Varazdin Development and Entrepreneurship Agency and **University North**
in cooperation with
Faculty of Management University of Warsaw
Faculty of Law, Economics and Social Sciences Sale - Mohammed V University in Rabat
Polytechnic of Medimurje in Cakovec

Economic and Social Development

77th International Scientific Conference on Economic and Social Development

Book of Proceedings

Editors:
Mustapha Machrafi, Tomislav Galovic, Zvonko Merkas

ISSN 1849-7535

27 January, 2022

Varazdin Development and Entrepreneurship Agency and **University North**
in cooperation with
Faculty of Management University of Warsaw
Faculty of Law, Economics and Social Sciences Sale - Mohammed V University in Rabat
Polytechnic of Medimurje in Cakovec

Editors:
Mustapha Machrafi, Faculty of Law, Economics and Social Sciences Sale - Mohammed V University in Rabat, Morocco
Tomislav Galovic, University of Rijeka, Croatia
Zvonko Merkas, Libertas International University, Croatia

Economic and Social Development

77th International Scientific Conference on Economic and Social Development

Book of Proceedings

27 January, 2022

Title ■ Economic and Social Development (Book of Proceedings), 77th International Scientific Conference on Economic and Social Development

Editors ■ Mustapha Machrafi, Tomislav Galovic, Zvonko Merkas

Publishing Editor ■ Spomenko Kesina, Mario Vrazic, Domagoj Cingula

Publisher ■ Design ■ Print ■ Varazdin Development and Entrepreneurship Agency, Varazdin, Croatia / University North, Koprivnica, Croatia / Faculty of Management University of Warsaw, Warsaw, Poland / Faculty of Law, Economics and Social Sciences Sale - Mohammed V University in Rabat, Morocco / Polytechnic of Medimurje in Cakovec, Cakovec, Croatia

Printing ■ Online Edition

ISSN 1849-7535

The Book is open access and double-blind peer reviewed.

Our past Books are indexed and abstracted by ProQuest, EconBIZ, CPCI (Web of Science) and EconLit databases and available for download in a PDF format from the Economic and Social Development Conference website: http://www.esd-conference.com

CONTENTS

ASSESSING FACTORS WHICH INFLUENCE INDIVIDUAL BEHAVIOUR TO ADOPT FAMILY TAKAFUL

Samar Rahi
Hailey College of Banking & Finance, University of the Punjab, Lahore, Pakistan
Samar.rahi@puhcbf.edu.pk

Zohaib Tahir
Hailey College of Banking & Finance, University of the Punjab, Lahore, Pakistan

ABSTRACT
The Takaful industry is flourishing worldwide therefore the growth of Takaful in Pakistan is stagnant. Therefore, this research examines factors which influence citizen's behaviour to adopt family Takaful. The family Takaful or Islamic life insurance is determined through relative advantage, media Influence, resource facilitating condition, self-efficacy, word of mouth, attitude, subjective norm and perceived behavioural control. The research model comprises Decomposed theory of planned behaviour (DTPB) to investigate citizen's behaviour towards adoption of family Takaful. It is expected that attitude, subjective norm and perceived behavioural control significantly impact family Takaful. Data of this study will be collected through non-probability sampling approach. Overall, the quantitative research approach is employed. This study is significant as it develop an amalgamated model which included multiple factors to investigate citizen's adoption behaviour towards family Takaful. For inferential analysis Smart-PLS software will be used.
Keywords: *Relative Advantage, Media Influence, Resource Facilitating Condition, Self Efficacy, Word of Mouth, Decomposed Theory of Planned Behaviour*

1. INTRODUCTION

Takaful is the replacement of traditional insurance for Muslim community. This word "takaful" originated from "Kafala" which is an Arabic verb that means responsibility or joint guarantee. In Pakistan, there is great increase in the competition to capture the market since the first takaful company started in 2007. The study applied decomposed theory of planned behavior (DTPB) to recognize person's attitude for the adoption of family takaful. According to researcher's information, none of the studies have revised DTPB in perspective of family takaful in Pakistan. In order to overcome this gap, the attributes of this model (DTPB) is investigated in this study.

1.1. Problem Statement

Even after the noteworthy growth and expansion of takaful industry, according to previous studies, there is still existence of untouched market in several Muslim countries (Yazid, Arifin & Sulong, 2013; Yazid, Arifin, Hussin, & Daud, 2012). In Pakistan, family takaful is far behind than conventional life insurance. To overcome this issue, the drivers of takaful industry need to accommodate and implement constructive marketing strategies in way to achieve and conquer target market. So this study applied Decomposed Theory of Planned Behavior (DTPB).

1.2. Research Objectives

The objectives of the research are as follows:

1) To discover influence of perceived behavioral control, subjective norm, and attitude on family takaful adoption.
2) To determine the impression of resource facilitating condition and self-efficacy over consumer perceived behavioral control.
3) To examine the impact of media referents and word-of-mouth over subjective norm.

4) To explore the influence of Relative advantage and Usefulness towards attitude for the adoption of family takaful.

1.3. Research Questions

1) To what extent perceived behavioral control, subjective norm, and attitude can influence family takaful adoption?
2) Do resource facilitate condition and self-efficacy significantly impact consumer perceived behavioral control?
3) Do media referents and word-of-mouth impact subjective norm?
4) Do Relative advantage and Usefulness influence attitude to adopt family takaful?

2. LITERATURE REVIEW

This chapter contains theoretical background/previous work/research related to the variables, which will help to develop hypotheses to test this study.

2.1. Decomposed theory of planned behavior (DTPB)

This philosophy consists of number of components like attitude, perceived behavioural control and subjective norm. This model components are furthermore decomposed, for instance, subjective norm decomposes into two determinants, Word of mouth and Media influence; and perceived behavioral control also decomposes into two determinants, Resource facilitating condition and Self-efficacy. Relative advantage and Usefulness are the components of attitude (Rahi, Othman Mansour, et al., 2021).

- **Relative advantage**
  Rogers, 1999 as cited in Ali et al. (2019) and Rahi, Alghizzawi, et al. (2021); Rahi, Khan, et al. (2021a, 2021b) explained Relative advantage as conception of rational person that believes creativeness or transformation is advantageous than the prevailing system.
- **Usefulness**
  Authors like Maduku (2013) and (Rahi, 2018); Rahi and Abd Ghani (2021) stated that usefulness refers to user's internal or inner possibility that utilize an operational structure would boost job performance of the users in any administrative manner.
- **Subjective norm**
  Husin and Ab Rahman (2016) expressed Subjective norm as individual's feeling about what will be thinking of others regarding particular behavior.
- **Word of Mouth**
  Anderson, 1998 as cited in Chen et al. (2013) defined WOM (Word of mouth) as informal conversation among the general public about the judgement or assessment of the products and services.
- **Media Influence**
  Husin et al. (2016) highlighted that mass media come up with several benefits/advantages like quick way to reach to the public at large, generate information and pass on details.
- **Perceived behavioural control**
  Alam et al. (2012) explained Perceived behavioral control as scope of one's capability to execute the behavior. They showed two features of PBC: the extent of control of a person to execute the behavior; the belief of a person to execute or to refuse the treatment of behavior.
- **Self-efficacy**
  Aziz et al. (2017) defined Self-efficacy as the capacity or power of an individual's perception in own's capability to do the act and reach destination.

- **Resource Facilitating Condition**
  Taylor and Todd, 1995 as cited in (Husin & Ab Rahman, 2016) defined Resource facilitating conditions as perception regarding the accessibility of resources to promote or encourage the expected behavior.
- **Attitude**
  According to suki (2010) and (Samar Rahi, 2017); S. Rahi (2017); (Rahi & Abd. Ghani, 2019; Rahi et al., 2018) attitude denotes to what level an individual has an advantageous or disadvantageous judgement or estimation of the behavior.
- **Family Takaful**
  According to Muhammad Akram Khan (2013), family Takaful is the replacement of traditional life insurance as it does not follow the prohibited factors like uncertainty, gambling and interest, as these factors are found in conventional insurance which is against Islamic law and principles.

2.2. Hypothesis Development

- **H1.** Relative advantage significantly influences an attitude towards family takaful adoption.
- **H2.** Usefulness significantly influences an attitude towards adoption of family takaful.
- **H3.** Subjective norm significantly influences family takaful adoption.
- **H4.** Word of mouth has a direct and constructive impact on subjective norm.
- **H5.** Media has a direct and positive impression on subjective norm.
- **H6.** Perceived behavioral control significantly influences family takaful adoption.
- **H7.** Self-efficacy significantly influences perceived behavioral control.
- **H8.** Resource facilitating condition significantly influences on perceived behavioral control.
- **H9.** Attitude significantly influences family takaful adoption.

3. THEORETICAL FRAMEWORK

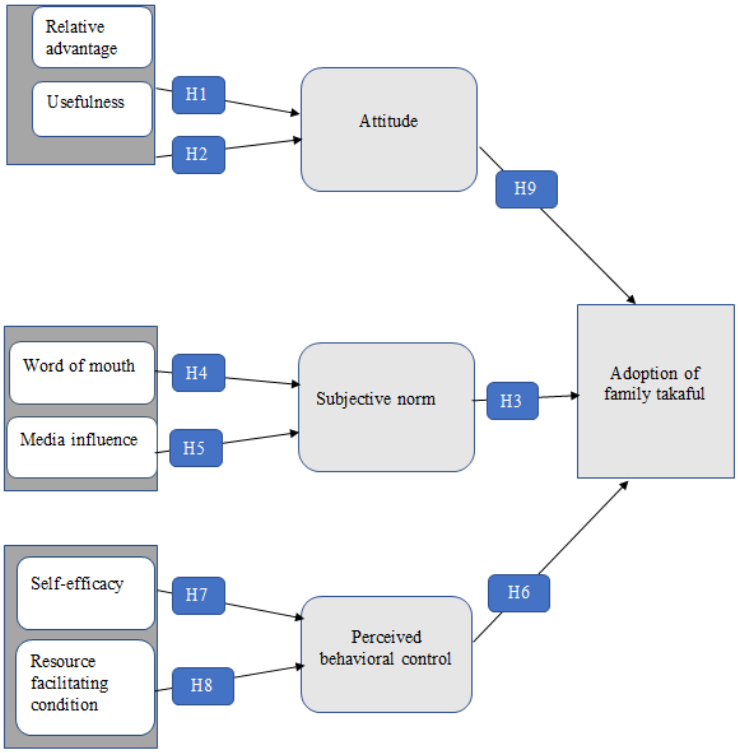


Figure 1: Theoretical Framework

4. METHODOLOGICAL APPROACH

This study applies Quantitative method with latest statistical tools for identifying this theory. This research constitutes sample size of 250 respondents using convenience sampling technique and these respondents belong to the city of Lahore, Pakistan. All respondents will be from banking sector as they have better understanding of family Takaful. Self-structured questionnaire will be used consist of five point likert scale. For Data Analysis Smart PLS software will be used.

5. EXPECTED CONCLUSION

The results will strengthen the knowledge of the Takaful practitioner and their marketing managers for development of the policies accordingly, to target the untapped/target market (the potential customers). That will possibly show positive attitude of the customers which would raise in demand of family Takaful in Pakistan. Future researchers can conduct their research using DTPB in General Takaful rather than family Takaful.

LITERATURE:

1. Ali, M., Raza, S. A., Puah, C. H., & Amin, H. (2019). Consumer acceptance toward takaful in Pakistan. International Journal of Emerging Markets.
2. Alam, S. S., Janor, H., Zanariah, C., & Ahsan, M. N. (2012). Is religiosity an important factor in influencing the intention to undertake Islamic home financing in Klang Valley. World Applied Sciences Journal, 19(7), 1030-1041.
3. Arifin, J., Yazid, A. S., & Sulong, Z. (2013). A conceptual model of literature review for family Takaful (Islamic Life Insurance) demand in Malaysia. International Business Research, 6(3), 210.
4. Aziz, S., Md Husin, M., & Hussin, N. (2017a). Conceptual framework of factors determining intentions towards the adoption of family takaful-An extension of decomposed theory of planned behaviour. International Journal of Organizational Leadership, 6, 385-399.
5. Chen, Y., Liu, F., Fang, C. H., & Lin, T. M. (2013). Understanding the effectiveness of word-of-mouth: an elasticity perspective. Journal of Research in Interactive Marketing.
6. Husin, M. M., & Ab Rahman, A. (2016). Do Muslims intend to participate in Islamic insurance? Journal of Islamic Accounting and Business Research.
7. Husin, M. M., Ismail, N., & Ab Rahman, A. (2016). The roles of mass media, word of mouth and subjective norm in family takaful purchase intention. Journal of Islamic Marketing.
8. Khan, M. A. (2013). What is wrong with Islamic economics?: analyzing the present state and future agenda: Edward Elgar Publishing.
9. Maduku, D. (2013). Predicting retail banking customers' attitude towards Internet banking services in South Africa. Southern African Business Review, 17(3), 76-100.
10. Ali, M., Raza, S. A., Puah, C. H., & Amin, H. (2019). Consumer acceptance toward takaful in Pakistan. International Journal of Emerging Markets.
11. Aziz, S., Md Husin, M., & Hussin, N. (2017). Conceptual framework of factors determining intentions towards the adoption of family takaful-An extension of decomposed theory of planned behaviour. International Journal of Organizational Leadership, 6, 385-399.
12. Chen, Y., Liu, F., Fang, C. H., & Lin, T. M. (2013). Understanding the effectiveness of word-of-mouth: an elasticity perspective. Journal of Research in Interactive Marketing.
13. Husin, M. M., & Ab Rahman, A. (2016). Predicting intention to participate in family takaful scheme using decomposed theory of planned behaviour. International Journal of Social Economics.

14. Husin, M. M., Ismail, N., & Ab Rahman, A. (2016). The roles of mass media, word of mouth and subjective norm in family takaful purchase intention. Journal of Islamic Marketing.
15. Maduku, D. (2013). Predicting retail banking customers' attitude towards Internet banking services in South Africa. Southern African Business Review, 17(3), 76-100.
16. Rahi, S. (2017). Research design and methods: A systematic review of research paradigms, sampling issues and instruments development. International Journal of Economics & Management Sciences, 6(2), 1-5.
17. Rahi, S. (2017). Structural Equation Modeling Using SmartPLS. CreateSpace Independent Publishing Platform. https://books.google.com.my/books?id=XwF6tgEACAAJ
18. Rahi, S. (2018). Research Design and Methods. CreateSpace Independent Publishing Platform. https://books.google.com.pk/books?id=FlGktgEACAAJ
19. Rahi, S., & Abd Ghani, M. (2021). Examining internet banking user's continuance intention through the lens of technology continuance theory and task technology fit model. Digital Policy, Regulation and Governance, 23(5), 456-474. https://doi.org/10.1108/dprg-11-2020-0168
20. Rahi, S., & Abd. Ghani, M. (2019). Does gamified elements influence on user's intention to adopt and intention to recommend internet banking? International Journal of Information and Learning Technology, 36(1), 2-20. https://doi.org/doi:10.1108/IJILT-05-2018-0045
21. Rahi, S., Alghizzawi, M., Ahmad, S., Munawar Khan, M., & Ngah, A. H. (2021). Does employee readiness to change impact organization change implementation? Empirical evidence from emerging economy. International Journal of Ethics and Systems, ahead-of-print(ahead-of-print). https://doi.org/10.1108/ijoes-06-2021-0137
22. Rahi, S., Ghani, M., & Ngah, A. (2018). A structural equation model for evaluating user's intention to adopt internet banking and intention to recommend technology. Accounting, 4(4), 139-152.
23. Rahi, S., Khan, M. M., & Alghizzawi, M. (2021a). Extension of technology continuance theory (TCT) with task technology fit (TTF) in the context of Internet banking user continuance intention. International Journal of Quality & Reliability Management, 38(4), 986-1004. https://doi.org/10.1108/ijqrm-03-2020-0074
24. Rahi, S., Khan, M. M., & Alghizzawi, M. (2021b). Factors influencing the adoption of telemedicine health services during COVID-19 pandemic crisis: an integrative research model. Enterprise Information Systems, 15(6), 769-793. https://doi.org/10.1080/17517575.2020.1850872
25. Rahi, S., Othman Mansour, M. M., Alharafsheh, M., & Alghizzawi, M. (2021). The post-adoption behavior of internet banking users through the eyes of self-determination theory and expectation confirmation model. Journal of Enterprise Information Management, 34(6), 1874-1892. https://doi.org/10.1108/jeim-04-2020-0156
26. Suki, N. M. (2010). An Empirical Study of Factors Affecting the Internet Banking Adoption among Malaysian Consumers'. Journal of Internet Banking and Commerce, 15(2).
27. Yazid, A. S., Arifin, J., Hussin, M. R., & Daud, W. N. W. (2012). Determinants of family takaful (Islamic life insurance) demand: a conceptual framework for a Malaysian study. International Journal of Business and Management, 7(6), 115-127.

CREATIVE VARIABLES THAT INFLUENCE THE ENTREPRENEURIAL DECISION

Cristina Blanco
Universidad de Alcalá, Spain

Esther Pagan-Castano
ESIC Business & Marketing School, ESIC University, Spain

Jose Fernando Gallego-Nichols
ESIC Business & Marketing School, Spain

Agustin Carrilero-Castillo
ESIC Business & Marketing School, Spain

ABSTRACT

Creativity, one of the most sophisticated and valued concepts, is considered a soft skill inherent to the entrepreneurial ecosystem. Although it is difficult to measure due to its conceptualization (Xu et al., 2019), researchers approach it from different perspectives. Thus, it is considered a component of individual cognitive processing based on the ability to generate new and valuable ideas by combining and recombining existing information and knowledge (Xiu'e, and Kun, 2018). Creative thinking involves ordinary cognitive processes; therefore, everyone can develop their creativity (Simonton, 2000). However, if the surrounding environment is not conducive to creative expression, this ability may be reduced over time (Lin, 2011). Consequently, context influence creativity, thus being a driving or hindering factor the degree of creativity and the frequency of creative acts among individuals vary (Guilford, 1967). Thus, entrepreneurship constitutes a determinant contextual element in the analysis. Torrance (1969) defined and consolidated different elements that have been universally adopted in the evaluation of creativity: elaboration, fluency, flexibility and originality. This research focuses on the awareness of the four elements above among individuals within organization, as proposed by Torrance (1974) in his research Thinking Creative Test. Thus, a Fussy Set Qualitative Comparative Analysis is proposed with the aim of analysing the relationship between these four variables of creativity and the individual's decision to start a new business. To this end, a survey of business leaders will be carried out. The aim of this analysis is to show the correlation between the creativity variables that have been universally assumed in the evaluation of creativity and to propose a new line of research in the field of entrepreneurship.

Keywords: *Creativity, Education, Entrepreneurship, Soft Skills*

1. INTRODUCTION

Entrepreneurship has the capacity to influence the economy and the country (Ribeiro and Huarng, 2013), for this reason, it is a concept that has gained special relevance in recent years. The entrepreneurial activity is not only based on the person who founds the company, as Schumpeter (1939) pointed out. In this way, there are different factors that can influence entrepreneurial development at both the personal and organizational levels. Entrepreneurship emphasizes the role of the innovative person, who helps in the organization and making decisions in the market (Hayward et al., 2006). In this way, a set of skills, knowledge and characteristics that drive the individual to entrepreneurial development should be considered.

Recent years have seen an increased interest and emphasis on creative education in several countries around the world (Lin, 2011; Smears, et al., 2011). Entrepreneurial development motivates the development of different skills such as creativity and innovation, thus allowing

the proactive adaptation of the individual to the environment. Considering globalization, continuing education in these aspects becomes especially relevant, also highlighting that interest in creativity and innovation is crucial for the success of the global economy. Thereby, business education and entrepreneurship have a relevant role in the economic context (Fetters et al., 2010). In many cases the creativity of the organization is evident in internal business processes (Hober et al., 2021). Novel and valuable ideas should also be considered since they are the core of entrepreneurship, and entrepreneurs have the ability to recognize, evaluate and exploit these ideas and opportunities to succeed (Ward, 2004). Specifically, this research considers the entrepreneurial being defined by Dees (1998), which highlights the ingenuity of the entrepreneur, the creation of value and the identification of opportunities, among others. This will require the analysis of creativity as an influential skill and the proposal of a methodology that allows us to provide relevance to the different creative variables that influence the decision to undertake an entrepreneurial venture. However, there is not enough literature linking creative variables and entrepreneurial potential; therefore, the present analysis aims to contribute to the existing gap. Hence, the main purpose of this study is the assessment of creativity in the business leader's profile through fuzzy logic, using the methodology Comparative Qualitative Analysis (FsQCA). The present work is distributed as follows. Point two introduces the explanatory theoretical framework related to the concept of creativity in entrepreneurs. In point three on the methodology, a description of the procedure to be implemented is made. In section four of conclusions, the main expected results based on the theoretical framework are presented.

2. LITERATURE REVIEW

The changing needs of society create opportunities that are discovered by those who are willing to take advantage of them (Krueger et al., 1994). The cognitive processes and intentions of the entrepreneurial mind have been studied by different authors throughout history (Baron, 2004). Gartner (1989) proposed the interaction between sociopsychology and organizational management considering important characteristics that could differentiate entrepreneurs from non-entrepreneurs. Accordingly, human capital is a determinant of entrepreneurial intentions and provides value (Davidsson and Honig, 2003). Therefore, it is necessary to consider that human capital is constituted by the set of skills and knowledge that individuals acquire through investments in schooling, on-the-job training and other types of experience (Unger et al., 2011). In the set of competencies and skills, creativity becomes relevant in entrepreneurial activity since it is required from the first-generation phase of the idea to the dissemination and adoption of it (Mylonas, et al., 2017). Batchelor and Burch (2012) reported that creativity has a strongly significant effect on entrepreneurial intentions. Drucker (1985) considers innovation and creativity as intrinsic conditions of entrepreneurship. Many researchers have analyzed the relationship between entrepreneurial behavior and personal traits (Leroy et al., 2009). Others, in view of the complex creative development that encompasses disciplines from psychology to education (Amabile, 1987), have analyzed the link between entrepreneurship and this ability (Whiting, 1988). Creativity means innovating through a process of combining and reorganizing knowledge (Chen, et al., 2013). Likewise, some authors have suggested creativity as a necessary survival skill for the 21st century (Craft, 2006).

2.1. Potential entrepreneurship and training in creative skills

Entrepreneurial activity is essential for the growth of developing economies (Manolova et al., 2008) and, in particular, it becomes significant considering nascent entrepreneurial activity (Wagner, 2006) since environments do not always provide favorable conditions for it. The entrepreneur has a creative and innovative capacity that allows him to explore new opportunities in the environment (Metallo et al., 2020).

Taking a different perspective, in terms of motivating and fostering nascent entrepreneurship, Aldrich and Martinez, (2001) suggest that high levels of trust and emotional closeness are positive, also, Shane and Venkataraman, (2000) show the relationship between needs and opportunities and affirm the importance of the recognition of opportunities enabling the creation of businesses. From the internal organizational perspective, the human resources department uses different methods to motivate employees to be creative and to promote their innovative behavior (Montoro-Sánchez and Soriano, 2011). Following this approach, Sánchez, (2011) links it to the skills of entrepreneurship, from the standpoint of cognitive theories, where entrepreneurs acquire a structure of knowledge through which they can make evaluations and judgements of the opportunities identified in the environment, thus enabling the creation and growth of the company. Considering the psychological perspective of entrepreneurship, personal characteristics turn out to be relevant. Hamidi et al., (2008) show that creativity is also an antecedent of entrepreneurial intention. In this line, entrepreneurship is defined by personal variables that shape entrepreneurial behavior. These studies attempt to link behavioral approaches and research on new venture formation to improve academic understanding of entrepreneurial behavior (Metallo et al., 2020). From the education perspective, both formal and informal education should be considered as one of the main components of human capital that can contribute to the accumulation of knowledge capable of providing useful skills for entrepreneurs (Davidsson and Honing, 2003). Rauch and Hulsink, (2015) outline that there is a significant relationship between training programs and entrepreneurial intention. Hence, education should take into account elements such as creativity, innovation capacity and skills that allow individuals and companies to obtain better results (Chen, et al., 2011). Bearing in mind education, creativity can be learned, nevertheless, it should be emphasized that all people are born with a natural creative capacity (Lin, 2011). At this point the creative thinking process should be considered to involve ordinary cognitive processes, giving rise to each person's ability to learn to be creative (Simonton, 2000). Hence, it becomes relevant to analyze the relationship between training in creative skills and the decision to be an entrepreneur. Accordingly, the following proposition is formulated:

- Proposition 1. Identify the relationship between creative training and the decision to become an entrepreneur.

2.2. Creativity

Creativity is a multivariate construct (Ivancovsky et al., 2021). People need to be creative in order to solve problems they face at work and in daily life (Sternberg and Lubart, 1996). Therefore, to cope with uncertainty and meet the demands of today's ever-changing world, it is essential for the individual to use creativity (Smears et al., 2011). Thus, being creative in society has a real impact as it can lead to economic achievements and help in sustainability (Shaheen, 2010). Furthermore, Antunes and Pinheiro (2020), highlight creativity as a factor that contributes to organization. Creative ability has grown exponentially over the last years. Torrance (1966) sees the creative process as a path through which the person becomes aware of the problems existing in the context and sets out to find solutions to satisfy them. For this purpose, he defines creativity as a set of different elements, such as originality, flexibility, elaboration and fluidity of ideas (Torrance, 1969). Guilford (1973), in turn, refers to creative traits that have endured over time, such as flexibility, fluidity, elaboration, originality, sensitivity, curiosity, independence, persistence and action, among others. These variables have been used by authors such as Rizal, et al., (2020) in the generation and testing of creative thinking skills. Likewise, Kaufan, (2012) proposes self-creativity as a representative element in the entrepreneurial field, so, for personal development, the search for different solutions to current challenges will be essential. Creativity is linked to individual cognitive processing since it allows generating new and valuable ideas through the combination and recombination of

existing information and knowledge (Xiu'e, and Kun, 2018). Xu et al., (2019), who affirm that it is a complex skill to conceptualize, should be borne in mind. However, business studies, make reference to creative behavior. Hence, it becomes highly appropriate to consider that creative behavior is relevant in business processes since it allows identifying opportunities through different patterns and trends (Fillis and Rentschler, 2010). The measurement of creativity in the areas of education and psychology has been widely analyzed (Said-Metwaly, et al., 2021) being the Torrance Test of Creative Thinking a commonly used measure to analyze creative potential. Torrance (1969) defined the criteria of fluency, understood as the quantity of ideas produced; flexibility considering the production of ideas in different categories or contexts; originality highlighting unusual or novel ideas; and elaboration taking into account details. The present study proposes to analyze these four criteria based on the opinion of the entrepreneurs in relation to the creative ideas and solutions they propose and the entrepreneurial propensity they have. This analysis aims to identify which variable has a stronger link with the entrepreneurial decision and which configurations of the creative variables are the key factors in the nascent entrepreneur. Although creativity has been considered over the years, there is a need to make the individual aware of each of the variables that compose it and thus differentiate the influence of each of them in the decision to become an entrepreneur, since creativity has been considered as the set of originality, fluidity, flexibility and elaboration in a universal approach. Therefore, the following proposition should be addressed:

- Proposition 2. Identify the relationship between originality and the decision to be an entrepreneur.
- Proposition 3. Identify the relationship between flexibility and the decision to be an entrepreneur.
- Proposition 4. Identify the relationship between elaboration and the decision to be an entrepreneur.
- Proposition 5. Identify the relationship between fluency and the decision to be an entrepreneur.

3. DATA

A sampling approach is used to address the above propositions, drawing on a set of 64 professional leaders. Thus, the sampling frame was obtained through a Microsoft Forms survey. In the first part of the study, creativity is highlighted as a relevant skill. Secondly, the most important characteristics of the potential entrepreneur and their relationship with creativity are presented. Subsequently, the study of the different propositions is addressed using the Fussy Set Qualitative Comparative Analysis methodology developed by Ragin and Davey (2016). This methodology has gained relevance in recent years, so, as proposed by Piñeiro-Chousa et al. (2019), it is an alternative method to traditional methodologies. Thus, Comparative Qualitative Analysis (FsQCA) allows investigating considering mathematical sets, through the analysis of the influence of the combination of causal conditions on the outcome as De Crescenzo et al., (2021) and Ribeiro-Navarrete et al., (2021b) have argued. In our case, it is particularly useful as it allows a qualitative comparative study through a configurational approach (Lassala et al., 2021; Ribeiro-Navarrete et al., 2021a). Moreover, this methodology has been used by authors such as Kusa et al., (2021) in the entrepreneurial field using variables such as entrepreneurial orientation, entrepreneur motivation and opportunity perception. Consequently, the relevance of this methodology in this analysis lies in the configuration or combination of the proposed conditions and not only in the individual value of the variable. Hence, complementary analyses will be proposed that allow a glimpse of the link between the potential entrepreneur and the creative dimensions used, thus allowing a vision of the influence of creativity in a society that is in continuous change.

4. CONCLUSION

Several authors have proposed the continuation of research in this area, which is a great challenge due to the difficulty of measuring this construct. Responding to the call of Plucker and Runco, (1998) and bearing in mind the problems of assessing and measuring creativity, this article proposes a concrete strategy to address the challenge and give sense to the analysis of creativity. Since it is an abstract concept, the best way to approach the relationship and link between its variables is through fuzzy logic. Thus, FSQCA is proposed as a tool for this purpose. Originality, fluency, elaboration and flexibility variables have been commonly used throughout history with the aim of determining different characteristics of creativity, so, through our analysis we have proposed to explore the relationship between all of them, as well as to analyze which of them has a greater impact on entrepreneurial intention. For this purpose, a group of business leaders has been considered. This research contributes to the existing literature in the field of entrepreneurship. It is worth noting that it is nowadays when this kind of competencies acquire relevance linked to entrepreneurial decisions. To understand which of the variables is more relevant for business leaders in today's uncertain times, the relevance of creativity in the implementation of a business idea can be shown to entrepreneurs. In this way, the multivariate construct of creativity for the individual will be highlighted, making individuals aware of the relevance of each variable.

LITERATURE:

1. Aldrich, H.E., & Martinez, M.A. 2001. Many are called, but few are chosen: an evolutionary perspective for the study of entrepreneurship, Entrepreneurship, *Theory, & Practice Journal*, Summer: 41-56. https://doi.org/10.1177/104225870102500404
2. Amabile, T., & Gryskiewicz, S. S. (1987). Creativity in the R&D laboratory. *Center for Creative Leadership.*
3. Antunes, H. D. J. G., & Pinheiro, P. G. (2020). Linking knowledge management, organizational learning and memory. *Journal of Innovation & Knowledge*, *5*(2), 140-149. https://doi.org/10.1016/j.jik.2019.04.002
4. Baron, R. A. (2004). Opportunity recognition: a cognitive perspective. In *Academy of Management Proceedings* (Vol. 2004, No. 1, pp. A1-A6). Briarcliff Manor, NY 10510: Academy of Management. https://doi.org/10.22034/DFSR.2020.123535.1374
5. Batchelor, J. H., & Burch, G. F. (2012). Creative individuals and entrepreneurship: Is there an inherent attraction?. *Small Business Institute Journal*, *8*(2), 1-11.
6. Chen, A., Li, L., Li, X., Zhang, J., & Dong, L. (2013). Study on innovation capability of college students based on extenics and theory of creativity. *Procedia Computer Science*, *17*, 1194-1201. https://doi.org/10.1016/j.procs.2013.05.152
7. Chen, C.-T., Hu, J.-L., Wang, C.-C., & Chen, C.-F. (2011). A study of the effects of internship experiences on the behavioural intentions of college students majoring in leisure management in Taiwan. *Journal of Hospitality Leisure Sport & Tourism Education*, 10(2), 61-73.
8. Craft, A. (2006). Fostering creativity with wisdom. *Cambridge Journal of Education*, *36*(3), 337-350. https://doi.org/10.1080/03057640600865835
9. Davidsson, P., & Honig, B. (2003). The role of social and human capital among nascent entrepreneurs. *Journal of Business Venturing*, *18*(3), 301-331. https://doi.org/10.1016/S0883-9026(02)00097-6
10. De Crescenzo, V., Monfort, A., Felício, J. A., & Ribeiro-Navarrete, S. (2021). Communication and the role of third-party endorsement in social crowdfunding. The Service Industries Journal, 1-28. https://doi.org/10.1080/02642069.2021.1963437

11. Dees, J.G. (1998). The meaning of "social entrepreneurship."Comments and suggestions contributed from the Social Entrepreneurship Founders Working Group. Durham, NC: Center for the Advancement of Social Entrepreneurship, Fuqua School of Business, Duke University.
12. Drucker, P. F. (1985). The discipline of innovation. *Harvard business review*, *63*(3), 67-72.
13. Fetters, M., Greene, P. G., & Rice, M. P. (Eds.). (2010). The development of university-based entrepreneurship ecosystems: Global practices. Edward Elgar Publishing.
14. Fillis, I., & Rentschler, R. (2010). The role of creativity in entrepreneurship. *Journal of Enterprising Culture*, *18*(01), 49-81. https://doi.org/10.1142/S0218495810000501
15. Gartner, W. B. (1989). Some suggestions for research on entrepreneurial traits and characteristics. *Entrepreneurship Theory and Practice*, *14*(1), 27-38. https://doi.org/10.1177/104225878901400103
16. Guilford, J. P. (1967). The nature of human intelligence.
17. Guilford, J. P. (1973). Characteristics of Creativity.
18. Hamidi, D. Y., Wennberg, K., & Berglund, H. (2008). Creativity in entrepreneurship education. *Journal of Small Business and Enterprise Development*.
19. Hayward, M. L., Shepherd, D. A., & Griffin, D. (2006). A hubris theory of entrepreneurship. *Management Science*, *52*(2), 160-172. https://doi.org/10.1287/mnsc.1050.0483
20. Hober, B., Schaarschmidt, M., & von Korflesch, H. (2021). Internal idea contests: Work environment perceptions and the moderating role of power distance. *Journal of Innovation & Knowledge*, *6*(1), 1-10. https://doi.org/10.1016/j.jik.2019.11.003
21. Ivancovsky, T., Shamay-Tsoory, S., Lee, J., Morio, H., & Kurman, J. (2021). A Multifaceted Approach to Measure Creativity across Cultures: The Role of the Centrality of Context in Divergent Thinking Tasks. *The Journal of Creative Behavior*. https://doi.org/10.1002/jocb.506
22. Kaufman, J. C. (2012). Counting the muses: development of the Kaufman domains of creativity scale (K-DOCS). *Psychology of Aesthetics, Creativity, and the Arts*, *6*(4), 298. https://doi.org/10.1037/a0029751
23. Krueger Jr, N. F., & Brazeal, D. V. (1994). Entrepreneurial potential and potential entrepreneurs. *Entrepreneurship Theory and Practice*, *18*(3), 91-104. https://doi.org/10.1177/104225879401800307
24. Kusa, R., Duda, J., & Suder, M. (2021). Explaining SME performance with fsQCA: The role of entrepreneurial orientation, entrepreneur motivation, and opportunity perception. Journal of Innovation & Knowledge. 6(4), 234-245. DOI: 10.1016/j.jik.2021.06.001
25. Lassala, C., Orero-Blat, M., & Ribeiro-Navarrete, S. (2021). The financial performance of listed companies in pursuit of the Sustainable Development Goals (SDG). Economic Research-Ekonomska Istraživanja, 34(1), 427-449. https://doi.org/10.1080/1331677X.2021.1877167
26. Leroy, H., Manigart, S., & Meuleman, M. (2009). The planned decision to transfer an entrepreneurial company.
27. Lin, Y. S. (2011). Fostering creativity through education–a conceptual framework of creative pedagogy. *Creative Education*, *2*(03), 149-155. https://doi.org/10.4236/ce.2011.23021
28. Manolova, T. S., Eunni, R. V., & Gyoshev, B. S. (2008). Institutional environments for entrepreneurship: Evidence from emerging economies in Eastern Europe. *Entrepreneurship theory and practice*, *32*(1), 203-218.
29. Metallo, C., Agrifoglio, R., Briganti, P., Mercurio, L., & Ferrara, M. (2021). Entrepreneurial behaviour and new venture creation: the psychoanalytic perspective. *Journal of Innovation & Knowledge*, *6*(1), 35-42. https://doi.org/10.1016/j.jik.2020.02.001

30. Montoro-Sánchez, Á., & Soriano, D. R. (2011). Human resource management and corporate entrepreneurship. *International Journal of Manpower*. https://doi.org/10.1108/01437721111121198
31. Mylonas, N., Kyrgidou, L., & Petridou, E. (2017). Examining the impact of creativity on entrepreneurship intentions: The case of potential female entrepreneurs. *World Review of Entrepreneurship, Management and Sustainable Development*, *13*(1), 84-105.
32. Piñeiro-Chousa, J., Vizcaíno-González, M., & Ribeiro-Navarrete, S. (2019). Using voting decisions to identify shocks in the financial services industry. *Service Business*, 13(2), 419-431. https://doi.org/10.1007/s11628-018-00389-8
33. Plucker, J. A., & Runco, M. A. (1998). The death of creativity measurement has been greatly exaggerated: Current issues, recent advances, and future directions in creativity assessment. *Roeper Review*, *21*(1), 36-39. https://doi.org/10.1080/02783199809553924
34. Ragin, C. C., Drass, K. A., & Davey, S. (2006). Fuzzy-set/qualitative comparative analysis 2.0. *Tucson, Arizona: Department of Sociology, University of Arizona*, *23*(6), 1949-1955.
35. Rauch, A., and Hulsink, W. (2015), "Putting entrepreneurship education where the intention to act lies: An investigation into the impact of entrepreneurship education on entrepreneurial behavior", *Academy of Management Learning and Education,* Vol. 14 No. 2, pp. 187-204. https://doi.org/10.5465/amle.2012.0293
36. Ribeiro, D., & Huarng, K. -H. (2013). Innovation and entrepreneurship in knowledge industries. Journal of Business Research, 64(11), 1224–1228. https://doi.org/10.1016/j.jbusres.2013.02.019
37. Ribeiro-Navarrete, S., Botella-Carrubi, D., Palacios-Marqués, D., & Orero-Blat, M. (2021a). The effect of digitalization on business performance: An applied study of KIBS. Journal of Business Research, 126, 319-326. https://doi.org/10.1016/j.jbusres.2020.12.065
38. Ribeiro-Navarrete, S., Palacios-Marqués, D., Lassala, C., & Ulrich, K. (2021b). Key factors of information management for crowdfunding investor satisfaction. International Journal of Information Management, 59, 102354. https://doi.org/10.1016/j.ijinfomgt.2021.102354
39. Rizal, R., Rusdiana, D., Setiawan, W., & Siahaan, P. (2020). Creative thinking skills of prospective physics teacher. In *Journal of Physics: Conference Series* (Vol. 1521, No. 2, p. 022012). IOP Publishing.
40. Said-Metwaly, S., Van den Noortgate, W., & Barbot, B. (2021). Torrance test of creative thinking-verbal, Arabic version: Measurement invariance and latent mean differences across gender, year of study, and academic major. *Thinking Skills and Creativity*, *39*, 100768. https://doi.org/10.1016/j.tsc.2020.100768
41. Sánchez, José C. (2011), "University training for entrepreneurial competencies: its impact on intention of venture creation", *International Entrepreneurship and Management Journal*, Vol.7, pp.239-254. https://doi.org/10.1007/s11365-010-0156-x
42. Schumpeter, J. A. (1939). *Business cycles* (Vol. 1, pp. 161-174). New York: McGraw-Hill.
43. Shaheen, R. (2010). Creativity and education. *Creative Education*, *1*(03), 166. https://doi.org/10.4236/ce.13026
44. Shane, S., Venkataraman, S., 2000. The promise of entrepreneurship as a field of research. Acad. Manage. Rev. 25 (1), 217 – 226. https://doi.org/10.5465/amr.2000.2791611
45. Simonton, D. K. (2000). Creativity: Cognitive, personal, developmental, and social aspects. *American Psychologist*, *55*(1), 151. https://doi.org/10.1037/0003-066X.55.1.151
46. Smears, E., Cronin, S., & Walsh, B. (2011). A risky business: Creative learning in education. *Teacher Advancement Network Journal*, *2*(1), 1–15.
47. Sternberg, R. J., & Lubart, T. I. (1996). Investing in creativity. *American psychologist*, *51*(7), 677.
48. Torrance, E. P. (1966). Nurture of creative talents. *Theory into Practice*, *5*(4), 167-173. https://doi.org/10.1080/00405846609542020

49. Torrance, E. P. (1969). Creativity. What Research Says to the Teacher, Series, No. 28.
50. Torrance, E. P. (1974). Norms-technical manual: Torrance Tests of Creative Thinking Lexington. *MA: Ginn & Co*.
51. Unger, J. M., Rauch, A., Frese, M., & Rosenbusch, N. (2011). Human capital and entrepreneurial success: A meta-analytical review. *Journal of Business Venturing*, *26*(3), 341-358. https://doi.org/10.1016/j.jbusvent.2009.09.004
52. Wagner, J. (2006). Nascent entrepreneurs. In *The Life Cycle Of Entrepreneurial Ventures* (pp. 15-37). Springer, Boston, MA.
53. Ward, T. B. (2004). Cognition, creativity, and entrepreneurship. *Journal of Business Venturing*, *19*(2), 173-188. https://doi.org/10.1016/S0883-9026(03)00005-3
54. Whiting, B. G. (1988). Creativity and entrepreneurship: how do they relate?. *The Journal of Creative Behavior*. https://doi.org/10.1002/j.2162-6057.1988.tb00495.x
55. Xiu'e, Z., & Kun, Z. (2018). The Relationship between Creativity and Entrepreneurial Intention: A Moderated Mediating Effect Model. *Foreign Economics & Management*, *40*(03), 67-78. https://doi.org/ 10.16538/j.cnki.fem.2018.03.005
56. Xu, X., Liu, W., & Pang, W. (2019). Are emotionally intelligent people more creative? A meta-analysis of the emotional intelligence–creativity link. *Sustainability*, *11*(21), 6123. https://doi.org/10.3390/su11216123

ANALYSIS OF CURRENT SUBNATIONAL TERRITORIAL AND ADMINISTRATIVE ORGANISATION OF EU MEMBER STATES

Davor Zmegac
Libertas International University
Trg J. F. Kennedy 6b, Zagreb, Croatia
dzmegac@libertas.hr

ABSTRACT

The subnational organisational level of government is a dynamic system which is subject to constant minor or major systematic changes. Despite numerous similarities, the internal subnational organisation of each EU Member State also has certain specific characteristics, which together make the operational optimisation of system management more complex. The diversity of subnational organisation of European states results from several factors, primarily from: (a) the form of government; (b) historic and administrative legacies and circumstances; (c) specific geographic or national features of individual parts of the territory within a state union, and (d) dominant political and economic standpoint in relation to the subnational organisation within an individual state. The paper first discusses historical development of systems of subnational organisation of government, and further examines and analyses the three aspects of recent formal system organisation, namely (i) the type and number of organisational levels, (ii) specific forms of formal organisation of each EU Member State, and (iii) the fragmentation of the basic organisational form i.e. 1st level units. Based on the latest available and analysed data, the current subnational level of EU Member States comprises 86,027 1st level units, 1,072 2nd level units and 245 3rd level units. The average number of inhabitants per one subnational 1st level unit is 5,184 inhabitants, median per number of inhabitants is 4,667, the average number of subnational 1st level units per 100,000 inhabitants is 15.9, while the average surface area of one subnational level unit is 46.5 km2.

Keywords: *Organisation, Regional economy, Subnational units*

1. INTRODUCTION

The European Union does not in any of its legal acts explicitly define or condition the ways of decentralization or subnational organisational forms of its Member States, but inherits specific relations in each Member State. However, the EU regional policy very clearly shows the importance attributed to the capacity of local and regional self-government to directly affect the development and standard of living of citizens in its area, especially with the aim of reducing regional inequalities.[1] EU Member States have different, albeit predominantly unitary, forms of government and specific forms of subnational level of government. Europe, as a community of diversity, is characterized by a number of differences in terms of area of its Member States, size of their populations, levels of economic development, etc. but a common history, commitment to cooperation, values of the democratic system and the potential for common progress of each member through integration are essential elements of development of the European Union as a supranational organisation.[2]

[1] "The Union shall respect the equality of Member States before the Treaties as well as their national identities, inherent in their fundamental structures, political and constitutional, inclusive of regional and local self-government. It shall respect their essential State functions, including ensuring the territorial integrity of the State, maintaining law and order and safeguarding national security. In particular, national security remains the sole responsibility of each Member State." (Consolidated version of the Treaty on European Union) (https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A12012M004 (14.11.2021.)

[2] Having in mind the diversity of Europe and the specific heritage of each country in terms of internal organization of public systems on the one hand, and on the other hand the need to create a basis for monitoring and comparing economic indicators of different systems, a methodology has been developed based on NUTS statistical regions.

Optimizing the system of subnational organisation has unforeseeable consequences, not only directly in the context of efficient public governance (Hodžić, Demirović and Bečić, 2020), but also indirectly, affecting a higher economic productivity, the inflow of foreign direct investments (Lobanova, Lobanov and Zvezdanović, 2021), and improvement of the transfer of knowledge, technology and innovation (Broz, Buturac and Parežanin, 2020) (Fang and Sheng, 2021). When beginning the research of the subnational organisational level of EU Member States, it is necessary to take into account both the formal organisation and the statistical (NUTS) methodology, which enables the comparison of formal units that are sometimes characterized by significant structural differences. The subnational organisational level of government is a dynamic system which is subject to constant minor or major systematic changes. Also, despite numerous similarities, the internal subnational organisation of each Member State has certain specific characteristics, all of which makes the research more complex. The paper aims to investigate and analyse the latest available data on the subnational organisational system of EU Member States. To this end, the historical development of the system of subnational organisational level will be considered in the introduction, followed by research and analysis of the recent formal organisation of the system from three aspects, namely: (i) the type and number of organisational levels, (ii) specific forms of formal organisation in each EU Member State, and (iii) the fragmentation of the basic organisational form i.e. 1st level units.

2. HISTORICAL DEVELOPMENT AND ROLE OF SYSTEMS OF SUBNATIONAL ORGANISATIONAL LEVEL OF GOVERNMENT

Discussion of subnational organisational level of government starts from the aggregate concept of the form of state, consisting of two elements: (a) the form of government; (b) the political system. Although both the form of government and the political system affect the economy of the state, this paper focuses on the latter, which will be explained in more detail below. The state is the holder of sovereign power and as such has one central government. That government is the highest in the corresponding state territory, and as noted by (Perić, 1994). "Its power extends to the entire state territory and is called sovereign." However, the state mechanism does not consist of only one central government, but there are other organisational administrative units whose competence do not extend to the entire state territory, but only to a part of that territory (the network of such non-central organisations covers the entire state territory). The task of these lower-level organisational bodies is to transmit the state authority in both directions (central government to regional/non-central and vice versa). In every state there are always both types of bodies and units (central and non-central) since no state power can be exercised only with the help of central (sovereign) government, but this requires an entire system of lower-level, non-central (regional) authorities. The development of lower-level (non-central) levels of government originates from the history of civic self-government, i.e. the process by which the new bourgeoisie obtained, due to its growing social and economic importance, a certain organisational freedom to effectuate its development and expected profits. When it comes to the structure of civic self-government, two fundamental relations are distinguished between central government and self-government in the relevant literature, the so-called *double track* and *single track*. The *double track* is characterized by the existence of two parallel types of local authorities: regional centralized (directly subordinated to state government) and regional decentralized authorities (indirectly subordinated to state government). The *single track* is characterized by two types of competences (transferred state competence and own competence). The relationship between the central government and the lower-level non-central (regional) government yields two main systems of political organization: (i) unitary state and (ii) complex state. A unitary state has a unique constitution, a unique system of supreme (central) bodies, and is divided into certain administrative areas

with a certain degree of decentralization (unitary states can be both centralized or decentralized). On the other hand, a complex state, conditionally speaking, consists of several states[3] and is divided into the following types: (i) Protectorate; (ii) Union (real or personal); (iii) Confederation and (iv) Federation. Each type of complex state has its own characteristics, but for the purpose of this research it is important to emphasize that the relationship between the federation as a central government and federal units (states) is regulated by the Constitution and in that regard any substantial interventions in economic, cultural, political, or similar matters are limited in terms of their compliance with the highest federal legal standard, i.e. the Constitution. Thus, when speaking about the subnational organisational level of government, two basic correlations should be noted: (i) the relationship between central and non-central (regional) systems and bodies and that of regional and local authorities and organisational forms with the central government and (ii) the relationship between organisational forms and systems within a subnational territorial-administrative unit. A whole set of relations between the central and non-central levels of government is based on the two correlations mentioned above. These relations are in constant search of optimum, both from the aspect of the central state, which seeks to preserve its competencies all the while enabling the growth and development of non-central units, and on the other hand, from the aspect of non-central units which seek to ensure strong positions for the implementation of activities and measures aimed at strengthening their own territory and system and to reduce possible obstructions (intentional or unintentional) from the central level. At the same time, non-central units have a competitive relationship with other subnational units, which further complicates the entire optimization process. Subnational level management optimization processes cover a wide range of social, societal, security, democratic, and especially organisational and economic elements that should be optimally modelled to ensure effective and efficient operational functioning of government for the benefit of its citizens.

3. CURRENT SUBNATIONAL ORGANISATION OF EU MEMBER STATES

When speaking of the subnational organisational levels of EU Member States[4], due to the need to systematize the system studied, three levels are usually distinguished. Municipal level units are the levels of local self-government closest to citizens (cities, municipalities, communes and similar organisational forms). The second level, often called the intermediate, consists of units forming the transition from the local to the regional or federal level (district, province…). The third level (regional or state level), as a rule the strongest in its rights, consists of independent regional units (regions) or states in federally structured states. In practice and in formal organisation, there are certain overlaps, and a considerable number of informal, historical or formal statistical or planning levels of the state organisation, which further complicates research, systematization, and economic comparison.

3.1. Levels and numbers of subnational organisational units of EU Member States

As the European Union is a supranational community of states, which sometimes have significant differences in the approach to organisation of subnational level, before researching the subnational organisation it is necessary to consider the macro level (Brandmüller and Önefors, 2020). A detailed overview of the current subnational level of the EU Member States is shown below in Table 1.

[3] In this matter legal science has different views (author's remark)

[4] When we look at government from an economic point of view, we are talking about the concept of 'General Government'. "The general government consists of all national and subnational units, including extra-budgetary funds, non-profit institutions providing non-market services, collecting revenues, generating expenditures for the government that largely controls them, as well as unincorporated market producers that cannot be classified into quasi-companies. The three basic levels of general government are: central government; state, provincial or regional government, and local government." (Bejaković, Bratić and Vukšić, 2011).

State	Political system	2019-2020		
		1st level	2nd level	3rd level
Austria	Federal state	2095	0	9
Belgium	Federal state	581	10	6
Bulgaria	Unitary state	265	0	0
Croatia	Unitary state	556	0	21
Czech Republic	Unitary state	6258	0	14
Cyprus	Unitary state	380	0	0
Denmark	Unitary state	98	0	5
Estonia	Unitary state	79	0	0
Finland	Unitary state	309	0	1
France	Unitary state	34965	101	18
Germany	Federal state	10792	401	16
Greece	Unitary state	332	130	13
Hungary	Unitary state	3155	0	19
Ireland	Unitary state	31	0	0
Italy	Unitary state	7904	0	20
Latvia	Unitary state	119	0	5
Lithuania	Unitary state	60	0	0
Luxembourg	Unitary state	102	0	0
Malta	Unitary state	68	0	0
Netherlands	Unitary state	352	0	12
Poland	Unitary state	2477	380	16
Portugal	Unitary state	308	0	2
Romania	Unitary state	3181	0	42
Slovak Republic	Unitary state	2927	0	8
Slovenia	Unitary state	212	0	0
Spain	Federal state	8131	50	17
Sweden	Unitary state	290	0	21
EU-27		**86027**	**1072**	**245**

Table 1: Subnational organisation of EU-27 States (2020)
(Source: Author's systematisation according to: Subnational governments in OECD countries: Key data 2021 edition (OECD, 2021))

Table 1 shows that the current subnational level of EU Member States consists of 86027 1st level units, 1072 2nd level units and 245 3rd level units. Transitional 2nd level units are strongly present in Germany, Poland, France, Greece, and Spain as part of the historical heritage and specifics of the organisation, while all other EU Member States are focused on two basic subnational organisation levels, based on 1st level units as fundamental and most numerous and 3rd level as the highest and coordinating form of subnational organisation (OECD, 2020). An analysis of the established number of subnational levels in correlation with the population size is presented in Figure 1 below.

Figure following on the next page

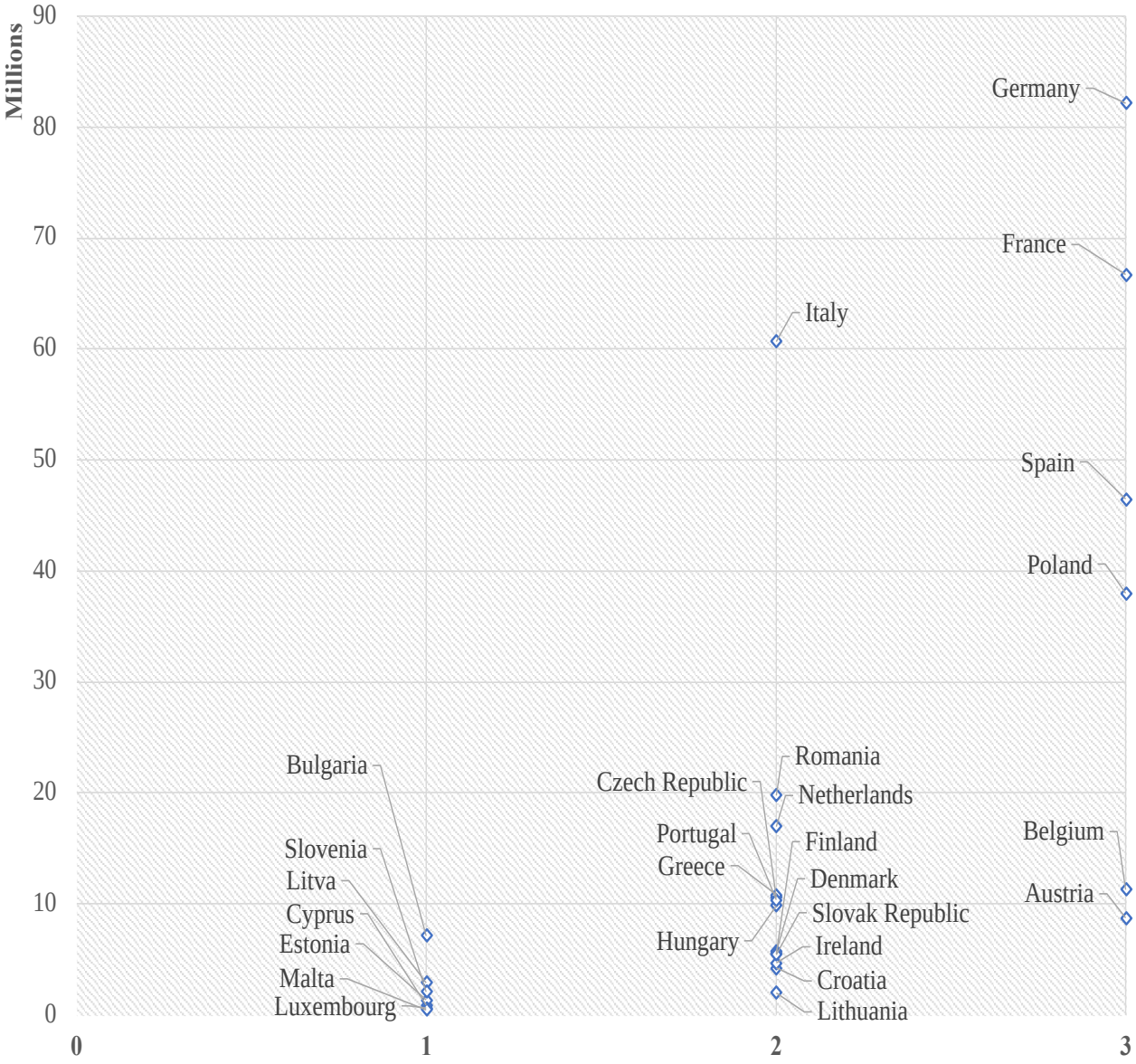


Figure 1: Number of subnational organisational levels in EU countries in relation to number of inhabitants
(Source: Author's systematisation)

When considering the correlation of the number of subnational levels and the number of inhabitants according to Fig. 1, we see that: (1) seven countries with a population of less than 10 million have one subnational level; (2) fourteen countries have two subnational levels, of which eleven are with a population of less than or at 10 million, while three are with more than 15 million and (3) six countries have three subnational levels, with two countries (Austria and Belgium) having a population of about 10 million and others more than 35 million.

3.2. Specifics of the system of subnational organisation of EU Member States

The system and form of the subnational territorial organisation of European states is similar, but at the same time specific in relation to each of the states (Buljan, Deskar-Škrbić and Švaljek, 2021) and for that reason studying the relevant literature leads to quite different approaches to the number and types of subnational territorial organisation of EU Member States. Table 2 below shows the recent state of formal subnational organisational forms of EU Member States based on a three-level approach.

State	1st level forms of formal organisation	2nd level forms of formal organisation	3rd level forms of formal organisation	Remark
GERMANY	Municipality (*gemeinden*) [11.252]; Joint municipalities in Lower Saxony (*gamtgemeinde*)	Rural district (*landkreis*) [295]; Independent city *(kreisfreie stadt*) [107]	State (*land/ bundesland)* [16][1]	[1)] 13 states and 3 city-states (*stadtstaaten):* Berlin, Hamburg, and Freie Hansestadt Bremen
AUSTRIA	Municipality *(gemeinde)* [2102]; Statutory city *(statutarstädte)* [15]	District *(bezirke)* [80][1]	State *(bundesland)* [9]	[1)] Administrative status only
BELGIUM	Municipality *(gemeinde/ commune/gemeente)* [589]	Province (provinz/ province/ provincie) [10]	Autonomous region (region/région/ gewest) [3]	Language communities (Flemish, French, and German) [3] (*gemeinschaft/ communauté/ gemeenschap)*
ITALY	Municipality (*comune*) [7998]	Province (*provincia*) [110]; Metropolitan city (*città metropolitana)* [10]	Region (*regione*) [15]; Autonomous province *(provincia autonoma)* [5]	
PORTUGAL	Civil parish *(freguesia)* [3091]	Municipality *(concelhos/municipio)* [308][2,3]; Intermunicipal community (*comunidades intermunicipais)* [21]; Metropolitan city *(areas metropolitanas)* [2]	Autonomous regions *(região autónoma)* of the Azores and Madeira [2]; District (*distrito*) [18][1]	[1)] Administrative function only in dissolution procedure [2)] A municipality may consist of one or several cities [3)] In Portugal, a city is not an administrative unit
SPAIN	Municipality (*municipio*) [8111]	Province (*provincia*) [50]	Autonomous community (*comunidad autónoma)* [17]; Autonomous city *(ciudad autónoma*) [2]	
FRANCE	Municipality (*communes*) [36.658]; Paris, Marseille, and Lyon have the status of both municipality and department (divided into *arrondissements)*	Department (*département*) [96];	Region (*région*) [13+5][1]	[1)] Overseas departments: French Guiana, The islands of Guadeloupe, Martinique, Réunion and Mayotte
POLAND	Municipality (gminy) [2479]	County (powiaty) [380]; including cities with county status [66][1]	Region (voivodship-województwo) [16]	[1)] Cities with 100.000 or more inhabitants
CROATIA	City [127]; Municipality [428]	County [20+1][1]		[1)] City of Zagreb has the status of both a city and a county
CZECH REPUBLIC	Municipality (*obec*) [6258]	Region (*kraje*) [14][1]		[1)] Prague has the status of both a city and a region
DENMARK	Municipality *(kommuner)* [98]	Region (*regioner*) [5]		Greenland and Faroe islands have autonomous status
GREECE	Municipality (*dimos*) [325]	Region (*peripheria*) [13]		Seven decentralized administrative areas (*apokentromeni dioikisi)* - Kallikratis Program 2011
FINLAND	Municipality *(kunta/kommun)* [336]	Region *(maakunta/ landskap)* [19]		Kainuu Region (regional pilot project); Regional Councils elected from among municipal councillors; the Åland islands have special status since 1921; reform in progress
HUNGARY	Municipality (*települések*) [2863]; City (*városok*) [265]; City with county status (*fővárosi kerületek)* [23]; City of Budapest, divided into districts [23]	County (*megyék*) [19]		

IRELAND	County (*contae*) [26]; City (*cathair*) [3]; County and city *(cathair agus contae*) [2]; all divided into municipal districts *(ceantar bardasach)* [96]	Region (*réigiún*) [3]		
LATVIA	Municipality (*novadi*) [110]; City (*pilsēta*) [9][1]	Planning Regions *(plānošanas reģiona attīstibas padome)* [5][2]		[1)] City - minimum 25.000 inhabitants [2)] Regional council consists of elected local self-government representatives of the units constituting the planning region
ROMANIA	Municipality (*comune*) [2861]; Town (*orase*) [217]; City (*municipii*) [103]	District (*judete*) [41]		Eight development regions
SLOVAK REPUBLIC	Municipality (*obec*) [2751]; City (*mesto*) [140]; City district (*mestská čas*) [39]	Region (*samosprávny kraj*) [8]		79 districts as statistical units
SWEDEN	Municipality (*kommuner*) [290]	County (*landsting*) [11]; Region (*regioner*) [9]		
NETHERLANDS	Municipality (*gemeenten*) [390]	Province (*provincies*) [12]		
SLOVENIA	Municipality (*občin*) [212]			
BULGARIA	Municipality (*obshtina*) [265]			Bulgaria also has 28 districts, with statistical and administrative functions and certain competencies of the central state
ESTONIA	Municipality (*vald*) [183]; City (*linn*) [30]			There are 15 regions (*maakond*) with administrative function and certain competencies of the central state
CYPRUS	Municipality (*demoi*) [39]; Rural municipality (*koinotites*) [478]			Cyprus also has 6 administrative districts
LITHUANIA	Municipality (*savivaldybė*) [60]; may be divided into elderships (*seniunija*) [546]			Regions have been abandoned since 2010 and are used only as statistical units, while all functions have been assumed by municipalities
LUXEMBOURG	Municipality (*commune*) [105]			Three districts and 12 cantons have only administrative and statistical function
MALTA	Municipality (*kunsill lokali*) [68]			Five regions as statistical and restricted administrative units

Table 2: Formal forms of subnational organisational level of EU Member States (Source: Author's systematisation)

The research has shown that the diversity of subnational organisation of European states results from several factors, primarily from: (a) the political system (b) historic and administrative legacies and circumstances;[5] (c) specific geographic or national features of individual parts of the territory within a state union, and (d) dominant political and economic standpoint in relation to the subnational organisation within an individual state.

[5] More about historical heritage and traditional types of public administration in e.g. Halásková, M., & Halásková, R. (2015). The Structure and Financial Dimensions of Public Administration in EU Countries. Transylvanian Review of Administrative Sciences, (45), 41-57.

3.3. Fragmentation of the 1st level subnational units in EU Member States

Subnational 1st level units (cities, municipalities, communes and similar organisational forms) are the fundamental and most numerous form of territorial-administrative organisation of states. These units are also parts of the organisational levels of the 2nd and 3rd level, they are closest to the citizens and the most operational part of the subnational organisational system. Issues of size (in relation to number of inhabitants), function, and especially the optimal number of the 1st level units (system fragmentation) are the subject of a significant number of studies (Gendźwiłł, Kurniewicz and Swianiewicz, 2020). The basic indicators of the recent fragmentation of the subnational 1st level in EU Member States, consisting of 86027 units, are shown in Table 3 below.

2019-2020	Average municipal size (number of inhabitants)	Average number of municipalities per 100 000 inhabitants	Median municipal size (number of inhabitants)	Average municipal area (km^2)
FEDERATIONS & QUASI-FEDERATIONS				
Austria	4238	23,6	1822	40
Belgium	19775	5,1	12528	53
Germany	7699	13,0	1737	33
Spain	5793	17,3	525	62
UNITARY COUNTRIES				
Bulgaria	26604	3,8	10095	419
Croatia	7384	13,5	2984	102
Cyprus	2274	44,0	264	15
Czech Republic	1705	58,7	438	13
Denmark	59357	1,7	42989	438
Estonia	16770	6,0	7460	574
Finland	17869	5,6	6066	1095
France	1929	51,8	467	16
Greece	32294	3,1	19230	397
Hungary	3097	32,3	790	29
Ireland	58941	0,6	123851	2256
Italy	7634	13,1	2457	38
Latvia	16077	6,2	6412	543
Lithuania	45569	2,1	26296	1088
Luxembourg	6093	16,4	3063	25
Malta	6996	14,3	4497	5
Netherlands	49276	2,0	30725	106
Poland	15499	6,5	7492	126
Portugal	3397	3,0	13771	299
Romania	6140	16,3	3102	75
Slovak Republic	1863	53,7	669	17
Slovenia	9854	10,1	4713	96
Sweden	35444	2,8	15978	1543
EU - 27	**5184**[6]	**15,9**	**4667**	**46,5**

Table 3: Fragmentation of 1st subnational level of government in EU Member States (2020) (Source: Author's systematisation according to: Subnational governments in OECD countries: Key data 2021 edition (OECD, 2021))

[6] On an estimated EU-27 population of 460 million (https://europa.eu/european-union/about-eu/figures/living_en) (author's remark)

As the table above shows, the average number of inhabitants per subnational (1st level) unit is 5184 inhabitants, the median size of subnational units per number of inhabitants is 4667, the average number of 1st level subnational units per 100,000 inhabitants is 15.9 while the average area of a subnational unit is 46.5 km^2. Further research into the share of a 1st level subnational unit size per number of inhabitants leads to the indicators according to which 30% of 1st level subnational units have 1999 or less inhabitants, 17% of 1st level subnational units have between 2000 and 4999 inhabitants, 26% of such units have between 5000 and 19999 inhabitants, while 27% of 1st level subnational units have more than 20,000 inhabitants. The distribution of these indicators is shown in figure 2.

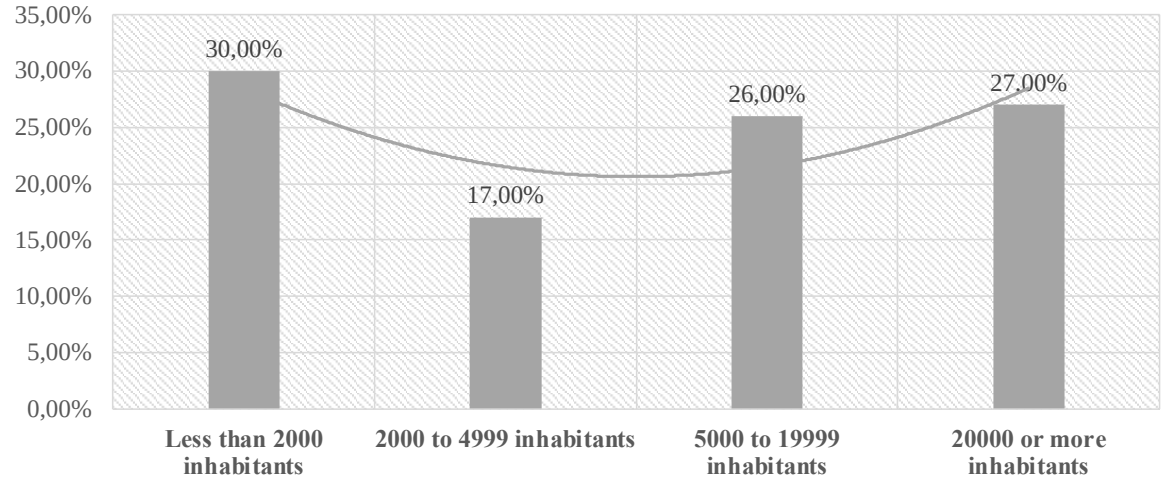


Figure 2: Distribution of 1st level subnational units by number of inhabitants (%) (Source: Author's systematisation)

If the distribution in Fig. 2 is corelated to the average population of 1st level units in the EU (5184), it can be concluded that 53% of 1st level subnational units in the EU are larger in population than the EU average, while about one third of such units have less than 2000 inhabitants.

4. CONCLUSION

Based on the latest available and analysed data, the current subnational level of EU Member States comprises 86,027 1st level units, 1,072 2nd level units and 245 3rd level units. The average number of inhabitants per one subnational 1st level unit (being the fundamental and most numerous form of territorial-administrative state organisation) is 5,184 inhabitants, median size of subnational units per number of inhabitants is 4,667, the average number of subnational 1st level units per 100,000 inhabitants is 15.9, while the average surface area of one subnational unit is 46.5 km^2. Of the total number of sub-national 1st level units in the EU, 53% have more inhabitants than the EU average (5,184 inhabitants), while about one third of the units have less than 2,000 inhabitants. The subnational organisational level of government is a dynamic system which is subject to constant changes. Despite numerous similarities, the internal subnational organisation of each EU Member State also has certain specific characteristics, which together make the operational optimisation of system management more complex. The diversity of subnational organisation of European states results from several factors, primarily from: (a) the political system; (b) historic and administrative legacies and circumstances; (c) specific geographic or national features of individual parts of the territory within a state union, and (d) dominant political and economic standpoint in relation to the subnational organisation within an individual state.

Research related to the territorial-administrative organisation of the subnational level of government is an important element in the processes of optimising efficient state governance as a system, especially in the relations between the central state and non-central organisational units and within and between non-central units in competitive interrelationship. Such research is characterised by an approach of interdisciplinary, multidisciplinary and holistic view of the problem, and the need to connect space with economic activities. All of the above falls within the framework of research issues addressed by regional economics.

LITERATURE:

1. Bejaković, P., Bratić, V. and Vukšić, G. (2011) 'Veličina javnog sektora u Hrvatskoj', *Hrvatska komparativna javna uprava*, 11(1), pp. 99–125.
2. Brandmüller, T. and Önefors, A. (eds) (2020) *Eurostat regional yearbook 2020 edition*. EUROSTAT S. Luxembourg: EUROSTAT European Union.
3. Broz, T., Buturac, G. and Parežanin, M. (2020) 'Digital transformation and economic cooperation: The case of Western Balkan countries', *Zbornik Radova Ekonomskog Fakulteta u Rijeci*, 38(2), pp. 697–722. doi: 10.18045/zbefri.2020.2.697.
4. Buljan, A., Deskar-škrbić, M. and Švaljek, S. (2021) 'In Search of an Optimal Size for Local Government: An Assessment of Economies of Scale in Local Government in Croatia', *Croatian National Bank*, (June).
5. Fang, L. and Sheng, Z. (2021) 'Policy orientation, knowledge dynamic ability and green innovation: A mediation model based on china provincial panel data', *Zbornik Radova Ekonomskog Fakulteta u Rijeci*, 39(1), pp. 9–37. doi: 10.18045/zbefri.2021.1.9.
6. Gendźwiłł, A., Kurniewicz, A. and Swianiewicz, P. (2020) 'The impact of municipal territorial reforms on the economic performance of local governments. A systematic review of quasi-experimental studies', *Space and Polity*, (2017), pp. 21–23. doi: 10.1080/13562576.2020.1747420.
7. Hodžić, S., Demirović, A. and Bečić, E. (2020) 'The relationship between fiscal policy and economic growth in CEE countries', *Zbornik Radova Ekonomskog Fakulteta u Rijeci u Rijeci*, 38(2), pp. 2–11.
8. Lobanova, J. Z., Lobanov, M. and Zvezdanović, M. (2021) 'Governance and civil and political rights as FDI determinants in transition countries', *Zbornik Radova Ekonomskog Fakulteta u Rijeci*, 39(1), pp. 59–86. doi: 10.18045/zbefri.2021.1.59.
9. OECD (2020) *OECD Regions and Cities at a Glance 2020*. Paris: OECD Publishing. doi: 10.1787/f01de667-tr.
10. OECD (2021) 'Subnational governments in OECD countries: Key data 2021 edition'.
11. Perić, B. (1994) *Država i pravni sustav*. Šesto izda. Edited by A. Goldštajn. Zagreb: Informator d.d. Zagreb.

MANAGEMENT OF THE INNOVATION ECOSYSTEM DEVELOPMENT

Venelin Terziev
Georgi Rakovski Military Academy, Sofia, Bulgaria
Kaneff University Hospital, Rousse, Bulgaria
vkterziev@gmail.com

Vladimir Klimuk
Baranavichy State University, Baranavichy, Republic of Belarus
klimuk-vv@yandex.ru

ABSTRACT
This work contains an overview of national and foreign authors working in the field of innovation ecosystems management. It presents components of the model of innovation ecosystem management, a set of compulsory elements of the model, the basic principles and functional components of the model.
Keywords: *Innovation ecosystem, Management model, Ecosystem approach*

1. INTRODUCTION

An important condition for the development of social and economic systems is flexibility and efficiency of decision-making, sharing resources to reach the set goals. The ecosystem approach is gaining popularity in the contemporary conditions of intense globalization. It is based on cooperation, mutual development of each party of a newly created alliance. These entities offer resources that are usually scarce, valuable and are used for the purposes of this cooperation. The joint activities rationally and functionally distributed among the participants of the cooperation, help create synergy in the form of economic and social benefits that provide conditions for sustainable development of the ecosystem.

2. MANAGEMENT OF THE INNOVATION ECOSYSTEM DEVELOPMENT

Many scientists carry out research in the application of the ecosystem approach as a tool for innovative development of systems, such as Belarusian researchers Kasperovich S.A. (Kasperovich, Rogova, 2011), Vankevich E.V. (Vankevich, 2018), Klimuk V.V. (Klimuk, 2021e), Stolyarova E. (Stolyarova, 2020e), Yasheva G.A. (Yasheva, 2014) and others; Russian scientists Popov E.V., Simonova V.L. (Popov, Simonova, Tihonova, 2019a), Kleyner G.B., Ribachuk M.A., Karpinska V.A. (Kleyner, Ribachuk, Karpinskaya, 2020b), Korchagina I.V. (Korchagina, 2020c), Permyakov O.E., Pavlova T.A. (Permyakov, Pavlova, 2020d), Solovyova T.S. (Solovyova, 2019b), Astratova G.V. (Astratova, Klimuk, Minin, 2015), Chernova O.A. (Klimuk, Chernova, 2016) and others; as well as foreign scientists V. Terziev (Terziev, Klimuk, 2021c), A.Zahariev (Zahariev, 2021d), J. Robertson, A. Caruana, C. Ferreira (Robertson, Caruana, Ferreira, 2021b), T. Könnölä, V. Eloranta, T. Turunen, A. Salo (Könnölä et al. 2021a), D. Yin, X. Ming, X. Zhang (Yin, Ming, Zhang, 2020a) and others. According to the theory of economic systems, the economy is a field of creation, interaction and development of social and economic systems of various types – object, process, design and environmental. A full-fledged ecosystem should include the following subsystems: organizational – a cluster as an object subsystem, infrastructural – an information and technological platform as an environmental subsystem; communication and logistics – a network as a process subsystem; innovative – business incubator as a design subsystem (Kleyner, Ribachuk, Karpinskaya, 2020b). The ecosystem approach may be used to effectively manage the structural elements of the cooperative business model (business entity, region, industry complex, country, union, etc.).

Let us highlight the intellectual, financial and infrastructural components of the management model of the innovation ecosystem development. They characterize the resource component in the development of a functioning system (Figure. 1).

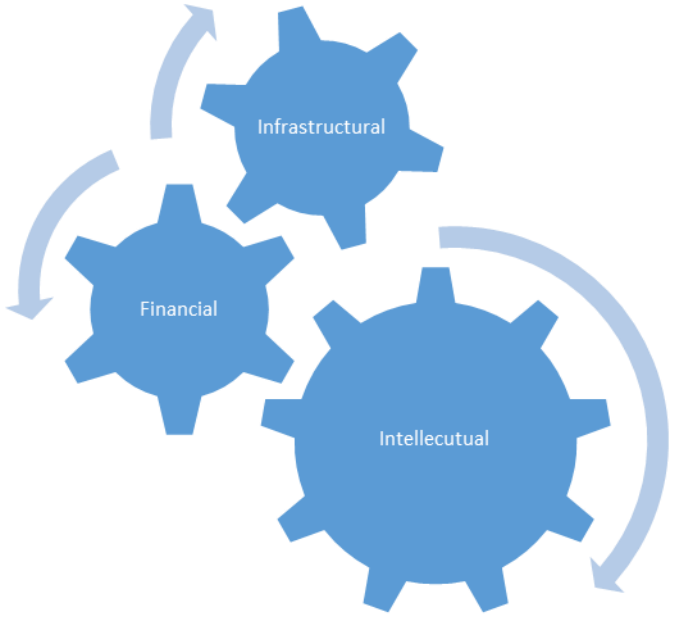


Figure 1: Management components of innovation ecosystem development

The intellectual component is aimed at the implementation of research activities, the development of innovative potential, educational and competence-based support of the quality of implementation of production and management processes for the participants of the system. The financial component helps provide procedures for financing the business processes of the system participants with the help of various types of sources (budgetary, non-budgetary, including foreign ones), develops the ways of attracting investments, satisfies the financial needs, develops a competitive support system. The infrastructural component is aimed at implementing effective processes of interaction between system participants, developing a network of partners, promoting innovative products; developing a flexible legal framework for stimulating innovation processes in the ecosystem, an information and communication platform for interaction between system participants and users (beneficiaries), updating the material and technological base. Creating a management model of an innovation ecosystem development should include the following stages: analysis of the problem field, planning the work of the ecosystem, assessment and improvement. The main principles for the successful implementation of the management of innovation ecosystem development should include:

- Partnership, meaning mutually beneficial union of participants;
- Integration as the complementarity of the participants of the system;
- Modularity – functional distribution;
- Innovation – the implementation of elements of scientific and practical developments;
- Flexibility – the ability to promptly adjust development trajectories, make management decisions;
- Consistency – search for solutions to a problematic issue;
- Variability – multiple ways of achieving a goal;
- Openness – the ability to include new participants in the system.

The effective implementation of the management of the innovation ecosystem development can be represented as an integrated platform of individual modules (Figure 2).

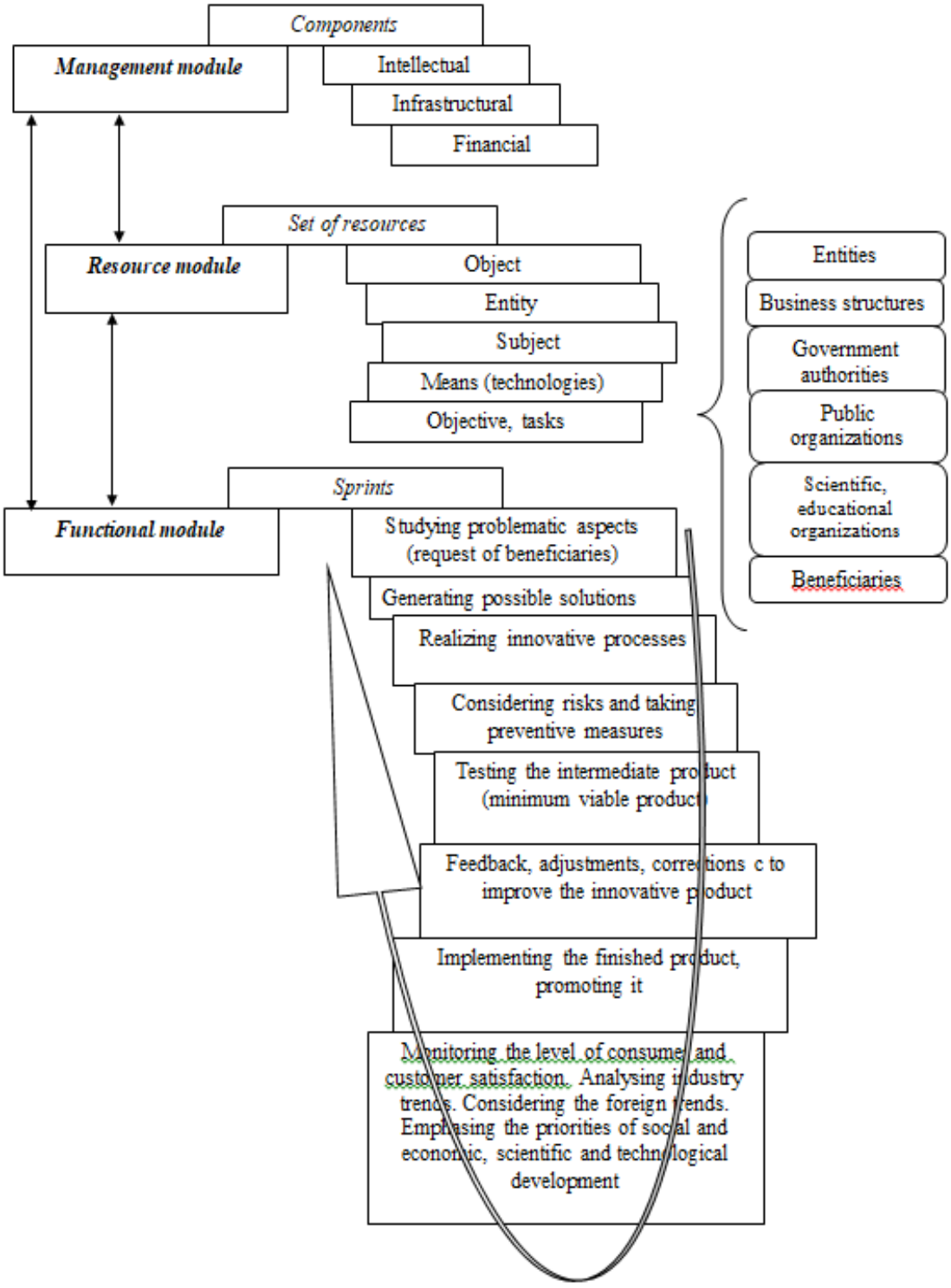


Figure 2: Management model of the innovation ecosystem development

3. CONCLUSION

The presented management model of the innovation ecosystem development will ensure effective management of business processes focusing on flexible, prompt, rational solutions of individual tasks, part of the main goal of the project being implemented. The implementation of the ecosystem approach is dictated by the need to improve the performance indicators of the participants.

LITERATURE:

1. Könnölä, T., Eloranta, V., Turunen, T., Salo. A. (2021a). *Transformative governance of innovation ecosystems. //* Technological Forecasting and Social Change, Volume 173, 2021, https://doi.org/10.1016/j.techfore.2021.121106.
2. Robertson, J., Caruana, A., Ferreira, C. (2021b). *Innovation performance: The effect of knowledge-based dynamic capabilities in cross-country innovation ecosystems*. // International Business Review, 2021, https://doi.org/10.1016/j.ibusrev.2021.101866.
3. Terziev, V., Klimuk, V. (2021c). *Modelling the Forms of International Scientific and Educational Cooperation*. // Conference Proceedings "20th RSEP International Economics, Finance & Business Conference", Virtual / Online 17-18 February 2021, Holiday Inn Vienna City, Vienna, Austria. ISBN: 978-605-06961-8-9. Pp. 151-156.
4. Yin, D., Ming, X., Zhang, X. (2020a). *Sustainable and smart product innovation ecosystem: An integrative status review and future perspectives*. // Journal of Cleaner Production, Volume 274, 2020, https://doi.org/10.1016/j.jclepro.2020.123005.
5. Zahariev, A. (2021d). *Corporate social responsibility under COVID-19 circumstances: Bulgarian business attitude*. // Economics and organization of management, 2021, №3 (43), pp. 6-13.
6. Astratova, G.V., Klimuk, V.V., Minin, V.V. (2015). *Quality of life in the creative aspect of regional well-being*. // Standards and quality, No. 1 (931), 2015, pp. 72-74.
7. Vankevich, E.V. (2018). *The role of human resources management system in the strategic development of organizations*. // Strategy of economic development of Belarus: challenges, tools and prospects: materials of the International scientific practical conference (20-21 September 2018, Minsk). Vol 2 p. 1 / Economics institute of the National Academy of Sciences of Belarus, Minsk: Law and Economics, 2018, pp. 62-65.
8. Kasperovich, S.A., Rogova, M.V. (2011). *Sustainable development of the enterprise as a factor of intensive economic growth*. // Works of the State Technical University of Belarus, 2011. No. 7: Economics and management, pp. 263-267.
9. Kleyner, G.B., Ribachuk, M.A., Karpinskaya, V.A. (2020b). *Development of ecosystems in the financial sector of Russia.* // Upravlenets, Vol. 11, No. 4, pp. 2–15, DOI: 10.29141/2218-5003-2020-11-4-1.
10. Klimuk, V.V. (2021e). *Application of the ecosystem approach in creating a model of neo-industrial development of industrial enterprises*. // Natural and humanitarian research, 2021, No. 37 (5), pp. 64-69.
11. Klimuk, V.V., Chernova, O.A. (2016). *Факторообразующая инновационность модели экономического развит*ия // Bulletin of the Baranovichi State University. Series: Historical science and archeology. Economic sciences. Legal sciences, 2016, Ed. 4, pp. 65-73.
12. Korchagina, I.V. (2020c). *Developing a "Soft" component of innovative ecosystems of* flagship universities. // University management: practice and analysis. 2020. No. 1. URL: https://cyberleninka.ru/article/n/razvitie-myagkoy-komponenty-innovatsionnyh-ekosistem-opornyh-universitetov (accessed on 20.11.2021).
13. Permyakov, O.E., Pavlova, T.A. (2020d). *Multifactorial management of the development of innovative educational ecosystems of universities*. // Management consulting. 2020. No. 12 (144). URL: https://cyberleninka.ru/article/n/mnogofaktornoe-upravlenie-razvitiem-innovatsionnyh-obrazovatelnyh-ekosistem-vuzov (accessed on 20.11.2021).
14. Popov, E.V., Simonova, V.L., Tihonova, A.D. (2019a). *Factor model for the development of innovation ecosystems*. // Innovations. 2019. No. 10 (252). URL: https://cyberleninka.ru/article/n/faktornaya-model-razvitiya-innovatsionnyh-ekosistem (accessed on 20.11.2021).

15. Solovyova, T.S. (2019b). *Theoretical aspects of the formation and development of regional social and innovation ecosystems*. // Bulletin of Nizhny Novgorod State University of Engineering and Economics. 2019. No. 3 (94). URL: https://cyberleninka.ru/article/n/teoreticheskie-aspekty-formirovaniya-i-razvitiya-regionalnyh-sotsialno-innovatsionnyh-ekosistem (accessed on 20.11.2021).
16. Stolyarova, E. (2020e). *The digital ecosystem as a competitive advantage for international companies*. // Banking Bulletin. 2020, pp. 20-28.
17. Yasheva, G.A. (2014). *Partnership mechanisms in innovation development of the economy.* // Collection of materials of the International Scientific and Practical Conference "Prospects, organizational forms of the effectiveness of the development of cooperation between Russian and foreign universities", April 24-25, 2014: Korolev M.O.: FTA, "Kantsler" Publishing house, 2014, pp. 254-267.

APPLICATION OF A RISK-BASED APPROACH IN ORGANIZATION OF INTERNAL CONTROL IN RISK MANAGEMENT SYSTEM OF MORTGAGE CREDIT LENDING

Svetlana Litvinova
Russian Presidential Academy of National Economy and Public Administration, Rostov-on-Don, Russia
sv-lit@mail.ru

Oksana Karepina
Rostov State University of Economics, Rostov-on-Don, Russia
karepindima@mail.ru

Venelin Terziev
Georgi Rakovski Military Academy, Sofia, Bulgaria
Kaneff University Hospital, Rousse, Bulgaria
vkterziev@gmail.com

Olga Andreeva
Rostov State University of Economics, Rostov-on-Don, Russia
olvandr@ya.ru

ABSTRACT

The need of organization and the importance of internal control in a credit institution, which would guarantee high level of reliability corresponding to the nature and scale of operations carried out, is enshrined in Russian legislation. The key aspect of internal control in a credit institution is application of a risk-based approach and this article considers the possibility of applying a risk-based approach in organization of internal control in risk management system of mortgage credit lending. The risk-based approach in internal control helps assess possible risks in achieving the strategic and tactical objectives of control institutions and develop proposals for their adjustments. The research studies the possibility and potential positive outcome of applying the risk-based approach on all stages of the internal control in risk management system of mortgage credit lending.

Keywords: *Internal control, Management, Stages of the control event, Monitoring, Risk-based approach, Efficiency, Mortgage credit lending*

1. INTRODUCTION

The main objective of internal control in a credit institution is protecting the interests of the bank, its shareholders and clients by monitoring the compliance of bank employees with legislation, regulations and professional standards, managing conflicts of interest, ensuring an appropriate level of reliability that corresponds to the nature and scale of operations carried out by the bank and reducing banking risks. The Regulation on the Organization of Internal Control in Credit Institutions and Banking Groups determine the rules for implementing internal control in credit institutions and banking groups, as well as the peculiarities of exercising supervision over their observance by the Bank of Russia. The Regulation states that the parent credit institution is responsible for ensuring the unity of approaches to the internal control and responsibility for its effectiveness. Organizations carry out internal control to:

- ensure the efficiency and effectiveness of financial and economic activities in the performance of banking operations, the efficiency of asset and liability management, including ensuring the safety of assets, bank risk management;

- ensure the reliability, completeness, objectivity and timeliness of the preparation and presentation of financial, accounting and statistical reports (for external and internal users), as well as information security (protection of the interests of a credit institution in the information sphere, which is a collection of information, information infrastructure, entities that collect, develop, disseminate and use information, as well as the regulating system of the resulting relations);
- ensure the compliance with legal acts, standards of self-regulatory organizations, articles of incorporation and other internal documents of the credit institution;
- prevent the credit institution and its employees from participating in any illegal activity, including legalizing (laundering) of income acquired through crime and terrorism financing, as well as the timely submission of information in accordance with the legislation of the Russian Federation to state authorities and the Bank of Russia.

2. RESEARCH RESULTS AND THEIR DISCUSSION

In accordance with the Regulation of the Central Bank of Russia "On the Organization of Internal Control in Credit Institutions and Banking Groups", the internal control system of a credit institution should include the following areas: management bodies control over the organization of the credit institution's activities; control over the functioning of the banking risk management system and assessment of banking risks; control over the distribution of powers when performing banking operations and other transactions; control over the management of information flows (receiving and transmitting information) and ensuring information security; monitoring the functioning of the internal control system on an ongoing basis in order to assess the degree of its compliance with the objectives of the credit institution's activities, identify deficiencies, develop proposals and monitor the implementation of decisions to improve the credit institution's internal control system. It should be noted that monitoring of the internal control system is carried out on a regular basis. The internal documents of a credit institution must determine the procedure for monitoring the internal control system, that is, control over the methodology, rules, frequency, procedure for reviewing monitoring results, etc. During the inspection of credit institutions by the Central Bank of Russia, it checks out both the internal control system as a whole and individual operations (procedures) for confirmation of compliance with internal methods, programmes, rules, procedures, as well as established limits, reliability, completeness and objectivity of accounting and reporting systems, collection, processing and storage of other information in accordance with the legislation of the Russian Federation, reliability of certain control methods established and used by the credit institution. We consider it useful to analyse the stages of internal control in risk management system of mortgage credit lending. Thus, the stage of preliminary control includes operational risk, which may be associated, for example, with false information provided by the client about his income and, as a result, approval of a mortgage loan based on incorrect information or in the analysis and assessment of creditworthiness and solvency, assessment of the adequacy of funds for the initial payment and debt repayment, meaning the calculation of all the necessary indicators by the employees. The main stage of the control includes all the risks of mortgage credit lending, starting with the operational risk – due to the failure of the mortgage lending transaction, the credit risk associated with the failure of the borrower to pay the mortgage loan and interest rate risk – the risk of not receiving interest payments under the loan agreement, etc. Currently, when implementing control procedures both at the level of external control (for example, when using state support for mortgage credit lending) and the internal control procedures, a risk-oriented approach is applied. The risk-based approach is a set of tools used to carry out control that involves planning and control procedures using the results of the risk assessment. The main purpose of applying the risk-based approach in control is to assess possible risks when achieving strategic and tactical objectives of the controlled entities and developing

recommendations in order to minimize the impact of risks. We believe that an important aspect in organizing internal control in a credit institution is the application of a risk-based approach. The objectives of the risk-based approach when conducting internal control in a credit institution are: improvement of the quality of analysis of the external and internal environment of entities; control of the risks and their changes in the implementation of control procedures due to early identification of risks, identification of new risks and their assessment; timely adaptation of activities to the predicted state of the social and economic situation of the Russian Federation; prioritization of measures when planning control procedures based on information about the risks in the entity being controlled; optimization of planning and use of material, financial, labour resources in the exercise of control due to their concentration at facilities where risks are identified; improvement of the quality of recommendations prepared based on the results of control procedures related to risk management; assistance in measures to minimize risks based on proposals and recommendations, including on improving the risk management system. Application of the risk-based approach for internal control can rely on the following principles:

- The risk-based approach is implemented together with other activities and is an integral part of control procedures;
- The risk-based approach is a key element of decision making when planning the activity of a credit institution;
- Risk awareness is an important component, because it is beneficial to identify risks in an entity undergoing the internal control, as they can significantly influence the achievement of strategic goals, to further control risks and increase the awareness of the interested parties both about the existing and potential risks.

Information used within the risk-based approach includes: internal and external data about the entity undergoing the control, results of the previously conducted control procedures, monitoring data, experts opinions, feedback from the stakeholders, forecasts and expert assessments. Thus, for instance, a risk-based approach to planning activities can be implemented in the course of:

- development of the main activities of the credit institution;
- preparation and consideration of changes in the main directions of development of the credit institution.

The risk-based approach shall be applied in all stages of the control. During the preparatory stage of the control procedure, a risk-based approach is applied to:

- setting goals, objectives and questions of the future control;
- choosing methods and techniques for conducting control based on risk assessment of the entity;
- assessing the required resources for the implementation of the control procedure.

During the main stage of the control, the risk-based approach is applied to:

- assessment of the risk management maturity level and risk management practices of the object of control or in risk areas;
- clarification of the characteristic features of the current risks of the entity and identification and analysis of new risks of the entity;
- risk management, including by adjusting the scope of the actions and methods planned by the programme and the work plan;

- determining the compliance of the activities of the controlled object with legal (within the framework of identifying potential risks of violation of legislation and analysis of risks that have occurred in the form of violations of legislation) and regulatory requirements;
- assessment of the possibility of achieving strategic goals, objectives of the controlled enterprise (expected deviation from the goals) in the period under consideration, taking into account the existing risks and their nature;
- assessment of the completeness and adequacy of key risk indicators, their monitoring systems used by the controlled enterprise;
- monitoring the values of key risk indicators in order to timely identify the likelihood and consequences of the implementation of risks in the controlled enterprise.

During the final phase of the control, a risk-based approach is applied to:

- determining the content of the report (composition of conclusions and proposals (recommendations) based on the results of the control, taking into account the results of the risk assessment;
- preparation of proposals and recommendations to the controlled enterprise, shareholders influencing or capable of influencing the areas of risks, including proposals and recommendations for risk management and increasing the level of maturity of the risk management system.

In our opinion, it is necessary to apply the appropriate elements of a risk-based approach within the control procedures:

- risk assessment;
- monitoring risk management;
- documenting and notifying about risks;
- assistance in risk reducing.

The key matter of the risk-based approach when conducting control is the risk assessment in achieving the strategic goals of the controlled enterprise, which includes the following elements:

- identification of the risks of the controlled enterprise that can have a negative impact on the achievement of the strategic and tactical goals of the enterprise;
- analysis of the causes and potential threats the identified risks pose;
- qualitative and quantitative risk assessment and determination of its level;
- comparison of the obtained risk values with risk appetite.

Risk identification involves the search, definition, description of risks that can affect the achievement of the set goals. In the course of risk identification, the general set of risks of the controlled enterprise and the risk area is formed and used, from which we can distinguish the actual (current) risks of the enterprise. These current risks, taking into account the dynamics of changes in the conditions of the external and internal environment, have an impact on the achievement of goals. The general set of risks is used in planning and conducting control. Risk analysis of the controlled enterprise and risk areas is aimed at understanding the nature of the risk, its characteristic features and includes a detailed consideration of the causes and consequences of the risk, means of control, risk management measures and the results of such measures. Assessment of individual risks and aggregated risks is aimed at facilitating further decision-making in terms of risk management. When determining the risk levels, risk management targets are taken into account, which are determined using risk appetite indicators and risk criteria.

Determination of the level involves comparing the results of the risk analysis with the established risk criteria and risk appetite to determine the next steps to influence the risk. The audit department of a credit institution can formulate proposals and recommendations on risk management of controlled enterprises or in risk areas, and it must also monitor the implementation of proposals and recommendations on risk management. The audit department of a credit institution should, as we see it, monitor risk management, including based on the results of control activities. The objectives of risk management monitoring are:

- verification of the implementation of proposals and recommendations based on the results of the activities carried out;
- analysis of the causes of realized risks, identification of new risks and subsequent reassessment of risks;
- development of proposals and recommendations for improving the risk management system.

In our opinion, identification and risk assessment should be carried out during operational control – monitoring. Monitoring is a permanent form of internal control, an information and analytical system for monitoring the dynamics of the performance indicators of a credit institution, necessary to assess the consequences of financial resource management.

The development of a risk-based approach to control should include the following main stages:

- preparation and approval of a target model for the application of a risk-based approach in the implementation of control;
- development of methods and methodological support, including:
  - a methodological document on the application of the risk-oriented approach, containing a detailed description of the elements, methods and tools of the risk-based approach, as well as the regulation of the actions of the participants in the events;
  - separate tools of a risk-based approach (with a description of the procedure for their application);
  - models for assessing the maturity of risk management systems;
  - a methodological document defining a methodology for assessing the application of a risk-based approach;
  - a methodological document for assessing the risks of the object of control;
- phased implementation of a risk-based approach, including a mandatory stage of approbation of the developed methods and methodological support.

3. CONCLUSION

Thus, the use of a risk-based approach will generally increase the effectiveness of internal control in a credit institution, including in risk managing system of mortgage credit lending.
The effectiveness of the application of the risk-based approach is ensured by (2021a; 2021b; 2021c; 2019):

- digitalization and automation of activities using a risk-based approach, including:
- development and implementation of algorithms for continuous monitoring and machine learning;
- implementation of automated and remote control methods and models;
- automation of the processes of applying a risk-oriented approach when documenting and preparing reports on the results of activities;
- increasing the level of maturity based on assessing the success of the implementation and application of a risk-based approach, which provides for:
- determination and approval of the target state of the maturity level of the risk-oriented approach in the credit institution;

- determination of the efficiency of resource costs for the implementation and application of a risk-based approach;
- regular analysis of the current level of maturity of the risk-based approach and assessment of the gaps between the current and target state;
- development of recommendations for further improvement to achieve the target state of the maturity level of the risk-oriented approach;
- formation and implementation of a "road map" for the development of a risk-oriented approach and control over its implementation.

The expected results of implementation of a risk-based approach in internal control, will include the following:

- reducing the load on the controlled enterprises with a high level of maturity of the risk management system;
- assistance in risk reducing in achieving the strategic goals of the controlled enterprise;
- improvement of risk management systems of the controlled enterprise;
- increasing the value and relevance of the proposals and recommendations of the audit department.

To conclude, it is worth noting that, in our opinion, internal control in a credit institution will become more effective in organizing the described stages of a control procedure under internal control of risk management in mortgage credit lending. In addition, the ongoing monitoring under the internal control of a credit institution will allow not only to identify potential risks, but also to promptly develop measures to level them, which, of course, is important in the activities of a credit institution, including in the management of mortgage credit lending risks.

LITERATURE:

1. *Federal law No. 395-1 on banks and banking activities dated 2 December 1990*, (2021a), http://www.consultant.ru, 12/2021.
2. *Decree of Federal tax service of Russian Federation No. MMB-7-15/509@ on "Approval of requirements for the organization`s internal control system" dated 16 June 20*17, (2021b), http://www.consultant.ru, 12/2021.
3. *Regulation of the Bank of Russia No. 242-П on the Organization of internal control in credit institutions and banking groups dated 16 December 2003*, (2021c), http://www.consultant.ru, 12/2021.
4. Galazova, S.S., Karepina, O.I., Romanova, T.F. (2019). *Prospects for the internal state financial control development in the Russian Federation*. // International Journal of Economics and Business Administration, 2019, V. 7, No. S1, pp. 116-122.

THE INFLUENCE OF NEW METHODS OF MEDIA MESSAGE ANALYSIS ON BROADER SOCIAL AND CULTURAL UNDERSTANDING OF THE STATUS OF DIGITAL MEDIA

Iva Rosanda Zigo
University North, Croatia
irosandazigo@unin.hr

Marina Biti
Faculty of Humanities and Social Sciences,
University of Rijeka, Croatia
marinabiti@gmail.com

Romana Zlatar-Vulic
University North, Croatia
rozlatarvulic@unin.hr

ABSTRACT

The development of information and communication technologies reveals their transformative effects on all areas and in all aspects of human practices. Transformative processes that accompany the development of artificial intelligence have been especially impactful in the past decade and a half. The social circumstances of the Coronavirus pandemic added a new dimension to such processes, as the world has become more aware of the need to introduce new technologies into the areas of the economy, education, culture, and art. Digital technology has also a strong impact on media development and functioning and enables the emergence of new genres while causing the old ones to transform. Thanks to all this, it affects the formation of media messages, also affecting the processes of perception and interpretation of messages. This paper assumes a critical approach to the notion of media, i.e., media messages while assuming two perspectives considered crucial for the understanding of the working of media in general. On one side, the fact that their steadiness is software-dependent impacts the understanding and interpretation of media messages. Therefore, this paper will observe recent theoretical framings relevant to the understanding of new media, while emphasizing the possibilities of new methodological approaches to media message analysis, and on the understanding of messages in general. These processes are mutually dependent, and possibilities of understanding and interpreting media messages can be said to have a direct influence on the interpretation of new media trends, and vice versa. We are proposing a research protocol to test the so-called method of media visualization that was gradually introduced by Lev Manovich via a series of articles published during 2008, to be rounded and presented integrally in his book Cultural Analytics, published in 2020. Grounding our approach in the fact that the new media are computer-based, and the message dissemination is software-based, we will approach the message analysis in much the same way, by using media visualization software (primarily ImagePlot). This method will, hence, embrace the fundamental characteristics of the new media, such as omnipresence, large data sets, recipient orientation, and visuality, and use all these principles to process our research data. The material which we are using will be the advertisements issued by a Swedish furniture company between 2012 and 2021 and published on social platform YouTube. The results of our research will, of course, point to strategic orientations in advertising practices by this firm. However, and more importantly: following the main goal of our research, they will point to the possibilities of application of new, technologically based methods and their relevance to the understanding of new media.

The results show that the use of big data sets and their digital processing open new perspectives applicable not only to the understanding of new media and media messages but also to the understanding of the broader social and cultural context within which they are created and interpreted.
Keywords: *new media, media message, media visualization, information and communication technologies, IKEA*

1. INTRODUCTION

The research into new media focuses on a broad array of theoretical and methodological shifts (Lister, Dovey Giddings, Grant, Kelly, 2009, p. 15). The topic is extraordinarily popular in recent scientific discussions and resulted in numerous papers that show, roughly speaking, two distinct tendencies of thought. One of these comes from the field of study of computer and communication technology and focuses on changes that are taking place within areas of production, distribution, and the use of media (Lin, T.-B., Li, J.-Y., Deng, F., & Lee, L. 2013. p., 161) Hereby, new media are defined from perspectives such as numerical representation, hypertextuality, virtuality, multimodality, hybridity interactivity, automatization and variability (e.g. Anderson & Balsamo, 2008; Manovich, 2001; Nichols, 2008; Pratt 2000). The second tendency focuses on social and cultural characteristics of the new media, focusing largely on topics such as a) language of the media; b) construction of media messages; c) media and (ideological) values; d) diverse aims and goals that the media aspire to fulfill (e.g. Lin, T.-B., Li, J.-Y., Deng, F., & Lee, L. 2013. p., 161). Discussions on new media mostly consider three elements: a) technologies that enable and expand our ability to communicate; b) communicative practices and activities that contribute to technological development; c) social arrangements and organizations that take shape, based on technologies and communicative practices (Flew and Smith, 2014, p. 5). This reveals that the scientific discourse on new media accentuates the relevance of both foundational determinants, information and communication technology, and social/cultural characteristics. Computer technologies, upon which new media are based, are therefore seen as factors that can condition and shape societies and cultures but are also dependent on how social and cultural processes are formed. Hence, we may be inclined to look back at the 14th and 19th centuries, when technical achievements – that of the press, and that of photography – revolutionized the development of modern art and culture (Manovich 2001, 61). The media revolution, based on computer technology nowadays affects all levels of communication, including acquisition, manipulation, memorization, and distribution, and is at the same time reflected on all media genres and forms: texts, mobile and immobile images, sound construction, and the construction of space. The dominance of computer technologies in the media space can, however, lead to a misconception of traditional media as having become redundant. What has changed is, however, the logic of creating, perceiving, and distributing media messages, and this point is made by Manovich in the following way: … *the visual culture of a computer age is cinematographic in its appearance, digital on the level of its material, and computational (i.e., software-driven) in its logic"* (Galloway, 2011, p. 383). Therefore, the changes are driven by new technologies that have much to do with the organization, storage, and distribution of media messages also have a significant influence on the ways and possibilities in which scientific research, analysis, and interpretation are carried out. Bearing in mind the fact that the new media are computer-based, and that messages are created and disseminated via the use of software, we are therefore opting also for software-based media message analysis. This method considers the key features of the new media, such as omnipresence, big data, user orientation, visuality, and applies the very same principles when processing and presenting the research results. On this occasion we will use the advertisements of the Swedish furniture producer IKEA, limiting the body of material by the criterion of the period of their publishing, thus focusing on the range of media texts that appeared on the

company's official YouTube channel between 2012 and 2021. The use of material published via social media is also deliberate since these are seen as typical of the contemporary media culture and of the visuality that it adopts. Regardless of goals or aims related to the distribution of information that may be detected in different media messages, their common characteristics are the following: computer conditionality, the dominance of the visual segment, data density, and broader cultural and social reach. This focus relieves us of the need to engage in the analysis of company policies and strategies, related to marketing and public relations. For much the same reasons we will treat the notions of media message, media content, and cultural artifact synonymously. Our general goals are related to the fact that media and technology alter the ways of creating and organizing media messages, as well as how messages circulate across media space, and the modes in which they affect their addressees and invite them to assume the position of co-creators of the proposed media content. Finally, the specific aim of this paper is to show how the media and accompanying technologies can drastically affect the process of interpretation of messages.

2. DATA VISUALIZATION

The visual element, typical of the new media, provides key to the understanding of media messages and is, therefore, the key feature which we will explore in this paper. Visuality has become a way to shape everyday communication, but also a way that contributes to the modelling of social relations. We are constantly exposed to visual information via the space of the screen, and this causes users also to conceptualize the world visually. Therefore, we are both witnesses and participants in the process of constant creation and recreation of visual material, and this affects us cognitively and emotionally and is reflected in culture, art, and social relations, i.e., in all areas of life (Chayka, Averkieva, 2016). We will, however, not be focusing on the aspect of reading, which has received a lot of scientific attention. We intend to emphasise the importance of photographic and video content in the process of communication that takes place via different channels and applications, such as Facebook, Instagram, Pinterest, Flickr, YouTube, etc. These channels are used not only by corporations to disseminate information on their goods and services, but also by users who share their own photographic and video material, directly exercising their influence on popular contemporary trends in culture. At the same time, it is necessary to know that in many of the examples this kind of communication involves multimedia, especially in the case of video recordings or video games which combine sensory and semiotic elements (Mitchell 2015, p. 14). Furthermore, the dominance of the visual plane (not only in visual images but also in verbal metaphors) appears to be especially relevant when it comes to the analysis of political discourse in social media, mass culture, reflections on human psychology, social behaviour, as well as when it comes to the very structure of knowledge (Mitchell 2015). According to Manovich, the new media culture is transitional if observed from the point of view of the significant reduction of the narrative element in relation to the visual one. It is in fact via the visual element that the contemporary achievements in technology can be best observed as tools to create, publish, and distribute network content. Manovich also points out that the software has become the interface which we use to establish contact with the world, but also with ourselves and our memories; it offers a universal language within the universal machine that enables communication to take place (Kir, 2020, p. 15). In his study entitled *Software Takes Command* (2013) Manovich points to the possibilities of new methodologies and their applicability to the field of humanities and social sciences. The very title of his book reveals that he sees the present-day dominance of software in the new media environment as comparable to the relevance of electrical power which was, until recently, practically the sole medium that enabled creation, storage, distribution, and access to cultural artifacts (p. 15).

He thus concludes that the exploration of contemporary society and culture, as in architecture, design, art, sociology, political science, art history, media studies, and in many other fields of humanities needs to acknowledge the vital role of software in the contemporary research (p. 28). Accepting the given incentive, we will therefore attempt to show that even the commercial products in the new media environment can assume traits of cultural artifacts and can be presented via methodology concerning the area termed by Manovich as cultural analytics, to be presented further on in this paper. At this point, it is necessary to emphasize that this method relies not only on visualization but also on a large input of data. The methodological shift that accompanies the transition from research into a single artifact towards the analysis of multiple artifacts can be seen as a reflection of processes that are taking place in the field of visual culture (Manovich, 2017, p. 3). Leaving aside the possibilities to shape graphs and visualize information via the tools such as Google Docs, Excel, Tableau, and likewise, Manovich proposed a significantly different method which he referred to as media visualization and pointed to the difference between the two approaches: *Typical information visualization involves first translating the world into numbers and then visualizing relations between these numbers. In contrast, media visualization involves translating a set of images into a new image which can reveal patterns in the set. In short, pictures are translated into pictures* (Manovich, 2011, p. 5). He furthermore affirms that the practices of presenting research used in the period between the 18th and the 20th century (such as infographics) which enable the transformation of data from non-visual to visual have become unsatisfactory (Manovich 2010, p. 11) for the present-day needs. This is because the traditional approaches to the visualization of data are based on reduction: they use dots, lines, curves, and various geometric forms to replace objects and to describe relations, regardless of actual objects of reference, which may be people, social relations, stock exchange, unemployment statistics, etc. At the same time, only a relatively small number of discreet values can be considered, represented as categorical variables. However, fundamental to the visualization of media is the fact that this method does not transform media objects into new objects, but offers new visual representations derived from original visual data. Visual data is therefore not replaced by equivalent graphic values (ibid, p. 20). This method is designed to reveal previously undetectable patterns which may pertain to the creative opus of an artist, or perhaps a group of artists who nurture a common approach to style, but also patterns and movements within popular culture as well as unique characteristics of contemporary media culture, and likewise. In dealing with numerous artifacts via computer technologies (such as computer vision, or artificial intelligence), and especially when exploring earlier periods in art history, it enables characteristics invisible to the human eye to appear on the surface and may have direct repercussions on the redefining of the known canons. Some of the projects carried out in Manovich's research lab *Software Studies Initiative* are the following: *Software Studies Initiative*: *Science and Popular Science magazines* (magazine pages), *Time Magazine covers 1923-2009* (magazine covers); *Motion studies* (films, cartoons, TV commercials, motion graphics); *Dziga Vertov's film comparisons* (films); *Kingdom Hears videogame play* (videogames); *YouTube remix* (user-generated video remix), etc. and more can be found on the following web page: http://lab.culturalanalytics.info/.

3. METHODOLOGY

In this paper, we will present the key procedures of the Media Visualization methodology. We will use ImageJ, the open-source software, as well as macros Image Plot. The author of the Image Plot code is Lev Manovich, and more information on the software and its usage in cultural analytics can be found by visiting http://www.softwarestudies.com, as well as in Manovich's 2011 paper *Media Visualization: Visual Techniques for Exploring Large Media Collections.*

Media visualization assumes that a collection of photographs standardly includes a given minimum of metadata that defines the course of study, and this enables the photographs to be organized by category. The uniqueness of this research lies in the fact that we are observing video content, i.e., the material used to advertise the Swedish furniture producer IKEA, published on the company's YouTube channel between 2012 and 2021. To subject this material to the procedures enabled by ImageJ software, the video content needed to be transformed into photographic content. Using the DVD VideoS Free Studio software, we divided the video recordings into sequences and extracted a photograph per every five seconds of the duration of the video. This resulted in 364 equally sized photographs retrieved from 22 individual video recordings. In organizing the material, we used the year of production as the basic meta-information, and in using ImageJ other metadata was extractable such as image brightness, saturation, colours, line orientations, number and types of shapes, composition, etc. In observing the material, we also detected other dominant features of the area of advertising, which also led us to apply classical content analysis to detect codes and to differentiate between five basic codes that could also be treated as metadata. These codes were the following: preservation of the planet; home and family; women as social entrepreneurs; style; the youth. The research was guided by two main research questions, and these were the following: a) can the selected video content be presented by the means of media visualization, and b) can this (and similar) media content be categorized as cultural artifacts that play a role in the definition of popular media culture.

4. RESEARCH RESULTS

In this chapter, we will be showing the possibilities of ImageJ software applicable to the analysis of photographic materials. The first three images show the visualization of image sequences enabled by stacks commands. Results of similar research and related analysis, carried out by the Software Studies Initiative lab, can be retrieved by visiting the following link:

- https://www.flickr.com/photos/culturevis/4038907270/in/set-72157624959121129;
- https://www.flickr.com/photos/culturevis/4040690842/in/set-72157622525012841;
- https://www.flickr.com/photos/culturevis/4049510496/in/set-72157622608431194.

Image No. 1 is an example of a conceptually and technically simplest way to present many correlated visual artifacts within a single frame. This technique is comparable to fundamental intellectual operations executed in the field humanities that involve comparison between chains of mutually correlated objects. At the same time, this technique is well adapted for carrying out *exploratory media analysis* (Manovich, 2011, p.9).

Image following on the next page

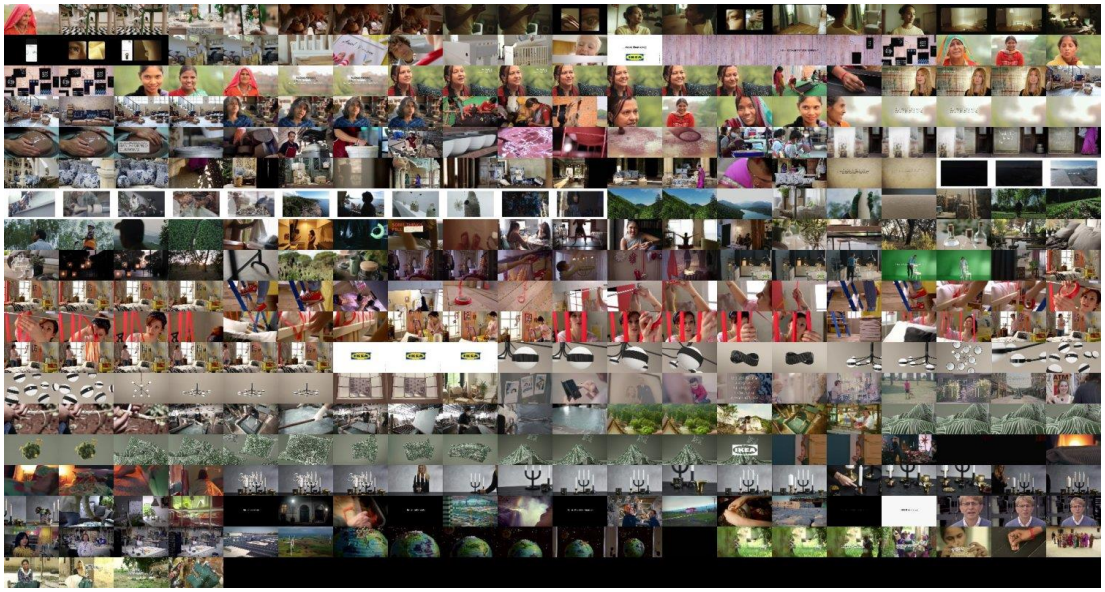


Image 1: Image Montage. Photographs of video content, 2012-2021.
N=364
(Source: IKEA YouTube channel)

In Image No. 2 we used the method to present average values of the photographs. We achieved this by using ImageJ software and by applying the Z-project command.

Image 2: Image Average. Photographs of video content, 2012-2021.
N=364
(Source: IKEA YouTube channel)

Image following on the next page

Image 3: Orthogonal View XZ. Photographs of video content, 2012-2021. N=364
(Source: IKEA YouTube channel.)

Image 4: Orthogonal View YZ. Photographs of video content, 2012-2021. N=364
(Source: IKEA YouTube channel)

Images 3 and 4 show the patterning, i.e., the presentation of parts of photographs that provide more detailed insight into elements undetectable in Image 1. Both images involve deep cutting into the material, as in medical and biological research. Images 5, 6, and 7 are visualizations achieved with the use of ImageJ software and Image Plot macro command. Images 5 and 6 compare the year of the video content to the brightness median: Image 5 represents dot visualization, and Image 6 visualizes photographs. Image 7 provides visualization of the median brightness and median saturation of the observed video content, i.e., photographs. Images 7 and 8 provide insight into additional possibilities that can be achieved by using the Image Plot macro command.

Endeavouring to provide – due to limitations of space – the most condensed possible form of information, we are hereby providing a comparative analysis of two visualizations that present two different codes ('preservation of the planet' and 'women as social entrepreneurs) and the median brightness.

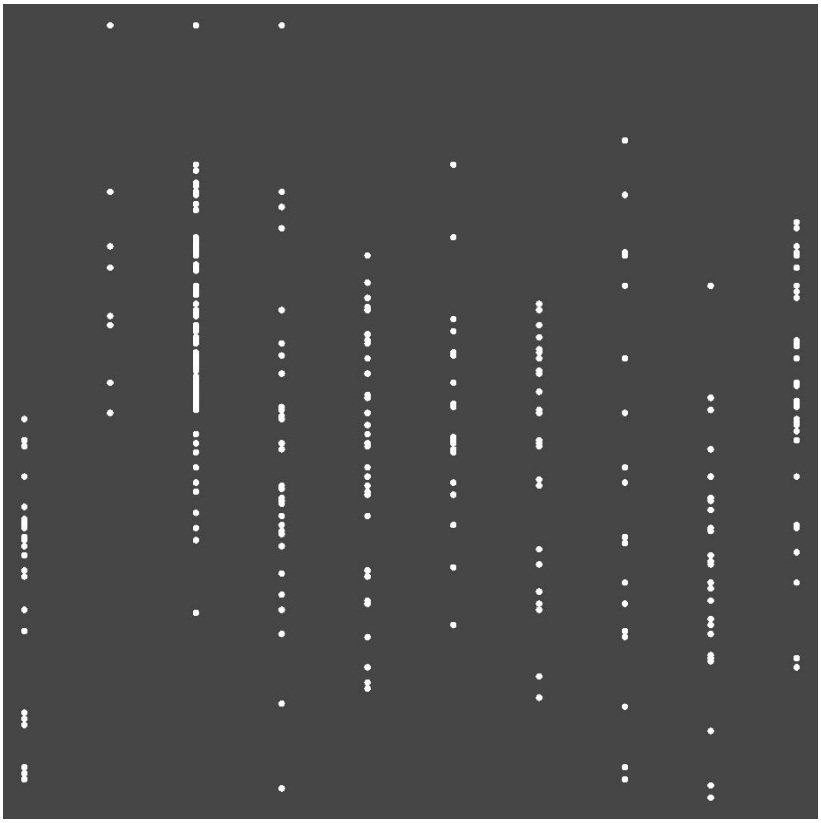


Image 5: 364 photo-advertisements (2012-2021) plotted as points. X-axis = date (year). Y-axis = median brightness

Image 6: 364 photo-advertisements (2012-2021) plotted as images. X-axis = date (year). Y-axis = median brightness

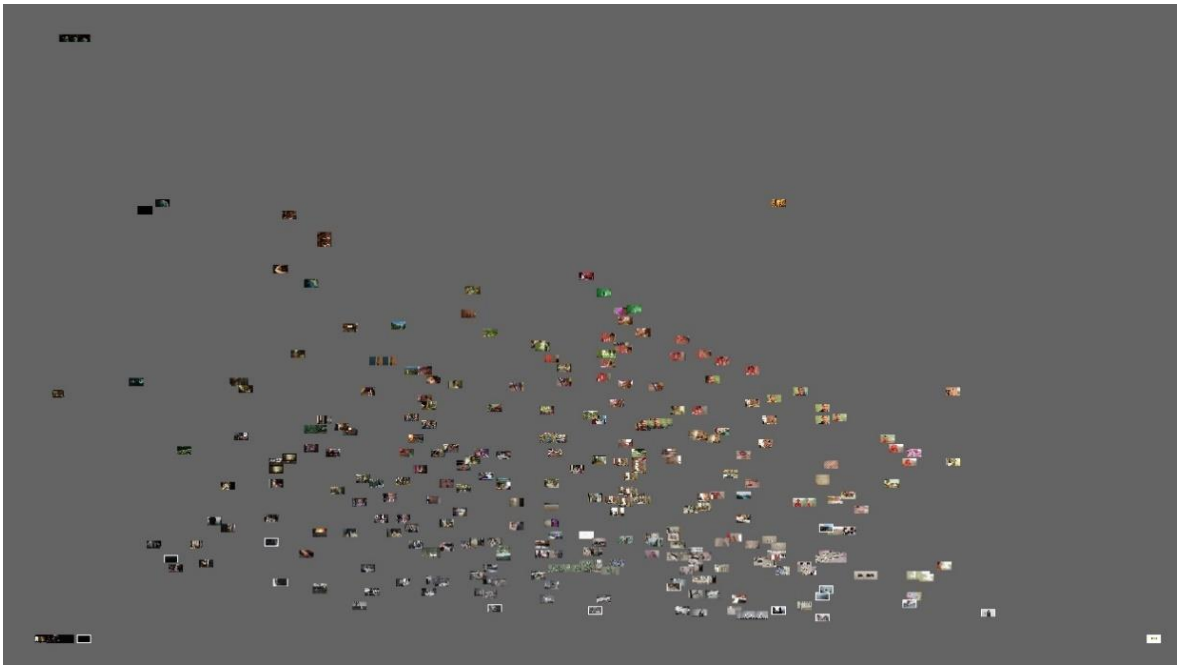


Image 7: 364 photo-advertisements (2012-2021); X-axis = median brightness, Y-axis = median saturation

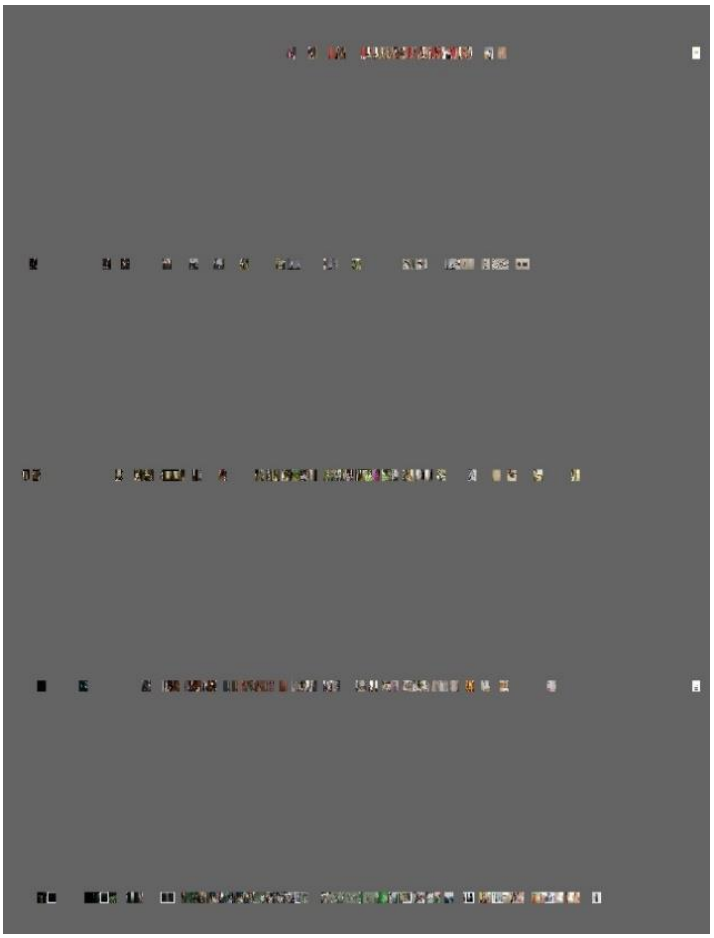


Image 8: X-axis = median brightness
Y-axis = 'preservation of the planet'-code
N= 158

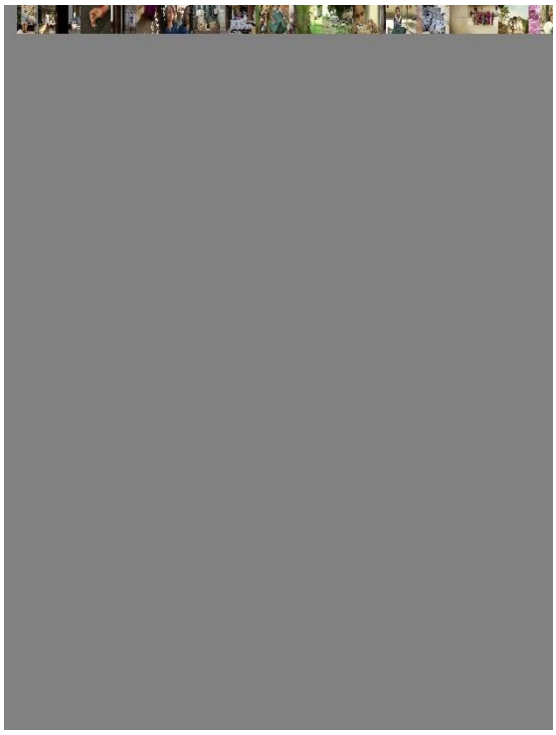


Image 9: X-axis = median brightness
Y-axis = 'women as social entrepreneurs'-code
N= 102

5. DISCUSSION AND CONCLUSTION

Bearing in mind the necessary economy that needs to be applied to the design of messages to accentuate certain features of the product while using a certain emphatic element (such as wax, clay, or earth) and colour, as well as the aim to augment the users' desire to own the product, we arrive at the reasons for symbolic shaping of media messages. This requires a high level of visual literacy that facilitates reading and understanding of the applied rhetorical strategies. The ability to assess such content critically presupposes activation of complex psychological, sociological, symbolic, and ideological processes (Kir, 2020, p. 43). Therefore, the semiotic model – as explained by authors such as Sassure, Barthes, Eco, etc. – is among the most applicable ones when it comes to a critical assessment of messages used in the field of advertising. This approach is still inspiring, especially when it the research of the nature of media of the role that they plan in cultural, political, and social activities. On the other hand, Moretti's 2013 analysis that points to the differences between the concepts of *close* and *distant reading* gains additional relevance in the era of the new media and provides a point of orientation in contemporary research. When we are facing a body of perhaps two or five hundred, or even a thousand or a million photographs, we can no longer begin our research with semiotic analysis, seeing that such efforts would be unfeasible both theoretically and methodologically. Hence, alternative routes need to be taken. As opposed to the semiotic approach which necessarily focuses on a single artifact, or a small number of them, the software-based ability to present extensive photographic material simultaneously can lead us to detect significant changes that are taking place in the visual shaping of selected content across rather lengthy periods. This can help in detecting differences and variability among different groups of images. While such procedures may appear to direct us towards quantitative analysis, they also enable the analyst to detect semantic features. For example, image No. 1 enables the detecting of dominant colours, i.e., red, black, and green, as well as the presence of female features across numerous photographs. Both these features correspond with IKEA's marketing and business strategies which branded the company's worldwide image.

The dominance of the colour green points to the company's environmental awareness, and the female presence is following the well-known initiative signed by IKEA, known as *Social Entrepreneurship*. This campaign engages in the empowerment of women and fights poverty across the world. The female social entrepreneurs and the manual work which they engage in enable new job openings for refugees and other vulnerable social groups. Images No. 3 and 4 reveal a more emphatic presence of the colour brown, which is not so obvious in Image 1, yet provides insight into the emphasis being placed precisely on social entrepreneurship. This is confirmed by the locations where the videos have been recorded, products and facial features that appear across the materials. Furthermore, images 5 and 6 reveal the prevailing presence of brighter tones, with a possible exception in some parts of the content published in 2012, 2015, 2019, and 2020. Image No. 7 confirms what has been said of the average brightness, and reveals the average intensity and clarity of the colours that dominate across the material. Images 8 and 9 confirm the trend of favouring brightness over dimness. All these observations could not have been achieved via traditional methods that were, until recently, exclusively used in social sciences and humanities. The media visualization method reveals trends and patterns across numerous artifacts even without the aid of the usual statistical methods such as quantifying, measuring, and summarizing (Manovich, 2020, p. 11). This method can be said to constitute a meta visual direction in the research of the new media, primarily because *1) these visualizations are images of images; 2) these parameters used to arrange them are visual; 3) the automatic distribution of the images is visualized spatially in a presentation governed by abscissas and ordinates; 4) the content analysis enabled by Media Visualization remains within the realm of images (filiation, tradition, citation, genre, etc.) and not the abstract realm of verbal description* (Dondero, 2019, p. 21). The analysis that we carried out and the results that we harvested via the media visualization method led us to believe that the described approach can fruitfully be applied not only to the commercial messages publicly disseminated via YouTube but also to those that may appear on any other internet channel that provides access to video content. Photographic, video and audio content, and multimedia in general, play an active role in the shaping of popular culture, which is clearly shown via the examples which we analysed. The technology involved in the creation of technologically disseminated content therefore also calls for the application of the technology in the research itself. It is becoming increasingly obvious that technology-based research cannot be bypassed if we are to open new doors to the analysis and to the understanding of global, largely computer-based culture that has become our new reality (Manovich, 2020, p. 16).

LITERATURE:

1. Anderson, S., Balsamo, A. (2008) A Pedagogy for Original Synners. *Digital Youth, Innovation and the Unexpected*. T. McPherson, Ed., Massachusetts: The MIT Press, pp. 241-259.
2. Chayaka, Y., Lubov, A. (2016) Viusality as a key aspect of cultural experience transformation of modern individual. *SHS Web of Conference 28*, 01019. *RPTSS 2015*.
3. Dondero, M. G. (2019) Visual semiotics and automatic analysis of images from the Cultural Analytics Lab: How can quantitative and qualitative analysis be combined? *Semiotica.* De Gruyter Mouton, Issue 230.
4. Flew, T., Smith, R. K. (2014) *New Media: An introduction*. Oxford: Oxford University Press.
5. Galloway, A. R. (2011) What is new media? Ten years after „The Lanuguage of New Media". *Criticism*. Vol. 53, No. 3, pp. 377-384.
6. Kir, S. (2020) *New Media and Visual Comminication in Social Networks*. Hatay Mustafa University, Turkey.

7. Lister, M., Dovey, J., Giddings, S., Grant, I., Kelly, K. (2009) *New Media. A critical introduction.* London and New York: Routledge.
8. Manovich, L. (2020) *Cultural Analytics*. Massachusetts: The MIT Press.
9. Manovich, L. (2011) Media Visualization: Visual Techniques for Exploring Large Media Collections. Retrieved 28/12/2021 from: http://manovich.net/content/04-projects/069-media-visualization-visual-techniques-for-exploring-large-media-collections/66-article-2011.pdf
10. Manovich, L. (2013) *Software Takes Command*. New York and London: Bloomsbury Academic.
11. Manovich, L. (2001) *The Language of New Media*. Massachusetts: The MIT press.
12. Manovich, L. (2017) Visual Semiotics, Media Theory, and Cultural Analytics. Retrieved: 20/12/2021 from: http://manovich.net/content/04-projects/103-visual-semiotics/manovich_visual_semiotics.pdf
13. Manovich, L. (2019) What is Visualization? Retrived 3/01/2022 from: http://manovich.net/content/04-projects/064-what-is-visualization/61_article_2010.pdf
14. Mitchell, W.J.T. (2015). *Iconology, Visual Culture, and Media Aesthetics. Image Science*. Chicago and London: The University of Chicago Press.
15. Moretti, F. (2013) *Distant Reading*. London and New York: Verso.
16. Nichols, R. E. (2008) Kind of Like Emerging from the Shadows: Adolescent Girls as Multiliteracy Pedagogues. *Media, Learning, and Sites of Possilbility*. Hill, M. L. and Vaseduvan, L., Eds. New York: Peter Lang Publishing, pp. 119-156.
17. Pratt, A. (2000) New Media, the New Economy and New Spaces. *Geoforum*. Vol. 31, No. 4, pp. 425-436.
18. Tzu-Bin, L., Yen-Yi, L., Feng, D., Ling, L. (2013) Understanding New Media Literacy: An Explorative Theoretical Framework. *Educational Technology & Society*. Vol.16, No. 4, pp. 160-170.

INNOVATION IN FOOD SERVICE – EFFICIENCY AND PERFORMANCE CHALLENGES

Luka Perman
ETEN d.o.o.
Nova cesta 12e, 51410 Opatija, Croatia
luka@eten.hr

Jihoon Ryu Lojpur
Student at College of Management and Design Aspira
Mike Tripala 6, 21000 Split, Croatia
Jihoon.ryu.lojpur@aspira.hr

ABSTRACT
This paper aims to give prospective to innovation processes in food service with accent on efficiency and performance challenges. After considering meaning of innovation in business such as restaurants, especially in modern world where there are many recognized awards in branch which make the difference and many business owners want that rank of achievement, there is a question about efficiency and performance challenges, more oriented towards sustainable business. In food service sustainability means a lot, not only towards foods used in food preparation, but also in longevity of business and achievement of brand credibility. Findings give prospective that business owners have to create such business models which has combine market differentiation with cost leadership and it provides different way of thinking about food service, since these topics attract little research as such.
Keywords: *Efficiency, Food service, Innovations, Michelin star, Performance*

1. INTRODUCTION

This paper focuses on the challenges of today's food service which is oriented in restauranteurship and it gives perspective on innovations which happen through new product development, and how that reflects to a efficiency and performances of the business, especially if such restaurant has been recognized by Michelin Guide, Gault&Milleau or similar professional publications. There were some previous researches regarding innovations in restaurants, analysis of Michelin starred restaurants, haute cuisine, but none had such perspective which can also be interested for further research. Restaurant industry today is pretty much as all industries influenced by turbulent environment and technological development. Food service as such needs to adopt customization , improving production processing and using innovative technologies to create high performances (Sheng-Fang Chou, Jeou-Shyan Horng, Chih-Hsing Liu, Yung-Chuan Huang, Shu-Ning Zhang, 2020), but at the same time there is big emphasis on offer differentiation and price leadership (Ivanovic, Perman, Grlj, 2015). Innovations, together with innovative entrepreneural development of products and services has to be market oriented, and in synergy with human capital to warrant further development of whole organization. Providing new products and service in food service is important, but there is also need of implementation of new management strategies or technologies to save costs (Kim & Mauborgne, 2017) but keeping customer satisfaction and operational performance in order to keep market share and enhacing brand awareness and impression. Appearance and popularity of branch awards in Croatia and neighbouring countries, such as Michelin Guide with world know Michelin Stars, Gault&Milleau recommendations had big influence on development awareness of constant need of enhacing services within the food service. Knowing that food service, or hospitality as wider prospective, does not have reputation to grow innovations, nor its culture of learning organization, as it is in other sciences are often

overlooked (Rodgers, 2008). Creating new services, and even products, if we consider newly created foods through so called „New Product Development“ or NPD. By innovating services in food service we may consider innovation of good – as foods, service as central part of food service, combined with idea, since that makes the difference and experience, which is user experience, mostly important in high end restaurants, of so called haute cuisine.

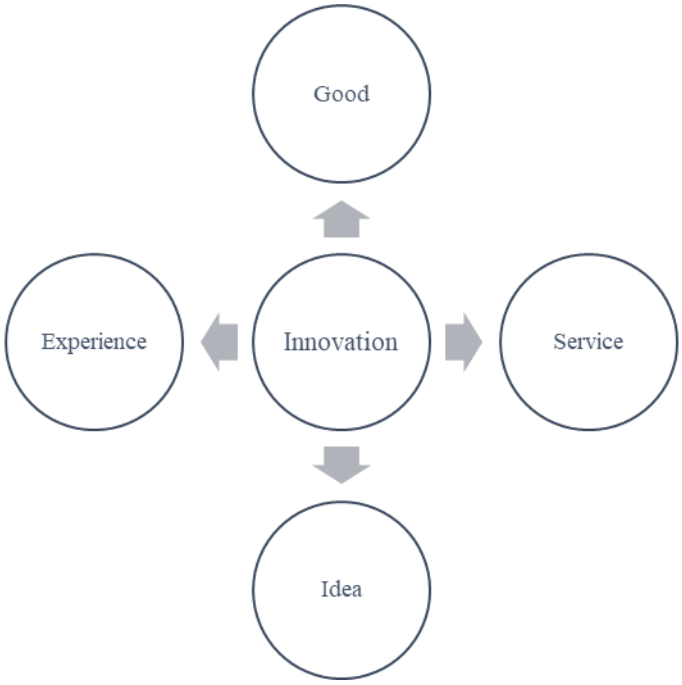


Figure 1: Innovations in food service (Source: Author)

As can be seen in Figure 1, Innovations in food service include four main elements good as main product of food service, and that can be considered as food; service as next main element, and it is intangible but is also essential element of the user experience. Idea as such is motivated by where innovation as one whole is positioned before taking any actions, and it gives inspiration where organization wants to be with it.

2. MARKET CHALLENGES

Every organization should, in order to survive on the market, continuously innovate its products and services, to create innovative service and grow its performances. Very big challenge happened in 2020 during lock-down where many restaurants, caused of „lock-down” could not offer their thoroughly developed services and products to the customers, yet had to found out how to reach them, and back in 2020 deliveries achieved very big growth. Due to the rapid market changes, market-oriented enterprises continuously learn new knowledge to provide products and services that meet customer expectations and create revenue (Agarwal, Krishna Erramilli, and Dev (2003), and stated facts proved to be right in 2020 during Covid-19 crisis which made food service business owners to be flexible, to plan further on and find way to reach customer. According to O'Bree (2020) modern food service operators compete in dynamic environment, where competition is intense, and consumers have a multitude of choices in both cuisine and establishments to choose from. Certainly, there is great need to differentiate, which will lead to showcasing culinary arts and a host of modern and traditional preparation and presentation styles (O'Fallon and Rutherford, 2011). Food service companies face the greatest challenge in designing a differentiated product or service (Ivanovic, Perman, Grlj, 2015), because of a huge competition in their sector, so need for differentiation is inevitable.

There is also concern of business owners regarding how today is easy to replicate dishes from one kitchen, or a restaurant to the next. Chefs nowadays want to find products that are not available for the competitor because it would give the operation a competitive advantage, and this makes most challenging tasks in today's hospitality according to Ottenbacher and Harrington (2007). Industry in this sector has high operational risks; thus entrepreneurs must innovate and possess the related competitive advantages to survive, according to S.-F.Chou, et.al. (2020).

3. INNOVATION IN FOOD SERVICE

Innovation in restaurants mostly comes from premium and upscale restaurants, also known as Haute Cuisine, and according to Presenza and Messeni Petruzzelli (2019), that type of restaurant can be seen as the trendsetters and innovators. In fact, chefs are continuously motivated to innovate launching new fine dining concepts and other luxury experiences (Svejenova et.al., 2016). Considering that Haute cuisine as food service concept in restaurants have rather small share of roughly 0,5% according to Presenza and Messeni Petruzzelli (2019), but their overall influence on whole industry is rather big. Food critics, and even awards such as Michelin stars, Gault&Millau and similar mostly focus on those haute cuisine restaurants which makes great effect on other restaurants. Differentiation, as it is stated makes difference, but according to Presenza and Messeni Petruzzelli (2019) standardization helps creative firms not only in reacting faster to a competitive environment, but also in increasing their reputation and ability to grow. Business owners are making changes in business model and some elements could be new for the individual implementing them, yet established practice for their profession or industry, or may alternatively be novel for the profession/industry itself, according to Svejenova et.al (2010). Innovation process in food service includes, according to Ivanovic, Perman and Grlj (2015) can be viewed through advantages in both differentiation and cost leadership, both very important for successful positioning and maintaining market share.

Differentiation	**Cost leadership**
Superior food quality and service	Production costs
Improved nutritional value	Greater usability
The unique ways of cooking and serving foods	Lesser losses of foods
Maintaining quality of foods and services	Lower costs of food
The speed and accuracy of service	Lower costs of energy
Attraction through processes of cooking and serving	Lower labour
Restaurant dining experience	Lower capital costs
Brand credibility	Shorter time of food production and service

Table 1: Differentiation and Cost leadership in food service (Source: Author)

According to the Table 1, differentiation is market oriented, and cost leadership is more oriented towards food service organization. Through prospective of food quality and services, guests' expectations are always high, but as there is also need of improved nutritional value, especially when eating in haute cuisine, and to differentiate on the market differentiation as itself is not enough, but also to maintain quality together with speed and accuracy. Nowadays, with many restaurant reviewers, guides and awards brand credibility has never been more important, and all that leads to restaurant dining experiences where guests can be indulged into restaurants' storytelling through courses, which is also affected by attraction through processes of cooking and serving as main factor here. Brand credibility, according to Kiatkawsin and Sutherland (2020) can be defined as the believability of a brand to produce or perform the goods and services that have been promise and is found to be a crucial mediator between brand experience and customers' willingness to pay a price premium.

Business owner, on the other hand see that all that has lots of influence on their position on the market, but still their main concern is business sustainability through lowering production costs and greater usability of their resources with lesser expenses of foods, energy, labour, together with shorter time of food production and service. According to Suharom et.al. (2019) culinary professionals have ability to deliver extensive culinary services plays a key role in trendsetting, image building, and establishing rapport with the guest through the presentation of food to establish an excellent dining experience

4. PERFORMANCES REGARDING EFFICIENCY AND BUSINESS SUSTAINABILITY

Restaurants are considered as providers of cultural elements, since it can be concluded, according to the C.R.d.A. Meneguel et.al (2018), that restaurants promote economic development with recognition and belonging of the local cuisine. Restaurants from Michelin Guide, especially those awarded by their Michelin stars have very complex meaning for both public and business owners. Certainly, it gives attraction to some destinations, but also has other repercussions. Latest trends go towards sustainable tourism, sustainable gastronomy, and so on. Haute cuisine, and Michelin star restaurants have public image of only pleasure and hedonism, but there is critical to examine of sustainability and luxury gastronomy are compatible and what are the dimensions of sustainable food experiences (Batat, 2020). It can be noticed that chefs are transforming their cooking and start using local ingredients more than in previous years which makes their creations with an emphasis on the local. Such foods are more expensive than wide market ones, but this can be easily justified by higher prices. According to Snyder and Cotter (1998) Michelin star awarded restaurants are rising their prices according to a different pricing strategy. Following that, gaining Michelin star also brings some other consequences such as losing some of their potential customers because of the image of luxury experience rather than good food image food service organization previously had. Some authors noticed that restaurants which gain their recognition such as Michelin stars, gain it because of their creativity and innovation, but there is typically experienced a decrease in profitability, as a consequence of the higher costs in order to obtain their stars, according to Daries, Moreno-Gené and Cristobal-Franci (2021). Certainly, well-established restaurants in later years may significantly raise their prices and generate more revenue. As organization identifies its business objectives and defines processes to deliver to customer requirements then they have to define the time, costs and quality standards of each tasks (Suhairom, et.al. 2016). Profitability as such does not depend solely on the on the chefs and business owners, but also on their ability to manage business together with innovative products they develop and sustainability business which includes standardization and following cost leadership, and achievement as a profitable food service organization – restaurant, bar, hotel, in the long run requires balancing multiple business models able to turn their cuisine into a commercial item.

5. CONCLUSION

Undoubtedly, innovations are substantial part of food service, especially in haute cuisine which has rather small share in overall prospective, but have rather big overall influence on whole industry. Differentiation processes in food service have great significance because of the huge competition, and yet since every business, and food service is not exception, depends on profitability and business sustainability there are some concerns regarding cost leadership which have to be addressed. This study contributes to the reflection on how food service organizations create their innovations and which are efficiency and performance challenges and which elements should be considered as important.

By this paper this topic opens for future researches which may better explore relationship between innovations and cost efficiency in Michelin star restaurants as a considerable trend today, together with quantitative measurement such businesses.

LITERATURE:

1. Agarwal, S., Erramilli, M.K., Dev, C.S. (2003). *Market orientation and performance in service firms: role of innovation*. Journal of Services Marketing 17 (1), 68-82.
2. Albuquerque Meneguel, C.R.d., Mundet, L., Aulet, S. (2019). *The role of a high-quality restaurant in stimulating the creation and development of gastronomy tourism*. International Journal of Hospitality Management 83: 220-228.
3. Batat, W. (2020). *Pillars of sustainable food experiences in the luxury gastronomy sector: A qualitative exploration of Michelin-starred chefs'motivations.* Journal of Retailing and Consumer Services 57, 1-13.
4. Chou, S.F., Horng, J.S., Liu, C.H., Huang, Y.C., Zhang, S.N. (2020). *The critical criteria for innovation entrepreneurship of restaurants: Considering the interrelationship effect of human capital and competitive strategy a case study in Taiwan.* Journal of Hospitality and Tourism Management 42, 222-234.
5. Daries, N., Moreno-Gené, J., Crostobal-Fransi, E. (2021). *Michelin stars shine brightly, but are they profitable?*. International Journal of Gastronomy and Food Science 24, 1-7.
6. Ivanovic, S., Perman, L., Grlj, I. (2015). *Impact of Technological Development on Business Efficiency in the Food and Beverage Department*. UTMS Journal of Economics 6 (2), 321–330.
7. Kiatkawsin, K., Sutherland, I.(2020).*Examining Luxury Restaurant Dining Experience towards Sustainable Reputation of the Michelin Restaurant Guide.* Sustainability 12: 1-16.
8. Kim, W. and Mauborgne, R. (2017). *Blue Ocean Leadership.* Boston, Massachusetts: Harvard Business Review Press.
9. O'Bree, Grant. (2020). *Food service in hospitality management*. Food and Society, 405-415. https://doi.org/10.1016/C2016-0-01631-5,
10. O'Fallon, M. and Rutherford, D. (2011). *Hotel management and operations*. 5th ed. Hoboken, New Jersey: Wiley.
11. Ottenbacher, M., Harrington, R.J. (2007). *The innovation development process of Michelin-starred chefs*. International Journal of Contemporary Hospitality Management 19 (6): 444-460.
12. Presenza, A., Messeni Petruzzelli, A. (2019). *Investigating business model innovation in Haute Cuisine. Role and behavior of chef-entrepreneurs.* International Journal of Hospitality Management 82, 101-111.
13. Rodgers, S. (2007*). Innovation in food service technology and its strategic role.* Hospitality Management 26, 899-912.
14. Snyder, W., Cotter, M. (1998). *The Michelin Guide and Restaurant Pricing Strategies*. Journal of Restaurant & Foodservice Marketing 3 (1), 51-67.
15. Suhairom, N., Musta'amal, A.H., Mohd Amin, N.F., Nordin, M.K., & Ali, D.F. (2016). *Quality indicators in the field of culinary professions in Malaysia – a method of developing competency profiling through self-assessment*. TVET Asia 7, 1-22.
16. Suhairom, N., Musta'amal, A., Amin, N., Kamin, Y., Wahid, N. (2019). *Quality culinary workforce competencies for sustainable career development among culinary professionals*. International Journal of Hospitality Management. 81. 205-220.
17. Svejenova, S., Planellas, M., Vives L.(2010). *An Individual Business Model in the Making: a Chef's Quest for Creative Freedom.* Long Range Planning 43: 408-430

18. Svejenova, S., Slavich, B., AbdelGawad, S.G. (2015). *Creative Entrepreneurs: The Business Models of Haute Cuisine Chefs.* The Oxford Handbook of Creative Industries, Oxford: Oxford University Press: 184-199.

PERSONALITY AS A PREDICTOR OF STUDENTS' HEURISTIC AND HERDING BIASES IN DETERMINING THEIR PREDISPOSITIONS FOR LONG-TERM INVESTMENT DECISIONS

Marija Vukovic
University of Split, Faculty of Economics, Business and Tourism
Cvite Fiskovića 5, Split, Croatia
marija.vukovic@efst.hr

ABSTRACT

Making the right investment decision has always been of crucial importance for any investor, since it results in better investment performance and, consequently, a higher level of satisfaction and long-term benefits. In this research, the focus is on students of business economics graduate studies in Croatia, who are expected to have fundamental knowledge of finance and stock investments, as potential investors in financial markets. It has previously been assumed that investment decisions are made in a rational way, taking only the risk and return of an investment into account. However, recent studies have shown that various psychological and behavioural factors influence this decision making process. Therefore, even though students of business economics are supposed to be more rational, it is often not true and their decisions are irrational to some extent. There are many different behavioural factors which can influence these decisions. This paper focuses on heuristics and herding, as some of the most frequently recognized biases which influence investment decisions. However, these behavioural biases themselves can be affected by an individual's personality characteristics, which consist of two dimensions: stability and plasticity. This research aims at identifying multiple causal relationships between students' personality characteristics, behavioural biases and predispositions for long-term investment decisions. Data was collected through an online questionnaire among 223 students of graduate studies from Faculty of Economics, Business and Tourism in Split, Croatia. Partial least squares structural equation modelling results show that plasticity positively affects overconfidence heuristic, while stability positively affects representativeness heuristic. Stability also has a negative impact on herding, while availability heuristic is not influenced by personality characteristics. Additionally, overconfidence and representativeness positively affect students' predispositions for long-term investment decisions, while availability and herding affect those predispositions negatively.

Keywords: *behavioural finance, herding, heuristics, investment decisions, personality*

1. INTRODUCTION

Investment decisions have been observed through the rational perspective for a long time. It was assumed that all of the investment decisions were made simply by evaluating the risk and return of a stock, according to Markowitz (1959). However, people are actually not rational and there are various psychological and behavioural factors which influence the decision making process in investing. Different kinds of behavioural biases can be identified in financial markets. Some of the most frequently recognized and analysed behavioural biases among investors include heuristics and herding (Bakar and Yi, 2016; Abul, 2019; Rahman and Gan, 2020). Those biases often have a significant effect on investment decisions by shaping their beliefs and judgements. However, these biases can be influenced by personal characteristics of investors (Yadav and Narayanan, 2021). This research is focused on a sample of 223 students of business economics graduate studies in Croatia, as potential future investors in financial markets. It is expected that they posses fundamental knowledge of finance and stock investments. By exploring how their personality affects their behavioural biases and, consequently, their investment decisions, an insight in their predispositions for long-term

investing can be obtained. Taking their knowledge and education into account, these students are more likely to become future investors. Therefore, with this analysis, they can be aware of the drawbacks and advantages they posses and try to turn themselves into a direction which will lead them to better decisions in future when they enter the actual financial market. The aim of this research is to find out how the personality characteristics influence heuristic and herding biases of students, as well as how those biases affect their predispositions for long-term investment decisions.

2. THEORETICAL FRAMEWORK AND LITERATURE REVIEW

Heuristic biases often direct investors' decisions to be made in an irrational way in the means of using shortcuts, in order to simplify their decision making process to reduce the risk of possible loss in uncertain situations. This could lead to poor investment decisions, due to lack of information used in the investment process, since individuals have a tendency of relying on previous experience too much (Kamran et al., 2008; Bakar and Yi, 2016; Khan et al., 2017; Vuković and Pivac, 2021). Some specific types of heuristics encompass overconfidence, representativeness and availability. All of these types (dimensions) of heuristics actually influence investors by offering a shortcut for the decision making, but each of them has its own specific properties. Representativeness is identified "when people tend to emphasize recent experience, while ignoring the long term rate" (Vuković and Pivac, 2021). It is actually a form of using stereotypes for stocks. This implies that investors often expect a past winning stock to continue its positive trend of rising, even though it doesn't have to be a correct assumption. Therefore, they tend to give more weight to recent experience and returns of a stock when making an investment decision (Waweru et al., 2008; Khan et al., 2017; Shukla et al., 2020). Another form of heuristics is availability, which occurs when people overweight easily available past information or information about familiar companies, stocks and events. This narrows down their investment options, because they often decide to invest only in local stocks, ignoring the possibility of diversifying and optimizing their portfolio (Waweru et al., 2008; Khan et al., 2017; Mikołajek-Gocejna, 2017). Perhaps the most frequently found and analysed type of heuristic is overconfidence. This particular bias implies that investors overestimate their own knowledge, skills and judgements. Since those investors consider themselves more capable for investing compared to others, this heuristic leads to more frequent trading at the stock market (Waweru et al., 2008; Mikołajek-Gocejna, 2017; Abul, 2019). Previous research have not found a unique conclusion about the impact of heuristics on investment decisions. Khan et al. (2017) examined the impact of various heuristics on decision making. They concluded that all of those heuristics are correlated and have a strong influence on stock buying decisions. Specifically, they found a positive influence of representativeness and availability bias on investment decisions. Phuoc Luong and Thi Thu Ha (2011) studied the impact of different types of behavioural factors on investment performance and found a positive influence of heuristics. Similar conclusion about a positive influence of representativeness was found by Rekha (2020). On the other hand, Shah et al. (2018) found a negative impact of representativeness, claiming that it leads to irrational trading mistakes. Siraji (2019) found a postitive influence of availability and representativeness on investment performance, while overconfidence has shown a negative impact. Availability was found to have a positive impact on investment decisions, as well as overconfidence (Bakar and Yi, 2016; Mahanthe and Sugathadasa, 2018). The positive impact of overconfidence on investment decisions was confirmed in more research (Qasim, 2019; Rekha, 2020; Vuković and Pivac, 2021). This could indicate that overconfidence may contribute to the emergence of new ideas, which are beneficial to financial markets. However, some researchers have different findings, indicating that overconfidence and availability have a negative influence on decision making of investors, what makes their decisions less reliable (Shah et al., 2018; Rahman and Gan, 2020).

Another important factor which shapes investors' behaviour is herding. It can be defined as behaviour when people follow the actions of a crowd. People tend to follow others when they are not confident in their own judgements, so they assume that the decisions of a majority of people are correct (Bakar and Yi, 2016; Mahanthe and Sugathadasa, 2018; Rahman and Gan, 2020). Some researchers have found a positive impact of herding effect on investment decisions (Qasim, 2019; Rekha, 2020), and others have found a negative or non significant influence (Bakar and Yi, 2016; Mahanthe and Sugathadasa, 2018; Rahman and Gan, 2020). Specific behaviour is determined by the personal characteristics of individuals. The most commonly used model of personality characteristics is the big five personality model. According to this model, personality can be observed through five dimensions, and those are extraversion, openness, conscientiousness, neuroticism and agreeableness (John and Srivastava, 1999; Yadav and Narayanan, 2021). However, these five dimensions are correlated and there is a higher-order structure among them. Namely, there are two higher-order factors: stability and plasticity, which encompass the five personality traits. Stability refers to the traits of conscientiousness, agreeableness, and low neuroticism (emotional stability), while plasticity is related to extraversion and openness (DeYoung, 2006). Previous research have found the influence of the personality characteristics on particular behavioural biases. According to the literature summary by Yadav and Narayanan (2021), overconfidence was found to be under both positive and negative influence of all big five personality characteristics, except for conscientiousness, which has only shown a positive influence. On the other hand, research has shown a positive influence of all personality characteristics on herding. Only conscientiousness has not shown a positive impact. Some studies have not found a significant influence of personality traits on either of the behavioural biases (Yadav and Narayanan, 2021). Lin (2011) has found a positive impact of extraversion and openness on overconfidence, since investors with those traits are open to new experiences, more self-confident and prefer to take more risks. On the other hand, agreeableness and neuroticism can encourage herding, while conscious people are disciplined and invest in more secure stocks (Lin, 2011; Yadav and Narayanan, 2021). It is generally assumed that students at the end of their graduate studies in the field of economics will have more knowledge of finance. Thus, it would be reasonable to assume that they would behave more rationally when making investment decisions. However, as it has been previously stated, people are often irrational and unable to process a large amount of information in short time period (Kamran et al., 2008; Khan et al., 2017). Additionally, people often follow the decisions of others and act according to what the majority does. Since this research is focused on students of business economics graduate studies and their predispositions for long-term investment decisions, it is important to note how the students perceive themselves. According to Susilowati and Latifah (2017), students believe that they are knowledgeable, but they also tend to rely on easily available information when making financial decisions. Students of economics are usually not yet involved in investment activites in the stock market. However, they are more likely to become real investors compared to their peers who did not have financial education. As potential young investors, they are not considered experienced, but only beginners. Beginner investors are more likely to be under herding bias (Novianggie and Asandimitra, 2019). This research extends the work of Vuković and Pivac (2021), by including herding as a potential predictor of long-term investment decisions. Additionally, big two personality traits, stability and plasticity, are included as predictors of the heuristic and herding biases. Considering the aim of this research, it is hypothesised that stability and plasticity both have a significant influence on heuristics and herding. It is also hypothesised that all heuristics (overconfidence, representativeness and availability) and herding significantly influence students' predispositions for long-term investment decisions.

3. DATA AND METHODOLOGY

Data was collected with a survey questionnaire, which was designed according to previous research (John and Srivastava, 1999; Waweru et al., 2008; Lin, 2011; Phuoc Luong and Thi Thu Ha, 2011; Rekha, 2020). The research was carried out in November 2020. The survey included basic questions about the demographic characteristics of the students and information about their study program. It also contained the questions which reflected their tendency to use heuristics when investing, their propensity for herding behaviour, their preferences for investments and their personality. The answers to those questions were formed as a 5-point Likert scale (1=completely disagree, 5=completely agree) and they represented the level of students' agreement with certain statements regarding behavioural biases and personality traits. The survey was distributed online to the students of graduate studies in the field of economics on the Faculty of Economics, Business and Tourism in Split. They are expected to have fundamental knowledge of finance, since their study programs include several courses of basic finance and financial management. The final sample includes 223 students. Most of the students who participated in the survey are female (72.2%), and males are a minority (27.8%). During the survey examination period, 80.7% of the students were studying in their first year of graduate studies, and 19.3% in their second year. The median age of the students in the sample is 23 years. The largest part of the sample refers to the students of Information management (21.1%), followed by the students of Financial management (18.8%) and Accounting and Auditing (18.4%). The least represented study program in the sample is International Economics and European Integration (2.2%). Minority of the students (16.6%) have had some sort of education specifically about the stock exchange trading, as part of their formal and/or informal education. Partial least squares structural equation modelling (PLS-SEM) was used to test the hypotheses. It is an appropriate method for this context, since it examines a larger number of causal relationships simultaneously, and it takes latent variables into account, such as behaviour, preferences and personality characteristics. In addition, the research model is more of an exploratory nature, and the assumption of multivariate normality of the data was not met. Also, availability bias is represented as a single-item construct. Therefore, the nonparametric PLS-SEM approach was used for data analysis under these conditions (Hair et al., 2011; 2017). SPSS 23 and SmartPLS 3 statistical softwares were used to analyse the data, providing results for the inner and outer model assessment.

4. RESULTS AND DISCUSSION

The model includes seven latent variables (constructs). They refer to stability (STAB), plasticity (PL), overconfidence (OC), representativeness (REP), availability (AV), herding (HERD) and investment decision (ID). Table 1 shows the results of the convergent validity and reliability of the constructs. This is evaluated through the values of the outer loadings, average variance extracted (AVE), composite reliability (CR) and Cronbach's alpha coefficient. The outer loadings have values above 0.6 and they are all statistically significant at the level of 0.01. AVE for each construct is above 0.5, implying that all constructs explain at least 50% of their indicators' variance (Hair et al., 2017). Therefore, convergent validity is adequate. High reliability is also established, since all CR values are relatively high, with the values above 0.7 and 0.8. Cronbach's alpha coefficient shows good internal consistency of the constructs, since it shows satisfactory values for all constructs. It is suggested to use both CR and Cronbach's alpha in the analysis of internal consistency reliability, where it is considered that the true reliability usually lies between the values of these two measures (Hair et al., 2017; Sarstedt et al., 2017). The described measures of convergent validity and reliability do not have meaning for AV, since it is a single-item construct.

Construct	Indicator*	Outer loadings	AVE	CR	Cronbach's alpha
Overconfidence (OC)	OC1	0.759***	0.537	0.822	0.728
	OC2	0.803***			
	OC3	0.687***			
	OC4	0.676***			
Representativeness (REP)	REP1	0.691***	0.554	0.787	0.594
	REP2	0.709***			
	REP3	0.826***			
Availability (AV)**	AV1	1.000***	1.000	1.000	1.000
Herding (HERD)	HERD1	0.745***	0.730	0.842	0.670
	HERD2	0.951***			
Stability (STAB)	STAB1	0.652***	0.515	0.841	0.766
	STAB2	0.781***			
	STAB3	0.728***			
	STAB4	0.792***			
	STAB5	0.619***			
Plasticity (PL)	PL1	0.652***	0.522	0.844	0.778
	PL2	0.683***			
	PL3	0.731***			
	PL4	0.742***			
	PL5	0.795***			
Investment decision (ID)	ID1	0.767***	0.529	0.815	0.699
	ID2	0.818***			
	ID3	0.761***			
	ID4	0.530***			

* Indicators: OC1 – I believe that my skills and knowledge of stock market would help me to outperform the market; OC2 – I believe that I would rely on my previous experiences in the market for my next investment; OC3 – I believe that I would be sure that I can make the correct investment decision; OC4 – I believe that I would always refer the investing profit to my successful investment strategy; REP1 – I would buy 'hot' stocks and avoid stocks that have performed poorly in the recent past; REP2 – I would be careful while investing in stocks of companies which have made losses recently; REP3 – I would use trend analysis of some representative stocks to make investment decisions; AV1 – I believe that I would prefer to buy local stocks than international stocks because the information of local stocks is more available; HERD1 – I believe that I would invest in the financial products by following my friend's recommendation; HERD2 – I believe that I would make my investment decisions on the basis of television advertisements; STAB1 – I do a thorough job; STAB2 – I am a reliable worker; STAB3 – I persevere until the task is finished; STAB4 – I am generally trusting; STAB5 – I am considerate and kind to almost everyone; PL1 – I am full of energy; PL2 – I generate a lot of enthusiasm; PL3 – I am original and come up with new ideas; PL4 – I have an active imagination; PL5 – I like to reflect and play with ideas; ID1 – I believe that I would allot funds that will produce long term benefits; ID2 – I believe that I would regularly review, compare and take instant decision on my investment performance; ID3 – I believe that I would do market research before taking any shot term investment; ID4 – I believe that I would allot more funds for the long term than short term.

** single-item construct

*** *significant at 0.01 level*

Table 1: Convergent validity and reliability of the constructs (Source: Author's calculation)

Discriminant validity was examined through the heterotrait-monotrait ratio (HTMT), which shows the ratio of the between-trait correlations to the within-trait correlations. Since the values of the correlations of indicators across constructs measuring different phenomena should be lower than the correlations of indicators measuring the same construct, lower HTMT values are desirable. Table 2 shows the HTMT ratios for the constructs. It can be seen that all of the HTMT values are lower than the threshold of 0.85, which supports the discriminanty validity. Thus, each of the constructs in the model is considered to be truly distinct from the other constructs (Hair et al., 2017; Sarstedt et al., 2017).

	AV	HERD	ID	OC	PL	REP	STAB
AV							
HERD	0.436						
ID	0.207	0.394					
OC	0.230	0.145	0.310				
PL	0.124	0.093	0.353	0.281			
REP	0.048	0.345	0.564	0.422	0.130		
STAB	0.138	0.305	0.583	0.179	0.545	0.557	

Table 2: Discriminant validity of the constructs
(Source: Author's calculation)

Structural model shows the relationships between constructs and their significance. It can be concluded that plasticity, as one personality trait, positively significantly affects overconfidence, while it shows no significant influence on other behavioural biases. This conclusion indicates that people who are more energetic, enthusiastic and innovative are more likely to overestimate their knowledge of financial investments. On the other hand, stability does not have a significant influence on overconfidence, while it significantly affects herding and representativeness. The effect on herding is negative and the effect on representativeness is positive. Therefore, individuals who are more thorough, reliable, persistent, trusting and considerate are less likely to follow the decisions of the crowd. These people mostly rely on themselves in their research of the stock market and they make their own investment decisions, without the need to imitate what other investors decide. Furthermore, people with these personality traits are more likely to buy popular stocks, they would carefully invest in companies which have made recent losses, and they are more likely to use trend analysis in their decision making process. This can be explained by the fact that stable people do thorough analysis when they make investment decisions, therefore following the market trends, which can lead them to representativeness bias. As for the behavioural biases, they all significantly affect the students' predispositions for long-term investment decisions. Namely, availability and herding have a negative impact on investment decisions. This leads to the conclusion that the students who believe that they would prefer investing in local stocks, due to information availability, tend to have less predispositions for long-term investment decisions. Similar conclusion is made for the effect of herding. Students who believe that they would follow their friend's recommendations and television advertisements about the stocks have less predispositions for long-term investment decisions. Overconfidence and representativeness positively impact investment decisions. This implies that students who believe that they would rely on their skills in investing and those who believe that they would use trend analysis and buy more popular stocks, tend to have predispositions for long-term investment decisions.

Table following on the next page

	Path coefficient	P-value
AV → ID	-0.141	0.033
HERD → ID	-0.213	0.001
OC → ID	0.208	0.003
PL → AV	-0.061	0.635
PL → HERD	0.084	0.396
PL → OC	0.198	0.026
PL → REP	-0.111	0.160
REP → ID	0.258	0.001
STAB → AV	-0.105	0.213
STAB → HERD	-0.272	0.000
STAB → OC	0.043	0.624
STAB → REP	0.433	0.000

Table 3: Path coefficients with p-values
(Source: Author's calculation)

Figure 1 shows the path diagram of the model, where the circles represent the latent constructs, and the rectangles represent the indicators. All of the previously described causal relationships can be seen in the figure. In addition, the values of the coefficients of determination (R^2) can be seen inside of the endogenous constructs. This measure shows in-sample predictive power of the model, so the focus is on the key endogenous construct ID. Its R^2 is 0.238, confirming the moderate to high predictive power of the model, since the model explains 23.8% of the variance in ID (Ringle et al., 2014; Hair et al., 2017). PLS Predict procedure was used to test the model's out-of-sample predictive power. Root mean squared error (RMSE) and mean absolute error (MAE) values obtained for all indicators of the key endogenous construct ID are compared for the PLS model and the linear regression model (LM). For the majority of indicators, these values are lower in the PLS model. Therefore, it can be concluded that the model has medium predictive power (Shmueli et al., 2019).

	PLS		LM	
	RMSE	**MAE**	**RMSE**	**MAE**
ID1	0.870	0.674	0.897	0.713
ID2	0.855	0.674	0.850	0.680
ID3	0.861	0.691	0.820	0.642
ID4	0.991	0.831	1.024	0.847

Table 4: PLS Predict results for out-of-sample predictive power of the model
(Source: Author's calculation)

Figure following on the next page

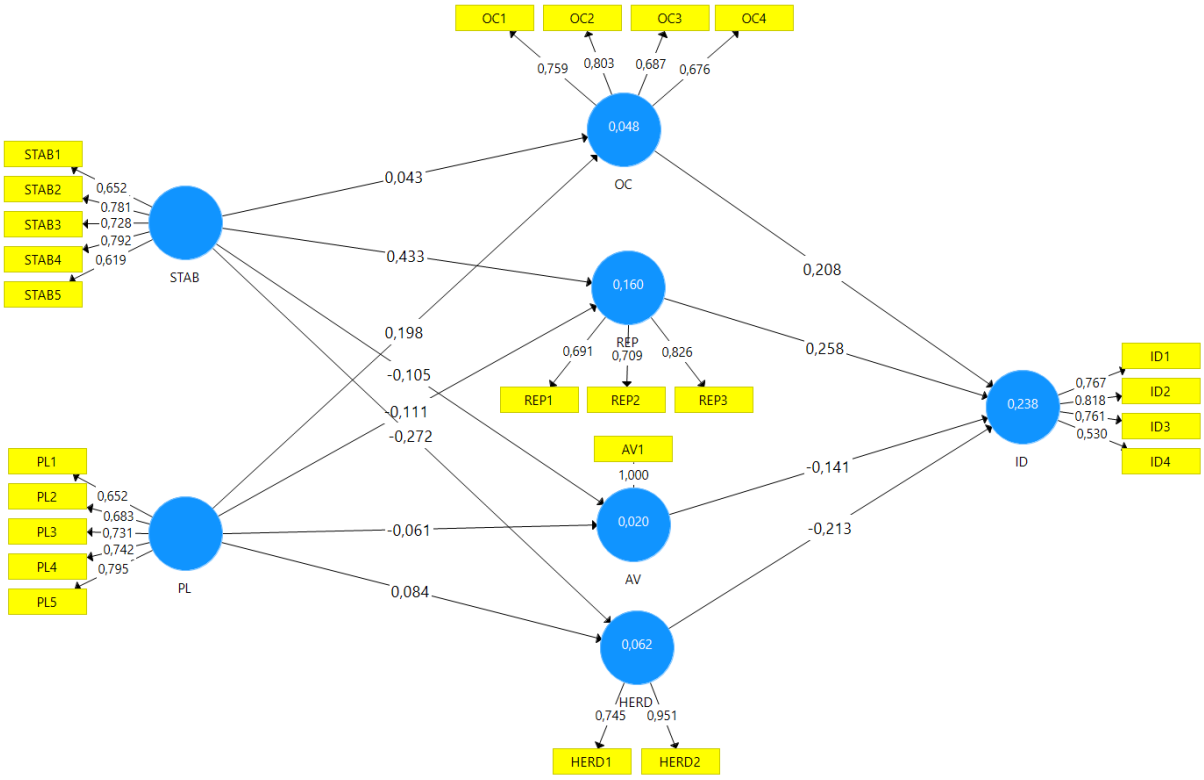


Figure 1: Path diagram with estimates
(Source: Author's calculation with SmartPLS software)

5. CONCLUSION

The aim of this research was to explore the role of personality traits of business economics students in predicting the behavioural biases which impact their predispositions for long-term investment decisions. Since these students are more likely to become investors in financial markets in the future, they can get an insight in the details of their behaviour. The research was conducted on a sample of 223 students of graduate studies in economics at the Faculty of Economics, Business and Tourism in Split, Croatia. PLS-SEM results imply that there is a significant impact of both personality dimensions, plasticity and stability, on specific behavioural biases of students. Namely, plasticity positively affects overconfidence heuristic. This shows that more energetic, enthusiastic and innovative individuals are more likely to overestimate their skills and knowledge in financial investment. This finding is relatively expected, since these people are more extraverted and open to new experiences, therefore having more confidence in their own actions and trading more frequently. Stability was found to have a positive impact on representativeness, which indicates that more thorough, reliable, persistent, trusting and considerate individuals often tend to use trend analysis in their evaluation of investment alternatives and they are careful when they invest in companies which have made recent losses. People with stability personality trait are also less likely to follow the crowd, i.e. to follow the suggestions of their friends, other investors and advertisements in their investment decision making process. This is logical, since they are prone to making their own analysis of the possible stock investments, because they are generally reliable and thorough. Availability heuristic is not influenced by the personality traits. All of these behavioural biases significantly affect the students' predispositions for long-term investment decisions. Availability and herding show a negative impact, i.e. the students who believe that they would prefer investing in local stocks and those who believe they would follow other investors' actions have less predispositions for long-term investment decisions.

On the other hand, overconfidence and representativeness positively impact investment decisions. This shows that students who would overestimate their skills and knowledge, as well as rely on trend analysis and buy popular stocks, tend to have more predispositions for long-term investment decisions. These findings can steer students' behaviour in a more desirable direction in the future. Namely, students can understand that their extraversion and openness are responsible for their tendency to be overconfident and overestimate their knowledge. However, it would consequently still lead them to long-term investment decisions. The stability trait can encourage representativeness bias, which also leads to long-term investment decisions. Most importantly, students should work on improving their stability and conscientiousness, since this kind of personality decreases the chances of herding, therefore increasing the chances of making long-term investment decisions. Since this research explores only the potential investor behaviour, future research should include an additional analysis of the students' behaviour in future time period when they actually start trading in financial markets. Direct influence of personality traits on students' predispositions for long-term investment decisions can also be analysed, along with mediation testing.

LITERATURE:

1. Abul, S. J. (2019). Factors influencing Individual Investor Behaviour: Evidence from the Kuwait Stock Exchange. *Asian Social Science,* Vol. 15 (3), pp. 27-39.
2. Bakar, S., Yi, A. N. C. (2016). The Impact of Psychological Factors on Investors' Decision Making in Malaysian Stock Market: A Case of Klang Valley and Pahang. *Procedia Economics and Finance,* Vol. 35, pp. 319-328.
3. DeYoung, C. G. (2006). Higher-Order Factors of the Big Five in a Multi-Informant Sample. *Journal of Personality and Social Psychology,* Vol. 91 (6), pp. 1138-1151.
4. Hair, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M. 2017. *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*. Los Angeles: Sage Publications.
5. Hair, J. F., Ringle, C. M., Sarstedt, M. (2011). PLS-SEM: Indeed a Silver Bullet. *Journal of Marketing Theory and Practice*, Vol. 19 (2), pp. 139-151.
6. John, O. P., Srivastava, S. (1999). The Big Five Trait taxonomy: History, measurement, and theoretical perspectives. In Pervin, L. A. and John, O. P. (ed). *Handbook of personality: Theory and research* (pp.102-138). Guilford Press.
7. Kamran, S., Karl, S., Thom, S. (2008). *Behavioral Finance – The Student Investor* (Bachelor thesis). Jönköping International Business School.
8. Khan, H. H., Naz, I., Qureshi, F. i Ghafoor, A. (2017). Heuristics and stock buying decision: Evidence from Malaysian and Pakistani stock markets. *Borsa Istanbul Review,* Vol. 17 (2), pp. 97-110.
9. Lin, H-W. (2011). Elucidating the Influence of Demographic and Psychological Traits on Investment Biases. *International Journal of Economics and Management Engineering*, Vol. 5 (5), pp. 424-429.
10. Mahanthe, J. W. S. M. D., Sugathadasa, D. (2018). The Impact of Behavioural Factors on Investment Decision Making in Colombo Stock Exchange. *The International Jounal of Business & Management*, Vol. 6 (8), pp. 199–207.
11. Markowitz, H. M. (1959). *Portfolio Selection: Efficient Diversification of Investment*. NewHaven, CT: Yale University Press.
12. Mikołajek-Gocejna, M. 2017. Heuristic. Psychological Aspects of Decision-Making on Capital Market. *Finanse, Rynki Finansowe, Ubezpieczenia*, Vol. 6 (90), pp. 51-65.
13. Novianggie, V., Asandimitra, N. (2019). The Influence of Behavioral Bias, Cognitive Bias, and Emotional Bias on Investment Decision for College Students with Financial Literacy as the Moderating Variable. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, Vol. 9 (2), pp. 92-107.

14. Phuoc Luong, L., Thi Thu Ha, D. 2011. Behavioral factors influencing individual investors' decision-making and performance: A survey at the Ho Chi Minh Stock Exchange. Master thesis, Umeå School of Business. Retrieved 03.05.2019. from https://www.researchgate.net/publication/328277613_Behavioral_factors_influencing_individual_investors_decision-making_and_performance_A_survey_at_the_Ho_Chi_Minh_Stock_Exchange
15. Qasim, M., Hussain, R., Mehboob, I., Arshad, M. (2019). Impact of herding behavior and overconfidence bias on investors' decision-making in Pakistan. *Accounting*, Vol. 5 (2), pp. 81-90.
16. Rahman, M., Gan, S. S. (2020). Generation Y investment decision: an analysis using behavioural factors. *Managerial Finance*, Vol. 46 (8), pp. 1023-1041.
17. Rekha. D. M. (2020). Determinants of behavioral finance influencing investment decisions with respect to income: A study on investment in the equity market. *International Journal of Advanced Science and Technology*, Vol. 29 (8), pp. 5015-5028.
18. Ringle, C., Silva, D., Bido, D. (2014). Structural Equation Modeling with the Smartpls. *Brazilian Journal Of Marketing*, Vol. 13 (2), pp. 56-73.
19. Sarstedt, M., Ringle, C. M., Hair, J. F. (2017). Partial least squares structural equation modeling. In Homburg, C., Klarmann, M., Vomberg, A. E. (ed.). *Handbook of market research*, Vol. 26 (1), pp. 1-40. Springer International Publishing.
20. Shah, S. Z. A., Ahmad, M., Mahmood, F. (2018). Heuristic biases in investment decision-making and perceived market efficiency: A survey at the Pakistan stock exchange. *Qualitative Research in Financial Markets*, Vol. 10 (1), pp. 85-110.
21. Shmueli, G., Sarstedt, M., Hair, J. F., Cheah, J.-H., Ting, H., Vaithilingam, S., Ringle, C. M. (2019). Predictive model assessment in PLS-SEM: guidelines for using PLSpredict. *European Journal of Marketing*, Vol. 53, pp. 2322-2347.
22. Shukla, A., Rushdi, N. J., Katiyar, R. C. (2020). Impact of Behavioral Biases on Investment Decisions 'A Systematic Review'. *International Journal of Management*, Vol. 11 (4), pp. 68-76.
23. Siraji, M. (2019). Heuristics Bias and Investment Performance: Does Age Matter? Evidence from Colombo Stock Exchange. *Asian Journal of Economics, Business and Accounting*, Vol. 12 (4), pp. 1-14.
24. Susilowati, N., Latifah, L. (2017). College Student Financial Behavior: An Empirical Study on the Mediating Effect of Attitude Toward Money. *Advanced Science Letters*, Vol. 23 (8), pp. 7468-7472.
25. Vuković, M., Pivac, S. (2021). The impact of business economics students' use of heuristics on their predispositions for long-term investment decisions. *Proceedings of the 16th International Symposium on OPERATIONAL RESEARCH*, Bled, Slovenia, 22-24 September, pp. 525-530.
26. Waweru, N. M., Munyoki, E., Uliana, E. (2008). The effects of behavioral factors in investment decision-making: a survey of institutional investors operating at the Nairobi Stock Exchange. *International Journal of Business and Emerging Markets*, Vol. 1 (1), pp. 24-41.
27. Yadav, A., Narayanan, G. B. (2021). Do personality personality traits predict biasdness while making investment decisions? *International Journal of Accounting & Finance Review*, Vol. 6 (1), pp. 19-33.

THE INFLUENCE OF COVID-19 PANDEMIC ON SUSTAINABLE STOCK INDICES - THE MARKOV SWITCHING APPROACH

Piotr Pluciennik
Adam Mickiewicz University in Poznan, Poland
pplucien@amu.edu.pl

Bogna Janik
WSB University in Poznan, Poland
bogna.janik@wsb.poznan.pl

ABSTRACT

This study analyses the dynamics of sustainable stock indices (SSIs) and their conventional peers during the COVID-19 health crisis by examining the FTSE4Good Index Series for the United Kingdom and the European Union as well as corresponding conventional indices. Conditional volatility was obtained from the Markov Switching ARCH-type model with two regimes. The first regime is identified as normal market conditions whereas the second one with pandemic conditions, which allows to recognize the period when the pandemic affected the market. The results reported herein, based on the applied model, do not indicate considerable differences in the dynamics of sustainable stock indices (SSIs) and their conventional peers during the COVID-19 health crisis. This analysis was based on daily log returns between January 1, 2018 and December 31, 2020.

Keywords: *COVID-19 Pandemic, GARCH models, Markov Swiching Models, Sustainable Stock Indices*

1. INTRODUCTION

Sustainable investments (SIs) are those which consider both financial return and social good. The concept of sustainable investing is a component of *Corporate Social Responsibility* (CSR) and it emphasizes ESG factors (*Environmental, Social, Governance*) that are crucial for the company's value both in the short- and long-term perspective. In this study, the two questions are going to be answered:

- **Q1**: Was the reaction of ESG companies to the pandemic as quick and durable as of conventional companies?
- **Q2**: Was the response of ESG companies to the pandemic as strong as in the case of conventional companies?

The research on sustainable investments (SIs) focuses largely on their returns rather than risk. The returns of SI have already been the subject of debates in different studies (Heinkel, et al. 2001; Kempf and Osthoff, 2007; Statman and Gluskov, 2009; Humphrey, et al. 2012; Lobe, Walkshauls, 2016) just as the risk of SI (Maraqa and Bein, 2020; Lee and Faff, 2009; Verheyden, et al. 2016; Sassen, et al. 2016; Bouslah, et al, 2011; Hemingway and Maclagan, 2004). There are also some research published which indicate higher returns and lower risk for SIs during the COVID-19 health crisis (Albuquerque et al., 2020, Broadstock et al., 2020 and Whieldon et al, 2020). In the context of the return and risk, the periods of high volatility are particularly interesting since the performance of companies may be assessed in an unstable environment.

2. DATA

This analysis is based on daily logarithmic returns of two Russel sustainable stock indices (SSIs), i.e. FTSE4good Europe, FTSE4good UK and two conventional indices represented by

large and mid-cap stocks, namely FTSE Developed Europe and FTSE 350. The analysis was based on daily log returns between January 1, 2018 and December 31, 2020. FTSE4good indices are based on stocks fulfilling high corporate social responsibility criteria measured by FTSE Russell's ESG Ratings. FTSE4good companies in developed markets are newly included in the index if their rating exceeds 3.3, and are removed from the index if it falls below 2.9. The indices exclude companies due to their involvement in tobacco production, nuclear weapons, conventional weapon systems or coal power industry. FTSE4good UK and FTSE4good EU cover 214 and 409 companies respectively. FTSE 350 covers 350 large and mid-cap stocks from the United Kingdom. Analogously, the FTSE Developed Europe comprises 590 large and mid-cap stocks covering 16 developed markets in Europe. Descriptive statistics (Table 1) show that SSIs are less volatile then their conventional peers and simultaneously they have bigger kurtosis. Strong negative skewness primarily arises from big falls in February and March 2020 after the first wave of Pandemic hits most of the developed countries in the World.

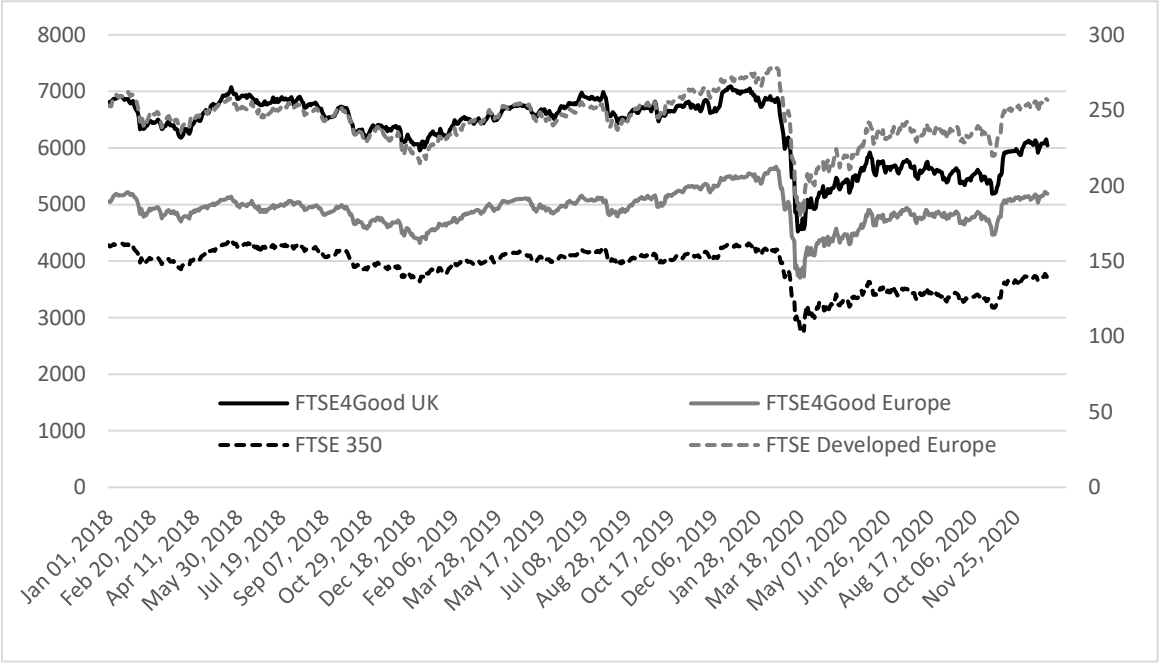


Figure 1: FTSE general market indices and FTSE4good indices between January 1, 2018 and December 31, 2020
(Source: the authors' own calculations)

Table 1 presents descriptive statistics of daily logarithmic returns of FTSE4good (FTSE4G) sustainable indices and FTSE conventional indices.

	FTSE4G Europe	**FTSE4G UK**	**FTSE Developed Europe**	**FTSE 350**
Mean	0.0090	-0.0039	0.0020	-0.0180
Volatility	1.0042	0.9992	1.1856	1.1339
Min.	-12.1032	-11.3228	-12.3188	-11.1002
Max.	6.8853	7.3628	8.1815	8.1067
Skewness	-2.7606	-2.2514	-1.7670	-1.9449
Kurtosis	32.7634	26.7602	21.0354	22.2828

Table 1: Descriptive statistics of FTSE4good indices and their conventional peers.
(Source: the authors' own calculations)

3. MODEL

Our analysis based on Markov switching (MS) methodology. It was introduced in the Goldfeld and Quandt (1973) and Hamilton (1989). The following form of MS-ARCH (Engle, 1982) model has been applied in this paper:

$$\begin{cases} r_t = \sigma_t \varepsilon_t, \\ \varepsilon_t \sim t(0,1,\upsilon(s_t)), \\ \sigma_t^2 = \omega(s_t) + \alpha_1(s_t) r_{t-1}^2, \end{cases}$$

where $s_t \in \{1,2\}$ is the regime of the process in *t*.

Markov switching models are estimated by using the maximum likelihood method. The logarithmic likelihood function in this case can be presented in the following formula:

$$LLF = \sum_{t=m+1}^{T} ln\left[\sum_{j=1}^{2} f(r_t|s_t = j, F_{t-1}; \theta)\, P(s_t = j|F_{t-1}; \theta)\right],$$

where

$$f(r_t|s_t = j, F_{t-1}; \theta) = \frac{\Gamma\left(\frac{\upsilon(j)+1}{2}\right)}{\sqrt{\frac{\upsilon(j)-2}{\pi}}\,\Gamma\left(\frac{\upsilon(j)}{2}\right)\sigma_t^2(j)} \left(1 + \frac{{r_t}^2}{(\upsilon(j)-2)\sigma_t^2(j)}\right)^{\frac{\upsilon(j)+1}{2}},$$

where

$$\sigma_t^2(j) = \omega(j) + \alpha_1(j) y_{t-1}^2.$$

The infinite sum is approximated by a finite one for large *n*. Furthermore

$$P(s_t = j|F_{t-1}; \theta) = \sum_{i=1}^{2} p_{ij} P(s_t = j|F_{t-1}),$$
$$P(s_t = j|F_t; \theta) = \frac{f(r_t|s_t=j, F_{t-1}; \theta) P(s_t=j|F_{t-1}; \theta)}{\sum_{i=1}^{2} f(r_t|s_t=i, F_{t-1}; \theta) P(s_t=i|F_{t-1}; \theta)},$$

where $p_{ij} = P(s_t = j|s_{t-1} = i)$. As initial values $P(s_t = 1|F_0; \theta)$ and $P(s_t = 2|F_0; \theta)$ we apply

$$P(s_t = 1) = \frac{1-p_{22}}{2-p_{11}-p_{22}} \text{ and } P(s_t = 2) = \frac{1-p_{11}}{2-p_{11}-p_{22}},$$

which are unconditional probabilities of the processes falling in the first and second regimes respectively.

The conditional volatility can be estimated by using the following formula

$$\hat{\sigma}_t^2 = \sum_{i=1}^{2} P(s_t = j|F_{t-1})\,(\,\omega(j) + \alpha_1(j) y_{t-1}^2).$$

4. ECONOMETRIC ANALYSIS

Table 2 presents estimation results of the MS-ARCH(1) model with t Student innovation fitted to log returns of four considered time series. The application of ARCH model directly to log returns arises from lack of autocorrelation in all return series. In all cases, the conditional probabilities of transition from regime 1 to regime 2 and from regime 2 to regime 1 are very small. It means that both regimes are persistent and can be indentified with specified states of the market. Parameter estimations show that in regime 1 the log return series are more variable and have higher kurtosis than in regime 2. It means that in the first regime the series fluctuation is bigger and the incidence of outliers. Therefore, the period of being in regime 1 is identified with market turbulences, so regime 2 corresponds to a stable market.

Index parameter	FTSE4G Europe	FTSE4G UK	FTSE Developed Europe	FTSE 350
Regime 1				
ω_1	2.5323	2.8096	2.5834	2.1770
α_1	-	-	-	-
υ	3.9599	2.2688	3.9527	3.2118
Regime 2				
ω_1	0.7196	0.5907	0.7358	0.6651
α_1	0.2042 (0.025)	0.2632 (0.046)	0.1926 (0.033)	0.2171 (0.008)
υ	4.8582	5.9311	4.7560	7.3241
condtional probabilities				
p_{11}	0.9782	0.9928	0.9783	0.9907
p_{12}	0.0029	0.0020	0.0029	0.0093
p_{21}	0.0218	0.0072	0.0217	0.0023
p_{22}	0.9971	0.9981	0.9971	0.9976

Table 2: Parameter estimates and p-values (in brackets) of MS-AR(1)-ARCH(1) model with t Student innovation with υ degrees of freedom.
(Source: the authors' own calculations)

In Figures 2-5 conditional volatility and the probability of first regime for all considered series are presented.

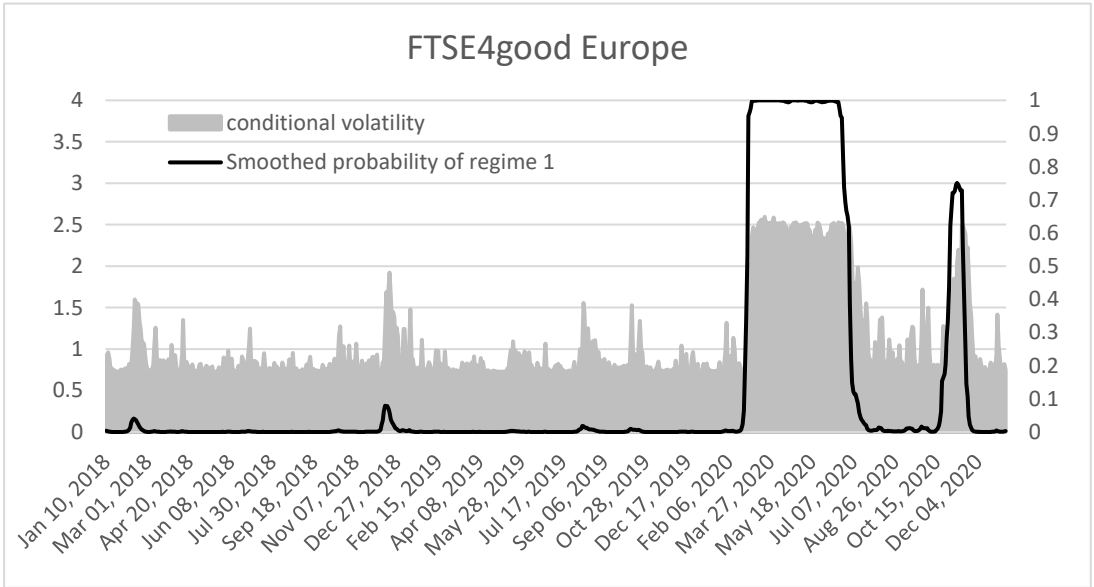


Figure 2: Conditional volatility (major axis) and smoothed probability of regime 1 (auxiliary axis) – FTSE4good Europe
(Source: the authors' own calculations)

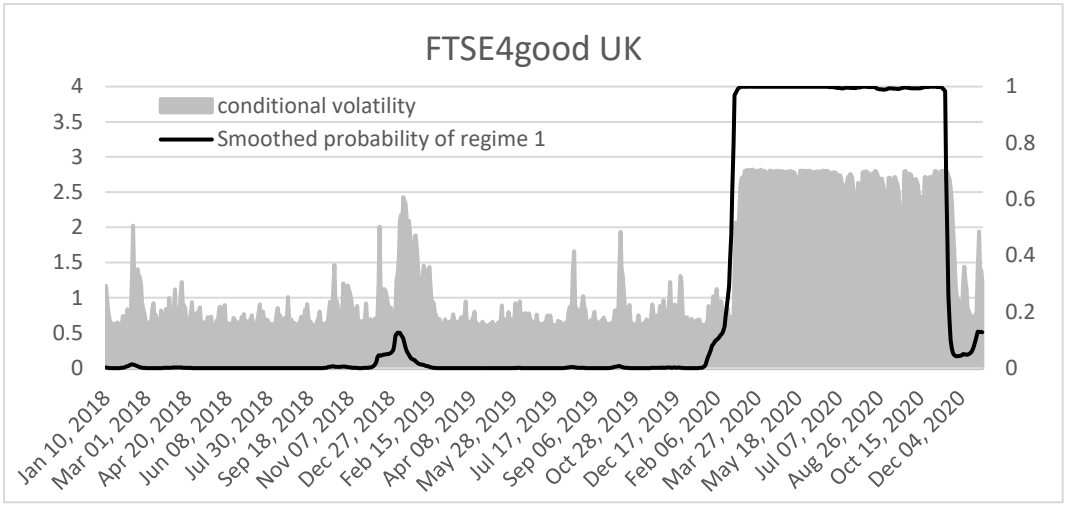


Figure 3: Conditional volatility (major axis) and smoothed probability of regime 1 (auxiliary axis) – FTSE4good UK
(Source: the authors' own calculations)

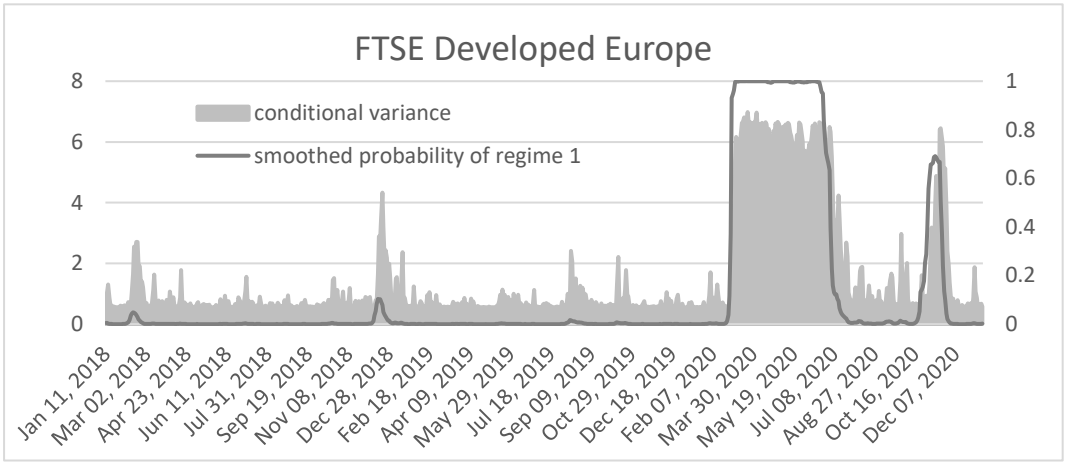


Figure 4: Conditional volatility (major axis) and smoothed probability of regime 1 (auxiliary axis) – FTSE Developed Europe
(Source: the authors' own calculations)

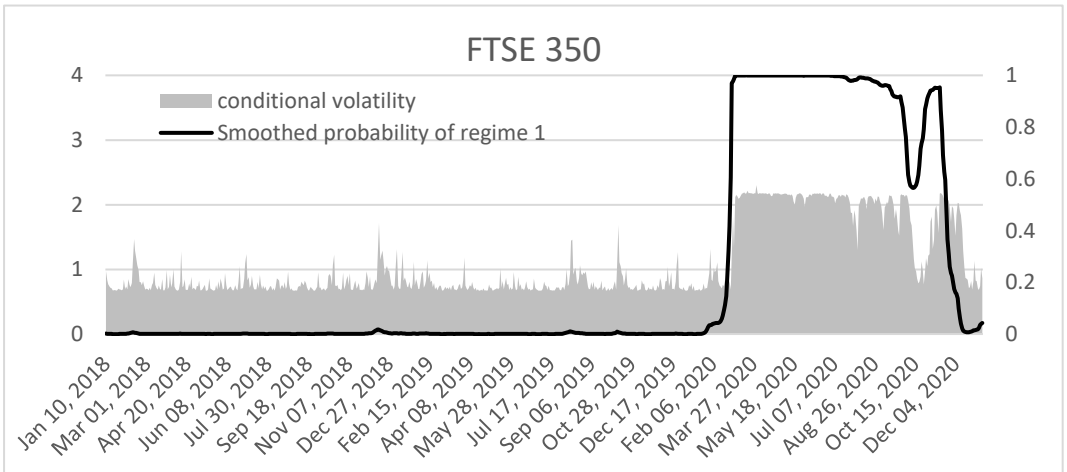


Figure 5: Conditional volatility (major axis) and smoothed probability of regime 1 (auxiliary axis) – FTSE 350
(Source: the authors' own calculations)

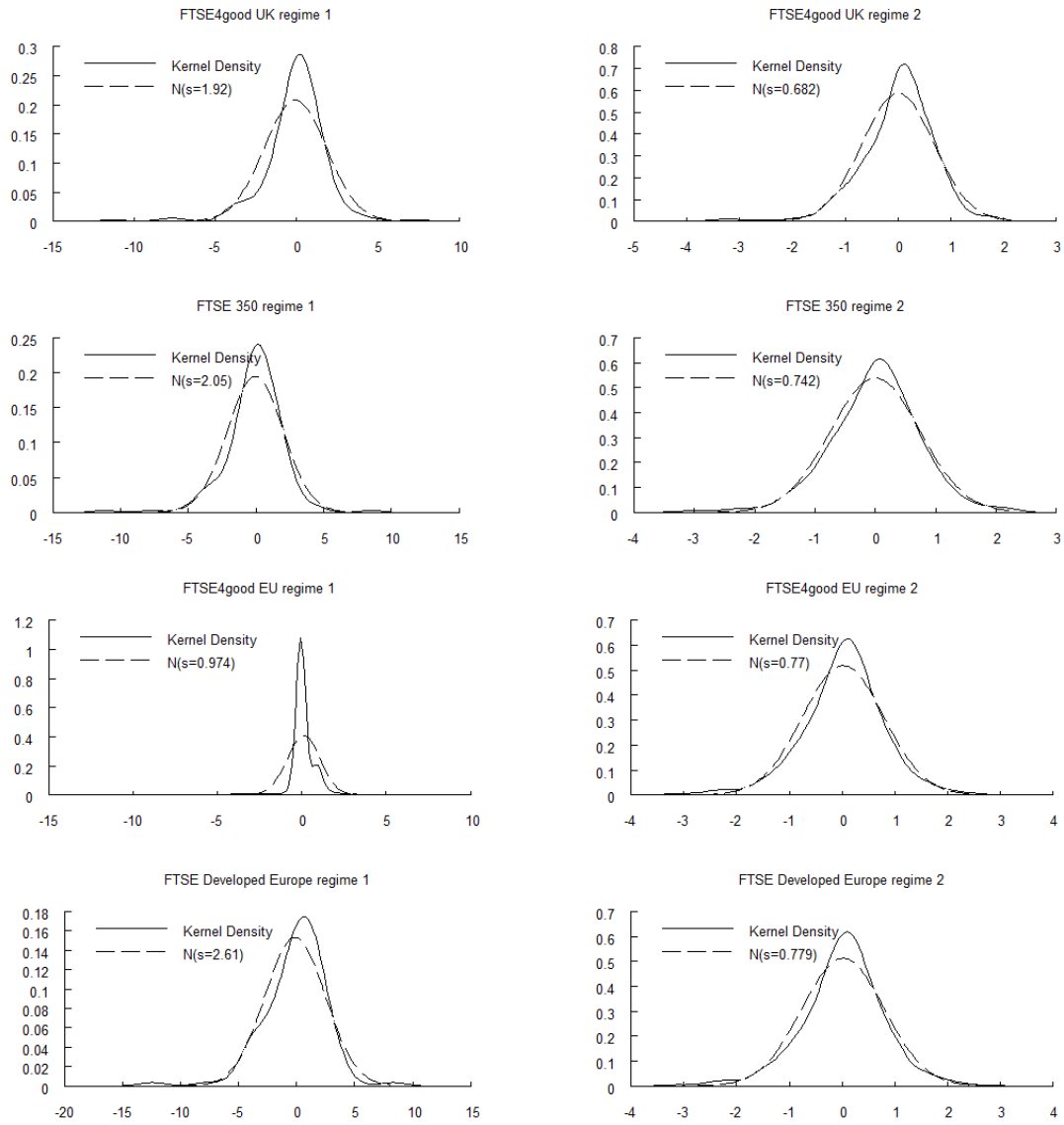


Figure 6: Kernel density together with the normal distribution density with the same standard deviation of considered series
(Source: the authors' own calculations)

To understand better the role of 2 regimes, Kernel density of return series (Figure 6) in each regime and its descriptive statistics (table 3) have been determined. It shows that in regime 1 the conditional standard deviation and the kurtosis is much bigger and the skewness lower. It should be noted that the difference in the standard deviation is exceptionally large in the case of FTSE Developed Europe.

Table following on the next page

	FTSE4G UK	FTSE 350	FTSE4G Europe	FTSE Developed Europe
Regime 1				
Minimum	-11.3228	-11.2138	-12.1565	-12.3188
Maximum	7.3628	8.5673	7.7782	8.1815
Mean	-0.0756	-0.0729	0.1141	-0.1242
Standard Deviation	1.9246	2.0534	0.9747	2.6202
Skewness	-1.4851	-0.9008	-3.1656	-1.0864
Kurtosis	11.93	8.9331	48.6198	7.4781
Regime 2				
Minimum	-3.4354	-3.1454	-3.1859	-3.2729
Maximum	1.9236	2.2301	2.6213	2.96
Mean	0.0047	-0.0001	0.0221	0.0206
Standard Deviation	0.6825	0.7427	0.7704	0.7798
Skewness	-0.9706	-0.3644	-0.4304	-0.3992
Kurtosis	6.33	4.451	4.6201	4.6084

Table 3: Descriptive statistics of considered indices in first and second regime (Source: the authors' own calculations)

Furthermore in Figure 6 it can be observed that the left tail of Kernel densities in regime 1 is considerable fatter and the concentration near the mean bigger than in regime 2. It confirms the identification of regime 1 with the crisis, and regime 2 is the regime of properly functioning market. In Figures 2-5 the probability of regime 1 for all indices grew rapidly at the end of February 2020, one month after the first cases of COVID-19 were confirmed in Europe, the spread of covid-19 infections in the United Kingdom and Western Europe became fast and the necessity to introduce radical restrictions in social life, education and economy became likely. In Great Britain the first national lockdown was announced on March 23, 2020 and the Coronavirus Act 2020 was introduced. The first restrictions in Great Britain were the strictest if compared to elsewhere in Europe or Asia. On June 23, 2020 Prime Minister Boris Johnson announced a release of the restrictions. Subsequent restrictions were eased in July and August, but local lockdowns occurred simultaneously. In the case of FTSE 350 The probability of system being in regime 1 slightly decreased (in the case of FTSE4good UK it remained close to 1). In September 2020 new restrictions were introduced and on November 5 the second national lockdown was introduced. A Rapid return to regime 2 occurred after Medicines and Healthcare Products Regulatory Agency approved Pfizer/BioNTech vaccine against COVID-19 on December 2, 2020. In most countries of the European Union lockdowns were introduced in March 2020 but in most countries the restrictions were systematically released since May 2020. *For these reasons* in July 2020 in most European markets investors should have felt reassured and the probability of being in regime 1 fell for FTSE4good Europe as for FTSE Europe. The lockdowns in the second wave of the Pandemic were less severe, and occurred often only in selected regions. Therefore, the renewed growth of probability of being in regime 1 after the beginning of the second wave of the Pandemic was also rapid, but temporary.

5. CONCLUSIONS

The study showed that the moment when the COVID-19 pandemic began to affect European financial markets was the turn of February and March 2020. At that time for each of the analyzed series, there was a quick switch between regime 2 and regime 1. The analysis of Kernel density and descriptive statistics by regime showed that for all indices the pandemic period was associated with a significant increase in variability. In the case of the British indices, the scale of this increase do not vary considerably, while the analysis of European indices

showed that the increase in sustainable stocks of the FTSE4good EU index was not as spectacular as for FTSE Developed Europe. Social responsibility also does not affect the pace of return to identified with a properly functioning market regime 2. This return occurs faster for European indices - in May 2020 followed by a short return in November 2020. In the case of British indices, system be in regime 1 in the whole summer and early autumn 2020. The return to regime 2 occurs only at the end of the analyzed period.

LITERATURE:

1. Albuquerque, Rui A., Koskinen, Y., Yang, Sh., Zhang, Ch., (2020), Resiliency of Environmental and Social Stocks: An Analysis of the Exogenous COVID-19 Market Crash. European Corporate Governance Institute – Finance Working Paper No. 676/2020.
2. Bouslah, K., Kryzanowski L., Mzali, B., (2011), The Impact of the Dimensions of Social Performance on Firm Risk. Journal of Banking & Finance 37(4).
3. Broadstock, D.C., Chan, K., Cheng, L., Wangb, X., (2020), The role of ESG performance during times of financial crisis: Evidence from COVID-19 in China, Finance Research Letters 2021 Jan; 38: 101716. doi: 10.1016/j.frl.2020.101716.
4. Engle, R., (1982), Autoregressive Conditional Heteroscedasticity with Estimates of the Variance of United Kingdom Inflation, Econometrica, 50(4): 987-1007.
5. Goldfeld S.M., Quandt R.E., (1973), A Markov model for switching regressions, Journal of Econome*trics*, 1973, 1, (1): 3-15.
6. Hamilton J.D., (1989), A New Approach to the Economic Analysis of Nonstationary Time Series and the Business Cycle, Econometrica, 57 (2), 357-384.
7. Hemingway Ch. A., Maclagan P.W., (2004), Managers' Personal Values as Drivers of Corporate Social Responsibility, Journal of Business Ethics volume 50, pp. 33–44.
8. Heinkel, R. Kraus A., Zechner J. (2001), The Effect of Green Investment on Corporate Behavior, The Journal of Financial and Quantitative Analysis, 36(4): 431–449.
9. Humphrey J.E., Lee D.D., Shen Y. (2012), Does it cost to be sustainable?, Journal of Corporate Finance 18(3): 626–639.
10. Kempf A., Osthoff P. (2007), The effect of socially responsible investing on portfolio performance, European Financial Management, 13(5): 908–922.
11. Lee D.D, Faff R.W., (2009). Corporate Sustainability Performance and Idiosyncratic Risk: A Global Perspective. The Financial Review 44(2).
12. Lobe S., Walkshauls Ch. (2011), Vice vs. Virtue Investing Around the World, SSRN: https://ssrn.com/abstract=1089827, http://dx.doi.org/10.2139/ssrn.1089827 (14.06.2020).
13. Maraqa, B., Bein, M., (2020). Dynamic Interrelationship and Volatility Spillover among Sustainability Stock Markets, Major European Conventional Indices, and International Crude Oil. Sustainability, 12, 3908.
14. Sassen R., HinzeInga AK., Hardeck H., (2016), Impact of ESG factors on firm risk in Europe. Journal of Business Economics 86(8).
15. Statman M., Glushkov D. (2009) The wages of social responsibility, Financial Analysts Journal, 65: 33–46.
16. Whieldon, E., Copley, M., & Clark, R. (2020), Major ESG investment funds outperforming S&P 500 during COVID-19, available at: https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/major-esg-investment-funds-outperforming-s-p-500-during-covid-19-57965103 (accessed March 20 2020).
17. Verheyden, T., Eccles, R.G., Feiner, A., (2016), ESG for All? The Impact of ESG Screening on Return, Risk, and Diversification. Journal of Applied Corporate Finance 28 (2).

USING TEXT MINING TO ANALYSE WEB ADDRESSES (URLS)

Romana Sipoldova
University of Economics in Bratislava, Slovakia
romana.sipoldova@euba.sk

ABSTRACT

With the digital transformation of the whole world, textual information from a wide range of sources has exploded. There has also been an increase in data mining. Data mining is the process of finding patterns, correlations and anomalies within large data sets to predict outcomes. The most natural form of information storage is text. Text mining is a type of data analysis that aims to gain valuable insights from textual information. It allows machines to understand the human language. Text Mining can also be used in the marketing area, specifically for more precise targeting of an online advertising campaign to the target audience. In our paper, we use information about visitors of the news site, who can become potential subscribers to paid content. In addition to technical, geographical, and behavioral parameters, we have the web address – URL (Uniform Resource Locator) link of the article they visited. In addition to the domain, each URL contains the title of a specific article in its body. We can process this data using Text Mining analysis. Before we can use different Text Mining techniques, we need to start pre-processing the text, which includes text analysis, cleaning, and transforming the text data into a usable format. Our goal is to process information from URLs and then create clusters that group articles with similar content based on the article title. This is the so-called URL clustering. The created clusters are then used as input variables in the predictive models used to more accurate target the online advertising campaign to target audience.

Keywords: *URL, Clustering, Text Mining*

1. INTRODUCTION

Analytics, data, personalization, automation, and optimization. These are the main pillars of the success of digital marketing campaigns. Digital marketing is now an integral part of big and successful brands. However, it is not only intended for large companies, but in comparison with traditional marketing it is also available to smaller companies, efficiently and at an affordable price. The great advantage of digital marketing is the provision of personalized content down to the level of the individual. It is possible to reach the target group in a measurable and cost-effective way, but only if there is an optimized marketing strategy. Advertisers and marketing agencies try to reach their audience as accurately as possible with the advertisement addressed to this audience. The basis of successful targeting of an online advertising campaign is an effective predictive model that predicts the target audience for which the advertising campaign is intended as accurately as possible. The more accurate the targeting of the campaign is, the better price/ratio can be achieved.

2. TYPES OF MEDIA BUYING

When advertisers want to buy advertising inventory, they have two options: traditional buying or programmatic buying.

2.1. Traditional buying

In traditional buying, an advertiser buys advertising inventory on a specific website. Depending on the affinity index of the website for the specific target audience, the advertiser can only hope to reach as many users that fall into his target audience as possible.

2.2. Programmatic buying

Programmatic buying does not generally focus on a specific website. The advertisement can be displayed to a specific user anywhere on the internet. Publishers sell advertising inventory through advertising exchange platform in real time. They create a supply that meets with the demand of advertisers (or media agencies) and in real time, the advertisers can bid against each other for each specific ad impression which is then displayed to a specific user. The whole principle is comparable to buying and selling stock exchange shares. The owner of the advertising inventory offers the ad impression with a set floor price to the auction, and advertisers submit their bids. The ad impression is won by the highest bidder, although he will actually, pay a price close to the second highest bid, so-called second-best price auction. Finally, the winner's ad is displayed on the publisher's website. This whole process only takes milliseconds to complete. The goal is to create a model that, based on input variables, predicts the purchase of the most effective impressions in the price / quality ratio, which are most likely to result in a click (Mindshare Slovakia, 2016).

3. TEXT MINING

Text mining is a type of data analysis that gains valuable insights from textual information. Text mining process consists of several steps. The first of them is a collection of textual data, which is called corpus – a collection of documents that represents input data for the model (IBM Cloud Education, 2020). Before we can use different text mining techniques, we need to start with word processing, which includes text analysis, cleaning, and transforming text data into usable format. This process usually involves text parsing techniques, such as tokenization, normalization of tokens (via stemming and lemmatization), part-of-speech (POS) tagging, and so on. Text parsing is perhaps the most important step in the text mining process. It is the first step in converting unstructured text to the structured format (Chakraborty et. al, 2013).

3.1. Tokenization in Text Mining

Important part of parsing is tokenization. It is a process where the text is divided into different groups of characters, which are separated by spaces or other characters (dot, semicolon, etc). Tokenization converts plain text into values called tokens which protect the sensitive data. Tokens can be words, phrases or full sentences (Mohler, 2020). Tokenization is followed by normalization of tokens. As tokens can be in different variants in document, normalization involves identifying the root terms of tokens. Two methods are used for this – lemmatization and stemming. Although both methods have the same goal – to modify inflected or derived words to their root form, they are different in their approach (SAS Support, 2012). Stemming uses a heuristic process that strip a suffix of the word (end of the word). Lemmatization uses morphological analysis of words and standard vocabulary for reducing word to its base or dictionary forms. This form is called lemma. (Chakraborty et. al, 2013). Words have one root-base form, but they can have different variations. For example, run is a root-base word and running, runner, runs are its different forms. Another example is for nouns – using singular form of a noun (such as cat) instead of plural form of the same noun (such as cats, Balodi, 2020). Stemming can also be extended to include semantically equivalent words or synonyms, for example, for the root-base word car is synonym word automobile. Another approach is creating a new word by merging two words, such as mobile phone, university guide, etc.

3.2. POS (Part-of-Speech) tagging

Another important part of text mining is to determine the part-of-speech for each token. POS tagging is the process of labeling each token with its appropriate part of speech. We use POS tagging to figure out whether token is a noun, an adjective, a verb, and so on.

This task is really difficult because the same word can be identified as a different part of speech based on the context. For example, the word "book" tagged as verb is different from the word "book" tagged as noun (Chakraborty et. al, 2013). To resolve ambiguities and correctly identify the part of speech, an understanding of the neighboring expressions in the sentence or paragraph is required. POS algorithms are designed to understand the relationship between terms based on defined rules. They determine whether a word is a common or proper noun, adjective, verb, adverb, etc. The goal is to create groups of syntactically similar expressions.

3.3. Start and Stop lists

With increasing number of terms used in the analysis, the complexity of the text mining analysis also increases. Each text contains terms that are irrelevant to the analysis. These are usually words such as "a", "an", "the", "and", "of", "in", etc., and these terms can account for almost 50 % of all terms. One method of filtering terms is ignoring specific part of speech, such as prepositions, conjunctions, and particles. Another method of filtering expressions is using of start and stop lists. These lists help you better control the terms that are later used in the analysis. Stop lists usually consists of articles, conjunctions, and prepositions. Custom stop lists allow you to omit specific terms (for example, word "smartphone" in an article about smartphones). The opposite case is the start list, which contains the terms we definitely want to keep in the analysis.

3.4. Filtering documents

Another step in text mining is filtering documents and specifying settings for term weight and frequency weight. The aim of the text mining analysis is to differentiate documents in the corpus. The key task is to identify the important terms that distinguish the individual documents. Research has shown that the use of simple term frequencies is insufficient for document discrimination. There are several techniques used for deriving a weight for each term, such as term frequency, document frequency, number of documents that the terms occur in and the size of the corpus. The frequency matrix is constructed using two types of weights. The first is the frequency weight - the local weight, which is the result of the transformation of the frequency of occurrences of the term in the document using the weighting function. The second is the weight of the expression - the global weight that is assigned to each expression according to the total number and number of documents. The cell value in the matrix is a weighted frequency value obtained by multiplying the local and global weights. One of the most used weight scheme is TF-IDF weight (*term frequency, inverse document frequency*). It is a statistical measure that evaluated how relevant is a word to a document in a collection of documents (Stecanella, 2019). The term frequency (TF) is calculated with the equation:

$$tf = \frac{tdf}{\max tdf}$$

tdf is the document frequency for a term and $\max tdf$ is the frequency of the most frequent term in a document. The global frequency is calculated with the equation:

$$idf = \log\left(\frac{N}{df_t}\right)$$

where N is the size of the collection and df_t is the number of documents in which the term appears. SAS Text Miner uses three local frequencies: log, binary, and none and three global frequencies: entropy, mutual information, and inverse document frequency (Chakraborty et. al, 2013).

3.5. Clustering in Text Mining analysis

Clustering or cluster analysis is a set of techniques that try to find natural groupings in data. The fundamental difference between cluster analysis and a typical classification model is the absence of any target variable. The goal is to group objects so that the object in each cluster is similar to the others in that cluster, while the objects in another clusters are different. In the context of textual data, objects are documents that must be grouped into individual clusters, so within one cluster, documents are similar, but documents are different between other clusters. In statistics, similarity is measured via three methods: distance, association, and correlation. For distance-based methods, the similarity of objects is represented by a small distance. If the objects are different, the distance between them is large. The most commonly used distance metrics are Euclidean Distance and Mahalanobis Distance. Mahalanobis Distance is defined as the following:

$$d(\mathbf{X_i}, \mathbf{X_j}) = \sqrt{(\mathbf{X_i} - \mathbf{X_j})^{\mathrm{T}} \sum_{.}^{-1} (\mathbf{X_i} - \mathbf{X_j})}$$

where $\mathbf{X_i}$ and $\mathbf{X_j}$ are vectors of values of variables for cases i and j, and $\mathbf{\Sigma}$ is variance-covariance matrix. In general, clustering algorithms can be divided into four groups: hierarchical algorithms, non-hierarchical algorithms, probabilistic algorithms, and neural networks. The hierarchical clustering algorithm iteratively groups objects into cascading cluster groups. Clusters within a given step are nested within the cluster from the previous (or next) step. You can also look at a hierarchical clustering as a binary tree (Blei, 2008). Non-hierarchical algorithms such as k-means are non-incremental and assign observations to clusters simultaneously based on the distance of each observation from the center of the cluster. The name k-means means that the algorithm divides the data set into k clusters and assigns the observations to the center of the cluster that is closest. The whole process runs until the convergence criterion is met (Gao, Buffalo, 2021). Authors who deal with URL clustering and Text mining are, for example, Nagwani (2010), Poomagal and Hamsapriya (2011), Zhang, Mn. et al. (2015), Li et al (2019), Hernández (2012), etc.

4. TEXT MINING AND WEB ADDRESSES ANALYSIS

In this section we will show the Text Mining analysis applied to the input data - web addresses of the visited news sites. The input data comes from a marketing agency and, in addition to technological, geographical, behavioral, and other variables, also contains information about the articles visited - this information will be the subject of our analysis. The goal is to analyze web addresses that contain article titles and create clusters from articles with a similar topic. The website from which the data comes does not offer any content for free, so if the visitor wants to read some content of the article, he needs to register and gain temporary access to selected articles (so-called trial version). However, this time is limited to one month only, and after one month the reader either subscribes to the content of the news site (usually for a period of one year) or loses access to the content of the articles. The decision about subscription is motivated by the content or type of article that interests the visitor when visiting the news website. The clusters created from the text mining analysis can then be used as input variables for creating predictive models when targeting an online advertising campaign, where the target group will be subscribers to the paid content of the news site. Each web address (URL – *Uniform Resource Locator*) consists of several parts. We will describe them with example.

- https://www.thetimes.co.uk/article/paradise-lost-the-latest-from-the- ... - hf6mvjhps
- https://www.thetimes.co.uk/ [section_1/ section_2] / [String]

Our goal is to focus on the "String" (an article name) part and use this part in Text Mining analysis. We will use SAS Text Miner software for Text Mining analysis. After importing the input data - the ID variable and the String variable, we can continue the process with text parsing.

EMWS1.FIMPORT_train

Obs #	ID	String
1	1	paradise lost the latest from the seychelles maldives mauritius and sri lanka hf6mvjhps
2	2	jeremy clarkson cheat love bray let me put my ass on the line and tell you that the donkey sex scene was real 2zrpzczz0
3	3	defence chiefs face battleover plan to scrap tanks ws87tdgbg
4	4	michel barnier refuses to open talks on brexit fishing deal wnffc56xv
5	5	danny cowley i shook the huddersfield chairman s hand and told him i d prove him wrong 278xk2thh
6	6	revealed viktor fedotov is tycoon behind aquind energy project pq0868vmj

Figure 1: Input data file
(Source: Own processing in SAS Text Miner)

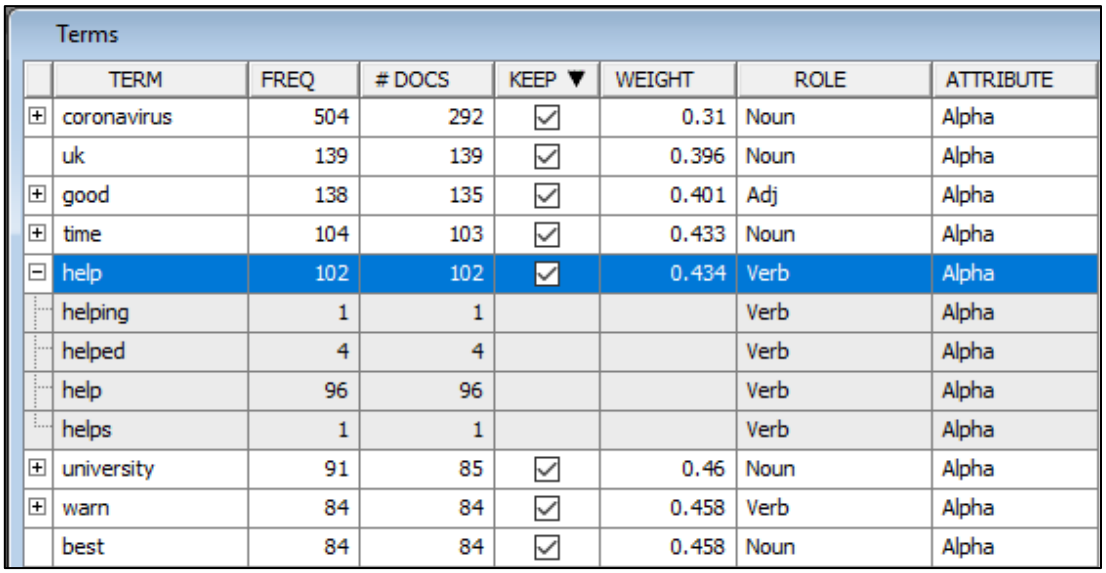
Text Parsing is provided by the Text Parsing node, which is located on the Text Mining tab in SAS Text Miner. Text Parsing node starts with dividing the text of the individual observations of the input file into tokens. The identified list of tokens can be edited in various steps, according to the settings in the properties panels. These settings significantly impact the number of terms that are used for analysis. Text mining deals with co-occurrence of the terms in the data file (document). In linguistics, co-occurrence is understood as the above-standard frequency of occurrence of two terms from a text file next to each other in a certain order. Stemming and synonyms play a key role in identifying relationships between words in a document or multiple documents. For example, if we perceive the words 'airlines', 'aviation' and 'aero' as similar in analyzing the titles of individual documents, we will know that these documents are somehow related. An algorithm that searches for the root of a word works based on rules or a dictionary. In SAS Text Miner we can define custom list of synonyms:

Synonyms-EMWS1.TextParsing_synonymDS

Child Term	Parent Term	Term Role	Parent Role
sas	sas institute		COMPANY
boris	boris johnson		PERSON
johnsons	boris johnsons		PERSON
jeremy clarkson	jeremy clarkson		PERSON
jeremy corbyns	jeremy corbyns		PERSON
enola holmes	enola holmes		PERSON
covid 19	covid 19		NOUN
can sharon	sharon white		PERSON

Figure 2: Custom table of Synonyms
(Source: Own processing in SAS Text Miner)

Each term has an assigned role that represents either the part of speech of the term, entity classification of the term, or a value called "noun group," which is a group of usually two terms that belong together. The set role talks about how the listed synonyms are used when the use of part of speech or entities is enabled or disabled. The terms that were created by combining stemming and synonym groupings can be viewed using the interactive result viewer (Figure 3), which is a part of the Text Filter node.



Terms

	TERM	FREQ	# DOCS	KEEP ▼	WEIGHT	ROLE	ATTRIBUTE
⊞	coronavirus	504	292	☑	0.31	Noun	Alpha
	uk	139	139	☑	0.396	Noun	Alpha
⊞	good	138	135	☑	0.401	Adj	Alpha
⊞	time	104	103	☑	0.433	Noun	Alpha
⊟	help	102	102	☑	0.434	Verb	Alpha
	helping	1	1			Verb	Alpha
	helped	4	4			Verb	Alpha
	help	96	96			Verb	Alpha
	helps	1	1			Verb	Alpha
⊞	university	91	85	☑	0.46	Noun	Alpha
⊞	warn	84	84	☑	0.458	Verb	Alpha
	best	84	84	☑	0.458	Noun	Alpha

Figure 3: Interactive result viewer
(Source: Own processing in SAS Text Miner)

We can see that the words “help”, “helping”, “helped”, and “helps” are represented by one root term “help”. Other terms are grouped similarly. We can also define the list of synonyms directly using the interactive browser by selecting them and selecting the "Treat as Synonyms" option. For example, we can treat the words “covid“, “covid-19“, and “coronavirus“ as synonyms and set one of them – “coronavirus“ as a parent term.

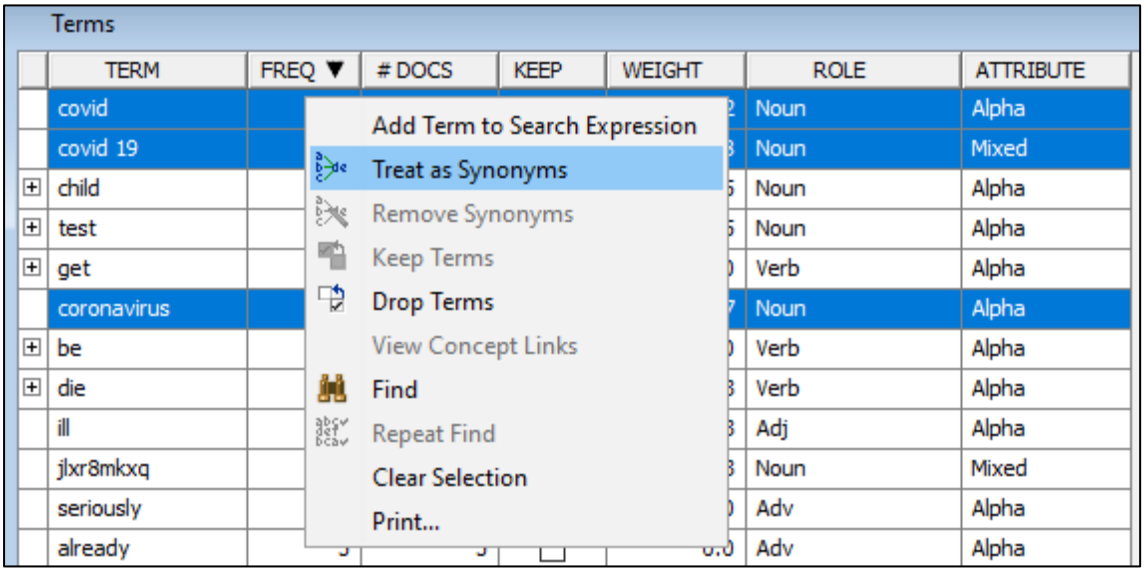
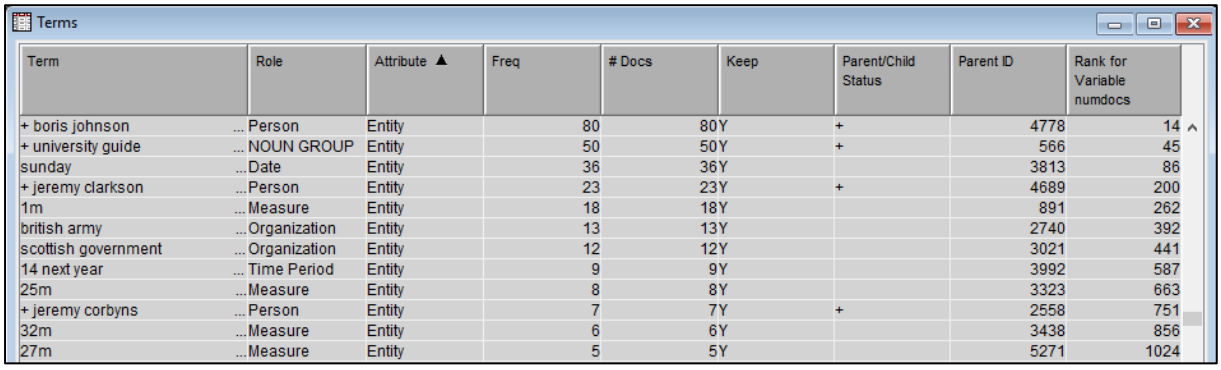


Figure 4: Creating synonyms via an interactive result viewer
(Source: Own processing in SAS Text Miner)

SAS Text Miner can identify part of speech for each token using POS algorithms. If we do not want to use this function, we can turn it off and assign the part of speech to each token ourselves. In addition to POS algorithms, SAS Text Miner can also identify groups of terms that belong syntactically to each other – Noun groups. For example, the words “data” and “model” are treated as individual terms and also as a group of terms – “data model”. In our paper, we used this function. If we want to ignore some part of speech in analysis, we can set this setting in the properties of the Text Parsing node.

By default, part of speech that are ignored in SAS Text Miner are: auxiliary verbs, conjunctions, determiners, interjections, prepositions, and pronouns. Ignoring specific parts of speech is one of the term filtering method. Another method, without omitting specific parts of speech, is to use the start and stop lists. In our example, we only used the general playlist that is preset in SAS Text Miner – it contains words such as "a", "an", "the", "of", etc. Entity detection is one of the other key features offered by SAS Text Miner. Entity identification is one of the important pieces of information contained in textual data. SAS Text Miner can identify different types of entities, e.g., street name, company name, postal address, person's name, telephone number, e-mail address, city name, etc. The entities that SAS Text Miner evaluates can be changed by editing the list of synonyms. In the results window of the Text Parsing node, we find the Terms table, which tells us whether the given expression belongs to a group of entities or not, and also which group it is.

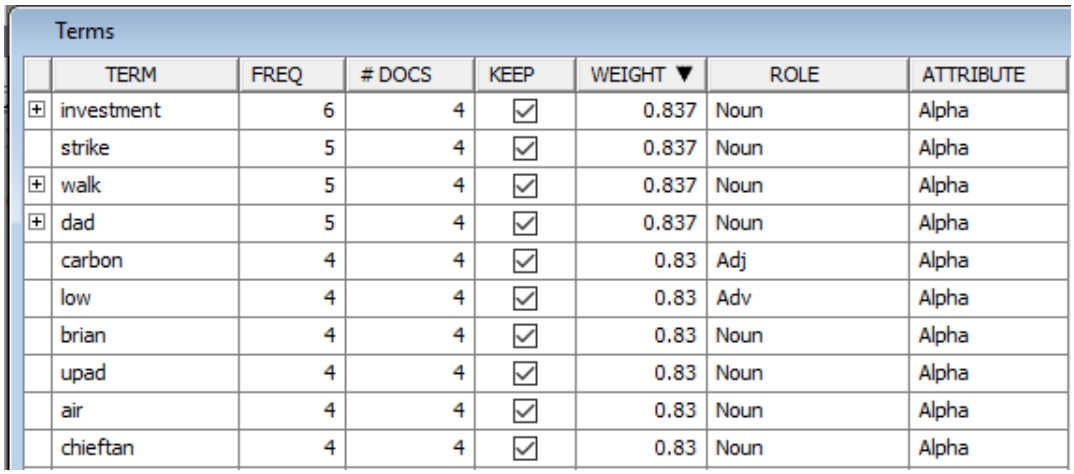


Terms

Term	Role	Attribute ▲	Freq	# Docs	Keep	Parent/Child Status	Parent ID	Rank for Variable numdocs
+ boris johnson	Person	Entity	80	80	Y	+	4778	14
+ university guide	NOUN GROUP	Entity	50	50	Y	+	566	45
sunday	Date	Entity	36	36	Y		3813	86
+ jeremy clarkson	Person	Entity	23	23	Y	+	4689	200
1m	Measure	Entity	18	18	Y		891	262
british army	Organization	Entity	13	13	Y		2740	392
scottish government	Organization	Entity	12	12	Y		3021	441
14 next year	Time Period	Entity	9	9	Y		3992	587
25m	Measure	Entity	8	8	Y		3323	663
+ jeremy corbyns	Person	Entity	7	7	Y	+	2558	751
32m	Measure	Entity	6	6	Y		3438	856
27m	Measure	Entity	5	5	Y		5271	1024

Figure 5: Entity settings in SAS Text Miner
(Source: Own processing in SAS Text Miner)

Because we use many terms for analysis, the question is whether all of these terms are important. Although we removed some terms based on its part of speech, there are still many terms that may not be very useful for analysis. We set the weight values as follows: for local weights we set option "Log" and for global weights we set option "Entropy". Terms that have a low frequency but are important for analysis have the highest entropy value.



Terms

	TERM	FREQ	# DOCS	KEEP	WEIGHT ▼	ROLE	ATTRIBUTE
⊞	investment	6	4	☑	0.837	Noun	Alpha
	strike	5	4	☑	0.837	Noun	Alpha
⊞	walk	5	4	☑	0.837	Noun	Alpha
⊞	dad	5	4	☑	0.837	Noun	Alpha
	carbon	4	4	☑	0.83	Adj	Alpha
	low	4	4	☑	0.83	Adv	Alpha
	brian	4	4	☑	0.83	Noun	Alpha
	upad	4	4	☑	0.83	Noun	Alpha
	air	4	4	☑	0.83	Noun	Alpha
	chieftan	4	4	☑	0.83	Noun	Alpha

Figure 6: The most important terms by entropy
(Source: Own processing in SAS Text Miner)

Relationships between individual terms can be visualized in the Filter Viewer window using concept links. Concept links help to understand the relationships between words based on a co-occurrence in a document.

We can examine terms in the document by selecting a keyword (such as coronavirus) and examining the words associated with that keyword. Because it is an interactive browser, it is possible to click on individual connected terms and explore other relationships of these terms. The strength of association of terms is represented by the thickness of the line that connects the individual terms. The thicker the line, the stronger the connection. For example, the term "coronavirus" is most commonly associated with the terms "breakthrough", "wealth", "triple", or "immunity".

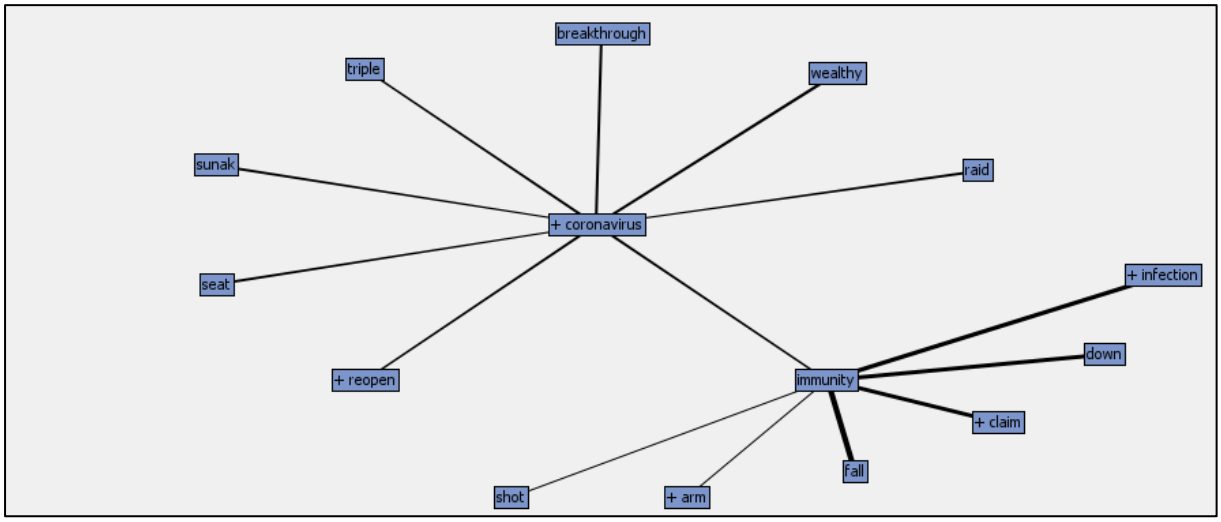


Figure 7: Concept links
(Source: Own processing in SAS Text Miner)

4.1. Cluster analysis

The Text Cluster node is used to create clusters. There are two types of clustering algorithms available in SAS Text Miner – the hierarchical algorithm and the expectation-maximization (EM) algorithm. EM clustering automatically selects between two versions of the algorithm – standard and scaled. The standard method of the EM algorithm analyzes all the data in the iteration step and is used when we have a small data file. The scaled method of the EM algorithm uses some of the input data in each iteration and is used when we have a large data set. Using cluster analysis, we created 5 clusters.

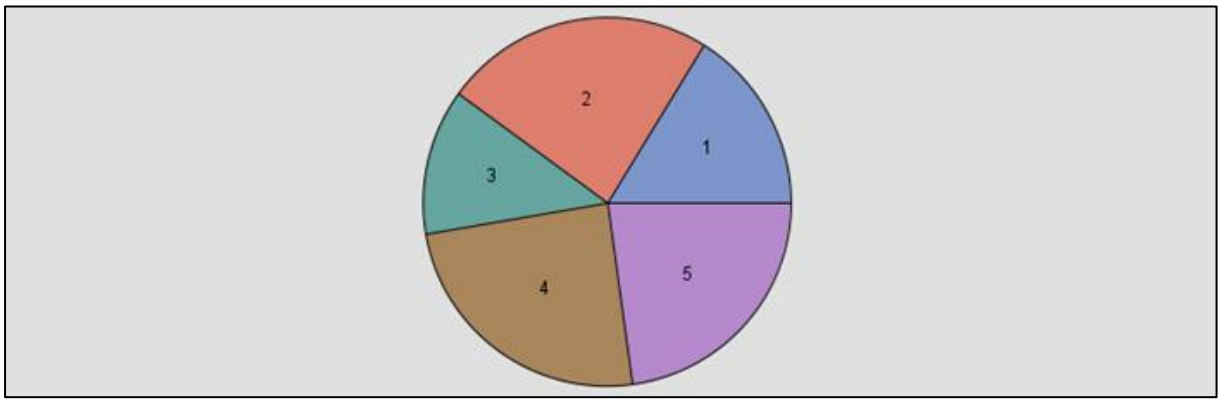


Figure 8: Graph of clusters
(Source: Own processing in SAS Text Miner)

Clusters are defined using terms selected in the filtering process that were input to the cluster analysis.

Cluster 1, which consists of 16 % of terms, is represented by terms such as "Boris Johnson", "deal", "Brexit", "review", "card", "million", "overburden", "underpay", "misery", etc. Cluster 1 is a cluster of articles with a political topic. Cluster 2 is made up of 24 % of terms, e.g. "coronavirus", "life", "immunity", "reopen", "breakthrough", etc. This cluster brings together articles related to the covid-19 pandemic. Cluster 3 consists of 13 % of terms – "Matt Hancock", "warn", "lockdowns", "Caitlin Moran", "plan", "join", "learn". Cluster 3 brings together articles that deal with advice and recommendations (whether from specific personalities or from experts). Cluster 4 consists of 25 % of terms, such as "good", "time", "university", "university guide", "first", "full", "science", etc. This cluster consists of articles with topics about education and universities. The last cluster – Cluster 5 consists of 23 % of terms, such as „uk", „best", „school", „power", „live", „year", „parent", „place", „best uk school", „price", „house", etc. This cluster connects articles about education system and housing. Using cluster analysis, we created five new binary variables, each for one cluster (Cluster_*). These will be further used as input variables in creating predictive models.

5. CONCLUSION

In our paper, we focused on processing web addresses from a news site using text mining analysis. The goal was to process web addresses and create clusters, which can be used as input variables into predictive models used to target the online advertising campaign to the target audience as accurately as possible through programmatic buying. The advertising campaign was focused on visitors of articles on the news website who would most likely become subscribers to paid content. Therefore, in addition to the technological, geographical, behavioral, and other data we had about the visitors, it was necessary to use the information about the articles that the visitors read. We had a visited web address, which in addition to the domain also contained the title of the visited article. We processed this text using the software SAS Text Miner and used cluster analysis to create clusters. The process of Text Mining analysis consisted of several steps. It included the use of techniques such as language identification, tokenization - dividing the text into individual terms - tokens, normalization of these terms (through lemmatization or identification the root terms of tokens - stemming) and part-of-speech tagging. We also created our own lists of synonyms that we wanted to include in the analysis and words that we wanted to exclude from the analysis. The result of text mining and cluster analysis was 5 clusters. The first group represented articles focused on politics, the second connected articles on the topic of the covid-19 pandemic, the third represented articles focused on advice and recommendations, the fourth connected articles about education and universities, and the last - the fifth cluster connected articles about education system and housing. The newly created five variables (clusters) can be used as input variables in predictive models. Creating predictive models is a topic for a further research.

ACKNOWLEDGEMENT: *This work was supported by the VEGA project The impact of the COVID-19 crisis on business demography and employment in the Slovak Republic and the EU (No. 1/0561/21).*

LITERATURE:

1. Balodi, T. (2020). What is Stemming and Lemmatization in NLP?. From: https://www.analyticssteps.com/blogs/what-stemming-and-lemmatization-nlp [cit. 2021-12-22].
2. Blei, D., M. (2008). Hierarchical clustering. From: https://www.cs.princeton.edu/courses/archive/spring08/cos424/slides/clustering-2.pdf [cit. 2022-01-02].

3. Chakraborty, G., Pagolu, M., Garla, S. (2013). Text mining and analysis: Practical methods, examples, and case studies using SAS. Cary, NC: SAS Institute Inc.
4. Gao, J., Buffalo, S. (2021). Clustering Lecture 2: Partitional Methods. From: https://cse.buffalo.edu/~jing/cse601/fa12/materials/clustering_partitional.pdf [cit. 2022-01-02].
5. Hernández, I. et al. (2012). A statistical approach to URL-based web page clustering. *WWW '12 Companion: Proceedings of the 21st International Conference on World Wide Web*, pp. 525-526.
6. IBM Cloud Education (2020). *What is text mining?* From: https://www.ibm.com/cloud/learn/text-mining [cit. 2021-12-22].
7. Li, B. et al. (2019). Incorporating URL embedding into ensemble clustering to detect web anomalies. *Future Generation Computer Systems*, vol 96, pp. 176-184.
8. Mindshare Slovakia (2016). *Programmatic – postrach alebo príležitosť?* From: https://blog.mindshare.sk/2016/11/07/digital/programmatic-postrach-prilezitost/ [cit. 2021-12-22].
9. Mohler, T. (2020). The 7 Basic Functions of Text Analytics & Text Mining. From: https://www.lexalytics.com/lexablog/text-analytics-functions-explained [cit. 2022-01-02].
10. Nagwani, N., K. (2010). Clustering Based URL Normalization Technique for Web Mining. *International Conference on Advances in Computer Engineering*, pp. 349-351.
11. Poomagal, S., Hamsapriya, T. (2011). K-Means for Search Results Clustering Using URL and Tag Contents. *International Conference on Process Automation, Control and Computing*, pp. 1-7.
12. SAS Support (2012). Getting Started with SAS Text Miner 12.1. From: https://support.sas.com/documentation/onlinedoc/txtminer/12.1/tmgs.pdf [cit. 2021-12-22].
13. Stecanella, B. (2019). Understanding TF-ID: A Simple Introduction. From: https://monkeylearn.com/blog/what-is-tf-idf/ [cit. 2022-01-02].
14. Zhang, Mn. et al., (2015). A sampling method based on URL clustering for fast web accessibility evaluation. *Frontiers Inf Technol Electronic Eng* 16, pp. 449–456.

TALENT MANAGEMENT AND FINANCIAL PROFITABILITY: AN ESSENTIAL BINOMIAL IN THE CONTEMPORARY COMPANY

Klaus Ulrich
ESIC Business & Marketing School, Spain
klausjurgen.ulrich@esic.edu

Maria Guijarro-Garcia
ESIC Business & Marketing School, Spain
ESIC University, Spain
maria.guijarro@esic.edu

Pilar Perez-Ruiz
ESIC Business & Marketing School, Spain
pilar.perezruiz@esic.edu

Javier Hernandez-Gadea
ESIC Business & Marketing School, Spain
javier.hernandez@esic.edu

ABSTRACT

Talent Management has emerged in contemporary companies as a fundamental element to generate value. Having an adequate human resources policy that enhances employee capabilities is vital to generate satisfactory and productive work environments. The main objective of this paper is to analyze the impact of some of the main variables involved in talent management, and how they affect the financial profitability of the company. Specifically, we focus on analyzing the size of the workforce of companies that carry out talent management actions, the range of aspects taken into account in the evaluation of employee performance, and employee perceptions of the company's compensation and promotion policies. On the other hand, given that Covid19 has strongly impacted the human resources area of all companies, we have introduced in the analysis the measurement of how the pandemic has affected the way of working in the different organizations studied in this article. The study has been carried out through a survey of the heads of the human resources departments of some of the largest companies in the region of Valencia, Spain. The analysis has been carried out through a fuzzy set qualitative comparative analysis approach, since it allows to capture the complexity of the relationships of the conditions in a human environment, obtaining equifinal solutions that lead to the expected result, the financial profitability. The main contribution of this study is to help business in making decisions in the area of Talent Management, in order to be able to continue generating profitability and value with their businesses.

Keywords: *compensation and promotion, employee performance, fsQCA approach, Human Resources, Talent Management*

1. INTRODUCTION

Talent management can be defined as the entire set of activities and processes that involve and comprise all those essential positions or occupations that provide and contribute in a clear and differentiated way value to the organisation, helping it to achieve a competitive position and sustainable success (Collings and Mellahi, 2009). The importance of talent management is nowadays evident, so that a large number of CEOs have highlighted that one of the most important risks preventing the growth of companies is the lack of certain capabilities, so that they recognise talent management as one of those required needs (Collings, Mellahi and Cascio,

2019 according to PWC 2017 survey). The complex and dynamic environment in which companies operate makes it necessary to develop work strategies in which talent management becomes one of the tools needed to achieve the objectives pursued (Tung 2016). COVID-19 has put many companies in check, revealing certain shortcomings in order to be able to face the new demands imposed by society and the environment. The need to apply more and better technology that allows information to be obtained and made available more quickly has become a priority, talent management has become a factor that promotes the resilience of companies and allows them to learn better in the current environment, thus being able to carry out better and more adaptable behaviours and decisions to the current situation (Remko, 2020). Society and the business environment is increasingly changing and entrepreneurial, requiring new capabilities that enable organisations to meet the needs that are demanded of them. Talent management allows talent to be moulded, as a key resource, to be able to respond quickly and agilely to the demands that companies require, allowing them to achieve a more competitive position. (Harsch and Festing, 2020). Talent management allows companies to improve all attitudes related to knowledge management (acquisition, assimilation, application and transmission) and its absorption capacity, which has a direct and positive impact on business performance (Latukha and Vaselova, 2019). Nowadays, attracting, keeping and improving or perfecting talent within organisations has become one of the main and complex objectives faced by many companies (Gallardo-Gallardo; Thunnissen and Scullion, 2020). In such a complex context where globalisation reigns together with the changes occurring at the economic, political and technological levels, organisations need to attract and retain talent in order to successfully face the new challenges that society imposes. (Claus, 2019; Reiche, Lee & Allen, 2019). Talent has become a valuable, strategic resource that allows increasing business competitiveness and that companies care for and protect in order to achieve sustainable goals and efficiency (Sparrow, 2019). That is why companies need talent management in such complex environments to be able to extend the scope of their operations beyond their borders and to be globally competitive. Therefore, organisations cannot ignore the influences that talent management has on them as it mitigates the business's ability to profit and grow (King and Vaiman, 2019).

2. LITERATURE REVIEW

Talent management is a fundamental part of business management in organisations. Formal research in this area began with the work of the consultancy firm McKinsey in the 1990s, investigating the war for talent (Michaels et al., 2001). Since then, attracting, retaining and nurturing talent in the company has developed into formalised People or Talent departments, which go beyond simple human resource management. As we have seen so far, talent management, and the components that comprise it, are fundamental to guarantee good economic and financial results for the firm. In the following sections we will develop the main factors in the field of talent management that, according to the literature review, can affect the economic results of companies.

2.1. Performance evaluation

Performance evaluation is a key driver to ensure firms competitiveness and promote the organizational innovation (Ren, 2016). We define talent performance evaluation as the systematic assessment of the staff on the job (De Oliveira & De Oliveira, 2020). Performance evaluation of employees is a complex process, which nowadays it is executed through different methodologies. This process is also influenced by the special characteristics of the firm, such as the industry, size, conuntry or sector in which they operate. According to prior studies of Chang (2013), performance evaluation of firms´ workers should include quantitative, qualitative ítems, and their alignment with companies´ mission, values and view.

The mainly accepted indicators of performance evaluation in human resources and talent management literature are those in which the link between productivity and employees performance, the peer review of the process, and the definition of the assessment factors is very defined (Bohlouli et al., 2017; Yuan, 2013; & Maruya et al., 2018). In this study we collected information of spanish companies, located in the region of Valencia, about the breadth of aspects of emplotee performance appraisal.

- *Research question 1: If the firm has taken a sufficient range of aspects into account in the evaluation of employee performance, this will have a positive impact on the company's financial performance.*

2.2. Employee compensation and promotion

Contemporary companies have significant risks of losing employees to competitors. Remuneration is the most important factor in retaining talent. Therefore, establishing effective remuneration policies is fundamental when establishing an adequate talent policy, which can contribute to the sustainability and generation of social, economic and financial value of the company. (Mandhanya, 2016). Compensation also plays an important role in workers motivation, as it is one of the main reasons for employees to find work, it also motivates and incentivises them to increase their performance and contribution to the company, thereby impacting the company's financial indicators (Mulyani et al., 2019). On the other hand, job promotion is an important factor o fan employee´s career. It represent an important aspect on the productivity and incentives of workers (Kosteas, 2011). Knowing that the employee has the opportunity to be promoted, and to have a career within the company, is essential to achieve a workforce that is motivated and incentivised to constantly improve. Promotion policy is also important for employees to achieve an adequate level of job satisfaction (Fuentes-Del-Burgo & Navarro-Astor, 2013). Based on the above arguments, we pose the second research question:

- *Research question 2: Having compensation and promotion policies in place leads the company to achieve high levels of profitability.*

2.3. The impact of the covid pandemic on the organisation

Since the Covid-19 pandemic human resources are more important than ever (Tomcikova et al., 2021). Companies need to adapt their organisations and workplaces to the new reality brought about by the pandemic. The need to maintain interpersonal safety distance, avoid crowds and introduce other mechanisms related to occupational risk prevention have been a major challenge for talent management managers in their firms (Carnevale & Hatak, 2020). Recent research of Fernandes et al. (2022) shows us that the pandemic has had an impact on the way employees and organisations work. Additionally it had an economic effect on sales, profitability and even the size of some companies. This effect has been different depending on the nature of the company, the country or the sector in which it operates (Belitski et al., 2021; de la Fuente, 2021; Raileanu-Szenes & Saman, 2020). Based on these premises, we formulate the following research questions:

- *Research question 3: The extent to which covid has affected the organisation has impacted the financial profitability of the company.*
- *Research question 4: The assessment of talent/human resource department managers on the extent to which the pandemic has impacted their organisations impacts on the financial profitability of the company.*

3. METHODOLOGY

To develop the study of the impact of the research questions on financial profitability, we will carry out an analysis based on a comparative qualitative methodology. The study will be carried out using the fsQCA software, which will allow us to determine the necessary and sufficient

conditions that lead to positive financial returns. The sample to be analysed will be obtained from a survey of some of the most relevant companies in the region of Valencia (Spain), specifically those responsible for talent management in their respective companies.

4. CONCLUSIONS

The importance of talent management in business administration has been increasing since the 1990s. More and more companies are allocating human and monetary resources to this task, with the aim of building productive workplaces that promote the well-being and happiness of employees, that motivate and integrate all workers, and that align them with the main objectives of the company. Following the impact of the covid-19 pandemic, the performance of talent management has been a very relevant indicator when assessing the capacity to generate profitability and value in a sustainable and sustained manner over time. In future lines of research we will develop an empirical study based on the theoretical framework and research questions presented in this paper.

LITERATURE:

1. Belitski, M., Guenther, C., Kritikos, A.S., & Thurik, R. (2021). Economic effects of the COVID-19 pandemic on entrepreneurship and small businesses. Small Business Economics, doi: 10.1007/s11187-021-00544-y
2. Bohlouli, M, Mittas, N., Kakarontzas, G., Theodosiou, T., Angelis, L., & Fathi, M. (2017). Competence assessment as an expert system for human resource management: A mathematical approach. *Expert System Applications, 70,* 83–102.
3. Carnevale, J. B., & Hatak, I. (2020). Employee adjustment and well-being in the era of COVID-19: Implications for human resource management. *Journal of Business Research, 116,* 183-187
4. Chang, Y., (2013). Study on capability evaluation system of a company based on staff competency model—Take Company A as an Example. *6th Int. Conf. Inf. Manage., Innov. Manage. Ind. Eng., Xi'an,*
5. Claus, L. (2019). HR disruption—Time already to reinvent talent management. *BRQ Business Research Quarterly*, *22*(3), 207-215.
6. Collings, D. G., & Mellahi, K. (2009). Strategic talent management: A review and research agenda. *Human resource management review*, *19*(4), 304-313.
7. Collings, D. G., Mellahi, K., & Cascio, W. F. (2019). Global talent management and performance in multinational enterprises: A multilevel perspective. *Journal of management*, *45*(2), 540-566.
8. De la Fuente, A. (2021). The economic consequences of Covid in Spain and how to deal with them. *Applied Economic Analysis, 29*(85), 90-104.
9. De Oliveira, A.S., & De Oliveira, R.C.L., (2020). "A Process for Human Resource Performance Evaluation Using Computational Intelligence: An Approach Using a Combination of Rule-Based Classifiers and Supervised Learning Algorithms," *IEEE Access, 8*, 39403-39419, doi: 10.1109/ACCESS.2020.2975485.
10. Frederiksen, A., Lange, F., Kriechel, B. (2017). Subjective performance evaluations and employee careers. *Journal of Economic Behavior & Organization, 134*, 408-429.
11. Fuentes-Del-Burgo, J., & Navarro-Astor, E. (2013). Promotion systems used by small and medium sized construction companies in Castilla-La Mancha (Spain). Does it concern the job satisfaction of the building engineer? *Revista De La Construcción, 12*(1), 109-118.
12. Gallardo-Gallardo, E., Thunnissen, M., & Scullion, H. (2020). Talent management: context matters. *The International Journal of Human Resource Management*, *31*(4), 457-473.

13. Harsch, K., & Festing, M. (2020). Dynamic talent management capabilities and organizational agility—A qualitative exploration. *Human Resource Management*, *59*(1), 43-61.
14. King, K. A., & Vaiman, V. (2019). Enabling effective talent management through a macro-contingent approach: A framework for research and practice. *BRQ Business Research Quarterly*, *22*(3), 194-206.
15. Kosteas, V.D. (2011). Job Satisfaction and Promotions. *Industrial Relations, 50*(1), 174-194.
16. Latukha, M., & Veselova, A. (2019). Talent management, absorptive capacity, and firm performance: Does it work in China and Russia?. *Human Resource Management*, *58*(5), 503-519.
17. Mandhanya, Y. (2016). Compensation Policy a Tool ; Fostering Employee Retention. *Pacific Business Review International, 8*(18), 101-108.
18. Maruya, A, Akoglu, L, Krishnan, R & Bay, D. (2018). 'A lens into employeer reviews via sentiment-aspect modeling,'' *IEEE/ACM Int. Conf. Adv. Social Netw. Anal. Mining (ASONAM), Art. no. 670677*, doi: 10.1109/ASONAM.2018.8508512.
19. Michaels, E., Hanfield-Jones, H., & Axelrod, B. (2001). War for talent. Boston, MA: *Harvard Business School Press.*
20. Mulyani, S.R., Sari, V.N., Sari, M.W. (2019). The model of employee motivation and cooperative employee performance. *Polish Journal Of Management Studies, 20*(2), 379-390.
21. Railneanu Szeles, M. & Saman, C. (2020). Globalisation, economic growth and covid-19. Insights from international finance. *Romanian Journal Of Economic Forecasting, 23*(3), 78-92.
22. Reiche, B. S., Lee, Y. T., & Allen, D. G. (2019). Actors, structure, and processes: A review and conceptualization of global work integrating IB and HRM research. *Journal of Management*, *45*(2), 359-383.
23. Remko, V. H. (2020). Research opportunities for a more resilient post-COVID-19 supply chain–closing the gap between research findings and industry practice. *International Journal of Operations & Production Management*, *40*(4), 341-355.
24. Ren, R. (2016) Research on human resource management innovation of Chinese enterprises in low carbon economy. *J. Yangtze University, 5*, 55–65
25. Sparrow, P. (2019). A historical analysis of critiques in the talent management debate. *BRQ Business Research Quarterly*, *22*(3), 160-170.
26. Tomcikova, L., Svetozarovova, N., & Coculova, J. (2021). Challenges and Priorities in Talent Management During the Global Pandemic Caused by COVID–19. *Marketing and Management of Innovations, 2*, 94-103.
27. Tung, R. L. (2016). New perspectives on human resource management in a global context. *Journal of World Business*, *51*(1), 142-152.
28. Yuan, J. (2013). ''Worker evaluation using FCE and AHP,*'' in Proc. 5th Int. Conf. Intell. Hum.-Mach. Syst. Cybern., Hangzhou, 568–571*, doi: 10.1109/IHMSC.2013.141.

DEVELOPMENT OF DESIGN THINKING EXPERTISE AMONG UNIVERSITY NORTH ECONOMY STUDENTS

Martina Baricevic
Department of Economics, University North, Croatia
mabaricevic@unin.hr

Tomislav Bobic
Department of Economics, University North, Croatia
tobobic@unin.hr

Matija Mandaric
Department of Economics, University North, Croatia
mamandaric@unin.hr

ABSTRACT

Nowadays, some of the learning models are outdated and the relationship between the lecturer and the student is changing. New generations are looking for more interaction, practical work, communication and they want to express their opinions. The main obstacle on the path to creativity and expression is the fear of how a particular lecturer will react. The course Disruptive Innovation and Design Thinking approached learning in a new and modern way, allowing us to gain the breadth and theoretical knowledge necessary to demonstrate the importance of the innovation process in all segments of study, and especially in the new challenges that digital economy brings every day. In this paper we touched on new ways and methods of learning using the Design Thinking process and we shared our innovations, reached by using said process. We introduced an idea for a Design Thinking workshop, a contactless asynchronous mailbox and a new model of giving feedback through a "feedback" application solution. The Design Thinking approach to problem solving encourages creativity and teaches students to focus on solutions rather than obstacles. It also allows to explore a multitude of alternatives, cooperate with different people and create a product that is customized to the needs of the user. Therefore, we believe that teaching classes as the Disruptive Innovation and Design Thinking in necessary and much needed for the education of tomorrows economy students.

Keywords: *Creativity, Design Thinking, Economics, Education, Students*

1. INTRODUCTION

In today's world of rapid changes, constant innovation and hyper personalization, an economist needs to be agile, creative and efficient. This is even more pronounced in the context of digital economy which, due to its intrinsic internationality and exponential growth of available information, requires a nonlinear approach to solving emerging challenges as well as a successful cooperation between people of different professions, occupations and ways of thinking. During the course Disruptive Innovation and Design Thinking, my colleagues and I were encouraged to think in the context of recognizing a problem in our surroundings and, using imagination and creativity, finding a solution tailored to the user. Such a solution, in order to be competitive, modern and to bring added value to the user, needed to include features characteristic of disruptive innovations, such as innovative technology, lower prices, a bottom-up market approach and the possibility of continuous improvement of the products and services offered. Through this paper we will present our solutions, created with the approach "see a problem - solve a problem" using the Design Thinking process, starting from the incentive for the idea, through the development of the innovation using the stages of Design Thinking, a

suggestion of the possible application and the conclusion. Creativity, combined with analytical thinking, are the two key concepts at the core of the Design Thinking process, and learning how to apply them in business is necessary for today's economy students, even more so for digital economy students, to be competitive and agile in tomorrow's market.

2. LITERATURE REVIEW

Innovation fundamentally means coming up with new ideas about how to do things better or faster. It is about making a product or offering a service that no one had thought of before. And it is about putting new ideas to work in enterprises and having a skilled workforce that can use those new ideas (Luić, Glumac, 2009). The term Design Thinking was first used by Rowe in 1987, as the title of his book. "Design Thinking is founded on the notion that many designers 'think' and 'practice' in particular and unique ways in the creation of products, graphics, artefacts, environments, buildings, systems and services, and that this way of 'thinking' can be studied, harnessed and improved" (Withell, Haigh, 2013). Although it originates from the field of design, today Design Thinking is used as a process mostly in the IT industry and business sector. What proves to be important, especially in the business sector, is that the method addresses open and complex problems in a simple and direct way (Dorst, 2011). Today, "Brown is considered to have popularized the concept of Design Thinking in management. In addition to the popular book Change by Design (2009), he also published an article in the Harvard Business Review (2008) and the Stanford Social Innovation Review (Brown and Wyatt, 2010). According to him, the designer is aware that there is no right answer to the problem, but by following a nonlinear, iterative design process, which he classifies as inspiration, idea and implementation, the design process can turn problems into opportunities. Brown defines Design Thinking as a discipline that uses the designer's sensibilities and methods to align individuals 'needs with what is technologically feasible and with what a feasible business strategy can turn into value for the customer and market opportunity (Brown, 2008)" (Srhoj, Morić Milovanović, 2016, p. 71). Some of the world's leading brands, such as Apple, Google, Samsung and GE, quickly adopted Design Thinking which is now taught at leading universities around the world, including Stanford, Harvard and MIT (Cross, 2011). Today, Design Thinking is regarded as a thinking process that leads to transformation, evolution and innovation, new behaviors and new ways of doing business. There is no doubt that Design Thinking has a lot to offer to Innovation Management, but it still remains unclear how to measure the added value of Design Thinking innovation and implementation and how to evaluate and select the most appropriate Design Thinking model for individual innovation processes. (Tschimmel, 2012, p. 1). Design Thinking is an iterative process in which we seek to understand the user, challenge assumptions, redefine problems, and try to identify alternative strategies and solutions that may not be apparent at first glance. On the other hand, Design Thinking offers a solution-based approach to the problem. It is a way of thinking as well as practical work. Design Thinking refers to understanding the interests of the people for whom we are developing a product or service and, through observation and empathy, it allows us to question problems, assumptions and implications. Design Thinking is an extremely useful method in solving problems that are poorly defined or unknown, reshaping problems in a human-oriented way, creating a multitude of ideas using brainstorming and adopting a practical approach to prototyping and testing. Design Thinking also involves continuous experimentation: sketching, prototyping and testing concepts and ideas. (Cross, 2011). Design Thinking combines elements and skills of play, empathy, reflection, creation, and experimentation in order to collaborate, create and upgrade achieved results. Failure is not a threat but the way we learn. Through observation, synthesis of choosing alternatives, critical thinking, feedback, visual presentation, creativity, problem solving and value creation, entrepreneurs can use Design Thinking to identify unique business opportunities. Users of the method accept obstacles to create new ideas.

However, it is important that these ideas are feasible, sustainable, and desired by the users. "In its development over the past fifty years or so, the Design Thinking method has integrated many tools and techniques from the fields of creativity, social sciences and computer science. It is often described in various ways, such as the so-called single framework for innovation or a tool for simplification." (Antoljak, Kosović, 2018, p. 16). While thinking about design often means aesthetics, in this case it's about applying design principles to problem solving as a response to the escalating complexity present in technology and business. Such a business has many faces - sometimes the focus is on software that needs to be integrated with the hardware (a complex problem) and make it intuitive and easy to use for users (another difficult challenge). The set of principles we know as Design Thinking - empathy with customers, prototyping discipline, and error tolerance - is the best tool for creating interactions and a responsive and flexible organizational culture (Brown, 2008, p. 4). Design Thinking can be defined as a complex process of thinking and creating new realities using culture and methods of design and implementation in other areas such as business innovation. (Tschimmel, 2012, p. 2). Design Thinking is an interactive process in which the tendency is to understand the user, challenge assumptions and redefine the problem with the intention of identifying alternative strategies and solutions that may not be visible at the outset. At the same time, Design Thinking provides a solution-oriented approach to the problem. It is a way of thinking and working just like a collection of practical methods. (Dam, Siang, 2021).

3. METHODOLOGY

The course Disruptive Innovations and Design Thinking is an elective course in the first year of the Digital Economics and Innovation study track of the graduate study program in Business Economics at the University North, in Varaždin. The course discusses disruptive innovations and the reasons for collision and resistance between technology and culture that undermine promising innovations. The course focuses on the Design Thinking process as well, which is studied and applied as a possible approach to a particular problem, in order to find an effective solution. The course Disruptive Innovation and Design Thinking is held as a hybrid course, with on-site and online lectures. It consists of theory lectures, a Design Thinking workshop and seminar lectures, in which the students present their own solutions created using the Design Thinking approach, mentored by the professors. The result of said lectures are the innovative solutions described below.

4. RESULTS

Design Thinking is a solution-based approach which can be applied to a multitude of fields and challenges, from designing a workshop to using smart technology and digital communication. Today's technologies, such as IoT, biometrics, smart contracting or blockchain to name a few, allow us more and more possibilities every day. These technologies can be used to solve challenges people encounter on a daily basis as well as complex situations. Technology is a tool, and the way we decide to use it will determine its future role. Another key factor is feedback. Today, more than ever, it's crucial to get feedback at the right time and in the right way. Giving feedback it's a learned process, and if expected in the workplace, it needs to start in the educational system. That's why it is very important to give students a chance to express themselves in the best way they know how: through digital technologies. Below are three examples of innovative solutions related to the aforementioned topics, created using the Design Thinking process: Design Thinking the Design Thinking Workshop, author Matija Mandarić; Mailbox for contactless asynchronous delivery using smart contracting, author Martina Baričević, FEEDBACK - an application for giving feedback to professors, author Tomislav Bobić.

4.1. Design Thinking the Design Thinking Workshop

The Design Thinking Workshop is one of the tools of Design Thinking. The name usually refers to a creative multidisciplinary meeting/session in which experts from various fields try to find a creative, user centric, solution to a design problem. One of the coauthors of the paper, Matija Mandarić, tried to apply the same tool and thought process to the tool itself, and see what would happen. This opens a whole new dimension of possibilities as the user centric approach does not say who the user is. The innovator can be her/himself the user. Another level of abstraction is also the question, what is a design problem. Can a Design Thinking workshop be designed itself even better? Using the tool itself used for problem solving? The title is a provocative way of drawing attention to the scope and potential strength of Design Thinking. And trying to abstract it the most by putting ourselves as "the user" and designing solutions to our own problems.

4.1.1. Meta, empathizing interview with oneself

Meta, adjective: referring to itself; self-referential. Not only does the workshop reference itself, the innovator or the problem solver also references his own problems from a user perspective. That requires that the empathizing part of the workshop actually requires the innovator to empathize with her/himself. Using the Design Thinking Workshop framework forces the user to formalize the thought and decision process, auto generated feedback thus reducing the necessary cycles of prototyping, external feedback or even more extreme, deciding of not doing something at all. That can lead to some ideas not being pursued in the end (for legitimate reasons), saving both time and money for the innovator. And some ideas can be adopted to the real needs of future or current users if the framework was used before rollout.

WHAT? WHY? HOW?

Design thinking workshop	Hower epidemiologic circumstances allow it :)	Self growth?
	No, really, by oneself, in a group, on-line, on-premise…everything works :)	Increasing the quality of life?
		Starting a business?
		Releasing a new product…

Figure 1: A table with standard questions, commonly used for Design Thinking Workshop, used for a Design Thinking Workshop itself
(Source: author)

Empathizing and empathetically defining a problem (our true goals) can help ourselves or subsequent participants in our workshop more easily reach a solution and not work on a XY problem.

4.2. Mailbox for contactless asynchronous delivery using smart contracting

Our physical world is increasingly intertwined with the digital, and many aspects of everyday life are changing and adapting to new needs. Situations and ways of doing business, which were once common, are archaic and unimaginable today, and it is necessary to find solutions appropriate to the times we live in. One of the sectors that is seeing continuous and growing change in consumer habits is retail, where more and more people are switching to online shopping, especially in the last two years since the start of the pandemic. Through numerous experiences of ordering goods and services online, both personal and while observing others, the author of the innovation, Martina Baričević, noticed there is one important link in the value chain that is not in line with today's life needs. Namely, you are offered the opportunity to order almost anything online and there is no need to physically go to the store to buy a book, a coat or milk, but at the same time, in Croatia, you need to personally be at a very specific time in a very specific place to take delivery of said "online" order; and this specific time is usually communicated at the last minute and it is impossible to arrange delivery outside normal business hours before 7 a.m. or after 5 p.m. In urban areas this issue is addressed by using mailing lockers for storage and later pick-up, but in rural areas there isn't such a possibility. The inadequacy of delivery modalities to modern lifestyles, combined with the possibility of theft in case of leaving the package at the doorsteps and the frequent need to pay in cash, and consequently the need to keep enough cash in the house, prompted me to think of a solution that would allow delivery without the need for physical presence or the use of cash.

4.2.1. BOX

The solution was reached using the five phases of the Design Thinking process: empathy, definition, ideation, prototyping and testing. During the empathy phase, after interviewing several employed people of different ages (ranging ages 26 to 60), the key problems identified were the inability to change previously scheduled obligations outside the home to take delivery, inaccessibility to a whole range of services due to work obligations and delivery hours, and few possibilities of contactless payment upon delivery. Said problems were more accentuated in rural areas and smaller family units. In the definition phase, the users were defined as employed people who shop online and / or get a lot of deliveries, people who usually are absent from home during normal office hours and people living in suburban, rural or remote areas with less pick-up points. The defined problem was how to order goods online without having to be at a specific place / time to take delivery? After brainstorming and considering a wide range of possibilities, the author arrived at a solution. To solve the problem described above the proposed solution is Box, a mailbox for contactless asynchronous delivery using smart contracting. If you are getting some packages delivered while you are at work, or you don't have time to go grocery shopping, they can be ordered, paid for, delivered and wait for you safely when you get home. How would it work? You download an app, for free. When you order something online, you have it delivered using the app. The app itself is based on smart contracting, which means you set a set of conditions which, when met, trigger the payment for the delivery. The delivery company (for example Wolt or Glovo) gets the info and "picks up" the contract. When the delivery person gets to the address, he finds Box. He opens Box by scanning the QR code he got when he "picked up" the contract and puts the package in. Box closed and if the weight matches with the order, the payment is released. Box displays a second RQ code which is confirmation of payment for the delivery person. The package is kept at an appropriate temperature until the user gets home and picks it up. An added bonus is that it can work as a pick-up point the same way. Box would have three main components: the physical box, the app and the smart contract software. The smart contract would be based on blockchain technology. It would work like an algorithm and it would execute when all conditions were met.

Once the party has accepted the contract it can't back out, meaning that the payment can't be sent and then retracted. This means that, once the deliverer accepts the delivery, he knows he'll get paid if he delivers the package to the indicated address. The app would be free, downloadable on your phone or accessible by computer, and would require the user to register and set up a user account. The app would contain the user's profile, a form for smart contracting, info about the current delivery, a history of past deliveries / smart contracts, and customer support. Box i.e. the physical mailbox would be made of metal, fixed to a solid surface, well insulated and suitable for outside usage. As it can be seen in the figure below, on its upper side, there would be a camera and a display (4) for scanning and visualizing the RQ code (and possibly taking a picture of the delivery person, depending on the legal regulation), as well as a solar panel (7). Inside there would be a light (5) and a scale i.e. weight sensor (1). There would also be a heat sensor (6) which, along with the heat-exchange system (3), would allow keeping the inside at a temperature appropriate for the package. In the end, in the lower back there would be the back-up battery (2) and the electronics needed for everything to work.

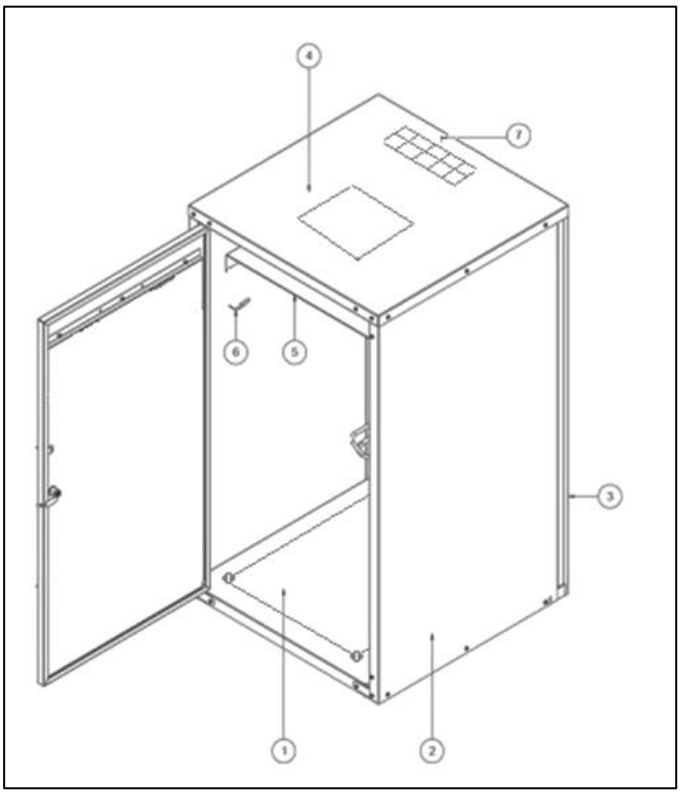


Figure 2: Box
(Source: author)

4.3. Feedback - an application for giving feedback to professors

The author of the innovation described in this chapter is one of the co-authors of this paper, Tomislav Bobić. The goal of this application is to help students and professors in giving and receiving feedback. Nowadays, when things change daily, standard annual or semi-annual questionnaires asking for feedback are outdated. When we talk about millennials and Generation Z and the ever-faster way of life, there is a need for more frequent giving and receiving of feedback. Today's generations that are using Instagram, Facebook and other social networks, are used to getting information immediately and are very impatient. Also, many students have a certain fear of expressing their own opinions. That is why the application "Feedback" allows students and professors to give each other real-time and anonymous feedback and to see the sum of all positive and negative feedback in one place.

The application is designed as a communication tool that would include predefined templates for giving feedback but would also be adaptive to fit into existing student satisfaction assessment systems.

4.3.1. SMART model

The SMART model helps to define and develop the idea, according to which the specificity, measurability, focus on activities, real situation and deadlines are defined. Efforts are being made to give Universities a different approach than usual, observing and analyzing their needs and interests in giving and receiving feedback. Measurable elements are diverse and can consist of the number of applications downloaded or the number of received and given feedback. With certain investments and realistic deadlines, this goal can be achieved. The goal is creating applications and education of students and professors about the importance of giving feedback. With quality staff, resources and adequate knowledge and skills supported with cutting-edge ICT technology, the challenge itself can quickly grow into a realistic goal.

Elaboration of an idea according to the stages of Design Thinking:

- Empathy: Generation Z is already in study. Their priority is to have constant access to data and professors, and they like teamwork and are used to using mobile applications from birth. They want frequent and consistent feedback on their work.
- Problem definition: After looking at all the main elements of Generation Z behavior and their desires and needs, we concluded that the main problem faced by universities is the lack of communication and quality feedback. Also, the current ways of giving feedback and frequency are not adapted to the generation that is used to using mobile applications (Facebook, Instagram).
- Ideation and prototyping: The idea is to create an application solution that will enable real-time anonymous feedback. The application would have predefined competencies that could be assessed (collaboration, knowledge, openness, presentation skills…) and the selection of competencies would allow giving a positive or negative feedback in the form of similes. After selecting the smiley, it would be possible to write a text in which a review of a certain behavior would be given.
- Testing: After creating the application itself, it is necessary to test it in a way that allows a minimum of 5 different departments within the university to use the application for half a year. After the expiration of 6 months, all feedback on the application itself would be collected and certain changes would be made based on the feedback received.

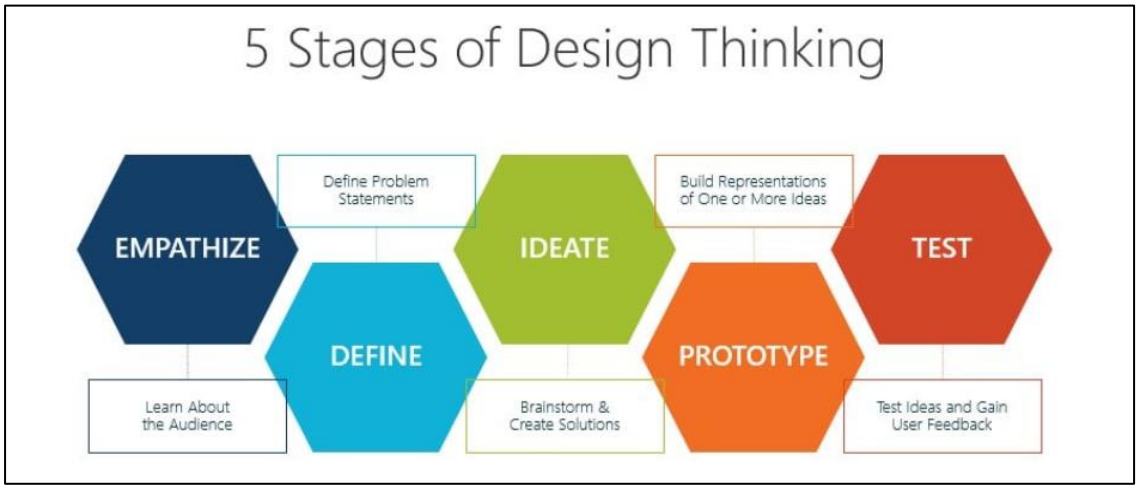


Figure 3: 5 stages of Design Thinking
(Source: Pisalica. Retrieved from https://pisalica.com/designt-thinking-metoda/)

5. DISCUSSION

In relation to the aforementioned innovations, there are numerous arguments in favor of the Design Thinking Workshop. Design Thinking as a process creates a user-centric environment, helping us hear the voice of our potential users albeit in our own head, and where solutions try to cater to that voice. Furthermore, Design Thinking Workshop is a well-defined framework for ideating and innovating solutions, not to mention just an established framework for a thought process is already helpful. For Box, it allows both contactless and asynchronous delivery, making it possible to take delivery of ordered goods without being physically present and at the same time keeping them safe and properly stored. Using smart contracting allows the interaction to be safe and reliable, and used in combination with blockchain technology makes it flexible and secure. It solved a number of issues related to the delivery of goods and it offers numerous additional possibilities as well. In relation to the feedback application, and considering the ever growing need to differentiate, present even in higher education, the fact is it's necessary to evolve to attract new generations of students. One way to differentiate itself is to enable students to express their opinion without fear and in the way that is most acceptable to them. Giving feedback to students during the presentation of their individual work (in real time, from all participants) is invaluable. It's a way for students to receive dozens of anonymous feedbacks from colleagues and professors that can be used for further development and as a learning mechanism. To initiate the development of the described innovations, there needs to be a strong support present at the University. There is also a need for an Innovation Lab, where students with different backgrounds, like engineering, economy and psychology to name a few, could meet and interact to create innovative solutions by applying what they have learned. Said Lab could allow students to interact with entrepreneurs and inventors, develop joint projects and future start-ups. However, there is one important factor that needs to be highlighted. The solutions described in this paper wouldn't exist without the knowledge acquired during the course Disruptive Innovations and Design Thinking. Both the topics and the way the course was held, having a workshop and being able to practice the process before having to go through it ourselves, has been instrumental in the development of our solutions. We were encouraged to be creative and express ourselves in new ways that were appropriate for us as economy students. This allowed us to express ourselves and put in practice what we had learned both in this course and in other theoretical courses. The results were 23 new and innovative solutions, proposed by the 23 participants of the course. Therefore, in order to further develop Design Thinking expertise in economy students, both at University North and in other universities, we suggest continuing with the course, particularly the workshop and the visiting experts lectures. We also suggest conducting a survey about 'The importance of applying Design Thinking to education for the development of the digital society' with students, professors and possibly future employers.

6. CONCLUSION

Nowadays, the learning models and the relationship between lecturer and student need to be updated. An economist, and especially a digital economist, needs to be agile, versatile and able to deliver a product that meets the customer's needs. The Design Thinking framework can be used to solve disparate problems and a Design Thinking Workshop can help formalize and/or redefine some problems as design problems, giving us a clear and helpful framework on reaching a solution. New generations are looking for more interaction, practical work, communication and they want to express their opinions. The Feedback application solves several problems that are specific for the Z generation and at the same time enables the University to better manage human potential and personal development of all students. The contactless asynchronous mailbox helps meet user needs in a fast and ever changing working environment. The Design Thinking workshop allows the innovator to become the user.

What these solutions have in common is that they solve arising challenges in a simple and innovative way, which is the strength that the Design Thinking process brings and it is why it is crucial to continue to teach it and develop it the context of higher education.

ACKNOWLEDGEMENT: *Publications of this paper was supported by the University North to which the authors express their gratitude for the support. The authors would also like to express their many thanks to Professor Ljerka Luić, lecturer of the course Disruptive Innovation and Design Thinking for her immense patience, enthusiasm and creativity as well as her ever-present kindness and support.*

LITERATURE:

1. Antoljak, V., Kosović, M. (2018). *Design thinking za nedizajnere: kako riješiti poslovne probleme i uspješno inovirati*. Zagreb: Školska knjiga.
2. Brown, T. (2008). *Design thinking*. Harvard Business Review. Retrieved from https://readings.design/PDF/Tim%20Brown,%20Design%20Thinking.pdf
3. Brown, T., Wyatt, J. (2010). *Design thinking for social innovation*. Retrieved from https://ojs.unbc.ca/index.php/design/article/viewFile/1272/1089
4. Cross, N. (2011). *Design Thinking: Understanding How Designers Think and Work*. Retrieved from https://direct.mit.edu/leon/article-abstract/45/2/175/97882/Design-Thinking-Understanding-How-Designers-Think?redirectedFrom=fulltext
5. Dam, R.F., Siang, T.Y. (2021) What is Design Thinking and Why Is It So Popular? Retrived from https://www.interaction-design.org/literature/article/what-is-design-thinking-and-why-is-it-so-popular
6. Dorst, K. (2011). *The core of 'Design Thinking' and its application*. Faculty of Design, Architecture and Building, University of Technology Sydney, Australia.
7. Luić, L., Glumac, D. (2009). *The Role of ICT Technology in the Knowledge Society*. Proceedings of Papers - Volume 1 of 2 volumes "9th International Conference on Telecommunications in Modern Satellite, Cable and Broadcasting Services TELSIKS 2009" doi:10.1109/TELSKS.2009.5339515. Retrieved from https://www.bib.irb.hr/474315
8. Srhoj, S., Morić Milovanović, B. (2016). Dizajn razmišljanja kao suvremeni pristup rješavanju poslovnih problema. *Zbornik Ekonomskog fakulteta u Zagrebu, 14* (2), 63-91. Retrieved from s https://hrcak.srce.hr/170203
9. Tschimmel, K. (2012). *Design Thinking as an effective*. Retrieved from https://www.coursehero.com/file/36234164/Design-Thinking-as-an-effective-Toolkitpdf/
10. Withell, A., Haigh, N. (2013*). Developing Design Thinking Expertise in Higher Education*. 2nd International Conference for Design Education Researchers. Retrieved from https://www.researchgate.net/publication/265606847

SOCIAL MEDIA AS CRISIS COMMUNICATION PLATFORM IN HOTEL INDUSTRY

Zeljka Zavisic
Poslovno Veleučilište Zagreb
Ulica grada Vukovara 68, Zagreb, Croatia
zeljka.zavisic@pvzg.hr

Senka Zavisic
Veleučilište Lavoslav Ružička
Županijska 50, Vukovar, Croatia
senka.zavisic@vevu.hr

Davor Bernardic
Hrvatski Sabor
Trg sv.Marka 6, Zagreb, Croatia
davor.bernardic@gmail.com

ABSTRACT

An extremely important form of business communication is crisis communication. The concept of social media crisis communication includes the exchange of information with the public during the crisis and taking measures to calm the intensity of the crisis towards certain target groups of the public through social platforms. The fact that events in online communities, especially on social networks, take place in real time, has given a completely new dimension to crisis management, and social networks have become an ideal channel for this type of communication. Since tourism is one of the most important economic branches of the Republic of Croatia and family and small hotels have been among the most popular Croatian tourist products on the foreign tourist market in recent years, they were chosen as the category in which the research will be conducted. The aim of this paper is to determine exactly the manner and level of use of social networks as a crisis communication platform for the small and family hotels in the Republic of Croatia and to present importance of implementing social media crisis communication strategy.

Keywords: *social networks, small hotels, crisis communication*

1. INTRODUCTION

In the context of business digitalization, it is evident that the Croatian market is increasingly following European and global trends. It is also clear how Croatian businesses use social networks in their business, but the question arises about the level of application, and certainly, the extent of exploiting the potential that social networks as a crisis communication platform offer. Since tourism is one of the most important economic branches of the Republic of Croatia and family and small hotels have been among the most popular Croatian tourist products on the foreign tourist market in recent years, they were chosen as the category in which the research will be conducted. The development of small and family hotels in the Croatian touristic offer unites all the qualities of tourism that visitors have known so far, and at the same time with small and family hotels there are some new advantages that manifest as qualities that were almost unknown. The offer of small family hotels opens a new page of the tourist offer because guests feel the best and most comfortable in a quiet, close, comfortable and family environment and these hotels can provide a completely personal approach.

Today, 402 small and family hotels operate in Croatia, which is 58.9% of the total number of hotels (List of categorized tourist facilities in the Republic of Croatia 2020) and it can be expected that their number will continue to grow in the future.

2. SMALL HOTELS – DEFINITION AND CHARACTERISTICS

Small and family hotels actually operate as small businesses. However, contrary to the usual criteria used to define a small business, such as the balance after deduction of loss, annual sales and annual average number of employees (Cetinski, 2003, p. 4), the classification of the hotel subsector is often based on number of rooms or beds . They are also not generally accepted and vary significantly, so the upper limit for small hotels is usually between 40 and 70 rooms; for medium-sized hotels from 70 to 200 rooms, and for large hotels more than 200 rooms (Avelini Holjevac, 2002, p. 128). According to the size and structure of the Croatian hotel industry, the criteria of 100 beds will be used in this paper, so hotels containing up to 100 beds will be considered as small and family hotels. In general, under the term small family business we can conclude that these are companies where financial resources are invested by the family and in which family members are involved. These companies are oriented to their own knowledge, family potential and reputation. Family businesses differ in the number of employees, in the type of activity they perform and in size, from small businesses, medium and large companies. The advantages of small businesses in tourism are flexibility, fostering competition, a wide variety of services offered, personalized services and products (Bastakis C., Buhalis D., Butler R., 2004). In fact, the greatest strength of small hotels compared to their large hotels and hotel chains is personal touch, ie the ability to provide individualized services. In order to acquaint the guest with original and authentic local values, each small hotel has its own story; its architecture is adapted to the area in which it is located, recognizable interior design, local cuisine specific to a particular area, various excursions and sports and recreational activities and customs that take place in the area. Most often, all the specifics and recreational activities associated with the hotel are presented in the hotel catalog, and with such catalogs, guests fully feel the spirit of the place where they are staying.

3. THE ROLE OF SOCIAL MEDIA IN TOURISM

In today's modern and networked world, tourist destinations and accommodation are searched on the Internet. Information access and the speed with which the desired information is obtained are drastically changing with the development of the Internet, and thus communication with service users and potential service users is necessarily changing. Unilateral communication in which tourism service providers are the subjects of communication, and those who use it are objects of communication, no longer exists or is not effective. The hotel's communication strategy must meet the requirements of customers who expect to be approached according to their needs. This is especially emphasized among young people, who are the most demanding group of users, and who most often make the decision on accommodation by following the communication on social networks. According to Sigala (2011), social networks provide multiple benefits for hotels; this includes improving the brand image, e-learning, knowledge of customers, ie hotel guests and receiving valuable feedback on hotel services. Also, social networks provide visibility, ubiquity and searchability. Compliments or complaints from a guest on social media can spread quickly, and a positive or negative review can have an enormous effect on business (Sigala, 2011). In addition, guest communication with hotels via social media is considered an important reason to improve hotel business services. (Garrido-Moreno, A., Lockett, N., 2016) Namely, the use of social networks has an impact on the business results of organizations, especially with regard to increasing the availability of information, reducing marketing costs and improving customer relationships and support services.

However, the viability of social networks is being questioned as the actual rate of social media purchases is still relatively low, despite the large number of visits. (Lee, H.,; Choi, J., 2014) Therefore, hotels are not convinced of the real impact of social networks on the quality of service because they still cannot (or do not know) find a direct return on investment in them (Garrido-Moreno, A., Lockett, N., 2016). But despite this, it is clear that social networks have a number of advantages as a platform for communication in the hotel industry. These are highly creative platforms that offer the ability to create multimedia content that best sells a product or service. The basic determinant of communication strategy in digital campaigns is to achieve mutual understanding between providers and users through two-way communication. But it is important to emphasize that the more presence on social networks does not bring business success. The greatest strength of social networks is their interactivity and the possibility of quick return of information. Clients can get the information they want in a fast time, and it is not necessary to mine this data, but the requested data is obtained from company employees, who are in charge of communication on social networks. Social networks provide a certain comfort zone that people do not like to get out of and are increasingly becoming the primary means of communication. Basic communication tools have become too formal for today's customer. Today, mobile applications and social networks are in force. Social networks have provided another communication tool, which the conventional media did not have, and that is fast feedback. So, in addition to the fact that sales can be made through social networks, there is also a very fast return of information, which can be used as an indicator to improve customer satisfaction. Which means that negative comments and reviews do not necessarily have to be treated as something bad, but as an open space for progress.

4. CRISIS COMMUNICATION

Crisis management has become an important part of modern business; moreover, the knowledge and readiness of the company's management for a potential crisis plays a key role in crisis prevention as well as in successful crisis management. Motivated by the rapidly growing number of business crises, where some types of crises have greatly affected the tourism industry and the hotel industry, the level of knowledge of hotel managers about crisis management is becoming increasingly important. Furthermore, the awareness of hotel managers about possible sources of crisis in the hotel industry, previous experience and success in overcoming past crises and the development of crisis plans and crisis manuals are becoming extremely important determinants for successful hotel management. One of the important factors of successful crisis management is concept of communication, which includes the following questions: a) when and whom to inform, b) who must do it, c) what we want to ask and from whom. A good concept of communication includes all recipients of information, documents when and how someone is informed and determines when who will continue to receive what information and in what way. Although the causes of negative consequences in crises on social networks can be attributed to poor planning in communication, the fact that events in online communities, ie on social networks take place in real time, gave crisis management a whole new dimension (Zavišić, S.; Zavišić, Ž., 2011). It is also very important to have a communication expert who will know the situation well, in this case the culture of living of the refugee people, and using communication skills to show care for people and their well-being (Tafra-Vlahović, 2011). The information that is released to the public must be fast, accurate and concrete, unburdened by irrelevant supporting details. James Lee Witt stressed that during a crisis, skills that show compassion, care and empathy are crucial (Witt, J.; Morgan, J., 2003). Today, the media is becoming one of the most important factors in crisis situations, and they decide which events will be considered a crisis and which will not. In addition, by disseminating information, they set, change and have the power to shape people's opinions about certain situations and thus influence the development of the situation (Novak, 2001).

4.1. Crisis communication in the hotel industry

Observing crises in the hotel industry, we can most simply divide them into internal and external crises. Internal crises arise from the very operation of the hotel and range from technical malfunctions of the interior to the death of a hotel guest. External crises, on the other hand, stem from changes taking place outside the hotel, also related to trends dictated by the market. They range from mass cancellations of hotel reservations to major or minor incidents that endanger human lives and destroy hotel property (e.g. terrorist attacks) (Niinien, 2013). It is important to emphasize how hotel guests can also contribute to the development of the crisis in the hotel industry. Unlike hotel staff who are taught how to react properly in crisis situations, hotel guests can (un) intentionally cause or contribute to an incident in a hotel or make it difficult to control a crisis situation. The reason for these inappropriate reactions of hotel guests may be different cultural norms, language barriers, lack of understanding of the current situation. Keown-McMullan states that the media can boost the strength and course of a crisis or even turn an incident into a crisis. (Keown-McMullan, 1997) It is therefore necessary to create a detailed communication strategy. While Marra states that, due to all the participants in the interviews, ie answering questions, insufficiently developed communication strategy affects the aggravation of the crisis and creates a bad image in the public (Marra, 1998). Providing verified and consistent information to the public and maintaining or improving the good image of the tourist organization, ie destinations facing the crisis are the basic task of crisis communication in tourism. The best way to have a successful public relationship is two-way communication. Although, it is important to note that crisis managers often neglect issues such as focusing on audience identification, developing goals for effective communication, and creating a strong positive message through crisis communication. Every crisis is different and each requires its own solutions, but some require quick responses, direct communication with tourists, some traditional means of communication, the most common mistakes are hasty decision-making without verified data and confirmation of statements, lack of compassion for tragedies, shifting responsibility to others. What they have in common is that in all phases of the crisis: before, during and after the crisis, the emphasis is on communication based on honesty and transparency, in order to create credibility.

4.2. Social media crisis communication

Effective communication in crisis situations on social media also refers to choosing the right message on social media. "But what an effective message really should look like is not the same in all contexts. Some scientists recommend the use of traditional crisis communication strategies such as apology and comprehensive justification for effective crisis communication, but stress that "excessive" use of apology can lead to resistance to apology even if it comes from the CEO or top management" (Ngai, CSB Jin, Y., 2016, p. 487). Other studies show that denial strategies are the most useful way to reduce resentment, criticism, and rumors. (Roh, 2017) Then there are studies that argue that “adaptation” strategies seem more successful than denial strategies and that blaming others is not an effective strategy for sending crisis messages in the social media environment (see, e.g., Schwarz, 2012). However, not all studies of apology strategies of various kinds are considered the most effective. Many scientists recommend using informative messages on social media instead of apologies. They claim that information messages speed up and increase secondary crisis communication on social networks and at the same time generate more positive attitudes than messages that contain emotional apologies (Chung, S.; Lee, S., 2016). The source of information is also extremely important in effective communication on social networks. Whether it is an impersonal organization communicating about the crisis, an employee, executives, or traditional mass media institutions, the source of social media messages also seems to play an important role in effective crisis communication.

Authors Van Zoonen and van der Meer show the importance of employees as an official source of information in crisis situations characterized by distrust of the organization. They believe that the messages sent by employees have a stronger effect in resolving the crisis and restoring trust in the organization. They also claim that the human face, ie video content on social networks, will be more effective in resolving the crisis than an anonymous textual publication from the official website of the organization. It is to be concluded that public relations officers and spokespersons of organizations are credible and reliable sources during crisis situations (van Zoonen, W.; van der Meer, T., 2015). The organization should definitely be present on social media before risk and / or crises and show that she is there to spread information, communicate and listen. Guidry et al. demonstrate the importance of developing guidelines for the future use of private social profiles of employees during a crisis to make employees a credible source of information (Guidry, J. D. et al., 2015). There are a number of reasons why organizations are preparing for crises and working on a strategy for social networks. One of these reasons is the possibility of avoiding the so-called "information vacuum" in the future crisis by preparing educational messages and materials before the crisis. Such pre-crisis work can enable companies to avoid potential silence that could otherwise lead to harmful rumors on social media. Furthermore, the reason for planning crisis communication is that shared content and opinions on social networks very often become “hotspots of change” during crises (Crook, B. et al., 2016). Such developments require strong pre-planned diversions, ie calming down the situation. Businesses also need to provide the resources, staff and time to manage crises in advance, as they are often lacking when a crisis occurs. Monitoring social networks is a prerequisite for effective communication since social networks, as part of crisis management, can serve as a tool for public opinion polls and public debate. Numerous studies recommend monitoring social networks as an integral part of crisis management, because by observing and closely monitoring them, crisis situations can be identified and prevented at an early stage (Krishna, A .; Vibber, K. S., 2017). It is also possible to identify an emerging crisis situation, the so-called "paracrisis" before it develops into a problematic and full-fledged crisis situation. (Coombs, W. T .; Holladay, J. S., 2012) Johansen et al. (2016) show that the content of the analysis of social networks during the crisis provides insight into the profile of their followers, ie their "followers" and their "haters". Monitoring social networks is recommended as a way to assess the emotional nature of the crisis, as well as to conduct research on crisis prevention situations, e.g., how people react when confronted with various threats, such as food poisoning (Gaspar, 2014). Some scientists also emphasize the importance of monitoring and supervising not only published news, but also following audience comments about it.

5. RESEARCH METHODOLOGY

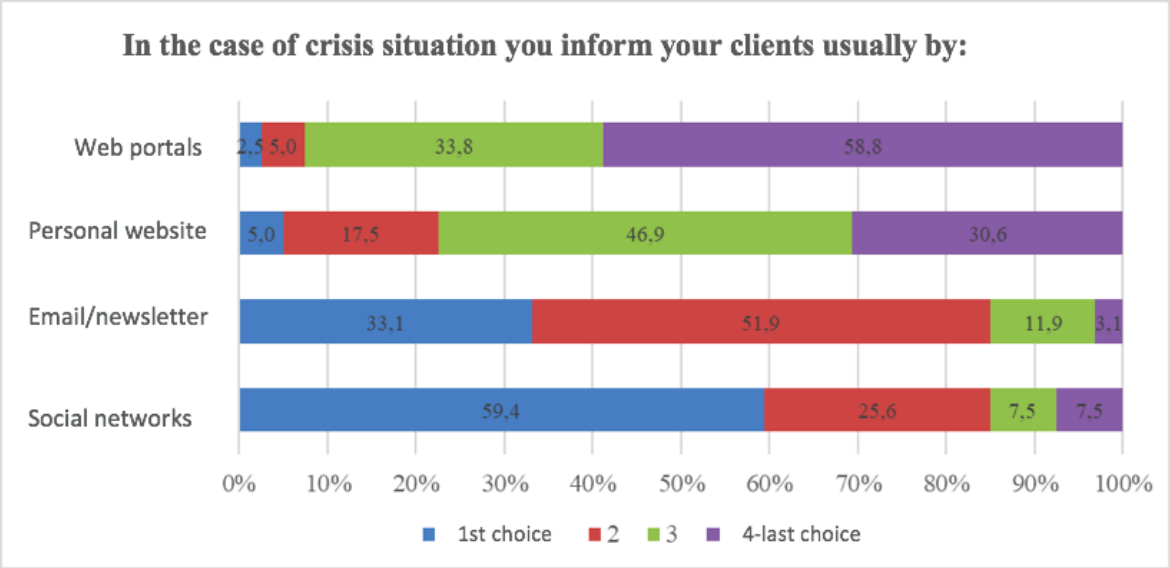
For this research, an online questionnaire was compiled that contained closed-ended questions and was intended for owners and managers of small and family hotels. Part of the question offers multiple answers, and part of the question is answered on a Likert-type scale of five (5) degrees. The questionnaire was available on the Internet at a specific address, while the selected subjects were contacted by e-mail or Facebook, which, in addition to explaining the research, also contained a link to the questionnaire. Completion of the questionnaire was anonymous, and the sample consisted of 169 small and family hotels from the territory of the Republic of Croatia. The research was conducted in 2021.

6. SURVEY RESULTS

The results of the research conducted for the purposes of this paper are presented below. The following few tables and graphs give a clearer view of the results.

		1	2	3	4	Total	C	Q_{3-1}
social networks	f	95	41	12	12	160	1,00	1,00
	%	**59,4**	25,6	7,5	7,5	100,0		
e-mail/newsletter	f	53	83	19	5	160	2,00	1,00
	%	33,1	**51,9**	11,9	3,1	100,0		
web portal	f	4	8	54	94	160	4,00	1,00
	%	2,5	5,0	33,8	**58,8**	100,0		
personal web site	f	8	28	75	49	160	3,00	1,00
	%	5,0	17,5	**46,9**	30,6	100,0		

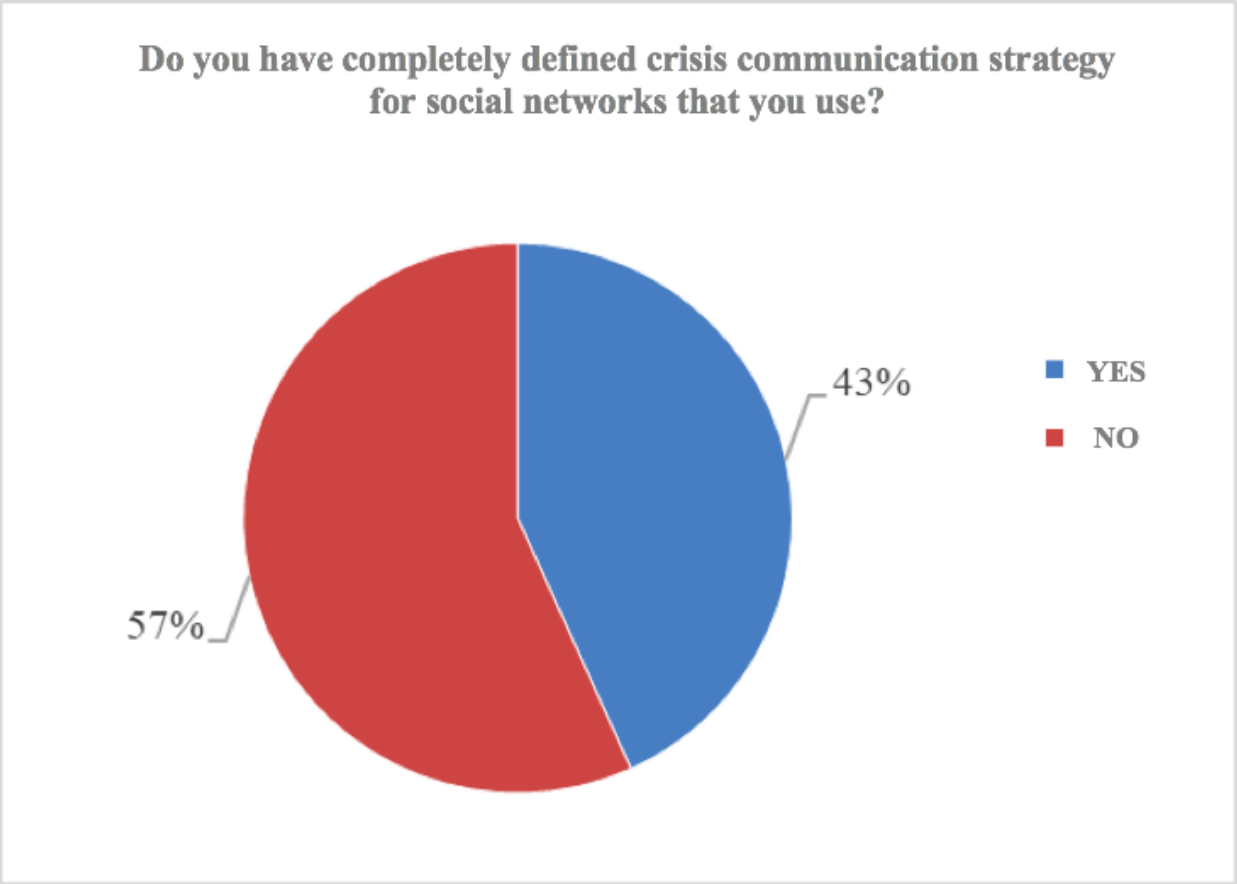
Table 1: Method of informing clients and potential clients in case of crisis situations (1-first choice, 4-last choice)



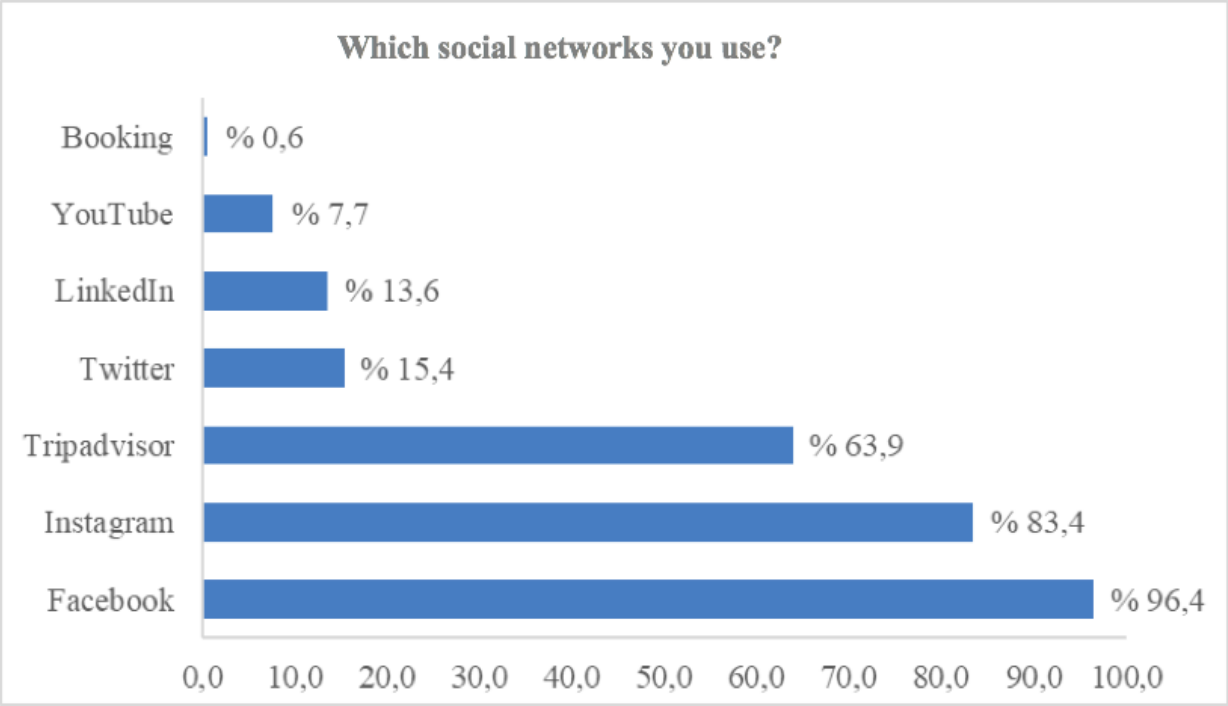
Graph 1: Method of informing clients and potential clients in case of crisis situations

In the case of crisis situations, it can be seen that social networks are the most preferred communication channel (59.4%), followed by e-mail / newsletters, then their own websites, and last but not least web portals.

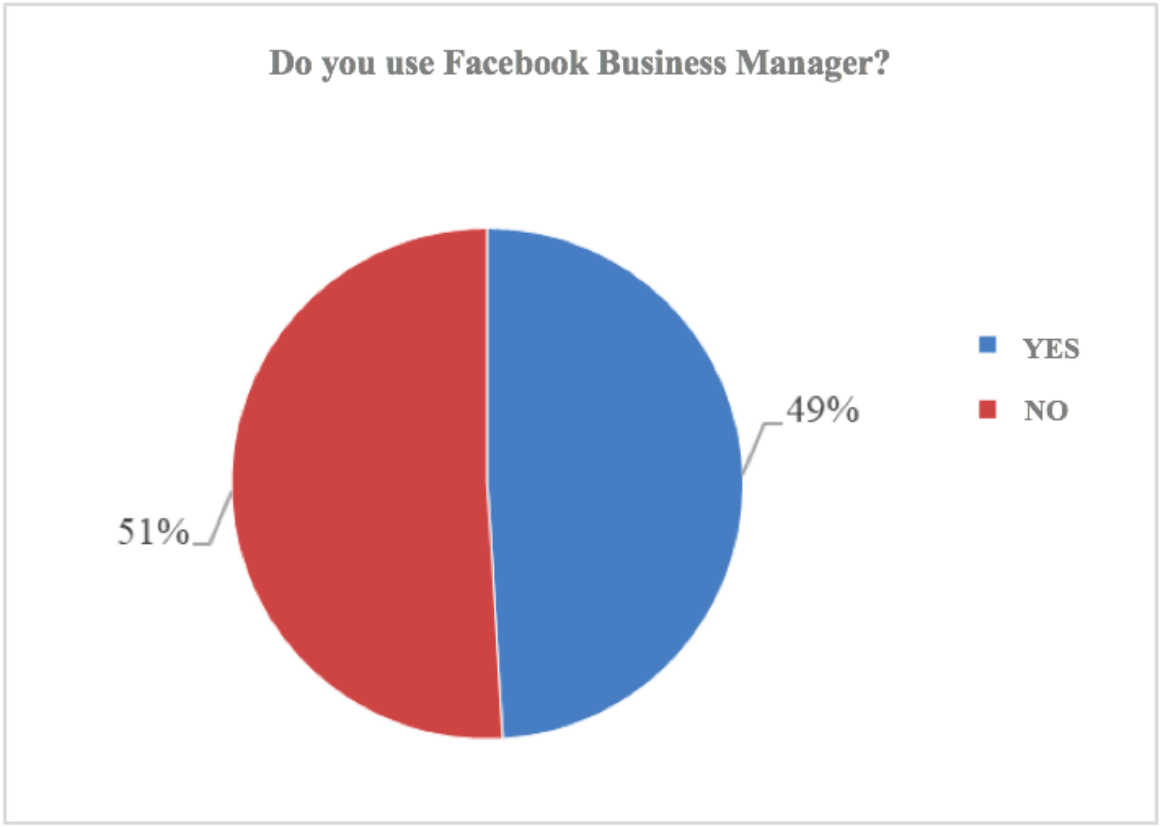
Graph following on the next page



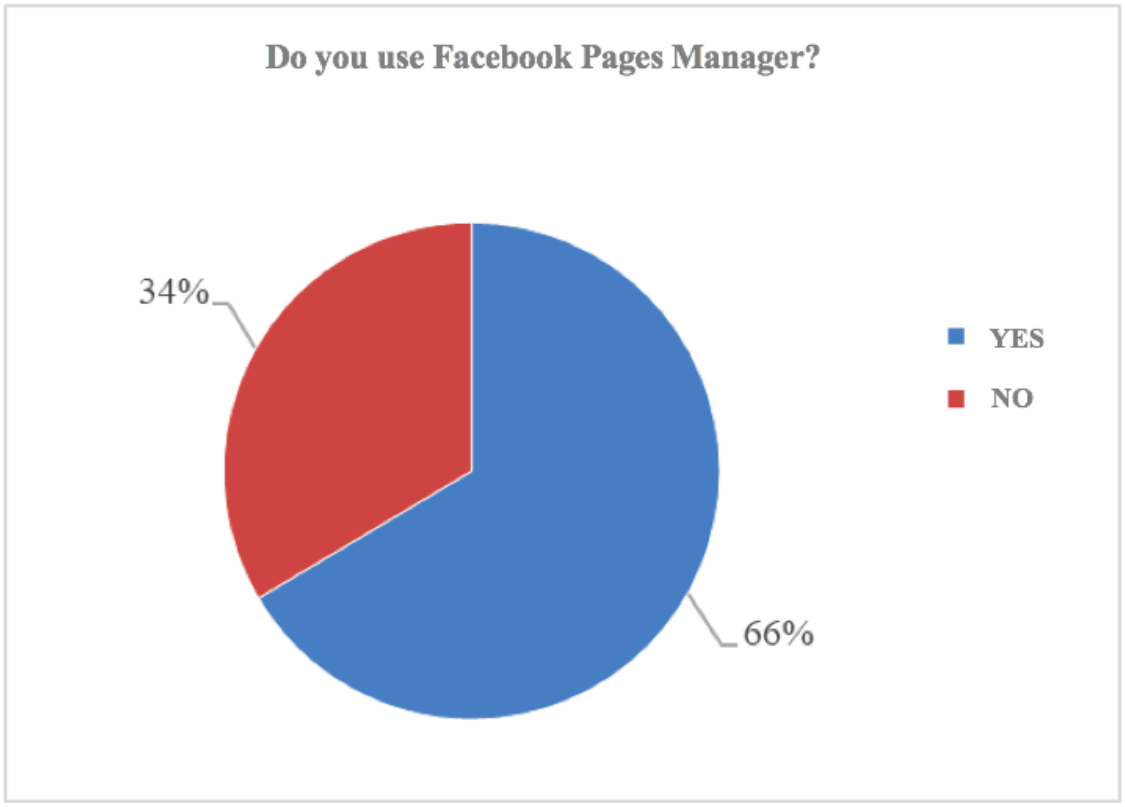
Graph 2: The existance of crisis communication strategy



Graph 3: Use of Social Networks

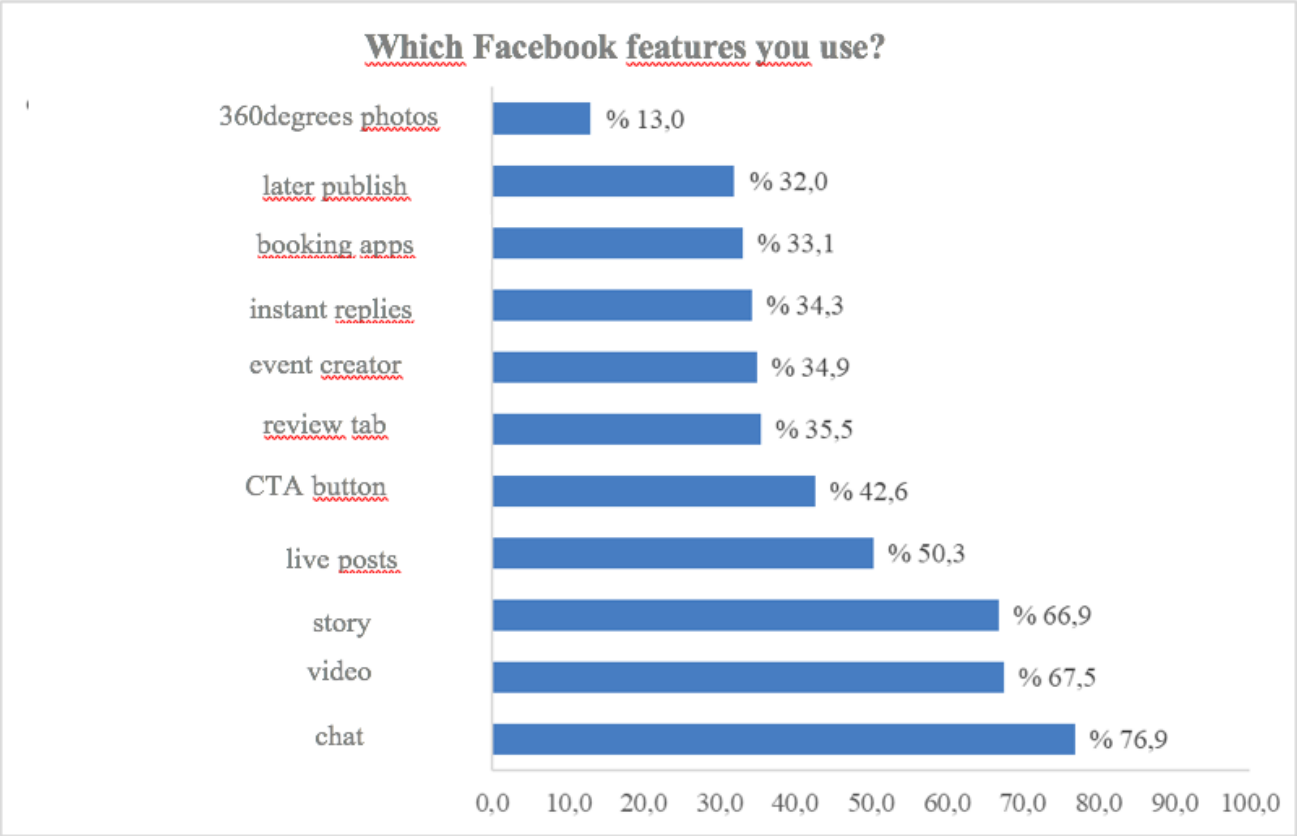


Graph 4: Use of Facebook Business Manager



Graph 5: Use of Facebook Pages Manager

The interface that contains all the features intended for business entities is called Business Manager and also include tool for fast communication with clients - Pages Manager. Business Manager contains everything in one place for managing business tools, business assets and through the interface (or mobile application) it is also possible to control the access of other, authorized, persons to the site. With Business Manager company can create, schedule and manage your posts and stories on Facebook and Instagram pages, view and reply to messages and comments, analyze the audience and content they post on the site. All of the above is extremely important for crisis communication, since the time to notice the situation and offer fast respond is crucial.



Graph 6: Use of Facebook features

The Facebook feature used by the largest share of respondents is chat / direct messages (77%). This is followed by video posts (67%) and story posts (67%), and half of the respondents stated that they use live posts. Based on this question, a new variable was calculated that represents the number of options (out of 11 options offered) that respondents indicated to use on Facebook.

N	Min	Max	0-2 features	3-5 features	6-8 features	9-11 features	M	SD
			%					
169	0	10	19,50	53,30	14,80	12,40	4,37	2,63

Table 2: Number of features used on Facebook

Respondents on average stated that they use less than half of the options (out of the 11 features listed) on Facebook (M = 4.37). Namely, the most represented and most used social network is Facebook, but hotels are only partially exploiting its full potential.

In order to examine the impact of the crisis communication strategy of the hotel on the use of available tools that social networks provide, the relationship between the following variables was examined using appropriate statistical procedures:

- defined communication strategy and use of Facebook features?
- defined communication strategy and use of Business Manager interface on Facebook?
- defined communication strategy and use of the Pages Manager application on Facebook?

The T-test for independent samples examined the difference between hotels that have a fully defined crisis communication strategy for the social networks they use and hotels that do not in the average number of features they use on Facebook. The use of available options was assessed on a nominal scale from 1 to 11 as 11 options were offered. The results are shown in the table (number of respondents - N, arithmetic mean - M, standard deviation - SD, t-ratio - t, degrees of freedom - df and significance level - p). The figure shows the average number of options that these two groups of hotels use on Facebook (arithmetic mean - M), with 95% confidence intervals.

	N	M	SD	t	df	p
have fully defined communication strategy	67	6,48	2,49	9,23*	86,40	<.01
don't have fully defined communication strategy	88	3,45	1,12			

Table 3: Existence of a fully defined communication strategy
(since the precondition for homogeneity of variance tested by the Leven test is not met, the result of the t-test with correction is given)*

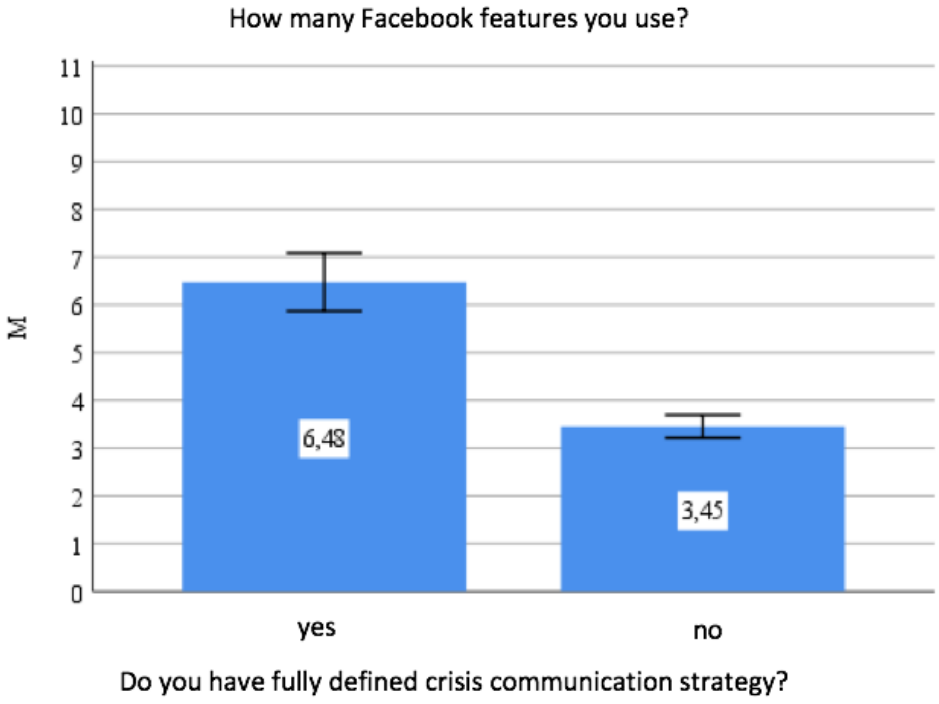


Figure 1: The results

The results indicate a significant difference in the use of Facebook options, with hotels that have a fully defined crisis communication strategy for social networks on average use more opportunities (M = 6.48) than hotels that do not (M = 3.45).

The Chi-square test examined the relationship between the definition of a communication strategy for social networks and the use of the Business Manager interface on Facebook. The results are shown in the table (frequencies - f, percentages -%, standardized residuals - St. residual, hi-square test result with Yates correction for 2x2 tables -χ_y^2, Cramer's V correlation coefficient - CV, significance level - p).

			Do you use Business Manager?		Total
			da	ne	
Do you have fully defined crisis communication strategy for social networks you use?	yes	f	51	16	67
		%	76,1%	23,9%	100,0%
		St. residual	5,9	-5,9	
	no	f	25	63	88
		%	28,4%	71,6%	100,0%
		St. residual	-5,9	5,9	
	Total	f	76	79	155
		%	49,0%	51,0%	100,0%
(χ_y^2=32.76, df=1, N=155, p<.01, CV=.47)					

Table 4: Overview of the use of the Business Manager interface and the existence of a fully defined communication strategy

The obtained results indicate a significant dependence of these variables. A higher share of hotels that have a fully defined communication strategy for social networks use the Business Manager interface on Facebook (76%) compared to hotels that do not have a fully defined communication strategy for social networks (28%). The chi-square test examined the relationship between the definition of a communication strategy for social networks and the use of the Pages Manager application on Facebook. The results are as follows:

			Do you use Facebook Pages Manager ?		Total
			da	ne	
Do you have fully defined crisis communication strategy for social networks you use?	yes	f	50	17	67
		%	74,6%	25,4%	100,0%
		St. rezidual	1,9	-1,9	
	no	f	53	35	88
		%	60,2%	39,8%	100,0%
		St. rezidual	-1,9	1,9	
	Total	f	103	52	155
		%	66,5%	33,5%	100,0%
(χ_y^2=2.92, df=1, N=155, p>.05)					

Table 5: Overview of the use of the Pages Manager interface and the existence of a defined communication strategy

No significant association was found between having a defined communication strategy for social networks and using the Pages Manager app on Facebook.

7. CONCLUSION

Effective communication in crisis situations in small hotels is based on the use of social networks; that is, it is clear that social networks today are a key component of effective communication in a crisis. Scientists who provide this type of explicit advice to practitioners argue that organizations and managers in crisis communication can no longer afford to neglect the integration of social media into crisis management. Crises can also be seen as an opportunity on social media because "crises can turn into a marketing campaign" and change "unfavorable factors into favorable ones" (Wang, 2016). Research has shown that small and family hotels take advantage of many of the opportunities that social networks as a crisis communication platform provide, but there is still a lack of rounded action and full use of potential due to the lack of a valid communication strategy. For these business entities, it is strongly recommended to implement mentioned strategy to be able to provide completely efficient crisis communication. There are also lists of detailed reasons why social networks should be used in a crisis strategy. The first such reason is that social networks create opportunities for the direct transmission of important information "to as many people as possible". Another reason is the large influence of social networks, which makes them a better choice than traditional media to avoid spreading misinformation during the crisis. Third, social networking technology is considered to offer communication opportunities that impose key principles of effective risk communication and effective crisis management. Such principles relate to the speed and possibility of direct communication between crisis management organizations and the public, as well as to the establishment of trust and the ability to work on the credibility of information sources (Panagiotopoulos, 2016). These tips on the possibilities of social networks emphasize the ability of social networks to bypass the news, engage in formal and informal interactions and support the exchange of information and cooperation, which is extremely important in crisis situations.

LITERATURE:

1. Cetinski, V. (2003). *Menadžment malog i srednjeg ugostiteljskog poduzeća.* Pula: Udžbenici Sveučilišta u Rijeci.
2. Avelini Holjevac, I. (2002.). *Upravljanje kvalitetom u turizmu i hotelskoj industriji*. Opatija: Fakultet za turistički i hotelski menadžment u Opatiji.
3. Bastakis C., Buhalis D., Butler R. (2004). *The perception of small and medium sized tourism accomodation providers on the impacts of the tour operators' power in Eastern Mediterranean.* Tourism Management, 151-170.
4. Zavišić, S.; Zavišić, Ž. (2011). *Facebook - nova dimenzija kriznog komuniciranja*. IV. međunarodna konferencija „Dani kriznog upravljanja" . Velika Gorica: Veleučilište Velika Gorica.
5. Tafra-Vlahović, M. (2011). *Upravljanje krizom.* Zaprešić: Visoka škola za poslovanje i upravljanje s pravom javnosti „Baltazar Adam Krčelić".
6. Witt, J.; Morgan, J. . (2003). *Stronger in the Broken Places: Nine Lessons for Turning Crisis into Triumph.* New York: Time Books.
7. Novak, B. (2001). *Krizno komuniciranje i upravljanje opasnostima.* Zagreb: Binoza press.
8. Keown-McMullan, J. (1997). Crisis: When does a molehill become a mountain? . Disaster Prevention and Management, 6(1), 4-10.
9. Marra, F. (1998). Crisis communication plans: *Poor predictors of excellent crisis public relations*. Public Relations Review, 24(4), 461-474.
10. Sigala, M. (2011). *Social media and crisis management in tourism*. Information Technology & Tourism, 13(4), 269–283.
11. Garrido-Moreno, A., Lockett, N. (2016). *Social media use in European hotels: Benefits and main challenges*. Tourism & Management Studies, 12(1), 172-179.

12. Lee, H.,;Choi, J. . (2014). *Why do people visit social commerce sites but do not buy? The role of the scarcity heuristic as a momentary characteristic*. Transactions on Internet and Information Systems, (pp. 2383–2399). Seoul.
13. Wang, Y. (2016). *Brand crisis communication through social media*. A dialogue between brand competitors on Sina Weibo. Corporate Communications, 21(1), 56-72.
14. Gaspar, R. e. (2014). *Tweeting during food crises: A psychosocial analysis of threat coping expressions in Spain, during the 2011 European EHEC outbreak*. International Journal of Human-Computer Studies, 72(2), 239-254.
15. Panagiotopoulos, P. e. (2016). *Social media in emergency management: Twitter as a tool for communicating risks to the public*. Technological Forecasting and Social Change, 111, 86-96.
16. Ngai, C. S. B.; Jin, Y. . (2016). T*he effectiveness of crisis communication strategies on Sina Weibo in relation to Chinese Publics' acceptance of these strategies*. Journal of Business and Technical Communication, 30(4), 451-494.
17. Roh, S. (2017). *Examining the paracrisis online: The effects of message source, response strategies and social vigilantism on public responses*. Public Relations Review, 43(3), 587-596.
18. Chung, S.;Lee, S. . (2016). *Crisis communication strategy on social media and the public's cognitive and affective responses: A case of foster farms Salmonella outbreak*. Communication Research Reports, 33(4), 341-348.
19. van Zoonen, W.;van der Meer, T. . (2015). *The importance of source and credibility perception in times of crisis: Crisis communication in a socially mediated era*. Journal of Public Relations Research, 27(5), 371-388.
20. Guidry, J. D. et al. (2015). *From #mcdonaldsfail to #dominossucks*. Corporate Communications, 20(3), 344-355.
21. Crook, B. et al. (2016). *Content analysis of a live CDC Twitter Chat during the 2014 Ebola Outbreak*. Communication Research Reports, 33(4), 349-355.
22. Krishna, A.; Vibber, K. S. (2017). *Victims or conspirators? Understanding a hot-issue public's online reactions to a victim cluster crisis*. Journal of Communication Management, 21(3), 303–318.
23. Coombs, W. T.; Holladay, J. S. . (2012). *The paracrisis: The challenges created by publicly managing crisis prevention*. Public Relations Review, 38(3), 408–415.


UNIVERSITY
NORTH
SVEUČILIŠTE
SJEVER


UNIWERSYTET WARSZAWSKI
WYDZIAŁ ZARZĄDZANIA


Faculté des sciences juridiques
économiques et sociales-salé


MEĐIMURSKO VELEUČILIŠTE U ČAKOVCU
MMVIII


Hrvatska kvaliteta


Izvorno hrvatsko