determining the financial sources with which the investment will be made; forecasting cash flows estimated as a result of the investment; determine the total cost of the investment; comparing the total value of estimated cash flows (receipts) with the total cost of the investment.

## REFERENCES


- Ioana, A. (2009). Managementul activității financiar-contabile și analize economice. Teorie și Aplicații, București, Editura Politehnica Press.
- Ioana, A., Marcu D. & Barbu, C.A. (2015). Analize economico-financiare-teorie si aplicatii. M Costoiu, A. Semenescu, (Coordonator), Editura Matrix Rom, București.
- Ioana, A., Tufeanu, D. & Labes, D.C. (2019). Management financiar. Teorie si aplicatii. Ed. Printech.
- Nicolescu, O. (1993). Ghidul managerului eficient, București, Ed. Tehnică.
- Nicolescu, O. et al., (2000). Sisteme, Metode și Tehnici manageriale ale organizației, București, Ed. Economică.





# FINANCIAL MANAGEMENT ELEMENTS SPECIFIC TO THE EVALUATION OF RESEARCH-DEVELOPMENT-INNOVATION (RDI) ACTIVITIES

Bianca Cezarina Ene<sup>1</sup> 

Adrian Ioana<sup>2</sup> 

Daniela Tufeanu<sup>3</sup> 

Daniela Ionela Juganaru<sup>4</sup> 

Daniela Alice Luta (Manolescu)<sup>5</sup> 

DOI: <https://doi.org/10.31410/LIMEN.2020.343>

---

**Abstract:** *This article presents the main elements specific to the evaluation of research and development and innovation activities: evaluation of scientific research activity; evaluation of the staff involved; valuation of tangible assets; valuation of intangible assets. Also, we present in the article the two ways of approaching the evaluation of research, development, innovation: macroeconomic approach; microeconomic approach. The comparative analysis is based on the management by results and the management by objectives in the field of research activities, development, and innovation. In this context, we present the economic-financial indicators used in the evaluation of the research, development, innovation: the rate of new sales; cost savings rate; revenues from research development innovation.*

**Keywords:** *Financial management, Research, Development, Innovation.*

---

## 1. INTRODUCTION

The research-development-innovation activity (RDI) plays an important role in the success and development of enterprises, in their strategic positioning. In the evaluation of the RDI activity, we distinguish four essential elements (Ioana, 2009; Nicolescu, 1993): valuation of the scientific research activity; evaluation of the staff involved; valuation of tangible assets, and valuation of intangible assets along with two following approaches.

The *macroeconomic approach* that takes into account the extent to which the state administration bodies at the national or local level administer the RDI activity and direct the allocated funds, either from the national budget or from international collaboration programs (e.g. European programs, or programs established with the USA, Japan, Canada, Russia, China, etc.)

*Microeconomic approach* concerning the role of the management of the institutions with attributions in the field of RDI in the management of the financial resources allocated or obtained from their activity.

---

<sup>1</sup> University Politehnica of Bucharest, Spl. Independentei 313, Bucharest, Romania

<sup>2</sup> University Politehnica of Bucharest, Spl. Independentei 313, Bucharest, Romania

<sup>3</sup> University Politehnica of Bucharest, Spl. Independentei 313, Bucharest, Romania

<sup>4</sup> University Politehnica of Bucharest, Spl. Independentei 313, Bucharest, Romania

<sup>5</sup> University Politehnica of Bucharest, Spl. Independentei 313, Bucharest, Romania

The comparative analysis is based on management by results and management by objectives in the field of RDI (Nicolescu, 2000; Ioana et al., 2019) and represents the vision of researchers, a system of procedures and principles for the allocation of resources and rewards.

Among the requirements of the comparative analysis are:

- importance of the RDI field, but also the research topic at macro and microeconomic level;
- the capacity of the enterprise to complete the project;
- side effects of program application;
- results of the RDI activity and the technological progress, development of the scientific infrastructure;
- requested financial support and own contribution.

## 2. ECONOMIC – FINANCIAL INDICATORS USED IN THE EVALUATION OF THE RDI

Among the most important indicators used in the RDI activity we can mention (Nicolescu, 1993; Costoiu & Semenescu, 2015) the following.

### 1. New sales rate ( $RVN$ )

This indicator of sales revenues in a year “i” results from the improvement of the product marketed in the period from “i-j” to “i-l” compared to the total revenues from the year “i” ( $VT$ ), i.e.:

$$RVN = \frac{1}{VT_{rev}} \times \sum_{N=i-l}^{N=1-l} VN_{vanz} \quad (1)$$

In which:

$VT$  = Total revenue for a year “i”

$VN_{vanz}$  = Net income in a year “i” from the improvement of the product marketed in a year “i”

### 2. Cost saving rate ( $REC$ )

This indicator expresses the cost savings of goods sold in a year “i” from the adoption of an innovative process that led to the change of the product in the period “i-k” to “i-l” and the obtaining of an average gross profit in a year “i”, ie:

$$REC = \frac{1}{PMB} \times \sum_{N=i-k}^{N=1-l} RC_{ec} \quad (2)$$

Where:

$RC_{ec}$  = reduction in costs of goods sold in a year “i” by the use of innovative processes in year N

$PMB$  = Gross Average Profit for the business unit in a year “i”

### 3. Revenue from RDI ( $RDI_{ven}$ )

This indicator is given by the contribution in the gross profit ( $PB$ ) which represents the sale of

new or modernized products (*NP*) and the decrease of the cost of new products by introducing innovative technologies (*SC*).

$$RDI_{ven} = NP + SC \quad (3)$$

#### 4. Predicted RDI / Created Value (VC), Portfolio Analysis (AP)

*The Expected Sales Value* is characterized by the *percentage of future sales from the total of RDI projects* and incorporates the probability of achieving the objectives of each project at the level of one year.

*The Value of Projected Revenues* given by the *percentage of the future net annual revenues (and/or profitability) from the total RDI projects* and which incorporates the probability of achieving the objectives of each project at the level of the 1-year period.

In addition to the indicators presented, we can also list others that have a *special significance in the RDI activity*.

- **Distribution of investments in new technologies / Portfolio Evaluation for Projects (EPP).**
- **The share of patents (PBI) in the Value of technological assets (VAcT)**

$$PBI = (NBI / VAcT) \times 100 \quad [\%] \quad (4)$$

Where:

*NBI* = Number of patents

- **Share of current investments in new technologies (PICTN) related to the value of technological assets (VAcT)**

$$PICTN = (ICTN / VAcT) \times 100 \quad [\%] \quad (5)$$

Where:

*ICTN* = Current investments in new technologies.

### 3. FINANCIAL MANAGEMENT ELEMENTS SPECIFIC TO RDI ACTIVITIES, INCLUDING EUROPEAN-FUNDED SCIENTIFIC RESEARCH PROJECTS

In general, the design and implementation of the call for tender for a European-funded scientific research project require a *pre-feasibility and/or feasibility study* specific to that project. Also, the activity of research, development, innovation (RDI) in general and scientific research projects with European funding in particular, require scientific *financial management of all types of resources* (human, financial, material, and informational).

Of particular importance is *the achievement of an estimated* (when submitting the offer request) *realistic, viable, and very well argued and substantiated Expenditure Estimate*. We will present later in the paper the examples of such estimates of estimated expenses.



### 3.1. Analysis of variable expenses

Within the operating expenses, the variable part, respectively the one that is dependent on the volume of activity, is predominant. Economic theory and practice use the notions of proportional and disproportionate dependence.

In the first case it is expressed by the relation:

$$a \cdot Q \text{ and in the second case by functions } f(Q)$$

where:

- a - the sum of variable costs per product;
- Q - the number of products.

The analysis of variable expenditures in economic practice is justified by:

- *elaboration of sales policies* depending on the degree of profitability and consequently on the contribution to the coverage of common expenses;
- *elaboration of the necessary cost budgets*, in the good management of all categories of resources;
- *establishing the implementation strategy* from a quantitative point of view and the deadline;
- *determining the break-even point*, a particularly important issue in the dimensioning of some activities and categories of expenses.

Of course, some reservations can be made in this regard, determined by:

- the inaccuracy of establishing the variability of different categories of expenses;
- the impact of the salary system on the two groups of expenses (variable or fixed).

### 3.2. Analysis of the dynamics and structure of variable expenditures

In order to follow the dynamics of the total variable expenses at 1,000 RON income, we use the data from table 1.

**Table 1.** Analysis of the dynamics and structure of variable expenditures

Nr. crt.	Indicators	Previous period $P_{n-1}$	Current period		$\frac{P_1}{P_0} \%$
			Provided $P_0$	Accomplished $P_1$	
1.	Variable operating expenses	3,974	4,772	5,092	106.70
2.	Variable expenses related to turnover	3.792	4.648	5.032	108,26
3.	Variable expenses related to the calculated turnover	3.808	X	4.990	X
4.	Fiscal value	7.360	8.436	9.260	109,77
5.	Operating income	6.770	8.014	8.750	109,18
6.	Turnover increased	6.600	X	9.000	X
7.	Variable operating expenses per 1.000 RON operating income (1/4)	540,00	565,67	550,00	97,22

8.	Variable expenses per 1.000 RON turnover (2/5)	560,00	580,00	575,00	99,14
----	--	--------	--------	--------	-------

Source: Own research

Following the evolution of variable expenses to 1,000 RON operating income and turnover, respectively, compared to the achievements of the previous year and provisions, this is different. Thus, an increase of variable expenses to 1,000 RON operating income and turnover was foreseen. However, there are reductions in comparing the achievements with the provisions.

#### 4. CONCLUSION

The evaluation of the research-development-innovation activities (RDI) supposes the completion of the following stages: the evaluation of the scientific research activity; evaluation of the staff involved; valuation of tangible assets; valuation of intangible assets. There are two ways to approach this evaluation activity: the microeconomic approach and the macroeconomic approach.

The most important economic-financial indicators used in the evaluation of the research, development, innovation, and innovation are new sales rate (RVN); RDI income; the share of patents (PBI) in the value of technological assets (VAcT); the share of current investments in new technologies (PICTN) related to the Value of technological assets (VAcT); distribution of investments in new technologies / Project Portfolio Evaluation (EPP).

Among the financial management methods specific to research-development-innovation (RDI) activities, including European-funded scientific research projects, the most important are: the analysis of variable expenditures; analysis of the dynamics and structure of variable expenditures.

#### REFERENCES

- Costoiu, M., Semenescu, M. (2015) Economic-Financial Analysis - Theory and Applications, Coordinator: A. Ioana, A. Marcu, D. Barbu CA, Matrix Rom Publishing House, ISBN 978-606-25-0196- 9, Bucharest.
- Ioana, A. (2009) Management of financial-accounting activity and economic analysis. Theory and Applications, Politehnica Press Publishing House, ISBN: 973-7838-20-3, Bucharest.
- Ioana, A., Tufeanu, D., Labes, D.C. (2019) Financial Management. Theory and Applications., Ed. Printech, ISBN 978-606-23-1017-2, Bucharest.
- Nicolescu, O. (1993) The guide of the efficient manager, Technical Publishing House, Bucharest.
- Nicolescu, O. et al. (2000) Management Systems, Methods and Techniques of the Organization, Economic Publishing House, Bucharest.



# LIBRARY MANAGEMENT SYSTEM: HOW TO AUTOMATE AND PUT A SMALL LIBRARY ONLINE

Tiago Lourenço<sup>1</sup>   
Clara Silveira<sup>2</sup> 

DOI: <https://doi.org/10.31410/LIMEN.2020.349>

---

**Abstract:** *Even with the amount of information that is diffused nowadays over the internet it is undeniable that the books in paper format are still a valuable source of knowledge either because they are often a reliable source or because the paper gives us a sensation that a screen does not give. Having said that, it is essential that a library not only publishes on the internet all the available books but also ensures good management for all that knowledge source. That is how this research and project comes up, a compilation of library standards for its management from the cataloguing of the books to its physical display in the library, as well as the automatization of all that standards. This study and the application of its results were done in a small library, Centro de Camões that complements the Department of Humanities of Marie Curie-Skłodowska University in Lublin, Poland. It used the Agile software engineering methodology, a light, efficient and low risk way of development. User stories were used as an approach that promotes essentially the user's point of view in the solution, i.e lead the team to think, question and perceive what they are developing. The main features of the automatization and management system are the cataloging with a book online search script by ISBN that returns the vital intel of a book, a website that shares with the users all the bibliography available and a books manager, also includes a requisitions manager that allows warnings to the library and users. The framework used was Django, a high-level Python Web framework. On it, we apply technologies like channels, Web sockets and all the fundamental guidelines of Web development. Therefore, this article is a jump start for those who want either implement a similar solution in a library or want to apply some technologies used on this project on their own projects, the source code of this project can be found at <https://github.com/tfcl/camoes>.*

**Keywords:** *Library management, Web programming, Agile, User story.*

---

## INTRODUCTION

This article will approach research where the key concepts in the management of a library will be presented, crucial concepts in the design of a computing system that ensures more digital and automatic management of all the bibliographic content, in other words how to put a library in the XXI century.

The first sections will address the presentation of the concepts such as categorization, unique identifiers and exchange of records among libraries, in the last five sections we will present the technical details of the system such as type of users, functionalities like the requisitions manager, this technical details will be demonstrated using the UML language, including use

---

<sup>1</sup> Instituto Politécnico da Guarda - ESTG, Portugal, Avenida Dr. Francisco Sá Carneiro, 50; 6300-559 Guarda; Portugal

<sup>2</sup> Instituto Politécnico da Guarda - ESTG, Portugal, Avenida Dr. Francisco Sá Carneiro, 50; 6300-559 Guarda; Portugal

cases (Jacobson, 2004). The development of this solution implemented the Extreme Programming-User Stories methodology (Rubin, 2012) that is characterized for involving the user during all the development process.

This article is intended to show the design and implementation of a software system for the management of a library.

## **BACKGROUND**

Most of the libraries display physically the books based on classification systems, these systems allow that all the books with related subjects are ordered logically.

This method was created with the need of a systematic arrangement aiming at the improvement of the reader's experience since that is the subject of the search criteria often used by most of them.

Classification is therefore one of the most important tasks in a library because it ensures a quick search of any book, so it is based on the principle that when we find a literary work next to it we will find a related one (Barbosa, 1969).

The process of classification is rigorous, we must read the preface, the introduction as it acquires the knowledge of the book content in order to understand what subject is covered.

This process is made from the general to the particular, that is, we start from the big areas of knowledge (e.g. social sciences; Mathematics, Natural sciences) to the more specific areas (e.g. politics, Physics) (UDC, 2013).

In 1976 Melvil Dewey wrote the book, *The classification and subject index for cataloging and arranging the books and pamphlets of a library*, in which the classification system designed by him is described. This system, Dewey Decimal System abbreviated to DDC started to be used around the world since it was one of the first implementing a decimal classification and because it allowed the search criteria described at the beginning of this section to stand out from the classification systems available at the time for being more usable, expandable and easy to memorize (Barbosa, 1969). Nowadays it is still used, however, due to its limitations it is only reliable in libraries with a small number of books.

In 1895 the International Institute of Bibliography based on the Work of Dewey, designs the Universal Decimal Classification, abbreviated to DDC, which in the beginning were very similar, however, with the expandability that DDC offers in the sub-areas of knowledge, they are more and more different (Barbosa, 1969).

The classification system used in this project is UDC since it is widely used in Europe.

### **Universal Decimal System**

After presenting a brief sum-up of the historical context in the previous section we proceed to explain the specificities of this classification system. This system divides the knowledge into 10 main classes, and these can be divided into subclasses, in a decimal hierarchy which ensures an infinite extension to make reading easier, a “.” is placed every 3 digits. To ensure greater flexibility this system uses signs or symbols where links can be made between auxiliary

subjects or tables where we can even specify the type of work (Barbosa, 1969). To clarify, Figure 1 shows these classes and their notations as well as auxiliary signs and numbers.

Below are listed four examples of this classification system.

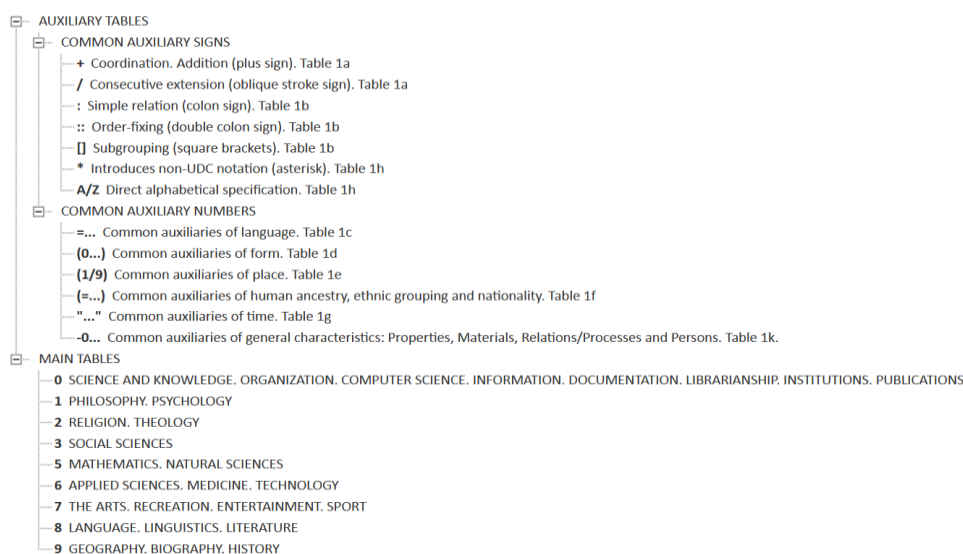
**Example 1:** 821.9 [LANGUAGE. LINGUISTICS. LITERATURE > Literature > Literatures of individual languages and language families > Literature in artificial languages]

**Example 2:** 7/8 [Art / Literature]

**Example 3:** 384 “20” [Telecommunications on the XX century]

**Example 4:** 5(038) = 30 [Geology German Dictionary]

**Figure 1.** Classes and special Notations of UDC



Source: <http://www.udcsummary.info>

## Exchange of Records

If the categorization process is so rigorous and since nowadays the bibliographic data of most of the books are shared over the internet, it makes sense that we automate the process, either to minimize the error or to simplify it.

To make the exchange of records easier in the 1960s the Marc records were designed, these records contain all the data of a book and at the same time can be interpreted by a computer (Library of Congress, 2009).

The Marc records use tags so they can be machine readable, with the evolution of the Markup Languages nowadays these records are more developed as it is the case of MarcXChange that is an XML based exchange format (Biblioteca Nacional de Portugal, 2016).

There are several API's online where we can access these records, the Portuguese Government created an open data project, BNP PorData, where we can access the records of most of the books published in Portugal, it's available in <http://urn.bn.pt/acesso.urn>.

The other API used on this project was the WordCat, it's available in <https://www.oclc.org/>.



## International Standard Book Number

The International Standard Book Number abbreviated to ISBN is a unique book identifier with which we can categorize work by type of content (e.g. Book, movie), country, author, publisher. The books released after 2007 use a 13-digit format (ISBN-13) while the previous ones use a 10-digit format (ISBN-10). Since it is a standard unique book identifier, it is used worldwide for sharing bibliographic data and updating library catalogues (International ISBN Agency, 2014)

## DEVELOPMENT OF THE LIBRARY MANAGEMENT SYSTEM

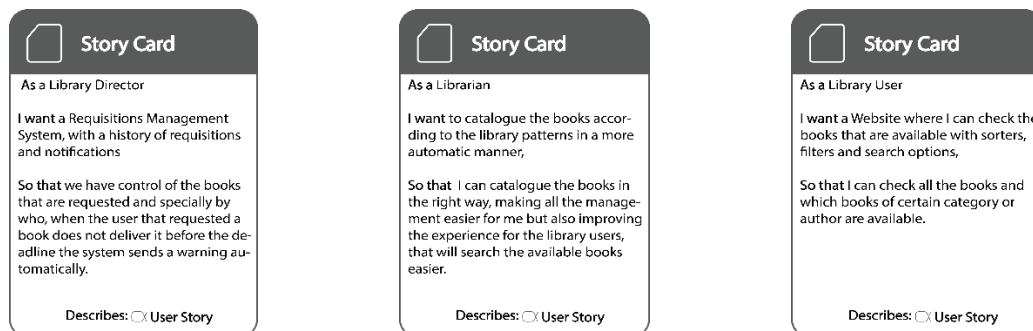
All the code of this software and images of it can be found at this github repository <https://github.com/tfcl/camoes>, the solution was developed using the framework Django. Figure 2 shows the algorithm written in pseudocode to validate an ISBN.

**Figure 2. ISBN Algorithm Validation**

```
Function Validate ISBN(ISBN)
Input: Integer to be validated
Output: True(if given number is a valid ISBN) or False(if given number is
not a valid ISBN)
Sum = 0
If length of ISBN not equal to 10 neither 13 then
    Return False
If length of ISBN equals to 13 then
    If ISBN is not an integer then
        Return False
    For first until penultimate digit in ISBN do
        If digit is in an odd position then
            Sum = Sum + digit * 1
        Else
            Sum = Sum + digit * 3
    Rem = remainder of the division of the sum and 10
    If Rem equals to 0 then
        Return True
    Else
        If Rem equals to the Last Digit of ISBN then
            Return True
        Else
            Return False
Else if length of ISBN equals to 10 then
    If all elements less the last in ISBN are not integers then
        Return False
    If last element is not an "X" or a integer then
        Return False
    Multiplier = 10
    For first until penultimate digit in ISBN do
        Sum = Sum + digit * multiplier
        Decrements one unity in ISBN
    If last element of ISBN is an "X" then
        Sum = Sum + 10
    Else
        Sum = Sum + last element of ISBN
    Rem = remainder of the division of the sum and 11
    If Rem equals to 0 then
        Return True
    Else
        Return False
```

The User Stories have origin in the Extreme Programming Methodology, they describe certain features that the team is developing, these features must be valuable to the user. A User Story is described by a Story Card that is checked by a Test Case (Jacobson, Lawson, McMahon, & Goedicke, 2019).

**Figure 3. Story Cards**

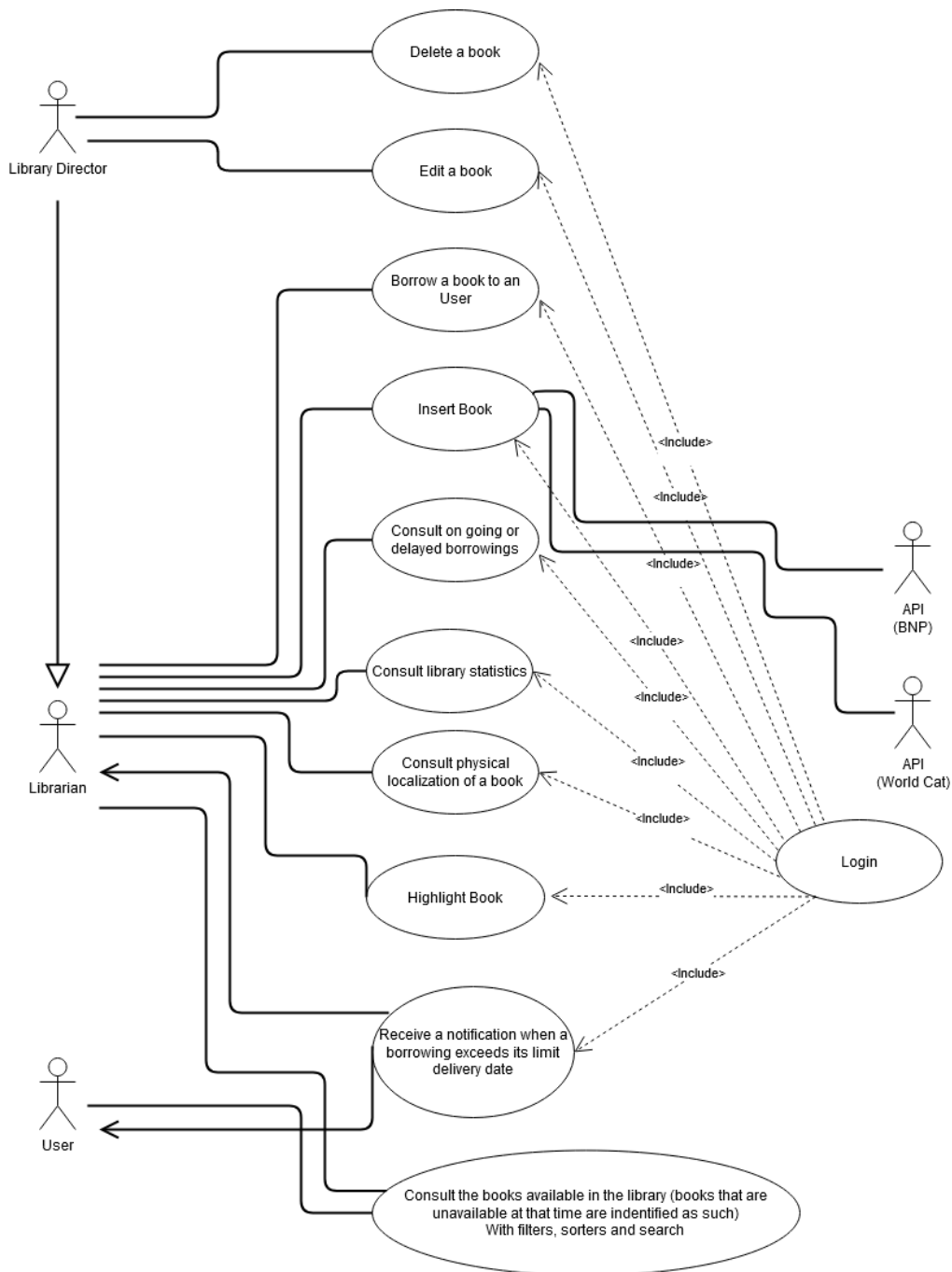


In Figure 3, three story cards are representing either the three types of users, Director of the Library, Librarian, and the library user either the features that are most valuable for each one of them.

## Use Cases

In Figure 4 it is possible to have an idea of the system overall, this Figure shows the use cases, they demonstrate what each actor can do in the system as well some restrictions like the actor must be logged in the system in order to access some of the features.

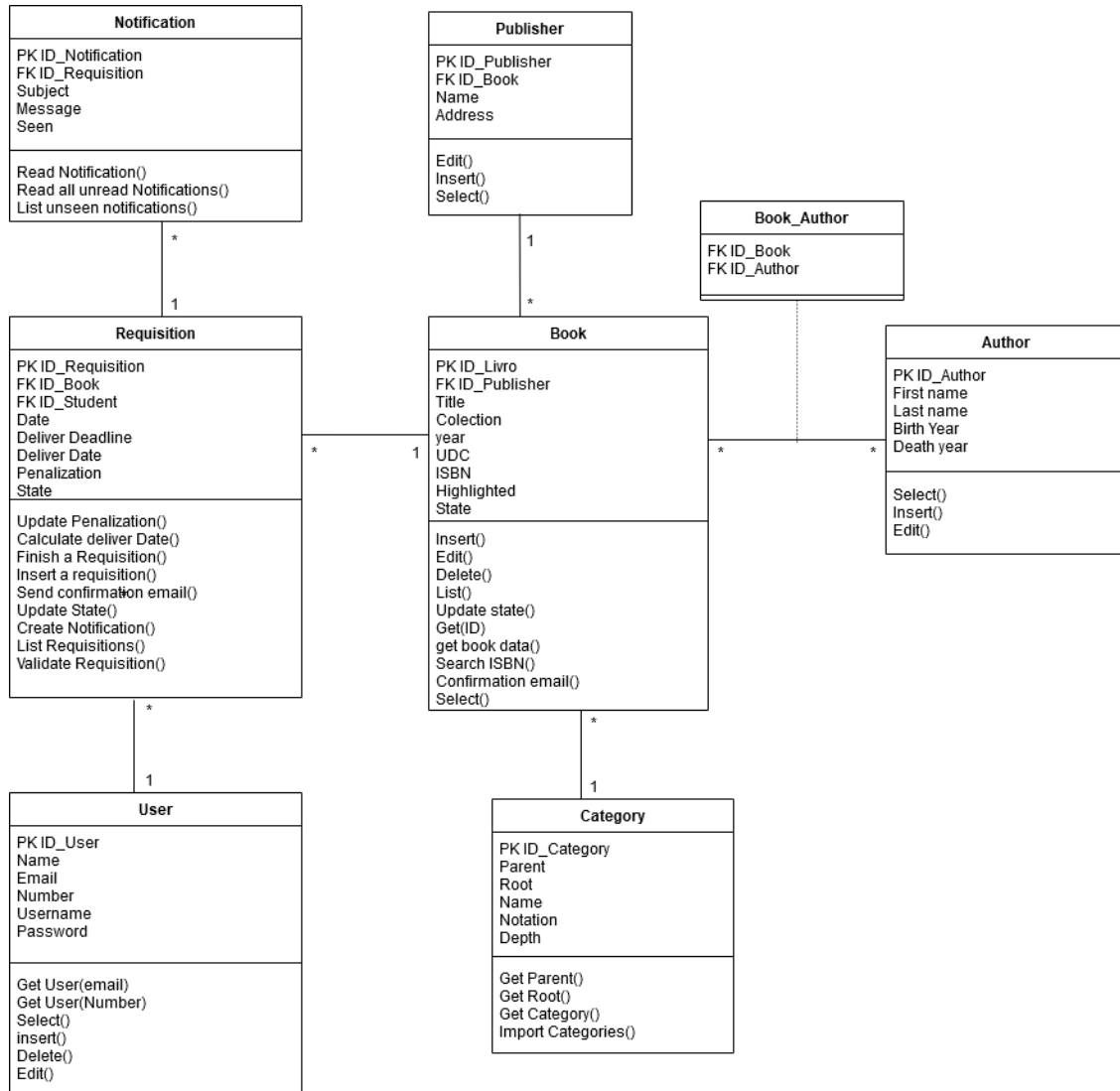
**Figure 4.** Use Case Diagram



In Figure 5 we present the design of the class diagram, with which it is possible to implement the Use cases in Figure 4 and also have a more detailed view of the solution.

## Class Diagram

**Figure 5.** Class Diagram



## Requisitions Feature

Since the library provides a requisition service we must maintain track of them. Usually, the library users don't deliver the books, so we need a feature that can warn either the user either the library staff when a certain book it's not delivered on the agreed date. That's why we need a notification table; an entry is created when a certain book overpassed the deadline. The user is also blocked and cannot do more requisitions while he doesn't normalize his situation and cannot have more than 3 active requisitions at one time.

In this specific case after cataloguing all the books, we noticed that from 2737 books, 187 were missing, that's why this feature is so important because the books are the most valuable resource in a library and we must know where each one of them is.

## FUTURE RESEARCH DIRECTIONS

In the future, this system could implement its own online API for exchanging its records.

We could also design more features like classifications converters, an electronic Library in order to share eBooks from known writers, or most important beginners that want to give their work more visibility.

To summarize, implementing more features to share content over the internet and with us helping this community to grow.

## CONCLUSION

It is not difficult, even in a small library, to lose control of the books that are arriving. It is necessary to immediately insert them into a computer system. It has been proven that currently exists several API's that besides speeding up the insertion ensures that the book is catalogued according to good practices and thus improve the experience of both, readers and librarians. It was also seen that when the library makes it possible for readers to borrow books, it is important to ensure the returns as sometimes users do not do so, thereby causing loss to the library. With this article, we show what are the key points in a library to sum up, cataloging, put the book in the right place and from then on always know where it is.

## REFERENCES

- Barbosa, A. P. (1969). *Teoria e Prática dos Sistemas de Classificação Bibliográfica*, Instituto Brasileiro de Biliografia e Documentação.
- Biblioteca Nacional de Portugal. (2016). *Documentation*, Retrieved from [https://opendata.bnportugal.gov.pt/eng\\_documentation.htm](https://opendata.bnportugal.gov.pt/eng_documentation.htm).
- International ISBN Agency. (2014). *What is an ISBN?*, Retrieved from <https://www.isbn-international.org/content/what-isbn>
- Jacobson, I. (2004). Use Cases – Yesterday, Today, and Tomorrow; *Software and Systems Modeling*; Vol. 3, N° 3, pp. 210–220.
- Jacobson, I., Lawson, H., McMahon, P., & Goedicke, M. (2019). *The Essentials of Modern Software Engineering*, ACM Books.
- Library of Congress. (2009). *What is a Marc Record, and Why is it Important?*, Retrieved from <https://www.loc.gov/marc/umb/um01to06.html>.
- Rubin, K. (2012). *Essential Scrum: A Practical Guide to the Most Popular Agile Process*. Addison-Wesley Professional.
- UDC. (2013). *Universal Decimal Classification*, Retrieved from <http://www.udcsummary.info/php/index.php>.



# QUANTITATIVE ANALYSIS OF DOCTORAL DISSERTATIONS IN SERBIA AT THE END OF 2019 ON THE TOPIC ARTIFICIAL INTELLIGENCE

Olga Mirković Maksimović<sup>1</sup> 

DOI: <https://doi.org/10.31410/LIMEN.2020.357>

---

**Abstract:** *The Strategy for the Development of Artificial Intelligence (AI) for the period from 2020 to 2025 has been adopted in Serbia and the strategy proposal states that one of the goals is the development of science and innovation in the field of AI. Some of the indicators being measured are the number of patents as well as the number of published papers in this field. The initial state is currently unknown. The aim of this paper is to establish how many dissertations at which University and faculty have been defended on this topic, who are the most common mentors and members of the commissions. The paper deals with publicly available data of doctoral dissertations in Serbia and makes a quantitative analysis of doctoral dissertations on the topic of AI.*

**Keywords:** *Artificial intelligence, Doctoral dissertations, Universities in Serbia, Strategy for the development of artificial intelligence.*

---

## INTRODUCTION

The paper deals with publicly available data of doctoral dissertations in Serbia (<http://nardus.mpn.gov.rs/discover>) and a quantitative analysis of doctoral dissertations that had artificial intelligence as their topic. In Serbia, the Strategy for the Development of Artificial Intelligence in the Republic of Serbia for the period from 2010 to 2025 (Ministry of Education, Science and Technological Development, 2019) was adopted and the proposed strategy clearly states that one of the goals is the development of science and innovation in the field of artificial intelligence and its applications. Some of the indicators being measured are the number of patents as well as the number of published papers in this field. The initial state is currently unknown. The aim of this paper is to establish how many dissertations at which University and which faculty were defended on the topic of artificial intelligence, who are the most common mentors and members of the commissions. Thus, we get a list of people who deal with artificial intelligence in Serbia and their distribution among faculties, universities, with the aim of clearly mapping the situation in the field of research of artificial intelligence in Serbia within university academic studies.

## QUANTITATIVE ANALYSIS

By inspecting the public database of defended doctoral dissertations <http://nardus.mpn.gov.rs/discover> and searching by the phrase "artificial intelligence", we get that the total number of dissertations on the topic of "artificial intelligence" is 324. However, a detailed review of the metadata of 324 doctoral dissertations as well as key words related to them shows that 82 doctoral dissertations concern artificial intelligence, and most broadly

---

<sup>1</sup> Videobolt, Bulevar Mihajla Pupina 10a, Belgrade, Serbia



speaking. Due to the lack of a single definition of artificial intelligence and the use of very different approaches in defining artificial intelligence, all doctoral dissertations were taken into account, which included key words such as: artificial neural networks, intelligent networks, intelligent control, model-driven development etc. From the very beginning, artificial intelligence has been multidisciplinary and this can be seen through the fact that doctoral dissertations are present at almost all faculties of the University of Serbia. Artificial intelligence was created as an attempt to answer the question is it possible to simulate and create intelligence in a computer environment - that is why it is inextricably linked to computer science. Artificial intelligence is an attempt to answer the question of whether a computer can perform a task that, when performed by a human being, requires intelligence. Table 1 shows the total number of searches for the phrase "artificial intelligence" after the review of the meaning of the search at all University in Serbia.

**Table 1.** Total number of searches for the phrase "artificial intelligence" at all University in Serbia.

	Number of doctoral dissertations at the end of 2019 on the AI topic
University of Belgrade	39
University of Novi Sad	25
University of Nis	6
University of Kragujevac	7
University of Arts in Belgrade	0
University of Business Academy in Novi Sad	1
Alpha BK University	2
European University	
University Signinum	0
University of Pristina - Kosovska Mitrovica	1

Table 2 shows the number of doctoral dissertations on the topic of artificial intelligence at the University of Belgrade by faculties.

**Table 2.** Number of doctoral dissertations on the topic of artificial intelligence at the University of Belgrade by faculties

	Number of doctoral dissertations at the BU by faculties
Faculty of Organizational Sciences	13
Faculty of Electrical Engineering	6
School of Mechanical Engineering	5
Faculty of Philosophy	3
School of Civil Engineering	3
Pharmaceutical University	3
Faculty of Transportation	2
Faculty of Technology and Metallurgy	2
Faculty of Economics	1
Technical Faculty Bor	1

Table 3 shows the number of doctoral dissertations on the topic of artificial intelligence at the University of Novi Sad by faculties.

**Table 3.** Number of doctoral dissertations on the topic of artificial intelligence at the University of Novi Sad by faculties

	Number of doctoral dissertations at the University of Novi Sad by faculties
Faculty of Technical Sciences	16
Technical Faculty "Mihailo Pupin" Zrenjanin	5
Faculty of natural sciences	3
Faculty of Technology	1

Table 4 shows the number of doctoral dissertations on the topic of artificial intelligence at the University of Niš by faculties.

**Table 4.** Number of doctoral dissertations on the topic of artificial intelligence at the University of Niš by faculties

	Number of doctoral dissertations at the University of Niš by faculties
School of Mechanical Engineering	2
Faculty of Electronic Engineering	2
Faculty of Economics	1
Faculty of Technology Leskovac	1

Table 5 shows the number of doctoral dissertations on the topic of artificial intelligence at the University of Kragujevac by faculties.

**Table 5.** Number of doctoral dissertations on the topic of artificial intelligence at the University of Kragujevac by faculties

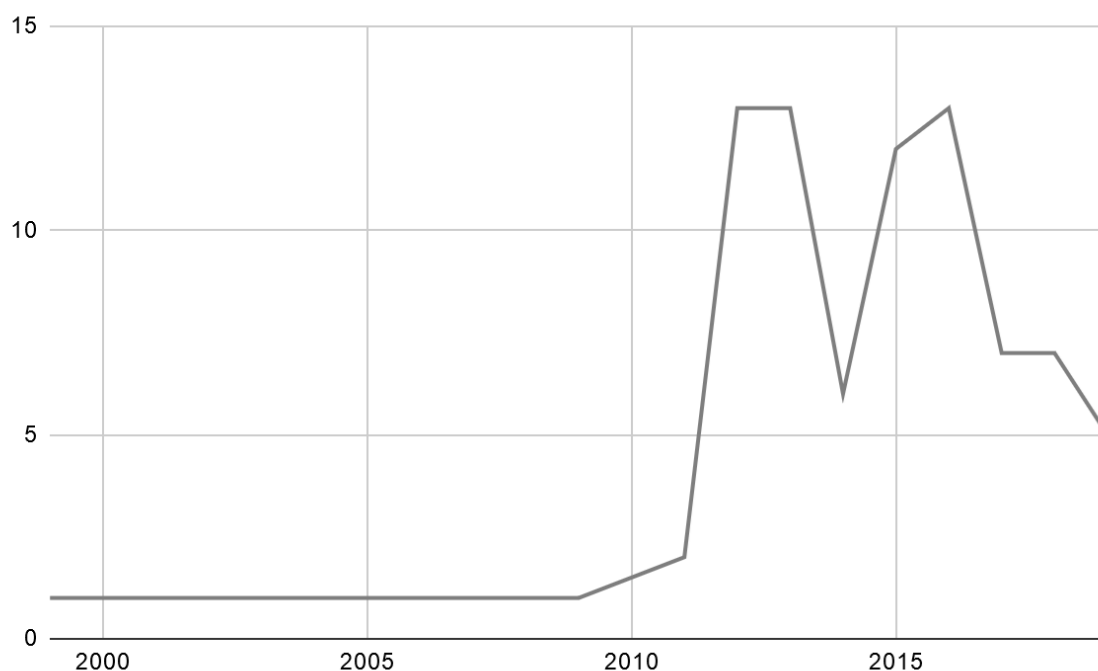
	Number of doctoral dissertations at the University of Kragujevac by faculties
Faculty of natural sciences	3
Faculty of Technical Sciences Čačak	2
Faculty of Engineering	2

At the University of Business Academy in Novi Sad, at the Faculty of Dentistry, 1 doctoral dissertation on the topic of artificial intelligence was defended. At the University of Alfa BK, Faculty of Information Technology, 2 doctoral dissertations on the topic of artificial intelligence were defended. 1 doctoral dissertation in the mentioned field was defended at the University of Singidunum. At the University of Pristina, Faculty of Technical Sciences, 1 doctoral dissertation was defended.

The first doctoral thesis on the topic of artificial intelligence was defended in 1999 by Raskovic Miodrag, before a commission: Mijajlovic Zarko, Markovic Zoran and Bankovic Dragic at the Faculty of Natural Sciences and Mathematics on the topic: "Some probabilistic logics and their applications in computing".

The figure 1. shows the number of defended doctoral dissertations on the topic of artificial intelligence from 1999 until now. It is evident that in the 21st century, research on the topic of "artificial intelligence" has started to develop more intensively, and that this has resulted in an increased number of defended doctoral dissertations starting from 2012 onwards.

**Figure 1.** The number of defended doctoral dissertations on the topic of artificial intelligence from 1999 until end of 2019.



As for mentors, a total of 67 mentors participated. Mentors who have had more than one PhD student are:

- Suknovic Milija: 4,
- Despotovic-Zrakic Marijana: 2,
- Devedzic Vladan: 2,
- Ivanovic Mirjana: 2,
- Kovac Pavel: 2,
- Miskovic Zoran: 2,
- Vujosevic Mirko: 2,
- Vukadinović Katarina S.: 2.

Eight of them are in charge of 18 doctorates, which make up 22% of all doctorates on the topic of artificial intelligence. (12% of mentors covered 22% of all doctoral theses)

## FUTURE RESEARCH DIRECTIONS

It would be very useful to continue research in this area and see if some of these doctoral dissertations had implementation in industry or business. Also, to see connection between students and industry and see what was their work status and where and how they continue to develop.

## CONCLUSION

In order for Serbia to progress outside of artificial intelligence, it is necessary to intensify scientific research in this area. In recent years, there has been a decline in the number of doctoral dissertations on the topic of artificial intelligence, and it is necessary to increase that

number in order to build a knowledge base within the University. It would be desirable to return the number of doctoral dissertations at universities to 13. Through networking of mentors and committee members from different faculties and institutes, the first step can be taken. We notice that the number of commission members differs greatly at the University of Belgrade and the University of Novi Sad, where the number of commission members is significantly higher and the base of scientists working on the problem of artificial intelligence is also larger. It is necessary to create and update a unique database of scientists in this field with the aim of networking and joint work on solving the challenges and tasks presented by the proposed strategy for the development of artificial intelligence in the Republic of Serbia for the period from 2010 to 2025. Insight into the tag cloud of keywords makes it clear that the beginnings of development are primarily related to the development of computer science and that other sciences are less involved. This is certainly a trend that needs to be changed in the coming period. According to research (McKinsey & Company, November 2019): "Global AI Survey: AI proves its worth, but few scale impact" we have the following findings: "Adoption of artificial intelligence (AI) continues to increase, and technology pays off. The findings of the latest McKinsey global survey on this topic show an increase in the percentage of AI use in standard business processes by almost 25 percent. Most executives whose companies have adopted AI report that it has increased revenue in the business areas in which it is used, and 44 percent say AI has reduced costs." Such research indicates that artificial intelligence is now developing more intensively in the economy than in science. In order to make the most of the potentials of artificial intelligence, it is necessary to connect the economy and science in the field of research, testing, and implementation of artificial intelligence. The current system of working on projects within science to a lesser extent recognizes the formal connection between the economy and employees in the economy, and it is necessary to redefine these relations and find the best way of formal organization in order to take the best of both systems.

## REFERENCES

- McKinsey & Company. (November 2019). *Global AI Survey: AI proves its worth, but few scale impact*. North America: McKinsey & Company.
- Milosavljević, M. (2015). *Veštačka inteligencija*. Beograd: Univerzitet Singidunum.
- Ministarstvo prosvete, nauke i tehnološkog razvoja. (2019, Novembar). *Ministarstvo prosvete, nauke i tehnološkog razvoja*. Retrieved from <http://www.mpn.gov.rs/wp-content/uploads/2019/11/1-Nacrt-strategije-razvoja-ve%C5%A1ta%C4%8Dke-inteligencije-u-Republici-Srbiji-za-period-2020.-2025.-godine.pdf>.



# THE FUNDAMENTAL FUNCTIONS OF PUBLIC SECTOR ORGANIZATION ON THE EXAMPLE OF SUBOTICA LOCAL SELF-GOVERNMENT

Slavko Tomašković<sup>1</sup>

Julka Sremac<sup>2</sup>

DOI: <https://doi.org/10.31410/LIMEN.2020.363>

---

**Abstract:** *Organizations, as well as individuals, realized that they possess their core, the core which consists of the necessary activities and necessary people, the core which is surrounded by an open and flexible space that can be complemented with flexible workers and flexible delivery contracts. The attempts to save money, by downsizing the management layers or by hiring temporary workers, change the form of the organization and the style of coordination within the organization itself. This paper will firstly explain the notion of organization and organizing. Since the example which will be presented is the Local Self-Government Subotica organization, the author will state the specific characteristics of a public organization first.*

**Keywords:** *Organization, Public sector, Local Self-Government Subotica.*

---

## 1. INTRODUCTION

Common features of all organizations, regardless their size is first and foremost: that their constituents are people, staff, they exist to achieve certain goals and to limit certain behavior of their members, that is, to limit personal freedoms. The term organization is one that we encounter daily and it is widely used. We use it in conversations, read it in the papers or hear about it on TV. The term organization inspires different associations with people, some refer to it as a shop, or school, a company, workshop and the like. However, in expert literature there are certain definitions of organization that differ depending on the theoretical stand points of various authors.

First and foremost, it is important to view an organization as a group of two or more people, working together to meet a common goal. It is of utmost importance to understand the manners in which organizations function so as to improve their management since we spend most of our lives working in them. A successful manager is able to organize human resources, material factors, production, marketing and finances in order to achieve company's goals.

Furthermore, the organization consists of *staff, formally determined functions and informal relations*. It can be also viewed as an ideal structure of logically grouped elements which are interrelated, have the optimal coordination and clearly defined objectives.

---

<sup>1</sup> Subotica City Administration, Secretariat for General Administration and Common Affairs - Tavankut Local Office, Serbia

<sup>2</sup> Prima Lupus doo Subotica, Serbia



## 2. ORGANIZATION PROCESS

The organization process is a result of company's structural formation. One of the basic managing functions within a company, which is an organized system, organization is a governing activity that provides setting and determining of subsystems within the system of task delegation to the subsystems (the company's constituents). Having that in mind, the organization consists of two basic activities. The activities in question are the ones of division (decentralization) and those of connection (centralization). (Lilić, 2012)

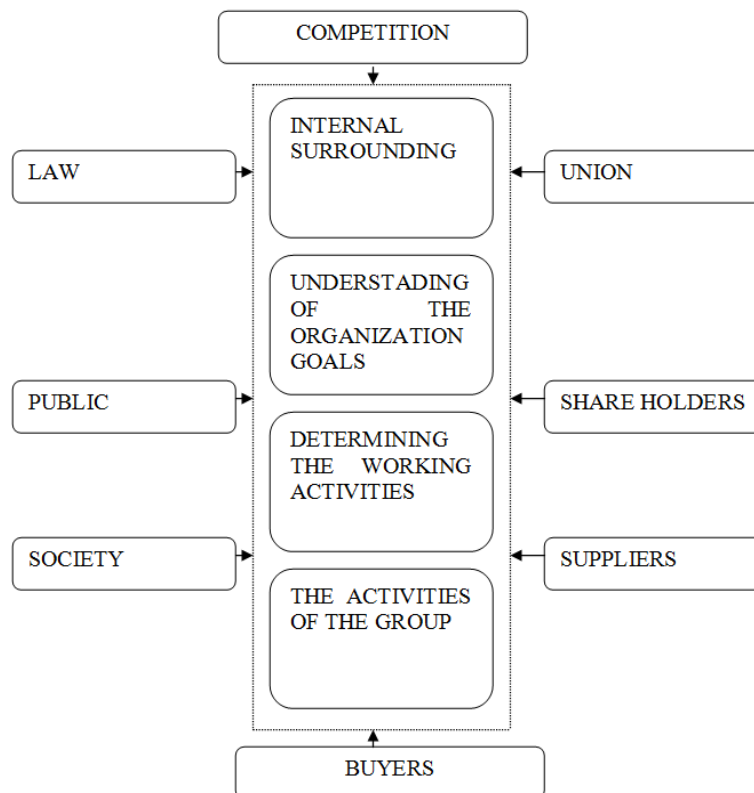
The organization process is shown in picture 1.

The decentralization activities, that is the division process within a company, has as its objective formation of autonomous or conditionally formatted organizational units. They should function within a company in such a manner that certain permits and responsibilities, regarding the tasks, are allowed to them, though only through a unique managing process. (Mladenović, 2011)

The centralization activities, that is of connection, actually imply creating relations between the organizational units within a company in order to perform at their best.

The connecting happens as a result of managing activities. The organization process is shown in the picture. (Lilić, 2012)

**Picture 1.** The organization process



**Source:** (Mladenović, 2011)

Organization is a phase in the managing process where the methods, manners and instruments for a successful realization of planned decisions are established. In this phase the necessary activities are determined, division of labor is made, the activities are grouped into the

appropriate structures, coordination of all the employees takes place and all is done as to achieve the before set goals.

The determining of the work is a process that goes from top to bottom. The task is decomposed into smaller tasks which are then grouped at certain levels. At this level, the task is still rather complex, therefore it is necessary to further divide the tasks into smaller and less complex ones. The process continues until the parts of the tasks are allocated to the administrative assistants, that is the employees at certain working positions. (Živanović, 2016)

### **3. CITY GOVERNMENT ORGANIZATION IN THE EXAMPLE OF SUBOTICA LOCAL GOVERNMENT**

In the sense of organizing, the government appears as a complex governing organization composed of many and various bodies and organizational units that establish mutual communication on the basis of the previously determined rules and regulations. By the term organization of the state government, one considers a network of state government bodies, rules that it is formed by, its internal structure and legal position of its units, their management and government as well as the position of its employees. The organization of the state government depends on the political and territorial organization of a certain state. Thus, in federations we find governing units on both federal and republic level, while in unitary states all governing activities spring from one level of government. The basic principles which serve as a foundation of the state government bodies are: realistic, territorial and personal principle. According to the realistic principle the governing bodies are formed according to the kind of work they are supposed to perform. Realistic principle can be found in the functional form or as a department in charge.

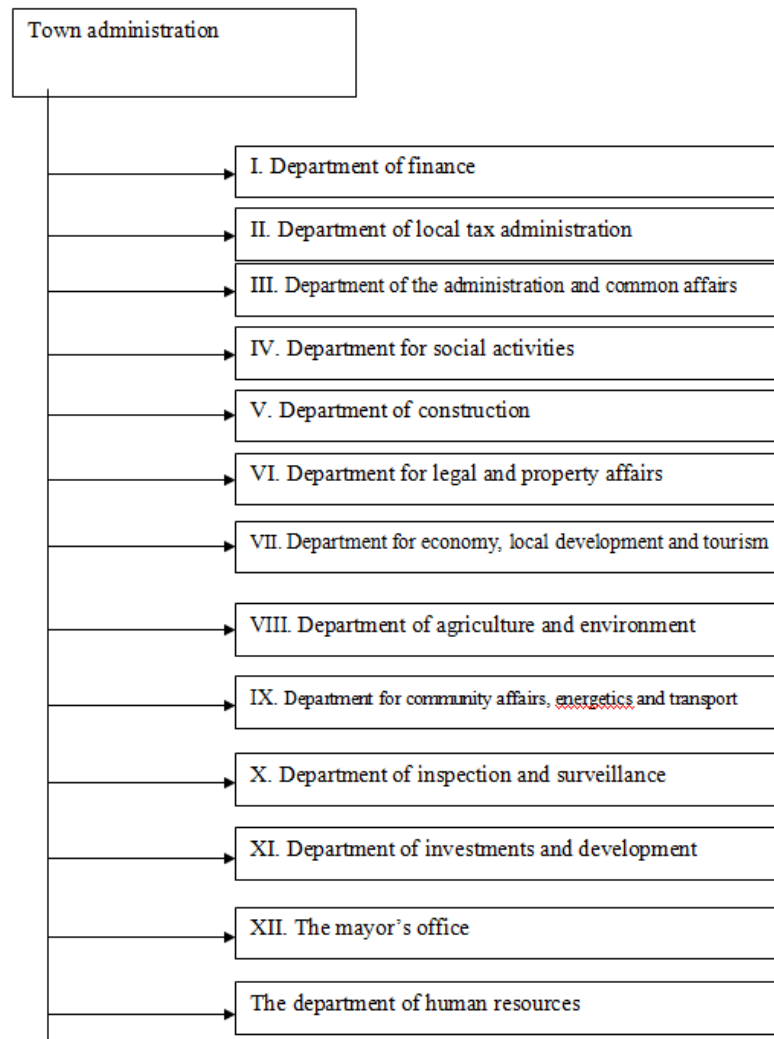
The basic activity of the state government bodies is a governing activity; this is why these bodies are defined as bodies that perform the governing activities as their primary activity. The work of the state government bodies is determined as a group of certain activities that enable the state to achieve its goals and tasks. They could be divided into two basic groups of activities, that is the activities of the state government bodies, and these are: a) activities with authority, b) activities without authority. Actually, the activities with authority are: issuing legal documents, administrative supervision, making decision on government issues. The activities without authority are those which are observed as the ones that spread the state tasks that is the objectives of the state. These activities are: making the Government politics, adjusting the development in certain areas, performing of the expert activities, expert drafting of the legal regulation and other expertise related businesses.

The state governing bodies are formed according to the law, that means that they cannot be organized *at hoc* according to some by-laws. Moreover, since the formation of the state government bodies is ruled by law, the scope of their work is also regulated by law. In the 1st article 2<sup>nd</sup> paragraph of the Law on state government of the Republic of Serbia it is stated: “the state government consists of ministries, governing bodies within ministries and special organizations.” (Law on state Administration of the Republic of Serbia, 99/2014)

#### **THE ORGANIZATIONAL STRUCTURE OF SUBOTICA LOCAL GOVERNMENT**

In the local government the following basic departments are formed.

**Picture 2.** Graphic representation of Subotica Local government organization



**Source:** ([http://subotica.rs/public/documents/pages/informator/informator\\_subotica\\_cir.pdf](http://subotica.rs/public/documents/pages/informator/informator_subotica_cir.pdf), accessed and taken: 1.11.2020)

Hereafter the services of certain departments will be described:

***The department of finance plies with:***

- preparation and drafting of the city budget, drafting of balance sheets, internal control, balance sheets of public income and expenditure, making manuals for the drafting of the budget blueprints, monitoring the performance of the end users, monthly and quarterly plan approval, monitoring the quotas of the assumed tasks, approval of the request for the change of appropriation and quotas, monitoring of the incomes and expenditures of the budget, taking care of the billing of the funds taken from the budget of the Republic, the usage of means from current and permanent budgetary reserves, provisional abolition of budget implementation, income tracking, expenditures and other obligations of the City regarding borrowing, free assets of the safety vault management,
- dealing with analytics, planning and reporting

- financial plan adjustment within the preparation procedure for the budget of the City according to functions and users, tracking of the legal and intended use of the budget means for the functions and users of the budget that are part of the State Department,
- draft preparation for the documents which are in jurisdiction of the State department and which are issued by the Town assembly, the Mayor and the Town council,
- implementation of the financial plans according to the functions within the scope of work of the State department,
- performs the activities of administrative supervision over the enforcement of the regulations and other general documents of the Town assembly that are in the jurisdiction of the State department,
- expert and other jobs that are established by the Town assembly, the Mayor and the Town council and
- other activities established by the Law, Statute, Assembly rules and other regulations.

***Local tax administration department deals with:***

- activities that establish and recover local public income
- preparation of the document's blueprints for the State department which are issued by the Town assembly, the Mayor and the Town council,
- State department functional financial plan implementation,
- Administrative supervision activities regarding regulations and other general documents under the jurisdiction of the State department and issued by Town assembly,
- Expert and other work approved by the Town assembly, the Mayor or the Town council and that are under jurisdiction of the State department,
- Other activities established by the law, Statute, Town assembly ruling and other official records.

***The administration and common affairs department deals with:***

- Activities regarding the requirements of the Town assembly and its constituents,
- Activities regarding the requirements of the Town council and its constituents,
- Activities regarding the Mayor work position requirements,
- Protocol activities,
- Requirements of the Chief of the department,
- Expert, technical and administrative work related to the enforcement of the public procurement,
- Activities related to the development and maintenance of the network information system of the City administration,
- Activities related to the working conditions provisions for the City government bodies
- Activities related to the commuting of the City government employees and vehicle fleet maintenance,
- Preparation of the regulation drafts within the scope of work of the State department and which are enforced by the Town assembly, the Mayor and the Town council.

***The property and legal affairs department does the following:***

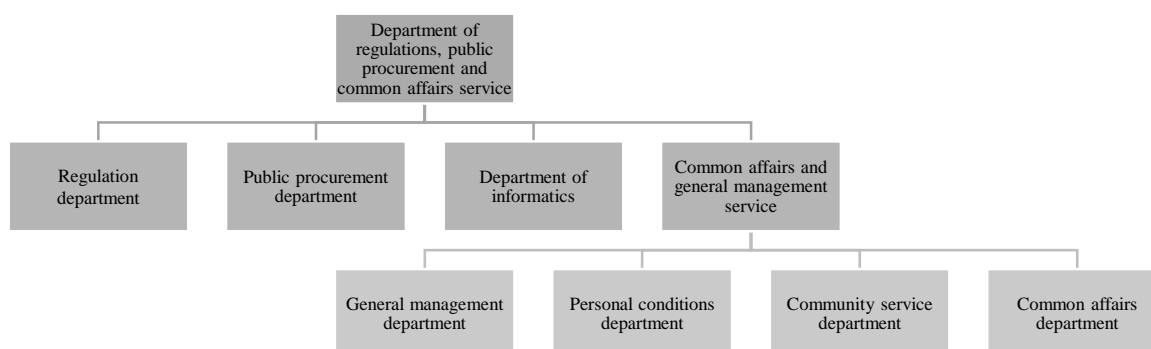
- Enforces the rulings and other regulations passed by the Town council, the Mayor and the Town assembly regarding property and legal affairs,
- Adopts rulings in the administrative proceedings in the first degree on the civil rights and obligations concerning the administrative issues under the jurisdiction of the State department,
- Enforces laws and other regulations related to the legal and property affairs and whose enforcement was entrusted to the City,

- Drafts financial plans in the City budget preparation procedure according to the functions and budget users, tracks legal and intended use of the budgetary funds for the functions and users of the budget that are under the jurisdiction of the State department,
- Monitors the financial plans implementation as of functions that are under the jurisdiction of the State department,
- Performs the administrative proceedings over the regulation and other general rulings enforcement which are under the jurisdiction of the State department,
- Drafts the regulations and other rulings passed by the Town assembly, the Mayor and the Town council that are concerned with the property and legal affairs as well as investments,
- Performs expert and other work set by the Town assembly, the Mayor and the Town council under the jurisdiction of the State Department,
- Performs other activities specified by the law, Statute, Town assembly regulation and other rulings.

***Human resource department deals with:***

- Expert and technical activities in the electing and hiring procedure,
- Personnel plans proposition preparation,
- Organizing professional training of the employees,
- Evaluation of the enforced decrees effects,
- Analysis of training and further education requirements of each employee
- Annual program of professional training proposition and financial plan proposition on how to execute the professional training plan,
- Tracking and analysis of the results of employee evaluation,
- Keeping of personnel records and personal files of the employees
- Other activities relevant to the professional development of the employees,
- Preparation of all the documents relevant for the exercising employees' rights and obligations,
- Takes part in the financial plan drafting procedure for the Town budget.

**Picture 3.** Representation of the Common affairs department organization



**Source:** ([http://subotica.rs/public/documents/pages/informator/informator\\_subotica\\_cir.pdf](http://subotica.rs/public/documents/pages/informator/informator_subotica_cir.pdf), accessed and taken: 1.11.2020)

*General administration and common affairs, account of enactment within the jurisdiction, obligations and authorizations*

***General administration and common affairs department deals with:***

- Administrative and other activities concerning law and other regulations enforcement which is directly entrusted with the Town, such as keeping registers of birth, death and

- marriages, citizenship, personal names, identification numbers, elective registers, office management, writing office management and archives,
- Activities of the City service center,
  - Activities regarding the election of the aldermen for the Town assembly and referendum implementation,
  - Receiving, logging, technical and administrative processing and enforcing of the documents, expediting mail and distributive activities,
  - Coordination of the local government and local community, cooperating with the expert departments of the Town government, provision of consulting, administrative, technical service to the local communities,
  - Workplace safety and fire protection activities,
  - Regulation draft preparation within the Service scope of work and enforced by Town assembly, the Mayor and the Town council,
  - The activities regarding the Town facility maintenance and cleaning of the premises within,
  - The activities related to the organization of the maintenance for office buildings of the Town bodies and cleaning of their premises,
  - Activities related to transport requirements of the Town bodies and vehicle fleet maintenance,
  - Other expert, administrative and technical activities within the Service and instructed by the Chief of the department, Mayor or the City council.

#### **4. CONCLUSION**

The organizational structure is often a variable set up of company's organizational formations (organizational units, organizational functions, job positions etc.) based on division of the work according to formation as well as interaction - mutual effect among formations. It is most often presented by graphic charts, where one uses geometrical forms and lines (rectangles, circles, ellipses etc.), connected by continuous or intermittent lines, which are called organizational charts or Gantt charts. In order to understand this, very important issues, notions such as macro, mezzo and micro-organizational structure are being used. Contemporary organization is viewed as a system of professional processes in which transformation of input into output takes place and thus additional value for the buyers is made, not all of the activities are of the same relevance to the organization. The organizations have to be prepared to meet these challenges. It is evident that the strategies, which ensure successful functioning, in such circumstances, require flexibility that is possibility of self-defense (stability), the forms that are used in order to single out and localize the negative effects of the external and internal surroundings. In such business conditions the choice and implementation of the adequate competitive strategy represents a guiding line towards doing business successfully. The trends in the surroundings as well as harsh global competition pressure managers immensely in order to aim the organizational activities towards continuous development of the key competences in order to strengthen the market position. The vitality of an organization on the market is conditioned by the efficiency and effectiveness of doing business.

#### **REFERENCES**

- Lilić, S., Administrative law- Administrative procedural law, JP The Official Gazette, Belgrade, 2012
- Mladenović, V., The basics of the management, Higher vocational school for management in transport, Nis, 2011

Živanović N., Živanović V., „Organisation of a company“, Faculty of the business industrial management at the University ”UNION – Nikola Tesla” Belgrade, 2016  
Law on state Administration of the Republic of Serbia "The official Gazette", no. 79/2005, 101/2007, 95/2010 and 99/2014  
[http://subotica.rs/public/documents/pages/informator/informator\\_subotica\\_cir.pdf](http://subotica.rs/public/documents/pages/informator/informator_subotica_cir.pdf), accessed and taken: 1.11.2020



# DANGEROUS LIAISONS: CORRUPTION AND MONEY LAUNDERING IN CONTEMPORARY SOCIETY

Georgi Petrunov<sup>1</sup> 

DOI: <https://doi.org/10.31410/LIMEN.2020.371>

---

**Abstract:** *The article analyzes the dangerous links between two criminal activities that are widespread in contemporary societies, corruption and money laundering. The spread of both crimes has a serious negative impact on our economies and societies. Moreover, the links between corruption and money laundering contribute to the criminalization of the state itself. The article describes the main characteristics of each criminal activity, focusing on the specific connections between them, and argues for the need of effective integrated counteraction policies.*

**Keywords:** *Corruption, Money laundering, Politically exposed persons.*

---

## 1. INTRODUCTION

Over the past decades, a growing number of studies has identified corruption as one of the main obstacles to economic development. The international community views corruption as a factor that erodes the stability of governments, undermines the democratic principles and foundations of societies, and perpetuates inequalities, poverty and discontent among the people (UNODC, 2018; World Bank, 2018). Corruption is also referred to in the UN Sustainable Development Goals 2030, in Goal 16 and Sub-Goals 3, 4, 5 and 6 (UN, 2015). It is considered a major hindrance to a sustainable socio-economic development and the cause of violence, insecurity and injustice, which is why coordinated efforts are needed to fight it. According to research data (Quintanilla et al., 2018), the cost of corruption across the EU put the loss to GDP as a result between 179 and 950 billion euros per year, and at national level that percentage ranges from 0.76% of the GDP in the Netherlands to 15% of GDP in Romania. Today, researchers are convinced that corruption is at the root of many failed states in Africa, Eastern Europe and Asia, in which large-scale corruption cases have made the news around the world (Chaikin & Sharman, 2009, p. 7).

While corruption causes huge damage to societies and economies, at the same time it generates significant illicit profits for the perpetrators. In order to enter the legal economy without the risk of being detected, the illicit funds must be managed so that their illegal origin is well concealed, i.e. the money has to be laundered. Although the link between criminal activity and money laundering has long been recognized (Levi et al., 2007), it is only recently that researchers have turned their attention to the topic of laundering money received from corruption. This is because money laundering has been mainly associated with drug-related crimes. The issue of corruption as a predicate offense, on the other hand, is not sufficiently studied.

This article aims to expose the dangerous links between corruption and money laundering. The intertwining of the two criminal activities appears to play a key role in the processes of

---

<sup>1</sup> University of National and World Economy, Sofia, Bulgaria, boul.8th December, Bulgaria

criminalization of the state in modern societies. To effectively counter these processes, policies integrating the fight against corruption and money laundering are needed.

## **2. MANIFESTATIONS OF CORRUPTION IN CONTEMPORARY SOCIETY**

Corruption has many faces, and in the following chapters we briefly described some of them.

There is broad consensus in the literature that corruption concerns the public sphere, state and bureaucratic structures (Maltz, 1985; Poole-Robb & Bailey, 2002), and is understood as the abuse of power for personal gain (Tanzi, 1998). This definition has gained great popularity and is also found in international anti-corruption conventions (for example, in the UN Convention against Corruption, Council of Europe documents, etc.). However, in recent years, more and more attention has been paid to corruption in the private sphere, as its size and negative effects are becoming more significant and cannot be neglected (Argandoña, 2003; Gopinath, 2008; Stoyanov, 2018; Sartor, & Beamish, 2020).

Corrupt practices take place both at the lowest level and at the highest levels of government. Every act of corruption has negative effects, and the result is illegal gains. The profits from corruption range from small amounts to millions of euros. What may appear as a negligible amount of 5-10 euros, for example, illegally collected by customs officers for letting someone pass border control easily, may in fact be part of systemic corrupt practices which can generate thousands of euros in illegal revenue per day. Such examples show that corruption should not be understood as just a deviant individual behavior, but rather the coordinated joint activities of well-structured organizations.

Like any other human activity, when organizations are engaged in corruption, the scale of operations is much bigger and sustainable over time, unlike any personal act. A number of investigations in Bulgaria have shown that employees at various inspection and control bodies - customs officers, police units, tax officials, traffic agencies, medical commissions, and others - carry out well-coordinated organized corruption activities. Organized corruption can grow quite substantial in scale and scope. In some cases, we have an example of a captured state (Stoyanov & Gerganov, 2019; Nonchev, 2019), where the employees have gained control over the institutions and use them to charge extra fees in addition to the regulated taxes and fees. In some cases, corrupt officials in these institutions exclude those employees who do not wish to participate in illegal activities.

What is important to grasp is that the problem of corruption concerns the institutional framework, and is independent of the individual or individuals holding certain positions. A person, a group of people or even all employees in an institutional unit can be replaced, and after a short period the newly appointed people will engage in the same corrupt practices.

The profits from corruption often exceed multiple times the official salary received by the corrupt employees. But possessing large amounts of cash is not enough, if the owner cannot freely spend it. A corrupt politically exposed person (PEP) can use a luxury company car, have a huge office, and be in a legitimate power position, overseeing many subordinates, but he/she will not be able to use the illegally obtained millions and would be forced to live in a small apartment until his or her mandate is over. The politically exposed person would be tempted to replace it with a more luxurious property, yet a luxurious life would be only a dream unless the money gained from corruption cannot be made to appear as legal income. This creates the need to launder this money.

### 3. LAUNDERING MONEY ACQUIRED FROM CORRUPTION

Money laundering itself can take different forms depending on the nature of the corruption practice (Barone et al., 2019, p. 4). A large number of corruption cases include receiving cash payments. This determines also how the money will be handled, since it has to be kept away until it is laundered. "The ability to transfer and conceal funds is critical to the perpetrators of corruption, especially large-scale or "grand corruption" (UNODC, 2004, p. 21).

The money laundering process is widely described as consisting of three phases - placement, layering, and integration. During the placement phase, money received from criminal activity is introduced into the financial system. Most often, legal financial institutions are used for this by making cash deposits to bank accounts, buying investment instruments and others. Following the first phase, once the money is already in the financial system, it goes through various transactions and operations so that it is no longer traceable to the original source. The layering of operations is needed as it makes it more difficult to trace and detect the illegal origin of the money. In the last third phase, money can be integrated into the legal economy with less risk of being detected. The possibilities for integration are numerous - investments in the capital market, purchasing real estate, purchasing luxury goods, cars, jewelry and much more. The money laundering process does not always go through all three phases, i.e. money can be laundered through only one of these phases (Van Duyne, 2003, p. 85). For example, when integration takes place through purchases of real estate or cars, the corrupt officials and the sellers formally finalize the deal at a much lower value than the real price of the property, and the rest is paid in cash with money whose origin does not need verification. Such agreements often take place in countries such as Bulgaria, where cash payments predominate and public acceptance of such practices is high.

In some cases, the money, especially from large-scale corruption cases, is transferred directly to a bank account specified by the corrupt person. Here, the placement phase is completed as soon as the money is received. Afterwards layering can be done through transfers to other accounts, using the money for bank guarantees to take loans, etc.

But corrupt practices do not always involve money. Corruption is also the act of transferring the ownership of a business to an intermediary or providing the use of property and services free of charge. Money laundering schemes are numerous and are limited only by the imagination and the capital (financial and social) of the corrupt employee.

### 4. LIAISONS BETWEEN CORRUPTION AND MONEY LAUNDERING

The links between corruption and money laundering can take different forms and all of them are important. In the previous section we discussed the most obvious link to corruption as a predicate crime to money laundering. Due to the enormous potential of corruption and the need to legalize the profits it generates, experts (FATF, 2012, p. 19) identify those who hold or have held senior political positions, as well as their associates, as a particularly high-risk group for corruption and related money laundering. Once laundered, money gained from corruption can be used for any purpose and gives great economic power to their owners.

On the other hand, corruption can take place in the very process of "dirty money" entering the legal financial system. Perpetrators bribe officers in the financial institutions to "circumvent" anti-money laundering requirements. Corruption, used to prevent the criminal nature of money

from being exposed, reduces the effectiveness of anti-money laundering measures. This increases the vulnerability of the financial system to the inflow of money generated by organized criminal groups and even terrorist organizations (Livescu, 2017).

It could be stated that the connection between corruption and money laundering leads to development of deviant societies and the criminalization of the state (Petrunov, 2010). The two crimes have become so interlinked that it is difficult to distinguish between them (Mugarura, 2016). Moreover, corruption triggers money laundering, and vice versa, so that they mutually reinforce each other. The close links between corruption and money laundering suggests that policies designed to combat both crimes at the same time will be more effective.

## **5. COUNTERACTION POLICIES**

Corruption is a difficult crime to detect and when it comes to prominent political figures, especially while they are in power, detection and investigation become even more complicated. This is usually a carefully planned, quickly executed, one-off act, and therefore, hard to investigate. The motivations of corrupt people, as we have already argued, are not only the financial gains, but also the possibility to enter the money in the legal economy. Thus, money laundering provides an additional opportunity for investigators to gather key evidence against corrupt individuals.

Despite that, as some authors have argued (Shehu, 2005), there has been a lack of consensus among the international institutions responsible for developing key documents and recommendations to combat both crimes on the benefits of using anti-money laundering regimes in the fight against corruption. In this regard, measures from all three main pillars aimed at countering money laundering have a key role to play: preventive measures can be of great benefit in stopping the profits from corruption to enter the legal economy; criminal law measures provide an important tool for investigators to reach to the top levels in the corrupt organizations and capture the most important actors by "following the money trail"; the confiscation of the illegally acquired assets (under civil or criminal law) deprives the corrupt perpetrators of their profits, which is the main motive for committing the crimes. Authors (Sharman, 2011, p. 176) who support such ideas also argue for the use of anti-money laundering measures in the fight against corruption.

Although corruption and money laundering are different phenomena related to specific problems, researchers (Chaikin & Sharman, 2009, p. 7) argue that we can and, in fact, need to develop an integrated response, considering the actual link between corruption and money laundering. An effective anti-money laundering framework limits the channels through which illegal money can be laundered, making crime riskier and thus reducing the incentives for corrupt activities (Fontana & Pereira, 2012). By shedding light on suspicious financial transactions in general, anti-money laundering mechanisms can help anti-corruption investigators detect both the illicit financial profits from corruption and the corruption schemes themselves. As other authors have noted (Fontana & Pereira, 2012, p.1), this does not suggest that anti-money laundering mechanisms can or should replace the wide range of available anti-corruption tools. Rather, they should be added to the existing ones. In order for this to happen, all the measures and procedures required by anti-money laundering policies need to be properly implemented and introduced in all sectors.

Recognizing the important role of anti-money laundering measures in the fight against corruption, the Egmont Group (2018) has proposed 55 specific indicators, the purpose of which is to facilitate the work of reporting entities to identify suspicious transactions and activities

indicative of corruption. The same indicators could alert investigators of money laundering linked to corruption, and can therefore be used alone or in combination with other indicators or relevant information to improve the prosecution of the crimes. Particular attention is paid to PEPs, as they are at increased risk of corruption.

The more effective the fight against money laundering, the more productive the fight against corruption will be (UNODC, 2004, p. 29). The implementation of anti-money laundering measures can make a significant contribution to detecting corruption and can enable more efficient financial investigations. Therefore, we need policies that effectively integrate the counteraction against the two criminal activities.

## 6. CONCLUSION

As separate crimes, corruption and money laundering each have a strong negative impact on every social sphere. Combined, their strength increases, on the one hand. On the other hand, their interconnection gives perpetrators the possibility to conceal their dealings. Therefore, it is of utmost importance that the dangerous links between corruption and money laundering are given special attention by the institutions leading the fight against them, and new tools are created to counteract the criminal phenomena.

The more effective the anti-money laundering regime, the better results can be achieved in the fight against corruption. The negative consequences of money laundering and corruption extend to every sphere of society, but have a particularly strong impact on the financial integrity and stability of the state - undermining the trust in the institutions and creating favorable conditions for criminals, as criminals work best in weak and corrupt countries, where the money laundering controls are ineffective. It is therefore important for each country to develop policies to combat the two criminal phenomena, in order to secure a policy and social climate that does not facilitate but prevents and impedes corruption and money laundering.

## ACKNOWLEDGMENT

This paper is result of the author's work in frame of research project № NID NI-10/2018 financed by University of National and World Economy, Sofia.

## REFERENCES

- Argandoña, A. (2003). Private-to-private Corruption. *Journal of Business Ethics*, 47(3), 253-67. [https://doi: 10.2139/ssrn.685864](https://doi.org/10.2139/ssrn.685864).
- Barone, R., Masciandaro, D., & Schneider, F. (2019). Money laundering and corruption: Birds of a feather flock together. *SSRN Electronic Journal*. [https://doi: 10.2139/ssrn.3400674](https://doi.org/10.2139/ssrn.3400674).
- Chaikin, D., & Sharman J.C. (2009). The Corruption-Money Laundering Nexus. In *Corruption and Money Laundering. Palgrave Series on Asian Governance* (pp. 7-30). New York: Palgrave Macmillan. [https://doi.org/10.1057/9780230622456\\_2](https://doi.org/10.1057/9780230622456_2).
- Egmont Group. (2018). *Set of Indicators for Corruption Related Cases from the FIUs Perspective*. Available at: <https://egmontgroup.org/en/content/new-publication-set-indicators-corruption-related-cases-fius-perspective>.
- FATF. (2012). *Specific Risk Factors in Laundering the Proceeds of Corruption*. Paris: FATF.
- Fontana, A. & Pereira, P.G. (2012). *Using money laundering investigations to fight corruption in developing countries*. Anti-Corruption Research Center.



- Gopinath, C. (2008). Recognizing and Justifying Private Corruption. *Journal of Business Ethics*, 82(3), 747-754. <https://doi.org/10.1007/s10551-007-9589-8>.
- Levi, M., Dakolias, M., & Greenberg, T.S. (2007). Money Laundering, the Highway of Grand Corruption. In E.J. Campos & S. Pradhan (Eds.), *The Many Faces of Corruption* (pp. 389-426). Washington, D.C.: The International Bank for Reconstruction and Development/The World Bank. <https://doi.org/10.1596/978-0-8213-6725-4>.
- Livescu, I. (2017). The link between Money Laundering and Corruption Is the fight effective? A thesis submitted in partial fulfillment of the requirements for the degree of Masters in European Union Law awarded by the Tilburg University Law School, Tilburg, The Netherlands.
- Maltz, M. (1985). Toward Defining Organized Crime. In H. Alexander & G. Caiden (Eds.), *The Politics and Economics of Organized Crime* (pp. 82-95). Massachusetts/Toronto: Lexington Books.
- Medina, L., & Schneider, F. (2018). Shadow Economies Around the World: What Did We Learn Over the Last 20 Years? *IMF Working Paper African Department*, WP/18/17.
- Mugarura, N. (2016). Uncoupling the relationship between corruption and money laundering crimes. *Journal of Financial Regulation and Compliance*, 24 (1), 74-89.
- Nonchev, A. (2019). State capture of the Post-socialist state: challenges to European integration. *Research Papers of UNWE*, 3, 203-213. (in Bulgarian).
- Petrunov, G. (2010). Organized Crime and Corruption as a Part of the Genesis of Deviant Societies: On the Example of the Crime Case „Human Trafficking“. *Sociological Problems*, 42 (1-2): 334-349.
- Sartor, M.A., & Beamish, P.W. (2020). Private Sector Corruption, Public Sector Corruption and the Organizational Structure of Foreign Subsidiaries. *Journal of Business Ethics*, 167, 725–744. <https://doi.org/10.1007/s10551-019-04148-1>.
- Sharman, J. C. (2011). *The Money Laundry: Regulating Criminal Finance in the Global Economy*. Ithaca, NY: Cornell University Press.
- Shehu, A.Y. (2005). International initiatives against corruption and money laundering: an overview, *Journal of Financial Crime*, 12(3), 221–245. <https://doi.org/10.1108/13590790510624828>.
- Stoyanov, A. (2018). *Private sector corruption in Bulgaria*. Sofia: CSD.
- Stoyanov, A. & Gerganov, A. (2019). State capture: from theory to piloting a measurement methodology. *UNWE Yearbook*, 2, 19-46.
- Tanzi, V. (1998). Corruption around the world: causes, consequences, scope and cures. *International Monetary Fund staff papers*, 45, 559–594.
- Quintanilla, P.B., Cummins-Tripodi, P., Marié, A., & Mussio, E. (2018). *The costs of corruption across the EU*. The Greens/EFA Group in the European Parliament. Available at: [https://www.greens-efa.eu/files/assets/docs/the\\_costs\\_of\\_corruption\\_across\\_the\\_eu.pdf](https://www.greens-efa.eu/files/assets/docs/the_costs_of_corruption_across_the_eu.pdf).
- UN. (2015). *Transforming our world: the 2030 Agenda for Sustainable Development*. Available at: <https://sustainabledevelopment.un.org/post2015/transformingourworld>.
- UNODC. (2004). *The Global Programme Against Corruption: UN Anti-Corruption Toolkit*. Available at: <https://www.un.org/ruleoflaw/blog/document/the-global-programme-against-corruption-un-anti-corruption-toolkit/>.
- UNODC. (2018). *UNCAC 15th Anniversary*. Available at: <https://www.unodc.org/unodc/corruption/>.
- Van Duyne, P. (2003). Money Laundering Policy: Fears and Facts. In P. Van Duyne, K. von Lampe & J. L. Newell (Eds.). *Criminal Finance and Organizing Crime in Europe* (pp. 72-109). Nijmegen, Netherlands: Wolf Legal.

World Bank. (2018). *Combating Corruption*. Available at:  
<https://www.worldbank.org/en/topic/governance/brief/anti-corruption>.





# INVESTIGATION OF PLATE WASTE IN UNIVERSITY REFECTORY

Melisa Ozbiltekin-Pala<sup>1</sup> 

Gülmüş Börühan<sup>2</sup> 

DOI: <https://doi.org/10.31410/LIMEN.2020.379>

**Abstract:** *Food waste is a crucial global problem in the world. It is also a crucial issue for food services, consumers etc. Food is wasted throughout the entire food chain. At the consumer level, 35 percent of wasted food occurs. One of the main causes of food waste at consumer level is determined as “plate waste”. Although, the issue needs sustainable solutions to decrease food waste, there is no permanent solutions in mass consumption places about food waste such as refectories, cafeterias. The aim of the study is to analyse the amount of plate waste in Yaşar University (YU) refectories in İzmir by observation method and to find ways of minimizing food waste in YU, providing sustainability and contributing to the development of circular economy and raising awareness about food waste problem. For this research, the food waste at the YU refectories in Izmir was analysed by observation method. For 1-week observation study, a total of 3883 trays were examined throughout the Main campus and T blocks. It is determined that the biggest percentage is the main course and more than 50 percent of trays consist of waste in YU refectories.*

**Keywords:** *Food Waste, Mass Consumption, Observation.*

## INTRODUCTION

Food waste is a critical issue for the world and the future. Food wastage is not about only food scarcity. According to Salihoglu (2018) food waste causes environmental impact such as unnecessary release of greenhouse gases or inefficient use of land and water. FAO estimates that 1/3 of all food produced is lost or wasted emphasizes the importance of the problem. Food loss and waste (FLW) can occur throughout the food supply chain (FSC) (Godfray et al., 2010; Gustavsson et al., 2011). The best way to reduce environmental impacts is to decrease FLW (FAO, 2013b). FLW occur at several stages of the supply chain (FAO, 2011). Reducing edible food at the stage of production, post-harvest and processing is considered food loss (Godfray et al., 2010). Food wastes are occurred in developed countries, while food losses often occur in developing countries. Generally, 30–40% of food is lost or wasted in all countries (Godfray, et al., 2010).

Food waste refers to food losses that occur during supply chain. Food waste is described by HLPE (2014) as the food, which is edible, discarded or left to be spoiled at the level of the product. Although the word “food loss” includes “food waste”, it applies to losses in the FSC during the growth, post-harvest and processing stages (Godfray et al., 2010; Parfitt et al., 2010). Moreover, it is difficult to estimate FLW at various stages of the FSC. Several methods are used to examine FLW. At the country level, FLWs are calculated by applying specific loss factors to the different stages of the FSC (Kummu, 2012; Hall et al., 2009; Pradhan et al., 2014).

<sup>1</sup> Yaşar University, Turkey

<sup>2</sup> Yaşar University, Turkey

In 2015, Turkey had more than 76 million inhabitants (TurkStat, 2015). Food industry and agricultural production are important sectors for the country's economy. One of the main problems is having enough food is not among the main problems in Turkey. Food is lost or wasted at the various stages of the FSC, from agricultural production to consumption, disposal or other removal methods (Lipinski et al., 2013).

Households have received considerable research and are biggest cause group of food waste in the consumption stage (Engström et al., 2004). Despite their potentially significant food waste generation, a more systematic study of total food service losses, especially in workplace and university cafeterias, hasn't received much attention (Gallardo et al., 2016). There could be many advantages to make analysis on food waste generation at universities. First, universities host people with experience and knowledge who can easily foster change in their environment. Second, food waste is usually a growing, if not the largest, fraction of waste generated on campuses (Lipinski et al., 2013). Although lots of universities have undertaken studies of planning of waste management, only a few have specifically focused on food waste generation and reduction methods (Abdelaal et al., 2019). Food wastes emerge on a larger scale, especially in public places, cafeterias and canteens. Therefore, the aim of this project is to analyse food waste in Yaşar University cafeterias and to offer solutions to reduce it with company of Fazla Gıda. With the help of the project, to find permanent solutions of food waste are aimed.

## **PROBLEM DEFINITION**

Global food demand is projected to increase 60-110% between 2005 (Alexandratos; Bruinsma, 2012; Pradhan, et al., 2013) and 2050 due to population growth. This increase is thought to help reduce FLW. In parallel, it is expected to reduce global warming since emissions from food production decreased (Foley, et al., 2011). Recently, one third of global food production (about 1.3 billion tons per year) is lost or wasted. (FAO, 2011). Preventing FLW can contribute to the conservation of resources used in food production and decrease the environmental impacts of agriculture, as well as increase local, regional and global food safety (Kummu, et al., 2012; Pradhan, et al., 2014).

One of the sectors where food waste is concentrated is food and beverage sector. Food and beverage sector have become one of the biggest sectors in the world due to its contribution to the economy and employment opportunities it creates (High Level Panel of Experts on Food Security and Nutrition, 2014). Moreover, in the food chain, the most waste occurs in consumption process. Consumers waste 35% of their food in households, restaurants and mass consumption places (refectories, hotels). While waste comes to the forefront at the consumption stage, losses during food preparation, spoilage due to incorrect preservation and cooking are also accompanied by this waste (Nguyen, 2018). However, food left on the plate should be investigated better than other losses and wastes. The plate waste which is a common cause of food waste means edible food left on the plate from the meal served (Williams and Warton, 2011).

Waste in refectories creates nutrients and economic losses for decision-makers, students, staff and is a loss for society due to its environmental impact. In order to prevent this loss, studies are carried out at different levels of education. Falasconi et al. (2015) search to food waste value in six schools from Verona (Italy) and 6525.35kg food went to trash in 2008 to 2011. By the way, surveyed 500 students in University of California, Berkeley about food waste. 210 students (43%) did not eat %30 per cent food tray and number of % 9 students did not eat more

than %50 per cent food tray (Lam, 2010). Sarjahani et al. (2009) collect food waste value about 2 weeks (10 days with Monday through Friday) in Virginia Polytechnic Institute and State University (Virginia Tech); Calculated 12.090 kilos food waste from breakfast, lunch and dinner.

There may be many advantages to addressing research efforts in the case of food waste in universities. First, universities are important for hosting individuals with experience and knowledge. Second, food waste is a large waste generated generally on campuses (Gallardo et al., 2016). While many universities implement practices for waste management plan studies (Gallardo et al., 2016), only a few add solutions for the formation and mitigation (Kim and Morawski, 2012).

Yasar University is one of the most important universities in İzmir with more than 600 staff (academic and administrative personnel) and more than 10 thousand students. Yasar University is one of 205 other universities in Turkey so universities can organize food wastes and can create economic and environmental benefits for the world. Yasar University is located in two separate locations: main campus and T block. Therefore, there are 2 separate refectories on the main campus and T block. According to data which are collected from food company providing food to Yasar University, the total number of people eating at Yasar University main campus and T block cafeterias was 15617 in September with 10844 staff and 4773 students. Moreover, according to data the number was 20957 in October with 17637 staff and 3320 students and it was 19993 in November with 12585 staff and 7408 students.

Furthermore, according to the study, Yaşar University' refectory produce food waste with 3883 trays (57%) in 1 week (Monday through Friday). However, the results showed that Yaşar University refectory is facing a huge food waste problem. Therefore, sustainable and circular solutions are needed to minimize food waste occurs in the refectory of the university.

## **LITERATURE REVIEW**

In this study, literature review is organized under 3 main headings; food surplus, food waste and circular economy. Firstly, food surplus is explained in detail.

### **FOOD SURPLUS**

Food surplus is a global issue. Furthermore, it is a key index to compare how different groups and societies have handled shortage and abundance problems, climatic variation and power relations in the past. According to Raak et al. (2017) “Inflated order to make the shelves look full” is important for companies because companies think to necessity of loaded racks for consumers. Moreover, food surplus is eatable, dumped food that is quit deliberately, has been extinguished from sale from e.g., a grocery store, or else fails to be consumed due to several causes. Food surplus changes food waste when it becomes invincible (Jurgilevich et al., 2016). Food surplus is generally about physical appearance of food in retail and institutional markets (Thyberg and Tonjes, 2016). In the future, it is expected that food surplus in most countries will move to grow due to increased demand for food. It is expected to increase in global food surplus around 850 kcal/cap/day by 2050 (Hiç et al., 2016). Compared with the required amount, the available food's growth rate will be more outstanding in the country of transit. The growth rate of available food compared to the required amount will be more prominent in the transition countries. The one of the important points of food waste is overproduction which is related with food surplus. On the other perspective, it is noted that overproduction is not a huge

problem for some products which have long shelf-lives such as juice, cheese, biscuits, convenience food. These products can be donated or redistributed. There are motivations based on environment and social, and for donors, economic benefits can be raised. Apart from products with a long shelf-life, the food produced should be sold or donated as soon as possible, but it is generally expected to be sold in stores. However, redistribution processes can be damaged because of hygiene regulations and logistical limitations (Raak et al., 2017). One of the functions of “degree of recoverability” is the transition from surplus food to food waste. In the following section, food waste is explained in detail.

## FOOD WASTE

Food waste is an important issue for our future and this issue start from our environment. Peng and Pivato (2017) states that food waste occurs because of discharged, lost, degraded, or contaminated of food for human consumption (Giroto et al 2015).

The reasons for food waste in developed and developing countries are related to consumer behaviour and lack of communication between the parts of the supply chain. Foods can be waste because of quality which are rejected cause of do not fit with required appearance or shape (Giroto et al., 2015). The reasons of food waste in undeveloped countries are mostly dependent on financial, administrative and technical limitations, insufficient storage and cooling facilities, poor infrastructure, poor packaging and marketing systems (Giroto et al., 2015). The reduction in the number of intermediaries and dealers can importantly contribute to the reduction of food waste. In this way, losses induced by wholesale or retail may be reduced (Kiss et al., 2019).

Global food waste amounts to nearly 25% of all food produced. Production part represents 24–30% of global food waste, while post-harvest stage shows for 20% and consumption for 30–35%. After all, fruits and vegetables are the largest source of food waste (44%), follow up by roots and tubers (20%) (Vilariño et al., 2017).

By considering literature review, there are many studies about food waste. To start with Baglioni (2017) analysed government and third-party sector operations on food waste and redistribution in Lombardy (Italy) and Baden- Wurttemberg (Germany). According to his study, government sides use tax tool for managing to food waste and non-profit organisations support private companies for their needs and increase their reputation like government about food waste. Moreover, Bhatt (2018) studied on recycling food problem and the study covers value-added surplus products have potential for creating a new type of food (Bhatt, 2018). In addition, Buzby (2009) analysed that annual food waste value in supermarket between 2005 and 2006. This study found average food waste value 11.4 percent for fruit, 9.7 per cent for vegetables and 4.5 per cent for meat types in supermarket. The objective of the study is to calculate food waste value about food categories for creating innovative packaging to prolong shelf life.

Garrone et al., (2014) focused on the multifaceted concept of FSC maintainability by showing a show of excess food production and administration, which includes the coordinates FSC (i.e. trade, natural and social players). Moreover, Borrello et al., (2017) state that mechanical society is confronting disturbing worldwide problems caused by the impacts of human exercises on the environment. This study states that numerous consumers are willing, on the off chance that adequately compensated, to be committed to support in circular circle. In addition, Franco et al. (2017) analysed a significant portion of the products created for human consumption turn

into waste in the world is presented as connected environmental, economic issues and social based on existing data and reviewed literature. The writers specify the different food waste models and challenges faced by different areas around the world. Also, the food value chain analysed from agricultural production down to household consumption. The environmental and socio-economic impacts of FLW are analysed based on reviewed life cycle assessments. Finally, it reflects on the main challenges for performing strategies to reduce FLW. Moreover, Kiss et al. (2019) state that according to deep research, short supply chain is related to sustainability and cyclical economy and it also considers the effect of short supply chain on circular economy and sustainability. In their research, the authors focus on the issue that the short supply chain is linked to cyclicity and sustainability; environmental load (transport, production method, emission), health, food quality, consumer behaviour, producer-consumer relations and local economy.

Furthermore, Parfitt et al. (2010) discussed that post-harvest losses and household wastes in developing and developed countries were addressed and interviews were conducted with post-procurement experts to find a solution and the work was aimed at preventing the post-production from the supply chain to household wastes. Giroto et al. (2015) state that as a result of research, it is known that waste is increasing in all stages of production and consumption from collection to disposal. Sustainability is the most important solution, and it includes everyone in the industrial sectors, from producers to distributors. One of the most appropriate solution is to donate the re-donable waste. In addition, Raak et al. (2017) state that based on this scientific literature survey, the researchers gathered with experts from 13 German food processing companies and discussed at what stages the problems of food waste were encountered and it was tried to find solutions with the interviewed representatives in order to minimize the formation of food waste. Also, Mourad (2016) states that as a result of approximately 120 interviews and many evaluations in France and California, especially in these regions, it seeks to manage in terms of sustainable production and consumption in general and solutions for recycling.

Food waste important for companies because companies do not have knowledge to organize food waste. Food waste organization must be controlled by companies because at the end of day food waste organization can change. Companies cannot control the food waste problem rightly so Food Recovery Hierarchy help to companies to take maximum benefit from food surplus and food waste.

## **CIRCULAR ECONOMY**

Circular economy aims to transforms traditional linear supply chains with networks based on “waste=food” (Borello et al., 2017). The circular economy approach consists of the idea of recycling towards upcycling, which represents to any process that can convert waste to a higher value. To sum up; the circular economy is planned to “waste one's resources”. For this reason, a circular economy can promote more critical transformations (Ellen MacArthur Foundation, 2012). To illustrate, new circular economy models consider waste generated throughout the linear life cycles. The need to move to a circular economy has become a part of the road map of policy makers and strategic plans of industries and businesses (Ghisellini, 2016).

After all, there are still some challenges facing the sustainability of the transition to a circular economy (Borrello et al., 2018). Some of these challenges are the role of society and consumers. Consumers are the last stage in their supply chain in a linear economy. Borello et al. (2017) states that their contribution is only purchase of products. For this reason, they are uninvolved



and ignorant in their state of middle people among retailers and waste collection. Food waste is the most important thing which consumers could participate to circular economy.

An important point in sustainable consumption and production is to decrease of food waste. Defined conventional operation of food waste can lead to environmental, economic, and social problems (Lozano et al., 2014). There are more sustainable or profitable administration options like reuse and, for example, sugars can be synthesized from food waste (Kiss et al., 2019). Circular economy hierarchy consist of “3Rs”; reduce, re-use and recycle of waste (Kiss et al., 2019). In the upper part of our scheme, as much production as possible is avoided. In the second part of our scheme, food that is close to the potential of being garbage is re-use for human needs. In the third part of the scheme, recycled food is used as fertilizer and animal feed. In the recovery section, inevitable food wastes are re-processed to gain energy. The last section is the disposal of unused products (Lozano et al., 2014). The principles of the circular economy concerning food chains include minimising waste and surplus, reusing food, food recycling, and supporting more diverse and effective. These approaches can contribute to the avoiding of food waste and can help to achieve the goals of the circular economy (Kiss et al., 2019).

If food wastes cannot be recovered under the circular economy heading, water resources as one of the most important consequences will affect the production of food if in water resources will be a problem. Production of wasted food cause global greenhouse emissions and it occurs to squander of usable water sources. FLW also occurs to climate change estimated 8% in the world. All the FLW doesn't have an equal impact to the environment. In solution to environmental problem companies must be paying attention to higher shares of caloric losses, but also paying attention to all the impacts of each good (Franco et al., 2017).

## METHODOLOGY

In this study, observation method was applied to justify and specify critical status of waste generated in Yaşar University refectories. Observation method has allowed to see the total number of people eating at the university refectories during the research period and how many foods became waste at the end of the lunch time.

Due to the fact that the wastes produced in the university refectories cannot be evaluated, an observation study was conducted simultaneously in the refectories of Main campus and T blocks of Yaşar University. This study was carried out in order to obtain the waste rates in the cafeteria between from 11:30 am 14:30 pm and between 25-29 November 2019. At the end of the 1-week study, a total of 3883 trays were examined throughout the Main campus and T blocks. 3254 of these trays were observed in Main Campus and 629 of them were observed in T block. According to the observation, results are explained below respectively.

According to results in 1-week period, totally 2729 amount of food samples became waste in main block of Yaşar University. Based on the results, it is seen that the biggest percentage is the main course. The rate of this is 26%. So, based on the results of a one-week observation, most people leave waste at their main course. This is followed by 21% salads. However, the helper meal (rice/pasta) comes with a rate of 17%, followed by bread with 10%, dessert and with 9%, soup with 8%, appetizer with 7% and the type of food with at least 2% left as yoghurt, and finally fruit is not waste. Moreover, the number of trays was analysed. According to results, 1814 trays contain waste and 1440 trays do not contain waste in the main campus. Approximately 56% of the 3254 trays observed contain waste. As a result of the observations,

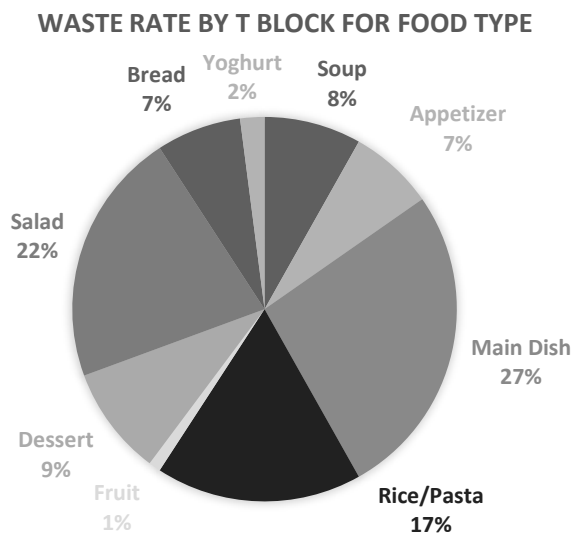


it is seen that it contains at least 1 waste in 56% of the university refectories in main campus. This ratio means that there is a serious waste in there.

Furthermore, the same observation is applied for T block's refectory. According to results, totally 605 amounts of food samples became waste at dinner time for 1-week period. According to results, it is seen that the biggest percentage is the main course. The rate of this is 29%. So, based on the results of a one-week observation, most people leave waste at their main course. This is followed by 21% salads. Afterwards, the helper meal (rice / pasta) comes with a rate of 18%, followed by dessert with 8%, bread and soup with 7%, appetizer with 5%, yoghurt with 3% and fruit with 2%. Moreover, the number of trays observed were analysed in T block refectory. According to observation, 411 trays contain waste and 218 trays do not contain waste in T block. Approximately 65% of the 629 trays observed contain waste. As a result of the observations, it is seen that it contains at least 1 waste in 65% of the university refectories. This ratio indicates that there is a serious waste.

By considering whole Yaşar University refectories, the critical waste status can be seen. At the end of the observations, totally 3334 amounts of food became waste and junked. Generally, main dish, rice/pasta and salad are observed as the most wasted type of food in Yaşar University.

**Graph 1.** Waste Rate by Yaşar University for each type of food



Looking at the Graph 1, it is seen that the biggest percentage is the main course. The rate of this is 26%. So, based on the results of a one-week observation; most people leave waste at their main course. This is followed by 21% salads. Afterwards, the helper meal (rice / pasta) comes with a rate of 17%, followed by dessert and bread with 9%, and soup comes with 8%, appetizer with 7%, yoghurt with 2% and the type of food with at least 1% left as fruit. Moreover, according to the results, 3334 trays contain waste and 1658 trays do not contain waste in whole Yaşar University refectories for 1-week period. Approximately 57% of the 3883 trays observed contain waste. As a result of the observations, it is seen that it contains at least 1 waste in 57% of the university cafeterias. This ratio shows that there is a serious waste.

## CONCLUSION AND FURTHER RESEARCH

Recently, food surpluses lead to food waste. The places that cause the most food waste are universities, hospitals and hotels. According to the research, it is seen that food wastes are mostly caused by “food on a plate” behaviour by consumers. Within the scope of this study, Yaşar University refectories providing food service to an average of 20 thousand people each month were discussed. After literature review was done, an observation of level of food waste which are created in refectories at Yasar University was conducted. All these searches and observations show that especially Yaşar University is facing with “food waste problem” and food waste is really important in human life and it really affects to create big problems in the environment, human health, sustainability, etc.

In this study, firstly it is aimed to analyse the amount of plate waste in the university refectory and then to create awareness about the food waste problem and to find sustainable and cyclical solutions to this problem in Yaşar University' refectory. After the observation method, it is planned to conduct face-to-face interview to measure food waste perceptions of consumers who are students, academicians and administrative staff of Yaşar University for the further research. Furthermore, based on observation results, we cooperated with Fazla Gıda, which provides digital platform for the companies in order to reduce food waste and to ensure the evaluation of the waste generated. After meetings with Fazla Gıda, proposed flow system for plate waste will be prepared for university refectories This proposed flow will enable the reduction of food waste in refectories and capacity planning for preparation of food at the preparation stage of food. We believe that, our cooperation with Fazla Gıda will continue to find sustainable solutions of food waste within the framework of circular economy.




## REFERENCES

- Abdelaal, A. H., McKay, G., & Mackey, H. R. (2019). Food waste from a university campus in the Middle East: Drivers, composition, and resource recovery potential. *Waste Management*, 98, 14–20. <https://doi.org/10.1016/j.wasman.2019.08.007>
- Alexandratos, N. & Bruinsma, J. World Agriculture Towards 2030/2050: The 2012 Revision Ch. 4 (ESA/12-03, FAO, 2012)
- Baglioni, S., De Pieri, B., & Tallarico, T. (2017). Surplus food recovery and food aid: The pivotal role of non-profit organisations. Insights from Italy and Germany. *VOLUNTAS: International Journal of Voluntary and Non-profit Organizations*, 28(5), 2032-2052. <https://doi.org/10.1007/s11266-016-9746-8>
- Bhatt, S., Lee, J., Deutsch, J., Ayaz, H., Fulton, B., & Suri, R. (2018). From food waste to value-added surplus products (VASP): Consumer acceptance of a novel food product category. *Journal of Consumer Behaviour*, 17(1), 57-63. <https://doi.org/10.1002/cb.1689>
- Borrello, M., Caracciolo, F., Lombardi, A., Pascucci, S., & Cembalo, L. (2017). Consumers' perspective on circular economy strategy for reducing food waste. *Sustainability*, 9(1), 141. <https://doi.org/10.3390/su9010141>
- Buzby, J. C., Wells, H. F., Axtman, B., & Mickey, J. (2009). Supermarket loss estimates for fresh fruit, vegetables, meat, poultry, and seafood and their use in the ERS loss-adjusted food availability data (No. 1476-2016-120929).
- Ellen Macarthur Foundation (2012). Towards the Circular Economy. Retrieved from: <https://www.ellenmacarthurfoundation.org/assets/downloads/publications/Ellen-MacArthur-Foundation-Towards-the-Circular-Economy-vol.1.pdf> (Accessed 26.09.2020).

- Engström, R., & Carlsson-Kanyama, A. (2004). Food losses in food service institutions Examples from Sweden. *Food policy*, 29(3), 203-213. <https://doi.org/10.1016/j.foodpol.2004.03.004>
- Falasconi, L., Vittuari, M., Politano, A., & Segrè, A. (2015). Food waste in school catering: An Italian case study. *Sustainability*, 7(11), 14745-14760. <https://doi.org/10.3390/su71114745>
- FAO (2011). Global Food Losses and Food Waste Extent Causes and Prevention. at Interpack2011 Retrieved from: [http://www.fao.org/fileadmin/user\\_upload/sustainability/pdf/Global\\_Food\\_Losses\\_and\\_Food\\_Waste.pdf](http://www.fao.org/fileadmin/user_upload/sustainability/pdf/Global_Food_Losses_and_Food_Waste.pdf) (Accessed 03.05.2020).
- FAO (2013). Toolkit: Reducing the Food Wastage Footprint. Food Agriculture Organization Retrieved from: <http://www.fao.org/3/i3342e/i3342e.pdf> (Accessed 10.05.2020).
- Gallardo, A., Edo-Alcón, N., Carlos, M., & Renau, M. (2016). The determination of waste generation and composition as an essential tool to improve the waste management plan of a university. *Waste management*, Vol. 53, 3-11. <https://doi.org/10.1016/j.wasman.2016.04.013>
- Garrone, P., Melacini, M., & Perego, A. (2014). Opening the black box of food waste reduction. *Food policy*, Vol.46, 129-139. <https://doi.org/10.1016/j.foodpol.2014.03.014>
- Ghisellini, P., Cialani, C., & Ulgiati, S. (2016). A review on circular economy: the expected transition to a balanced interplay of environmental and economic systems. *Journal of Cleaner Production*, Vol.114, 11-32. <https://doi.org/10.1016/j.jclepro.2015.09.007>
- Giroto, F., Alibardi, L., & Cossu, R. (2015). Food waste generation and industrial uses: a review. *Waste Management*, Vol. 45, 32-41. <https://doi.org/10.1016/j.wasman.2015.06.008>
- Godfray, H. C. J., Beddington, J. R., Crute, I. R., Haddad, L., Lawrence, D., Muir, J. F., ... & Toulmin, C. (2010). Food security: the challenge of feeding 9 billion people. *Science*, 327(5967), 812-818. <https://doi.org/10.1126/science.1185383>
- Gustavsson, J., Cederberg, C., Sonesson, U., & Emanuelsson, A. (2013). The methodology of the FAO study: Global Food Losses and Food Waste-extent, causes and prevention"-FAO, 2011.
- Hiç, C., Pradhan, P., Rybski, D., & Kropp, J. P. (2016). Food surplus and its climate burdens. *Environmental Science & Technology*, 50(8), 4269-4277. <https://doi.org/10.1021/acs.est.5b05088>
- High Level Panel of Experts on Food Security and Nutrition (HLPe). (2014). Food Losses and Waste in the Context of Sustainable Food Systems. A Report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security. *Hlpe Report*, (June), 1-6. <https://ik.yasar.edu.tr/> (Accessed 23.03.2020).
- Jurgilevich, A., Birge, T., Kentala-Lehtonen, J., Korhonen-Kurki, K., Pietikäinen, J., Saikku, L., & Schösler, H. (2016). Transition towards circular economy in the food system. *Sustainability*, 8(1), 69. <https://doi.org/10.3390/su8010069>
- Kim, K., & Morawski, S. (2012). Quantifying the impact of going trayless in a university dining hall. *Journal of Hunger & Environmental Nutrition*, 7(4), 482-486. <https://doi.org/10.1080/19320248.2012.732918>
- Kiss, K., Ruskai, C., & Takács-György, K. (2019). Examination of Short Supply Chains Based on Circular Economy and Sustainability Aspects. *Resources*, 8(4), 161. <https://doi.org/10.3390/resources8040161>
- Kummu, M., De Moel, H., Porkka, M., Siebert, S., Varis, O., & Ward, P. J. (2012). Lost food, wasted resources: Global food supply chain losses and their impacts on freshwater,

- cropland, and fertiliser use. *Science of the Total Environment*, Vol. 438, 477-489. <https://doi.org/10.1016/j.scitotenv.2012.08.092>
- Lam, Y. (2010). Why do UC Berkeley students waste food at dining halls. University of California Berkeley.
- Luecke, L. (2015). Haste to No Waste: A Multi-Component Food Waste Study in a University Dining Facility Dining Facility. Proceedings of The National Conference On Undergraduate Research (NCUR) 2015 Eastern Washington University, Cheney, WA
- Mourad, M. (2016). Recycling, recovering and preventing “food waste”: competing solutions for food systems sustainability in the United States and France. *Journal of Cleaner Production*, Vol. 126, 461-477. <https://doi.org/10.1016/j.jclepro.2016.03.084>
- Nguyen Khanh Linh. (2018). Food waste management in the hospitality industry Case study: Clarion Hotel Helsinki. Haaga-Helia University of Applied Sciences, 1–63. Retrieved from [https://www.theseus.fi/bitstream/handle/10024/142528/NGUYEN\\_KHANH\\_LINH.pdf?sequence=1&isAllowed=y](https://www.theseus.fi/bitstream/handle/10024/142528/NGUYEN_KHANH_LINH.pdf?sequence=1&isAllowed=y) (Accessed 04.04.2020)
- Parfitt, J., Barthel, M., & Macnaughton, S. (2010). Food waste within food supply chains: quantification and potential for change to 2050. *Philosophical transactions of the royal society B: biological sciences*, 365(1554), 3065-3081. <https://doi.org/10.1098/rstb.2010.0126>
- Peng, W., & Pivato, A. (2019). Sustainable management of digestate from the organic fraction of municipal solid waste and food waste under the concepts of back to earth alternatives and circular economy. *Waste and Biomass Valorization*, 10(2), 465-481. <https://doi.org/10.1007/s12649-017-0071-2>
- Raak, N., Symmank, C., Zahn, S., Aschemann-Witzel, J., & Rohm, H. (2017). Processing-and product-related causes for food waste and implications for the food supply chain. *Waste Management*, Vol. 61, 461-472. <https://doi.org/10.1016/j.wasman.2016.12.027>
- Salihoglu, G., Salihoglu, N. K., Ucaroglu, S., & Banar, M. (2018). FLW management in Turkey. *Bioresource Technology*, Vol.248, 88-99. <https://doi.org/10.1016/j.biortech.2017.06.083>
- Sarjahani, A., Serrano, E. L., & Johnson, R. (2009). Food and non-edible, compostable waste in a university dining facility. *Journal of Hunger & Environmental Nutrition*, 4(1), 95-102. <https://doi.org/10.1080/19320240802706874>
- Thyberg, K. L., & Tonjes, D. J. (2016). Drivers of food waste and their implications for sustainable policy development. *Resources, Conservation and Recycling*, 106, 110-123. <https://doi.org/10.1016/j.resconrec.2015.11.016>
- TurkStat, 2015. Turkey in Statistics 2015. Turkish Statistical Institute, ISBN 978-975-19-6546-2. Publication Number: 4431.
- Vilariño, M. V., Franco, C., & Quarrington, C. (2017). FLW reduction as an integral part of a circular economy. *Frontiers in Environmental Science*, 5, 21. <https://doi.org/10.3389/fenvs.2017.00021>
- Williams, P., & Walton, K. (2011). Plate waste in hospitals and strategies for change. *e-SPEN, the European e-Journal of Clinical Nutrition and Metabolism*, 6(6), e235-e241. <https://doi.org/10.1016/j.eclnm.2011.09.006>
- Williams, P., & Walton, K. (2011). Plate waste in hospitals and strategies for change. *E-SPEN*, 6(6).

# AGRICULTURAL EXTENSION SERVICE IN SERBIA – ATTITUDES OF FARMERS

Marija Nikolić<sup>1</sup>   
Tamara Paunović<sup>2</sup>   
Milena B. Stevović<sup>3</sup> 

DOI: <https://doi.org/10.31410/LIMEN.2020.389>

---

**Abstract:** *In modern agriculture, farmers face certain problems in obtaining necessary information and improving agricultural production. This paper aimed to reveal the standpoints of farmers related to the role of agricultural extension services (AES) as a source of information and farmers' opinion on the quality of work of extension officers. In order to examine this goal, two municipalities were selected, Alibunar and Kruševac. A total of 65 farmers were included in the research and a survey of their attitudes was conducted. The analysis of farmers' attitudes indicates that some of them are still not sufficiently familiar with the work of extension service. In the municipality of Alibunar, the most important source of information is other farmers, although half of them regularly use services of AES. Farmers in Kruševac are more focused on using the services of extension officers, which they value as the most important source of information related to agricultural production. Farmers from both municipalities think that the work of extension officers, both in terms of transparency and quality of information, can be improved.*

**Keywords:** *Standpoints, Farmers, Extension service, Improving the quality of work.*

---

## INTRODUCTION

Significant changes in the global market have greatly affected agricultural production. The demands placed on today's farmers include not only the production of sufficient quantities of safe food, but also the application of modern measures and numerous innovations in the production process. The success of this process depends primarily on the characteristics of the farmers: their level of education, readiness to attend additional educational seminars, commitment to lifelong learning, but also openness to change and willingness to minimize the impact of tradition on the business decision-making process. An important factor that should facilitate this process and help farmers to improve agricultural production is agricultural extension service.

The most important provider of agricultural extension services in Serbia, as in most South-Eastern European countries, is public agricultural extension service (PAES). The availability of modern extension services to agricultural producers and small businesses is extremely important for the development of agriculture (Volk et al., 2015). The efficiency of the extension service depends on the ability and competence of the extension officers, but also on their focus on the needs and requirements of service users, mostly agricultural producers. That is why

---

<sup>1</sup> Faculty of Agriculture, University of Belgrade, Nemanjina 6, 11080 Belgrade, Serbia

<sup>2</sup> Faculty of Agriculture, University of Belgrade, Nemanjina 6, 11080 Belgrade, Serbia

<sup>3</sup> Faculty of Agriculture, University of Belgrade, Nemanjina 6, 11080 Belgrade, Serbia



understanding the attitudes of farmers towards the work of PAES are of vital importance for the work of the service itself.

The effectiveness of extension services is highly dependent on the quality of work of extension officers, which is evaluated based on the degree of their clients' satisfaction. Therefore, the function of extension service should be created on the basis of information on attitudes of farmers towards AES, otherwise it will not be viable (Qtaishat & AL-Sharafat, 2012). The paper aims to reveal the attitudes of farmers regarding the role of agricultural extension services as a source of such information and their opinion on the quality of work of extension officers in selected municipalities in Serbia.

## **MATERIALS AND METHODS**

The research presented in this paper is aimed at examining the attitudes of farmers from the two municipalities towards the work of the agricultural extension service. Two types of data are used in research: primary data collected through the survey and secondary data obtained from relevant research by domestic and foreign authors. Primary data were collected in June and July 2020, using the face-to-face survey technique, based on a pre-prepared questionnaire. A total of 65 respondents were interviewed, of which 35 from the municipality of Alibunar and 30 from the municipality of Kruševac. The data were processed in SPSS 19.0, using descriptive statistics, Independent Samples t-Test for comparison of data from selected municipalities and Pearson's linear correlation coefficient to determine the correlation between individual variables.

In order to perceive the characteristics of municipalities and to justify their selection, the data from the Statistical Office of the Republic of Serbia, namely Census of Agriculture 2012 and Farm Structure Survey 2018 were used. The aim was to select two municipalities that differ in agrarian structure and characteristics of farm managers. Two municipalities were selected – Alibunar from the Autonomous Province of Vojvodina and the municipality of Kruševac from Central Serbia. These municipalities differ greatly in the observed characteristics, which contributes to the quality of the research.

### **Characteristics of municipalities included in the research**

According to Farm Structure Survey 2018 (SORS), there are 3,013 farms in the municipality of Alibunar, representing 0.5% of the total number of farm in the Republic of Serbia. Comparing to Census of Agriculture 2012, the number of farm decreased by 407 or 11.9%, which is, in percentages, more than in the Republic of Serbia (10.6%). Farms with more than 5 ha of agricultural land participate with 49.6% in the total number of farms and occupy 95.3% of the utilised agricultural land. Farms between 10 and 50 hectares in size are the most numerous (921 or 30.6%).

In the municipality of Kruševac, in 2018 there were 11,867 farms or 2.1% of the total number of farms in the Republic of Serbia. Compared to 2012, the number of farms decreased by 797 or 6.3%, which indicates a slower decrease compared to the national level. Farms with up to 5 ha of agricultural land represent 88.3% of the total number of farms, while larger farms (>50 ha) are less represented.

Out of 564,541 farms in Serbia (2018), managers of 95.3% of them have only practical experience, and only 1.29% of managers have higher training. In the municipality of Alibunar,

91.0% of managers have only practical experience, and 35 (1.16%) have additional training, of which most (15 or 42.9%) are from farms ranging in size from 5 to 10 ha. In Kruševac, even 96.3% of managers have only practical experience, which is above the national average, while 93 of them (0.78%) have higher training. As in the municipality of Alibunar, most managers with training are from farms that have 5 to 10 ha of agricultural land.

The provision of extension services by the public extension service on the territory of Alibunar is conducted by the AES Institute Tamiš Pančevo, and on the territory of the municipality of Kruševac by the Agricultural Extension and Advisory Service Kruševac.

## RESULTS AND DISCUSSION

### Socio-demographic characteristics of the respondents

The research included a total of 65 respondents, namely agricultural producers – 35 (53.8%) from the municipality of Alibunar and 30 (46.2%) from the municipality of Kruševac. There are significantly more males (60 or 92.3%) than females (5 or 7.7%) in the sample, which is to be expected since the intention was to include farm holders in the research. The average age of the respondents was 49, with the standard deviation being high (11.578), since the respondents were from 22 to 72 ages. Independent Samples t-Test showed that there is no statistically significant difference between the average age of respondents from the observed municipalities (for the municipality of Alibunar  $M=49.77$ ;  $SD=12.010$  and for the municipality of Kruševac  $M=48.30$ ;  $SD=11.204$ ;  $t=0.508$ ;  $p=0.613$ ). According to the level of education, most respondents are with high school – 53 or 81.5%, while an equal number of respondents are with primary school and university degree (6 or 9.2%). All 6 respondents with university degree are from the municipality of Alibunar.

For 42 respondents (64.6%) agriculture is the primary occupation, with more respondents from the municipality of Kruševac giving this answer (21 or 70.0% of the number of respondents from this municipality) compared to the municipality of Alibunar (21 or 60.0%). The research included farmers who have been engaged in agriculture from 2 to 50 years, with the average experience in agricultural production being 20.8 years. There is no significant difference between the length of engagement in agricultural production in the two observed municipalities (based on the results of the Independent Samples t-Test).

Only five respondents (7.7%) are engaged in animal husbandry. Most of them are engaged in growing of cereal (37 or 56.9%), followed by growing fruit (12 or 18.5%), vegetable (9 or 13.8%), and finally viticulture (two or 3.1%). All respondents whose dominant production is growing vegetables are from the municipality of Kruševac, while fruit growing is similarly represented in the municipality of Alibunar (five respondents) and the municipality of Kruševac (seven respondents). The average mark of the intensity of agricultural production (evaluated by farmers) on farms is 3.88. There are no significant differences between the municipalities in terms of the estimated intensity of agriculture (Alibunar  $M=3.97$ ;  $SD=0.747$  and Kruševac  $M=3.77$ ;  $SD=0.858$ ), while none of the farmers assessed their production as completely non-intensive (score one on a five-point Likert scale).

### The level of farmers' awareness of innovations in agriculture

The surveyed farmers assessed their own level of information related to innovations in agricultural production, also on a five-point scale. The average assessment of respondents in

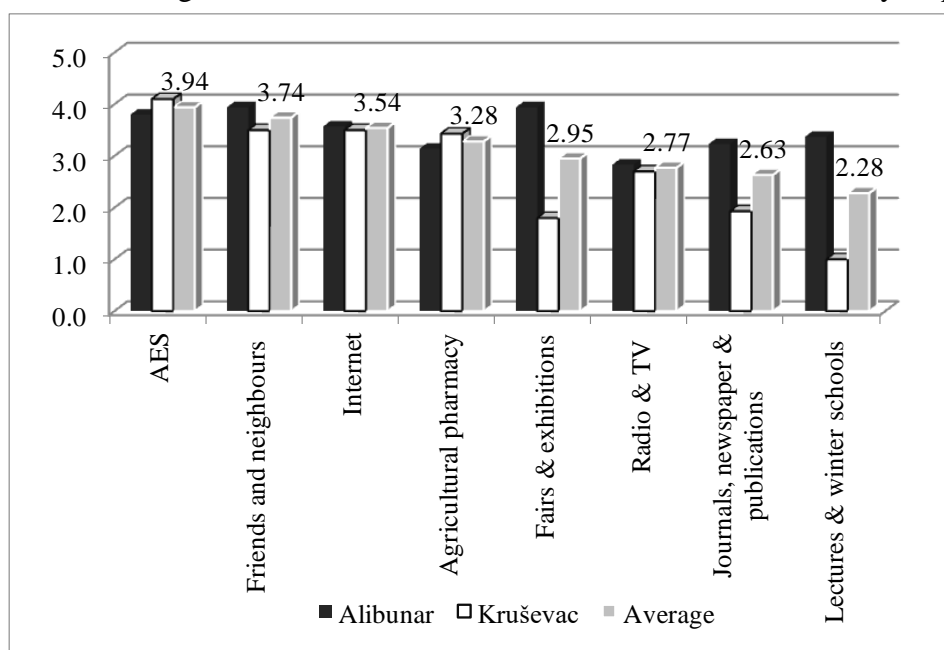


both municipalities is 3.20. Using the Independent Samples t-Test, it was found that there is a significant difference between the information level of farmers in municipalities: farmers in the municipality of Alibunar believe that they are more informed ( $M=3.57$ ,  $SD=1.01$ ) compared to farmers from the municipality of Kruševac ( $M=2.77$ ,  $SD = 1.19$ ;  $t=2.871$ ;  $p=0,006$ ).

Modern agricultural production is based on the application of new knowledge and information, not only in order for farmers to achieve their own goals, but also to realize national goals aimed at producing a sufficient amount of food (Čikić and Petrović, 2013). The classical linear model of innovation and knowledge transfer in modern agriculture is being replaced by an interactive and networking model (Nikolić and Paunović, 2019; Zrakić et al., 2018). Farmers need to be innovative, able to tackle problems and responsive to new opportunities (Nikolić and Paunović, 2019). In order to do so, farmers need different types of information. Today, farmers have access to abundance of information from various sources, which imposes to them the need to be able to evaluate and select the information they really need. This process requires certain knowledge from farmers, who must assess the credibility, objectivity and reliability of existing information because only such information can be a good basis for making the right decision. The role of AES in this process remains crucial. For these reasons, it was analysed to what extent the surveyed farmers see AES as a source of valid information.

The surveyed farmers from both municipalities assessed the agricultural extension service as an extremely important source of information. If the average grade of all respondents is observed, AES was rated with the highest mark (3.94) (Graph 1). It is interesting that the farmers from Kruševac rated higher than the farmers from Alibunar only the information provided by experts employed in AES and agricultural pharmacies. In other words, farmers in the municipality of Kruševac have more confidence in the information they receive from the experts employed in institutions, compared to information from other sources. The obtained results are in line with previous research in which it was found that half of farmers consider AES as a source of valid information (Sarker & Itohara, 2009).

**Figure 1.** The Average score for selected sources of information obtained by respondents



Source: Authors' calculation based on data from research

Farmers from Alibunar rated their own awareness of innovations in agricultural production with a higher average score (3.57) compared to farmers from Kruševac (2.77). This can be related to the following results, according to which farmers from the municipality of Alibunar perceive friends and neighbours (average score 3.94), fairs and exhibitions (3.94), and even the Internet (3.57) as important sources, i.e. they highly evaluate those sources that allow them to independently collect and evaluate information. At the same time, farmers from the municipality of Kruševac rated fairs and exhibitions as the second least important source of information (score 1.80; after lectures and winter schools, which were rated the lowest – 1.00). This is consistent with other research which also confirmed that farmers perceive fairs, demonstrations and exhibitions as an insignificant source of information (Al-Zahrani et al., 2016). Farmers from both municipalities, on average, rated the worst sources of information that include the use of mass media, namely radio and TV programs, magazines, newspapers and other forms of print media, but also lectures and winter schools.

Special attention in the research is paid to cooperation and attitudes of farmers about the quality of cooperation with the agricultural extension service. In that sense, first of all, it was necessary to examine the extent to which the surveyed farmers cooperate with AES. Regular contacts between extension officers and farmers contribute to the quality of extension services, because in this way two-way communication is achieved, which also contributes to strengthening the perception of farmers that AES is a source of reliable information (Sarker & Itohara, 2009; Qtaishat & AL-Sharafat, 2012). At the same time, irregular visits by extension officers result in farmers' dissatisfaction with the work of this service (Maoba, 2016).

More respondents from the municipality of Kruševac cooperate with extension officers (21 or 70.0%) compared to the municipality of Alibunar (19 or 54.3% where three of these respondents stated that the extension officers initiated cooperation, compared to the remaining 16 who independently sought the help of AES). Farmers from the municipality of Alibunar more often cooperate with extension officers, four (11.4%) on a monthly basis, and five (14.3%) several times a year (Table 1).

**Table 1.** Frequency of farmers' contacts with AES

	Alibunar		Kruševac		Total	
	Number	Percent	Number	Percent	Number	Percent
<b>Once a month</b>	4	11,4	0	-	4	6,2
<b>Several times per year</b>	5	14,3	6	20,0	11	16,9
<b>Once a year</b>	7	20,0	15	50,0	22	33,8
<b>Once in several years</b>	3	8,6	0		3	4,6
<b>Total number of farmers that have contact with AES</b>	19	54,3	21	70,0	40	61,5
<b>Never</b>	16	45,7	9	30,0	25	38,5
<b>Total in both municipalities</b>					65	100,0

**Source:** Authors' calculation based on data from research

Interestingly, there are no particular features that distinguish these farmers from others: the average age and length of engagement in agricultural production is at the level of the entire sample, five stated that agriculture is not their primary occupation; two are university educated, while others are with high school education. The only difference is reflected in the average size

of arable land: at the level of the municipality of Alibunar the average size of land per respondent is 93.8 ha, while among respondents who have regular contact with AES is 108.1 ha. However, it should be noted that five out of the 11 respondents (45.5%) who cultivate over 100 ha in the municipality of Alibunar stated that they never use the services of AES. It does not mean that they do not have access to extension services, since these farmers highly valued other sources of information, and one of them also hires a private advisor.

Farmers who had contact with AES representatives expressed their views on the quality of work of agricultural extension officers. These assessments are grouped into three categories: the importance and quality of information provided by AES, the cooperation of AES with farmers and the quality of this cooperation (Table 2).

Farmers from both municipalities believe that they receive enough reliable and quality information from AES. Despite that, farmers from Kruševac believe that the information is repeated from year to year. These respondents rated with a score 3.57 the attitude that the obtained information helps them in running and improving the farm, which, in addition to the previous attitude, indicates that they are not completely satisfied with the obtained information. Farmers in the municipality of Alibunar believe that AES renew the information it provides on an annual basis, but they gave lower marks to their impartiality. As these farmers are focused (to a greater extent) on other sources of information, and not only on AES, it means that they tend to compare the obtained information from different sources and only then make decisions. This imposes greater demands on extension officers who provide services in the municipality of Alibunar.

**Table 2.** Respondents' attitude towards the work of AESs in Serbia

	<b>Alibunar</b>	<b>Kruševac</b>	<b>Total</b>
<b>Significance and quality of information provided by AES</b>			
They provide information on agricultural production	4,26	4,86	4,58
They provide information on financial resources	3,58	3,10	3,33
AES provides unbiased information	3,32	4,33	3,85
The information is reliable and can be trusted	4,26	4,05	4,15
The information provided by AES is of practical importance for the improvement of the farm	4,05	3,57	3,93
The information provided by AES is the same every year	2,58	4,33	4,58
<b>Cooperation of AES with farmers</b>			
They show new ways of doing business	4,26	3,57	3,90
They help farmers acquire new knowledge	4,26	4,10	4,18
They help farmers make decisions	3,84	4,52	4,20
They help farmers analyse their own problems	3,42	2,62	3,00
<b>Quality of cooperation</b>			
It is easy to get in touch with AES	4,42	4,71	4,58
Extension officers cooperate equally with all farmers	3,63	3,14	3,38
They pay enough attention to farmers	3,79	4,05	3,93
AES informs farmers through newspapers, radio and television about important news related to agricultural production	3,74	1,05	2,33

**Source:** Authors' calculation based on data from research

With the lowest average score the respondents evaluated the information they receive from AES which refer to the sources of financing of agricultural production. This indicates the need for continuous education of extension officers, especially from the segment of existing support that farmers can use from the relevant ministry and local government. At the same time, this may indicate that farmers have poor access to finance (Veselinović and Drobnjaković, 2014).

Farmers in Kruševac rely more on the services of AES in decision-making, but they evaluated the work of extension officers less in terms of demonstrating new technical knowledge (ways of doing business) and the support they receive in analysing their own problems. Although the obtained mean score can be evaluated as average (3.00), it should be noted that according to other research, the willingness of extension officers to help farmers identify their problems and solve them is rated very low (1.9 on a scale of 1 to 5) and that it represents one of the biggest challenges facing modern AES (Maoba, 2016).

The surveyed farmers also showed a high degree of agreement with the attitudes that it is easy to get in touch with AES, i.e. that extension officers pay enough attention to them. Respondents again expressed the view that the mass media are insufficiently used in the work of the AES, especially in the municipality of Kruševac. The application of mass media in extension work is of particular importance because it enables coverage of a large number of users in a relatively short period at low costs. In recent years, there has been a change in the type of mass media used in extension work. Print media (pamphlets, reports, flyers) predominantly used by public AES is being increasingly replaced by electronic media (Norton & Alwang, 2020). That is why continuous education of extension officers is imperative in organizing a modern and efficient AES.

Finally, respondents who cooperated with AES assessed the degree of satisfaction with the cooperation with this service, which is crucial for understanding their attitudes towards the quality of extension services provided. The average score of all respondents is high and amounts to 4.08, with a higher degree of satisfaction shown by respondents from the municipality of Alibunar (4.32) compared to Kruševac (3.86). This is consistent with previous surveys of the level of user satisfaction with AES services, when it was found that 67% of respondents rated the quality of extension services as the highest, while 33% as satisfactory (Đurić et al., 2019).

Using Pearson's linear correlation coefficient, it was determined that there is no statistically significant relationship between the assessment of respondents' satisfaction with AES work and their age ( $r=-0.173$ ;  $\text{Sig}=0.287$ ;  $N=40$ ), and education level ( $r=0.096$ ;  $\text{Sig}=0.556$ ;  $N=40$ ). This is in contrast to other studies in which it has been found that farmers with a higher level of education have more positive attitude towards AES (Qtaishat & AL-Sharafat, 2012). However, a medium-strong negative correlation was determined between the degree of satisfaction of AES service and the length of farmers' engagement in agriculture ( $r=0.465$ ,  $N=40$ , at the level of significance 0.01), where respondents with less experience in agricultural production showed a higher degree of satisfaction with the work of agricultural extension officers. This can be confirmed in other research where was found that younger farmers with less experience show more tendency to try and adopt innovation in production process (Idrisa & Ogunbameru, 2008). The coefficient of determination is 21.6%, which means that more than 20% of the users' satisfaction with extension services depends upon how long the respondents have been engaged in agricultural production.

## **FUTURE RESEARCH DIRECTIONS**

The particularity of extension work in agriculture is reflected in the fact that it is difficult to quantify its effects. That is why considering the degree of customer satisfaction with the services provided is a starting point that can be used to evaluate the success of AES. The conducted research indicates that there is a certain degree of user satisfaction with the work of agricultural extension officers, but also that there are significant differences in the perception of the quality of services received by farmers from the two municipalities covered by the research. Future research should be more comprehensive both in terms of geography and the number of respondents included in the research, in order to obtain more detail results.

## **CONCLUSION**

In the paper are presented the results of a research related to the assessment of the attitudes of farmers from two municipalities, Alibunar and Kruševac, towards the work of agricultural extension officers. A total of 65 respondents were interviewed. As the primary objective of AES was to provide new knowledge and information to farmers; it was examined to what extent farmers are informed, as well as from which sources they obtain information. The average score of respondents' awareness is 3.20 on a five-point scale, with significant differences between the observed municipalities, in favour of farmers from Alibunar. The most important source of information is AES, especially for farmers from the municipality of Kruševac, while producers from the municipality of Alibunar also obtain information from friends and neighbours, at fairs and exhibitions and from the Internet.

Out of 65 farmers, 40 have contacts with representatives of the public AES. Although the respondents expressed the opinion that they receive enough information from extension officers, they evaluated less the importance of these information for improving the work of their farm, impartiality of information, as well as the readiness of extension officers to cooperate equally with all interested farmers. This indicates that although there are contacts between extension officers and users of their services; there is a need to suit the type and structure of information, as well as communication channels, to the needs and expectations of farmers.

Finally, farmers cooperating with AES rated the quality of that cooperation with an average score of 4.08. It is interesting to note that there is a statistically significant relationship between the length of engaging in agricultural production and the degree of satisfaction with the work of AES, whereby respondents who have less experience in agriculture showed a higher degree of trust in agricultural extension officers. This can be explained by the fact that respondents who have been engaged in agricultural production recently need more help from extension officers, but also the readiness of this group of producers to put innovations in use, i.e. to deviate from traditional models and techniques of farming.

The obtained results show that there are established channels of communication and cooperation between public AES and agricultural producers, but also that it is necessary to make certain modifications in the work of extension officers, in order to be more focused on the needs of farmers, which will ultimately strengthen mutual trust and perception of the extension service as a significant factor in improving agricultural production in Serbia.



## ACKNOWLEDGMENT

*This paper is a part of the research conducted within the contract on the implementation and financing of scientific research work in 2020 between the Faculty of Agriculture in Belgrade and the Ministry of Education, Science and Technological Development of the Republic of Serbia, contract number: 451-03-68/2020-14 and 200116.*

## REFERENCES

- Al-Zahrani, K. H., Aldosari, F. O., Baig, M. B., Shalaby, M.Y., & Straquadine, G. S. (2016). Role of Agricultural Extension Service in Creating Decision – Making Environment for the Farmers to Realize Sustainable Agriculture in Al-Qassim and Al-Kharj Regions – Saudi Arabia. *The Journal of Animal & Plant Sciences*, 26(4), 1063-1071.
- Čikić, J., & Petrović, Ž. (2013). Diffusion of Knowledge and Innovations in Serbian Agriculture. In: D. Škorić, D. Tomić, & V. Popović (Eds.), *Agri-Food Sector in Serbia State and Challenges* (pp. 91-118). Belgrade: Serbian Academy of Sciences and Arts, Board for Village - Serbian Association of Agricultural Economics.
- Đurić, K., Bulatović, M. L., Marjanović, J., & Prodanović, R. (2019). Stavovi poljoprivrednika u Republici Srbiji o poljoprivrednoj savetodavnoj službi. In: B. Krstić, S. Jelić, & Z. Rajić (Eds.), *Village and Agriculture* (pp. 215-226). Univerzitet Bijeljina.
- Idrisa, Y. L., & Ogunbameru, B.O. (2008). Farmers' assessment of the Unified Agricultural Extension service in Borno State, Nigeria. *Journal of Agricultural Extension*, 11(1), 106-114.
- Maoba, S. (2016). Farmers' Perception of Agricultural Extension Service Delivery in Germiston Region, Gauteng Province, South Africa. *South African Journal of Agricultural Extension*, 44(2), 167–173. <http://dx.doi.org/10.17159/2413-3221/2016/v44n2a415>
- Nikolić, M., Paunović, T. (2019). Role of Universities in Knowledge and Innovation System in Agriculture in European countries. In: B. Krstić, S. Jelić, & Z. Rajić (Eds.), *Village and Agriculture* (pp. 172-183). Bijeljina: Univerzitet Bijeljina.
- Norton, G. W., & Alwang, J. (2020). Changes in Agricultural Extension and Implication for Farmers Adoption of New Practices. *Applied Economic Perspectives and Policy*, 42(1), 8–20. <https://doi.org/10.1002/aep.13008>
- Qtaishat, T., & AL-Sharafat, A. (2012). Attitudes of Vegetable Farmers Towards Public Agricultural Extension Services. *American Journal of Agricultural and Biological Sciences*, 7(3), 370–377.
- Sarker, A., & Itohara, Y. (2009). Farmers' Perception about the Extension Services and Extension Workers: The Case of Organic Agriculture Extension Program by PROSHIKA. *American Journal of Agricultural and Biological Sciences*, 4(4), 332-337.
- Veselinović, B., & Drobnjaković, M. (2014). Qualitative and quantitative analysis of micro and macro aspects of agricultural finance. *Economics of agriculture*, 61(3), 771–787.
- Volk, T., Erjavec, E., & Mortensen, K. (2015). *Poljoprivredna politika i evropske integracije u jugoistočnoj Evropi (Agricultural Policy and European Integration in Southeastern Europe)*. Food and Agriculture Organization of the United Nations by the Regional Rural Development Standing Working Group, Budimpešta.
- Zrakić, M., Lončar, H., Išasegi, V., Rukavina, M., & Žutinić, Đ. (2018). Stavovi poljoprivrednika o inovacijama i ulozi savjetodavne službe u njihovom širenju. *Agroeconomia Croatica*, 8(1), 64-74. <https://doi.org/10.3844/ajabssp.2012.370.377>





# SUSTAINABLE VILLAGES

Nada Kosanovic<sup>1</sup>  
Suncica Vjestica<sup>2</sup>

DOI: <https://doi.org/10.31410/LIMEN.2020.399>

---

**Abstract:** *Despite the fact that we live in a country where the farmers' associations are created among the first on the Old Continent, and where one of the first Institute for Nature Protection is created, statistics warn us that the demise of several hundred Serbian villages and thus the emptying of strategically important areas of the state of Serbia today, is a serious development problem. In this paper an analysis of the rural, age and educational structure of the population, in rural areas of the Republic of Serbia, has been performed. The authors believe that the situation is not hopeless and point out that the sustainable development of the village is possible only if favorable local preconditions for it are met. Therefore, it is necessary to revive and institutionally expand the competencies of rural local communities as a form of local rural self-government in the Serbian folk tradition. Accordingly, decentralization and polycentric development are the main conditions for the renewal of the population and devastated parts of Serbia. Moreover, native networks and integrated rural development are models applicable through LAP in accordance with the characteristics of the area. Nowadays, it is necessary to raise people's awareness of the importance of rural survival and sustainable management of resources in agriculture, i.e. to breathe new life into rural areas, which would also be a motive for staying in the countryside.*

**Keywords:** *Sustainable village, Status, Development policy, Local communities, Local self-government.*

---

## 1. INTRODUCTION

The objective of this research is to indicate on the situation and problems in Serbian villages, using the statistical data. An analysis of the rural, age and educational structure of the population in rural areas of the Republic of Serbia has been performed. At the same time, the authors point out the development possibilities of villages in Serbia and suggest measures and mechanisms for their implementation.

The results of the research show the basic development problems, which are repeatedly reflected in the elements and aspects of further construction and foundation of the existing theory and practice, of the inhabitants<sup>3</sup> of rural areas, where the authors propose development measures and mechanisms to overcome those problems.

**Data sources are:** annual publications of the Statistical Office of the Republic of Serbia, relevant bulletins; 2011 Census, Strategy for Agriculture and Rural Development of the Republic of Serbia for the period 2014-2024, Law on Local Self-Government, "Official Gazette of RS", no. 129 of 29 December 2007, 83 of 5 August 2014 - other law, 101 of 16 December

---

<sup>1</sup> Faculty for Applied Ecology – Futura, Pozeska 83a, 11000 Belgrade, Serbia

<sup>2</sup> Faculty for Applied Ecology – Futura, Pozeska 83a, 11000 Belgrade, Serbia

<sup>3</sup> The term rural in the paper refers to the rural settlements. / Author's note /

2016 -other law, 47 of June 20, 2018. et al. Other sources, given in the footnotes and bibliography, were also used.

## 2. MATERIALS AND METHODOLOGY

The paper uses research methods and procedures specific to economics and agro-economics.<sup>4</sup>

By watching, monitoring and observing, a description was made, as an immediate, sensory-perceptual cognition of the subject of research. Using the **descriptive analysis**, we came to the cognition, findings and descriptions (origin, course and development) of the observed phenomenon (extinction of Serbian villages). **The research period** is long, considering the fact that the problem which the authors point out is several decades old.

**The empirical method**, as an important analytical method, was used to process empirical data, using statistics and mathematics. We used the statistical method to collect, present (tables, charts), analyze and interpret numerical data. Furthermore, quantitative research was performed using the mathematical method. In this regard, modeling was applied, where the model is presented as a simplified picture of the observed phenomenon. By **modeling**, the key parameters of the activities are identified, and these parameters are the basis for the agreement of different activities in the function of reviving Serbian villages.

In addition, **general methodological procedures** were also applied. By the analytical method, the individual and constituent elements of the observed phenomenon were investigated. The general characteristics of the phenomenon were derived by the synthetic method, whereby the observation of the differences between the important and the irrelevant, the main and the secondary, came to the fore. We performed inductive method for the analysis from the individual to the general. On the other hand, using the deductive method, starting from the general, we analyzed individual properties and elements. Deduction showed how complex the problem of rural extinction in Serbia is. At the end, **systematic analysis** has indicated the importance of recovery and revitalization of villages in Serbia, in the context of the entire socio-economic system of the Republic of Serbia.

## 3. SERBIAN VILLAGES IN THE SYSTEM OF LOCAL SELF-GOVERNMENT<sup>5</sup>

"Local self-government, in short, is a form of management and decision-making of citizens in local communities. It is in fact the original basic organization of government in a state performed by local authorities.<sup>6</sup> Local self-government is a form of decision-making and management in local communities, constituted in narrower parts of the state territory, directly by its inhabitants or through their representatives, which they directly elect, as well as other local bodies. It has the status of a constitutional matter, and its independence is guaranteed by

---

<sup>4</sup> Pejanovic, R. (2007). Some methodological phases and procedures in economy (and agricultural economy). Poljoprivredni fakultet: Letopis naučnih radova, Novi Sad, pp. 174-186

<sup>5</sup> The term "local government" was first used by the English philosopher Jeremy Bentham in 1832. The term itself is not clear and precise enough, so the question is what exactly is meant by it. Miodrag Jovicic thought that the term from the Swiss "autonomie locale" and partly the German "gemeinde (kommunal) selbstverwaltung" completely corresponded to "local self-government" in our language. It is narrower than the French term "administration locale", and broader than English "local government" and "local self-government". Stankovic, M. (2015) Local Self-Government in Serbia, Belgrade, 16; Simovic, V. (1966). Communal system and communal policy, Beograd, 41

<sup>6</sup> Durdev, A. (2003). Local government. Lokalna samouprava, Novi Sad, 5

the constitution, which means that it enjoys its protection."<sup>7</sup> /Orlovic, P. S., Constitutional Status of Local Self-Government in Serbia, pp.1649–1667/

Regardless of the fact that local self-government has a long tradition as a level of government in Serbia, the status of today's villages is not defined by the Constitution, and villagers are deprived of the right to decide about themselves and the environment in which they live. The constitutional position of local self-government, prescribed by the Constitution, is such that it is guaranteed as a "right of citizens" which "limits state power" (Article 12 of the Constitution of 2006). However, further elaboration of this constitutional starting point has not been completed.

In Serbia, local self-government units are municipalities, cities and the city of Belgrade, as it is written in the Constitution of the Republic of Serbia from 2006 (Article 188), which determines the position of local self-government units. Villages are not defined in the system of local self-government, they do not have a status, budget, source revenues nor competencies.

Local community councils / LCC /, which have been a form of administrative organization in villages since 1963, are a guarantee of further accelerated destruction of villages. According to the Law on Local Self-Government (Official Gazette of the RS, no. 129/2007, 83/2014, 101/2016 and 47/2018.), rural local communities are not seen as the level of government that may have statutory competencies. In terms of the jobs (rural) local communities can perform, and the funds they can get, they are determined by the local self-government unit / LGU / in accordance with the needs of citizens and the possibilities of local communities.

According to the Law on Local Self-Government (Official Gazette of RS, No. 129 of December 29, 2007, 83 of August 5, 2014 - other law, 101 of December 16, 2016 - other law, 47 of June 20, 2018. ), local communities and other forms of local self-government are formed in villages, and they can only propose and adopt legally determined jurisdiction and plans, but do not decide on anything, do not have a budget, source revenues nor precise jurisdictions according to the principle of subsidiarity - number of councilors from villages, depending on the number of inhabitants in the villages and the percentage of the population in the municipality to which they belong, as is the case in EU countries. The local community council is the basic representative body of citizens in the area of local self-government.<sup>8</sup>

The act on the establishment of a local community, in accordance with the statute of the municipality or city, determines the activities performed by the local community, local bodies and organization of work of local bodies, decision-making and election procedure of councils and other local self-government bodies, but also protection of rights during elections and other important issues concerning the work of the local community, i.e. another form of local self-government.

By article 74 of the Law on Local Self-Government the competencies of the Local Community Council are defined.

Local community council:

- 1) adopts the statute of the local community;
- 2) adopts the financial plan of the local community and develops programs of the local

<sup>7</sup> Markovic, R. (2015) Constitutional Law. Belgrade, pp. 405-406

<sup>8</sup> Law on Local self-government. Official Gazette of the Republic of Serbia, no. 129/2007, 83/2014, 101/2016, 47/2018

- community;
- 3) elects and dismisses the president of the local community council;
  - 4) propose measures for the development and improvement of communal and other activities in the area of the local community;
  - 5) adopt rules of procedure for the work of the local community council and other acts within the competence of the local community;
  - 6) initiate the adoption of new or change of existing municipal regulations;
  - 7) perform other tasks within the competence of the local community determined by the statute of the municipality, the act on the establishment of the local community or other municipal regulations.<sup>9</sup>

On June 20, 2018, the National Assembly of the Republic of Serbia adopted the Law on Amendments to the Law on Local Self-Government / LLSG /, whose important changes relate to the introduction of the right of supervision of local self-government bodies over the legality of work and local community acts, which expanded the power of municipality in terms of regulating the framework for the local community. From the above, we can conclude that the revival of Serbian villages is still in line with the illusion of Potemnik, given that the "village is still not deciding about the village".

It can be concluded that, in our recent history, the situation of the rural population has never been so miserable and today this situation is confirmed by statistics and the fact that our villages are getting older and emptier.

The words of wise people, that the peasant is the foundation of the Serbian domestic order, today is both a warning and a signpost for us.

This foundation was destroyed after the Second World War, when migration processes, from villages to towns, took place in Serbia, which resulted in the emptying of the village and the crisis in agriculture that have continued to this day. Confirmation of that are the results of the census of 1948, according to which the agricultural population made up 68 percent of the total population, and in 1991 only 17 percent. The Serbian domestic order is based on a strong village, with a strong large family, and it has been destroyed for the decades, still the fragments of that order are kept by the elderly today.

Ploughland that could feed half of Europe and that fed cattle for export, by which Serbia lived during the time of Milos and Karadjordje, is being turned into pastures and deserted meadows with an area of 505 618 ha of uncultivated land in 2012. Out of a total of 4709 settlements, i.e. villages /according to the Constitution, there is no category of villages/ in which lives more than half of the population of Serbia; 1200 of them are in the phase of disappearance. In 1034 of them there are less than 100 inhabitants, mostly middle-aged and older, and 550 of them have less than 50 inhabitants. As many as 500 villages do not have an asphalt road, 400 villages do not have shops, and there are no post offices in 2000 villages. Furthermore, in 230 villages there is no primary school and two thirds of villages do not have an ambulance. In 200 villages there are almost no inhabitants, and also in 200 of them there is no one younger than 25. It is estimated that in the next 10 years another 700 villages will become empty. Statistics show that in every fourth village, the youngest resident is older than 60, and according to the data of the SANU Village Committee, as many as 260 000 unmarried men are younger than 50.

---

<sup>9</sup> Law on Local self-government. Official Gazette of the Republic of Serbia, no. 129/2007, 83/2014, 101/2016, 47/2018

#### 4. DEMOGRAPHIC DISCHARGE AND RURAL INDICATORS<sup>10</sup>

In almost all parts of the Republic of Serbia, especially in the zones which are at a great distance from local, subregional and regional centers, as well as in hilly and mountainous areas, a long period of continuous negative demographic development is present. The consequences of this demographic situation are numerous and multifaceted. From the point of view of the situation in the spatial organization of the settlement network in Serbia, the appearance of spontaneously displaced rural settlements deserves special attention - because it results in spatial-demographic imbalances in the network of settlements in some parts of Serbia, as well as in Serbia as a whole, but also because of the significant disproportions in the degree of socio-economic development and the level of demographic manifestation of settlements in Geospace. /Stamenkovic, S./

In connection with the above, we will list some relevant indicators presented by tabular overview of settlements and populations of central Serbia and Vojvodina in 1991 and 2002. In 1991 the group of the smallest settlements (499 and less inhabitants) included 2373 settlements (50.6% of the total number of settlements), in which 7.3% of the population lived. In 2002 the group included 2722 settlements (57.8%), in which lived 7.8% of the total population. Special emphasis should be placed on the representation and growth of demographically dwarf settlements (less than 49 inhabitants), whose number doubled in the observed period: from 180 (3.8%) to 346 settlements (7.4%)<sup>11</sup>.

**Table 1.** Settlements of central Serbia and Vojvodina by demographic size in 1991 and 2002 <sup>12</sup>

Settlement size	1991.	2002.	1991.	2002.
1 000 000 and more inhabitants	1	1	1 168 454	1 119 642
500 000 – 999 999 inhabitants	-	-	-	-
200 000 – 499 999 inhabitants	-	-	-	-
100 000 – 199 999 inhabitants	4	3	602 708	511 502
50 000 – 99 999 inhabitants	12	14	739 980	902 848
20 000 – 49 999 inhabitants	26	25	787 388	748 255
10 000 – 19 999 inhabitants	42	42	598 477	615 941
5 000 – 9 999 inhabitants	96	95	650 968	657 269
2 000 – 4 999 inhabitants	334	309	1 005 285	930 159
1 000 – 1 999 inhabitants	675	544	935 500	750 303
500 – 999 inhabitants	1 080	951	765 274	676 843
200 – 499 inhabitants	1 350	1 335	453 371	449 165
50 – 199 inhabitants	843	1 041	109 985	126 604
49 and less inhabitants	180	346	5 405	9 470
Total	4 693	4 706	7 822 795	7 498 001

From this data, we can see the appearance of demographic fragmentation of settlements as a consequence of population decline, population aging, etc.

<sup>10</sup> At the local level, the OECD defines rural areas according to population density. Rural settlements are considered to be settlements with a population density below 150 inhabitants per km<sup>2</sup>. According to that classification, 85% of the territory of the Republic of Serbia is considered rural.

<sup>11</sup> Stamenković, S. (2004) Some actual questions of the spatial organization of the network of settlements and the relevant demography problems in Serbia. Demografija, Beograd

<sup>12</sup> Documentation material by the Statistical Office of the Republic of Serbia

Follow-up, the table presents demographic indicators of rural areas of the Republic of Serbia, data on the estimated movement of the population of the Republic of Serbia, educational structure of the population older than 15 in rural areas, unemployment in rural areas, age structure and rural infrastructure. By analyzing the data, we got the information necessary for modeling the revival of villages in Serbia in the context of the entire socio-economic system, i.e. the economic system of the Republic of Serbia.

**Table 2.** Demographic indicators of rural areas of the Republic of Serbia

Indicators	Serbia	Rural Areas
<b>Geographical indicators</b>		
Area /km <sup>2</sup> /	88 499	69 040
Number of settlements	6 158	5 965
<b>Demographic indicators</b>		
Population (Census 2002)	7 498 001	3 279 522
Population (Census 2011)	7 186 862	2 914 990
Population density (inhabitants / km <sup>2</sup> )	9.3	6.2
Share of population younger than 15 (%)	14.3	13.9
Share of the population older than 65 years (%)	17.4	20.2
Ageing index	1.2	1.4

**Source:** 2011 Census of Population of the Republic of Serbia

**Table 3.** Movement of the estimated number of inhabitants of the Republic of Serbia in the period 2012-2018.

Estimated population number (average annual rate)	Republic of Serbia	Region of Belgrade	Region of Vojvodina	Region of Sumadija and Western Serbia	Region of South and Eastern Serbia	Region of Kosovo and Metohija
2002	7 500 031	1 578 364	2 034 851	2 135 393	1 751 423	-
2011	7 236 519	1 658 151	1 932 945	2 033 203	1 612 220	-
2016	7 058 322	1 683 962	1 881 357	1 956 786	1 536 217	-
2017	7 020 858	1 687 132	1 871 515	1 941 130	1 521 081	-
2018	6 982 604	1 690 193	1 861 863	1 924 816	1 505 732	-

Over 2002-2018, the number of populations in the Republic of Serbia was continuously declining. At the regional level, only the Region of Belgrade recorded population growth, while the most pronounced decline was recorded in the Region of Southern and Eastern Serbia. Statistical Office of the Republic of Serbia published the data of the number of live births in the Republic of Serbia, which in 2016 was 64 734, while the number of deaths was 100 834. In that year alone, the negative natural increase was 36 100. In the period 2006-2016, the number of inhabitants in RS was reduced by about 385 000 only on the basis of natural increase. Of the total number of municipalities /169/ in the Republic of Serbia, the rate of natural increase in 2016 was positive in only five municipalities: Sjenica, Novi Sad, Presevo, Tutin and Novi Pazar.



Unfavorable demographic trends also result in an unfavorable educational structure of the rural labor force, which does not meet the requirements of the labor market, therefore the quality of the labor force is one of the limiting factors of economic development of rural areas. At the same time, the educated population finds it difficult to stay in rural areas without satisfactory transport and communal infrastructure.

According to the 2011 census of the Republic of Serbia, the educational structure of the population older than 15 years is dominated by persons with completed secondary school (42.4% in rural areas), which is a significantly higher percent compared to the participation of persons with completed primary school (27.7%) and those without formal education (23.4%). The structure of the real labor force in rural areas does not respond to the requirements of the modern labor market. The reason for that is the lower percent of highly educated population in these areas, compared to the national average (6.1% : 16.2%), and that is one of the important limiting factors of economic development of these areas. Households whose main activity is agriculture are characterized by a lower share of educated members and lower unemployment (here we are talking about the hidden unemployment, i.e. unpaid helping household members).

**Table 4.** Educational structure of the population older than 15 years in rural areas

% without formal education	13.7% With share of 80.4% with incomplete primary education.	23.4% With share of 81.2% with incomplete primary education
% primary school	20.8%	27.7%
% high school	48.9%	42.4%
% highly educated population	16.2% With share of 65.2% with Bachelor's degree	6.1% With share of 51.8% with Bachelor's degree
% unknown	0.4%	0.4%

**Source:** SORS (processed by The Ministry of Agriculture, Forestry and Water Economy of the Republic of Serbia), \* According to SORS criteria

**Table 5.** Unemployment in rural areas

Type of settlement	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Employment rate (%)											
Serbia	49.8	51.5	53.7	50.4	47.2	45.4	45.4	47.5	50,4	52,0	55,2
Urban settlements	49.1	50.8	50.7	47.9	45.4	43.9	43.4	45.7	49,2	53,5	53,5
Other settlements	51.0	52.4	58.1	54.0	49.8	47.4	47.9	50.2	52,3	57,8	57,8
Unemployment rate (%)											
Serbia	20.9	18.1	13.6	16.1	19.2	23.0	23.9	23.0	20,1	18,2	15,9
Urban settlements	22.0	18.6	15.9	18.4	21.4	24.8	26.9	25.0	21,6	17,9	17,9
Other settlements	19.4	17.3	10.8	13.3	16.4	20.6	20.1	19.9	17,9	12,9	12,9

**Source:** SORS (processed by The Ministry of Agriculture, Forestry and Water Economy of the Republic of Serbia), \* According to SORS criteria

Although the rural economy has a high unemployment rate, in recent years this indicator has stabilized at around 20%. The unemployment rate in rural areas is still high, with a particularly pronounced share of younger categories of the unemployed rural population.

The youngest and oldest categories of the rural population have an evidently higher share in total employment, compared to the same categories of the urban employed population. The participation of women in formal employment in rural areas is generally at the lower level compared to urban areas. Regionally speaking, the most unfavorable position of women<sup>13</sup> according to labor market indicators is in the region of Southern and Eastern Serbia. All age categories of women in rural areas participate in the total employment with about 39%, while this participation of women in urban areas is around 44%.

**Table 6. Rural infrastructure**

General data by regions, 2016 Region	Area (km <sup>2</sup> )	Number of settlements	Population	
			In total	per km <sup>2</sup>
Republic of Serbia, In total	88 499	6 158	7 058 322	
Region of Belgrade	3 234	157	1 683 962	521
Region of Vojvodina	21 614	467	1 881 357	87
Region of Sumadija and Western Serbia	26 493	2 112	1 956 786	74
Region of South and Eastern Serbia	26 248	1 973	1 536 217	59
Region of Kosovo and Metohija	10 910	1 449	...	...

**Source:** SORS (processed by The Ministry of Agriculture, Forestry and Water Economy of the Republic of Serbia), \* According to SORS criteria

Rural infrastructure in the Republic of Serbia is underdeveloped. Rural area is characterized by low roads infrastructure, communal infrastructure and other important elements of living standards. Infrastructure at the municipal level is more or less developed, with huge potential for further development, but also with great limitations such as poor information on the needs, characteristics and benefits of rural infrastructure, which contributes to unresolved water supply, telecommunications and other obstacles to development.

<sup>13</sup> The total number of women who live in villages is 1.6 billion and they make up one quarter of the world's total population. World data indicates that women in rural areas own only 2% of the land and earn only 1% of all agricultural income, which shows us the extremely difficult position they are in. Gender inequality in the countryside, in Serbia, does not deviate much from world statistics. The largest part of the informally engaged labor force in performing agricultural work in RS make women, with a share of about 63%. Furthermore, there is a low share of women who are farm owners, i.e. on whose behalf the farm operates (only about 17%), and an even lower share of them as farm managers, i.e. those who make decisions about the organization of agricultural production on the farm (16%) and permanent employees on the farm (14.8%). Women who live in the household are usually not the owners of the houses in which they live, they do not own land, nor the means of production. A survey by the Institute for Gender Equality showed that women who live in villages, in 61% of cases do not own or co-own a house, which is certainly due to patriarchal patterns of inheritance of parents' property in which female heirs renounce their right to inheritance. The position of older women in the countryside is far more difficult than that of working age, and it is especially more difficult than the position of women living in urban areas. Although 50% of women in the village are older than 65, grandmothers in the villages very rarely own property – to be precise only 9.1% of them. 88.5% live and work on their husband's property, while in 2.4% of cases the property is shared.

## 5. ORGANIZATIONS OF THE NETWORK OF RURAL SETTLEMENTS – NATIVE NETWORKS

Rural settlements in Serbia were formed spontaneously, often by chaotic concentration on randomly populated areas. Nowadays, the network of rural settlements is changing, some villages are already extinguished, others are empty (dying villages), some are still sustainable (sustainable villages), while some, which are located in prosperous areas and close to the big cities, are developed. Among them, there are several villages that could serve as a prototype of successful, agrarian and rural development for our specific global circumstances which are fundamentally unfavorable. Therefore, it is necessary for each type of village to find a specific development model that would be optimal for it. The most urgent measures need to be taken in the dying villages as well as those that are still sustainable. It is very difficult to determine, with statistical reliability, which village is sustainable and which is not. However, it is much more likely that a village with more than 500 inhabitants will develop and last longer, than the one with less than 200 inhabitants, and in this category (villages with more than 500 inhabitants) the largest number in 2002 in Serbia was 951 villages and in 2011 - 2832 villages! Scientists who deal with the sociology of villages claim that the disappearing villages are those with less than 100 inhabitants, and in Serbia in 2011 there were 1043 of them! Also, many villages with less than 200 inhabitants, if they are left without children and young women who still want to give birth, can be joined to this statistics.

This refers to villages that are infrastructurally neglected, economically devastated and obsoleted, precisely those in the Region of Southern and Eastern Serbia where we have the lowest population rate of 59 inhabitants per km<sup>2</sup>. When observed together extinguished and dying villages it can be seen that a quarter of the total number of settlements has disappeared, and in Serbia there are 4709 of them. For these villages, virtual rural municipalities should be formed, and for all the other villages native communication networks. Moreover, electronic means of communication are necessary for the inclusion of a large number of successful people from the Serbian diaspora, who want to be included and have important tasks in strategies, plans and projects of local, regional and national development. In that way, connections and relations of the Serbian diaspora with the Republic of Serbia would be institutionalized. If they are already leaving the country, these ties would create an opportunity for Serbia not to lose them completely and for them also not to lose Serbia.

## 6. INTEGRATED RURAL DEVELOPMENT

The biological extinction of the nation demands that we turn to the countryside. Instead of the current approach to the agriculture, where farmers are treated as producers of cheap food, it is necessary to introduce the concept of integrated rural development, which will be based on demographic, natural, economic and socio-cultural potentials. The concept of integrated rural development is based on the comprehensive development of rural mixed residential areas in which almost half of the population of Serbia lives. The policy of relying on agriculture and rural economy should not only be in the function of temporarily survival, but also in the function of the permanent commitment of Serbia and its economic development policy. This should be based on decentralization and balanced economic development that would bring back life to the Serbian village. The state should support this development concept and create mechanisms for maximum exploitation of opportunities, that come through EU funds. Accordingly, it is important to encourage the administration to adapt to the EU planning and implementation system for the development of rural areas, but also to encourage the rural population to use those measures.

At the same time, small agricultural holdings, whose number is declining every year, need to be organized into agricultural cooperatives and associations. Therefore, commercial family farms and cooperatives must have a unique, integrated, and modernized product procurement and sales system. The state needs to create a Center for Support of Agricultural Cooperatives and solve the problem of ownership over the property of cooperatives. Also, rural development programs should be focused on training farmers to use new technologies in restructured agricultural production, thus contributing to the reduction of the isolation of the most important regions and putting emphasis on the local conditions and opportunities. Thanks to such programs, the inhabitants of these areas are given the chance to engage in other activities besides the agriculture, such as forestry, crafts, construction of small processing facilities, greenhouse flowers production, vegetables, tourism. The diversification of the economy both at the level of the village and at the level of small agricultural holdings will enable the inhabitants of the village to become entrepreneurs. The role of the state, in order to rebuild and revitalize the village is directly related to the general economic development policy and the environments created by the state. The best long-term strategy is not to develop comparative, but competitive advantages. Stronger appearance of brand products on the market implies a strategic concept of development of export-oriented agriculture, but also improving the competitiveness of agricultural products, raising product quality, creating and promoting Serbian brands: Arilje raspberries, Pozega plums, Homolje honey, Srem sausages, ham and bacon, Sjenica cheese, Uzice beef prosciutto, Uzice bacon, Rtanj tea, Krivovir cheese, Homolje sheep cheese, Kladovo caviar, Serbian Slivovitz, etc. This is definitely the right way to revive Serbian villages and agriculture. At first glance, the implementation of some of these measures may seem daunting, regarding the fact that significant resources and a long period of time are required, but this should not be the reason to delay the beginning of their implementation.

## CONCLUSION

The legal academic profession and science believe that real local self-government exists if three conditions are met. The first is that the local population elects its representative bodies that directly or through their executive bodies have "certain decisive rights". The second is that these bodies have their financial and local jurisdiction, i.e. to perform a certain range of tasks on their territory as a government. Third, that the jurisdiction of local authorities really and formally affects the life and development of the local community.<sup>14</sup>

Nowadays, situation does not testify in favor of the above, since the political role of local self-government is obviously weak, which is confirmed by the data presented in the previous part of the paper. So, it can be concluded that the village is still not deciding about the village, due to the fact that the villagers do not have the authority, financial resources nor the ability to directly influence the personnel policy. So, what awaits us in the future?

Despite the legislative framework and the general sympathies of the social community for the village and rural development, the rural environment is still not developing. Older people who left the villages in the 1960s and 1970s are returning to rural areas, and besides them you can also find some enthusiasts, lovers of nature and healthy living who return there.

Rural areas are marginalized by local decision makers, both in local development planning and in the implementation of potential measures. The statistics show that the method of realization of policy makers intended for the end users, and based on the principle "bottom-down" did not

---

<sup>14</sup> Orlovic, P. S. Constitutional Status of Local Self-Government in Serbia. (pp. 1649-1667)

give the expected results. Therefore, it is necessary to introduce decision-making at the local level using "bottom-up" model, i.e. to include all those to whom the defined development guidelines apply.<sup>15</sup>

In addition, the most vivid answer for bringing life back to dying Serbian villages and supporting more balanced regional development would be a quote of the great military leader: "One can rule well from a distance but only one can manage well from close"<sup>16</sup>.

## REFERENCES

- Census of Agriculture (2011). Official Gazette of the Republic of Serbia
- Đurđev, A. (2003). *Lokalna samouprava [Local government]*. Lokalna samouprava, Novi Sad, 5.
- Government of the Republic of Serbia (2007). *Zakon o lokalnoj samoupravi. [Law on Local self-government]*. Official Gazette of the Republic of Serbia, no. 129/2007, 83/2014, 101/2016, 47/2018.
- Government of the Republic of Serbia (2014). *Strategija poljoprivrede i ruralnog razvoja Republike Srbije za period 2014-2024. godine [Strategy for Agriculture and Rural Development of the Republic of Serbia for the period 2014-2024]*. Official Gazette RS, no. 85/2014
- Orlović, P. S. (2015). *Ustavopravni položaj lokalne samouprave u Srbiji [Constitutional Status of Local Self-Government in Serbia]*. Zbornik radova pravnog fakulteta, Novi Sad, 1649–1667
- Pejanović, R. (2007). *O nekim metodološkim fazama i postupcima u ekonomiji (i agroekonomiji) [Some methodological phases and procedures in economy (and agricultural economy)]*. Poljoprivredni fakultet: Letopis naučnih radova, Novi Sad, 174-186
- Simović, V. (1966) *Komunalni sistem i komunalna politika [Communal system and communal policy]*. Naučna knjiga, Beograd, 41
- Stamenković, S. (2004) *Neka aktuelna pitanja prostorne organizacije mreže naselja i relevantni demografski problemi u Srbiji [Some actual questions of the spatial organization of the network of settlements and the relevant demography problems in Serbia]*. Demografija, Beograd
- Stanković, M. (2015). *Lokalna samouprava u Srbiji [Local government in Serbia]*. Pravni fakultet Univerziteta u Beogradu, Beograd, vol. 16

<sup>15</sup> Branislav, M. Rural development - a practicum for locals. /www.skgo.org/

<sup>16</sup> Napoleon Bonaparte