IMCSM Proceedings

ISSN 2620-0597

Volume XX, Issue (2), (2024)

An international serial publication for theory and practice of Management Science

Editor-in-Chief: Prof. dr Marija Panić

Published by University of Belgrade, Technical Faculty in Bor, Department of Engineering Management

Bor, 2024

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CIP - Каталогизација у публикацији
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005.51(082)(0.034.2)

INTERNATIONAL May Conference on Strategic Management (20 ; 2024 ; Bor)
[XX] International May Conference on Strategic Management – IMCSM24, May 31, 2024, Bor [Elektronski izvor] / [editor in chief Marija Panić]. - Bor : University of Belgrade, Technical Faculty, Engineering Management Department, 2024 (Bor : Tercija). - 1 USB fleš memorija ; 1 x 2 x 6 cm. - (IMCSM Proceedings, ISSN 2620-0597 ; vol. 20, issue (2) (2024))

Sistemski zahtevi: Nisu navedeni. - Nasl. sa naslovne strane dokumenta. - Tiraž 100. - Bibliografija uz svaki rad.

ISBN 978-86-6305-151-5

а) Стратешки менаџмент -- Зборници

COBISS.SR-ID 145961993

Conference is financially supported by the Ministry of Science, Technological development and Innovation of the Republic of Serbia

Konferencija je finansijski podržana od strane Ministarstva nauke, tehnološkog razvoja i inovacija Republike Srbije

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INTERNATIONAL MAY CONFERENCE ON STRATEGIC MANAGEMENT

SADRŽAJ

Volume XX, Issue (2) (2024) 1-6

International May Conference on Strategic Management

DOI: *10.5937/IMCSM24049S* *Original Research*

THE IMPACT OF GESTALT PSYCHOTHERAPY APPROACH ON LEADERSHIP INTERVENTION PERSPECTIVES IN THE ORGANIZATIONS

Aleksandra Shumar*

Skopje Metropolitan University, Republic of Macedonia/ United Arab Emirates

Abstract: This paper is an investigation into what and how the gestalt psychotherapy approach has contributed to the leadership in the intervention perspectives. The paper looks into what kinds of leader interventions, according to the research, make a positive influence for the group and its members. There is a gap in the literature in regards to models that link different psychotherapeutic approaches and leader interventions. The findings of this paper present companies' leaders with a mixture and intervention through psychotherapeutic approach (Gestalt psychotherapy). This impact demonstrates how the stages of group development are crucial in making concentrated therapeutic use of the leader variables, therapeutic factors and in making decisions about appropriate interventions. According to the risks and cultural factors across companies, and in order to avoid them, the research conducted in this paper will contain qualitative information. Usually I went through the questions: Which defence mechanism is the best in the current situation? How to lead my team members? How to finish team tasks without feeling aggression for the deadline? What would be therapeutic for this specific individual at this moment?" and "what does the group-as-a-whole need?" To discover and synthesize relevant material, this paper employs a modified systematic literature review. The traditional systematic literature review aids in the clarification of two key points. To begin with, they help determine whether findings from several studies on a certain issue are consistent, reliable, and can be applied to larger applications. Second, they help to discover gaps in the research literature, which may then be used to guide the development of future studies and how to affect a leader in a certain organisation using different approaches.

Keywords: Gestalt psychotherapy, leadership styles, intervention, ethical behaviour.

* *Corresponding author: vlaleks@yahoo.com*

Aleksandra Shumar, ORCID: 0009-0007-5181-6527

1. INTRODUCTION

Effective intervention tactics play a critical role in the dynamic field of organizational leadership. When leaders of organizations face ever-changing difficulties, they look for new ways to improve their perspectives on intervention. This study explores Gestalt psychotherapy's capacity for transformation as a framework that shapes leadership interventions in corporate settings. Through an analysis of the effects of Gestalt principles on communication styles, leadership tactics, and conflict resolution, our goal is to shed light on the many ways that Gestalt psychotherapy supports a more genuine and comprehensive approach to leadership. In order to promote constructive and long-lasting change, this study aims to highlight the need of incorporating Gestalt psychotherapy into leadership practices through a thorough examination of its use in organizational contexts (Cole, 2013).

1.1. Implementing Gestalt psychotherapeutic in leadership positions

Using a Gestalt psychotherapy approach in leadership roles is essential to developing leaders who are skilled at making strategic decisions as well as comprehending the complexities of human dynamics in organizational settings. The methodology prioritises an elevated level of self-awareness, motivating leaders to go into the depths of their own histories, convictions, and principles. Gestalt psychotherapy's focus on the "here and now" experience is one of its main advantages for leaders. It is recommended that leaders be totally present, aware of the current situation, and interact with their teams in a way that builds real relationships. With this kind of real-time awareness, leaders may respond empathetically to team members' needs, negotiate complex interpersonal interactions, and modify their style of leadership to fit changing circumstances (Albino, 2015).

Moreover, the Gestalt method gives leaders useful instruments for efficient communication. Gestalt psychotherapy training teaches leaders how to speak truthfully and create an atmosphere that values candid discussion. This openness fosters a culture of shared accountability and cooperation in addition to fostering trust. Another area in which Gestalt psychotherapy is quite helpful is conflict resolution. When a leader uses this strategy, they are able to see disagreements not as barriers to change but as chances for improvement. They gain the ability to discuss disagreements honestly, investigate the underlying causes, and assist in finding solutions that strengthen team unity (Brownell, 2009).

The main goal of applying Gestalt psychotherapy to leaders is to enable them to accept and value who they really are. Consequently, the company culture is infused with this genuineness, creating a fertile ground for invention, celebrating variety, and welcoming individual contributions.

1.1.1. Understanding Cultural Diversity in Dubai’s companies Page layout

Effective leadership is both aided and hindered by the various cultural makeup of Dubai businesses. Leaders must manage intricate relationships while working with people from many cultural backgrounds in order to create a truly inclusive atmosphere.

Due to its diverse workforce, Dubai's economic environment is defined by a rich tapestry of cultures. People with different communication styles, job preferences, and value systems come together because of this variety. The intricacy of leading teams in which cultural differences may affect expectations, attitudes, and methods of resolving conflicts must be faced by leaders.

1.1.2. Gestalt psychotherapy: A tool for enhanced leadership in diverse settings

Gestalt psychotherapy provides a distinctive perspective for leaders because of its foundation in holistic awareness and an appreciation of people's connection. Leaders can become more aware of the many viewpoints in their teams by adopting Gestalt principles. By encouraging leaders to examine their own prejudices, this strategy promotes a more accepting and compassionate leadership style.

The development of self-awareness is a fundamental component of Gestalt psychotherapy. Leaders who receive training guided by Gestalt theory are better able to identify their own cultural prejudices, which allows them to handle circumstances with more flexibility and openness. Building bridges between leaders and team members from different backgrounds starts with this self-awareness (Dana, 2018).

In a team, effective communication is essential to overcoming cultural differences. The focus of Gestalt psychotherapy is on genuine expression and in-the-moment awareness. By implementing these ideas, leaders can establish a culture of open communication that cuts across cultural divides and make team members feel heard and understood.

Conflicts in diverse workplaces might result from cultural differences in how situations are interpreted. Gestalt psychotherapy gives leaders the skills they need to explore the underlying dynamics of disputes and find solutions. Gestalt-trained leaders are more equipped to mediate disputes that take cultural quirks into account, transforming confrontations into chances for development.

The aim of the paper is to investigate and analyze how the principles and techniques of Gestalt psychotherapy can influence leadership intervention strategies within organizational settings. This research aims to explore how integrating Gestalt psychotherapy concepts into leadership practices can enhance leadership effectiveness, team dynamics, and organizational outcomes. (Daniels, 2004). Additionally, the paper seeks to examine the potential challenges, benefits, and implications of adopting a Gestalt psychotherapy approach in organizational leadership interventions.

2. EXPERIMENTAL

2.1. Research methodology

Methodology: Focus groups and semi-structured interviews are used in qualitative research based on the questions below:

1. What do you think about using Gestalt psychotherapy in organizations to improve leadership?
2. Have you faced any difficulties with traditional leadership methods in organizations?
3. Can you give an example of how using Gestalt psychotherapy ideas has changed how you deal with leadership challenges?
4. What parts of Gestalt psychotherapy do you think are most helpful for leaders in organizations?
5. How do you see the connection between team relationships and using Gestalt psychotherapy in leadership?
6. Have you met any resistance when suggesting Gestalt psychotherapy in leadership? How did you handle it?
7. What do you think are the good things that can happen when leaders use Gestalt psychotherapy methods?

8. Do you have any stories about when Gestalt psychotherapy made a big difference in leadership or how an organization works?
9. What do you think the future of leadership will look like if more leaders use Gestalt psychotherapy?
10. What advice would you give to leaders who want to try Gestalt psychotherapy methods in their work?

Participants: Executives and leaders from a range of industries working for Dubai-based businesses who have received training in Gestalt psychotherapy or are currently receiving it.

Sampling strategy: Purposive sampling to guarantee representation in various industries, sizes of organizations, and leadership positions.

Data collection methods included focus groups and in-depth semi-structured interviews with participants to elicit rich, in-depth thoughts.

2.2. Research Outcomes

- Insights into the difficulties and apparent advantages of applying Gestalt psychotherapy to leadership positions.
- Knowing how to use Gestalt concepts in leadership to improve communication, self-awareness, and conflict resolution in multicultural settings.
- Determining where Gestalt psychotherapy might be applied more skilfully and refined in positions of leadership.

3. RESULTS AND DISCUSSION

Asking participants about their thoughts on using Gestalt psychotherapy in organizations to improve leadership, responses had varied. Some participants expressed enthusiasm about the potential benefits of integrating Gestalt psychotherapy principles into leadership practices, highlighting its holistic approach to personal growth and self-awareness. Others expressed skepticism or caution, citing concerns about the compatibility of Gestalt principles with traditional organizational structures and leadership styles.

Participants shared experiences of facing difficulties with traditional leadership methods in organizations. They discussed challenges such as rigid hierarchies, communication barriers, resistance to change, and a lack of emphasis on individual well-being and holistic development. These difficulties could serve as motivating factors for exploring alternative approaches like Gestalt psychotherapy.

During the focus groups some examples of how Gestalt psychotherapy ideas head been provided and how some of them have changed participants' approaches to leadership challenges can offer valuable insights. Participants shared stories of adopting Gestalt principles such as focusing on the present moment, promoting self-awareness, and fostering authentic communication to navigate complex leadership situations more effectively.

Participants discussed how Gestalt principles such as promoting authenticity, fostering trust, and encouraging open communication can positively influence team cohesion, collaboration, and performance.

Participants shared experiences of encountering resistance when suggesting Gestalt psychotherapy in leadership. They described challenges such as skepticism from colleagues or superiors, concerns about the perceived 'softness' of Gestalt principles, or resistance to change ingrained in the organizational culture. Strategies for addressing resistance included education, demonstration of effectiveness, and gradual implementation.

When asked about the potential benefits of using Gestalt psychotherapy methods, participants they highlight outcomes such as improved self-awareness, enhanced emotional intelligence, stronger interpersonal relationships, increased resilience, and more authentic leadership styles. These positive changes can contribute to a healthier organizational culture, higher employee satisfaction, and better overall performance.

Sharing stories of when Gestalt psychotherapy made a significant difference in leadership or organizational dynamics can provide compelling examples of its effectiveness. Participants recounted instances of transformative leadership experiences, breakthrough moments in team interactions, or positive shifts in organizational culture catalyzed by Gestalt-inspired interventions.

Participants offered insights into their vision of the future of leadership if more leaders embrace Gestalt psychotherapy. They anticipated a shift towards more authentic, emotionally intelligent, and relational forms of leadership, characterized by greater self-awareness, empathy, and adaptability. This evolution lead to more humane, resilient, and sustainable organizational practices.

Finally, participants provided practical advice to leaders interested in trying Gestalt psychotherapy methods in their work. Suggestions included starting with small experiments, seeking mentorship or training in Gestalt principles, creating a supportive organizational culture conducive to personal growth, and being open to feedback and reflection on their leadership journey.

3.1. Implications for practice

The importance of Gestalt psychotherapy in their leadership responsibilities was acknowledged by all of the participants. A leader made the following observation: "Gestalt has provided me with a fresh perspective on the variety of viewpoints on my team. Not only should differences be acknowledged, but they should also be viewed as assets.

Following Gestalt psychotherapy training, leaders reported feeling more aware of themselves. They discussed situations in which their communication was improved by this awareness. As an illustration, one participant said, "I used to accept that my team preferred to get feedback or be delegated with the task in a certain way. I'm more aware of personal preferences now, which fosters a more candid and encouraging dialogue."

The participants outlined situations in which their approach to conflict resolution was informed by Gestalt ideas. One leader said, "The team was able to investigate the root causes, which resulted in a more long-lasting solution."

4. CONCLUSION

Gestalt psychotherapy is increasingly being included into leadership roles as Dubai businesses continue to value cultural diversity. This is a potent tactic for promoting inclusivity. Leaders may effectively negotiate the difficulties of cultural diversity by developing self-awareness, honing communication techniques, and adjusting conflict resolution tactics. This will ultimately lead to the creation of vibrant and harmonious workplaces (Delisle, 1991).

Based on the results, firms were advised to establish a culture that supports leaders in embracing vulnerability and introspection, incorporate real-world case studies into training, and offer continuous assistance throughout the early phases of implementation.

REFERENCES

Albino Mecaluso, M., (2015). Beyond the Perls-Goodman Model: From the Organism-Environment Field to the Relational Field, *Gestalt Review*, 19(3), 233-250. https://doi.org/10.5325/gestaltreview.19.3.0233

Brownell,P.,(2009). Executive Functions: A Neuropsychological Understanding of Self- Regu lation, *Gestalt Review*, 13(1), 62-81. https://doi.org/10.5325/gestaltreview.13.1.0062

Cole, P., (2013). In the Shadow of the Leader: Power, Reflection, and Dialogue in Gestalt Group Therapy, *Gestalt Review*, 17(2), 178-189. https://doi.org/10.5325/gestaltreview.17.2.0178

Dana, D., (2018). The Polyvagal Theory In Practice, Norton & Company.

Daniels, V., (2004). A Gestalt Therapy & Field Theory Based Model for Social Analysis and Change. Florida, Association for the Advancement of Gestalt Therapy Conference.

Delisle, G., (1991). A Gestalt Perspective of Personality Disorders. *The British Journal of Gestalt*, 1, 42-50.

Volume XX, Issue (2) (2024) 7-12

International May Conference on Strategic Management

DOI: *10.5937/IMCSM24050H* *Review article*

UNDERSTANDING ORGANIZATIONAL BEHAVIOR: INSIGHTS INTO VALUES, CULTURE, AND COGNITION

Enes Hamzagic*, Aleksandra Golubovic Stojanovic, Srdjan Skorup

Business College of Applied Studies „Prof. PhD Radomir Bojkovic“, Serbia

Abstract: This paper examines the complex dynamics of organizational values, culture formation, and group dynamics using a multidisciplinary approach. It explores the effects of national culture, organizational founders, and employees on organizational values, emphasizing the evolution of organizational culture over time. Additionally, it contrasts traditional and contemporary approaches to culture formation while emphasizing the roles of communication, managerial practices, and group dynamics in shaping organizational ethos. By synthesizing insights from different disciplines, this paper offers a comprehensive understanding of organizational dynamics and behavior, providing valuable implications for organizational leaders and researchers. Through its examination of the complex interaction between these factors, our study contributes to a deeper understanding of the challenges and possibilities facing organizations in today's dynamic environment.

Keywords: Organizational Behavior, Organizational Culture, Organizational Values

1. INTRODUCTION

Organizations are complex social entities, they are characterized by values, norms and cultural dynamics. They effect the behavior of the individual and they are affecting the decision-making processes in the organization. The research of organizational values, culture formation and group dynamic have central place in the organizational theory. It has great effect on organizational efficiency, employees moral and the overall organizational success. The understanding of the complex interaction between these elements is crucial for understanding organizational functioning and for developing organizational strategies for future development.

Our paper conducts multidisciplinary research of organizational values, formation of culture and group dynamics, drawing insights from psychology, anthropology, sociology and organizational theory. We begin by elucidating pivotal role of values in shaping organizational behavior, by recognizing the effects national culture and top management has in shaping organizational ethos. By examining seminal research and theoretical framework, our paper delineates mechanisms, through which organizational values are being transmitted, internalized and manifested in organizational culture.

* *Corresponding author: eneshamzagi@yahoo.com*

Enes Hamzagic, ORCID: 0000-0002-4649-0047
Aleksandra Golubovic Stojanovic, ORCID: 0009-0004-1916-1098
Srdjan Skorup, ORCID: 0009-0005-7006-037X

Furthermore, our paper delves into multifaceted process of culture formation inside the organizations, by considering the imprint left by the founders and the dynamic interaction between existing members and newcomers. It contrasts the traditional approaches, which are rooted in top-down control, such as the ones which are associated with Fordism, with more contemporary paradigms which are emphasizing empowerment, collaboration and employee's autonomy. By synthesizing insights from anthropological studies, sociological analysis and organizational research, our paper clarifies the mechanisms underlying the evolution of organizational culture and the emergence of subcultures within diverse organizational contexts.

Moreover, our paper examines the crucial role of communication and linguistic framework in shaping organizational culture, highlighting the role of managerial practices in strengthening already existing cultural norms. We examine the effect of group dynamics on organizational functioning, taking in the account the formation of cohesive groups, the dynamics of intra-group relations, and the implications for organizational cohesion and performance.

By synthesizing insights from different disciplinary perspectives, our paper aims to off comprehensive understanding of multifaced nature of organizational values, the formation of organizational culture and group dynamics. We attempt to contribute both theoretical scholarship and practical management strategies, providing valuable insights for organizational leaders, scholars, and practitioners navigating the complexities of contemporary organizational life.

2. ORGANIZATIONAL VALUES

Every organization is composed of certain set of values and believes. They are under the influence of national culture, the culture of founder and of the employees which are working inside the organization. Quartz and Sejnowski (2002) believed that it is the organization of long-life experience which is affecting adult brain. Additionally, the studies about the mind development do as well state the importance of the cultural context in which mind is being placed (Liu et al., 2008; Lu et al., 2008).

Suprapersonal values are often ones which are pan-personal, beyond the values of individuals. They may represent the values held by governments, banks, schools, municipalities, religion communities and so on. Coherency within the organization is not always an imperative. Often organization may face the confrontation, between the values held by the organization and values held by employees. That is why organizations tend to have set of rules, policies, and regulations. As it is sad, we can distinguish values held by organization and its members. The positive aspect of having strong organizational culture, lies in fact that in such case organizations do not necessarily need to do such regularization, since its members are coherent with organizational culture. Looking beyond the personal values, may help us to achieve such coherence. Superordinate goals that require collaboration and cooperation usually decrease prejudice and increase mutual respect (Relations & Sherif, 1961).

3. FORMATION OF ORGANIZATIONAL CULTURE

The formation of organizational culture may be examined from two perspectives (1) In the case of funders developing an organization's culture; (2) In the case of new members joining the organization. Considering the ongoing evolving concept of organization, culture is constantly closely attached to it. The construction and the constant evolving process of organization, the huge contribution was given by the organizational researches. In the first years of enterprise creation, founder's setup the pillars of organization culture. With policies,

rules and norms, mostly unaware, founders establish *the way how we do things here.* By the growth of company, culture is evolving. The transfer of established culture is done towards the new employees. In this way the *new* cultural paradigms are born. With the growth of enterprises, subcultures become formatted. Subcultures may be formed by the occupational backgrounds of its members. Schein (1984) noted that one of the main prerequisites of culture are the "owners", there cannot be a culture unless there is a group that "owns" it.

The anthropologist Wright (1994) believed that there are two types of organizations, the ones which are strengthened Fordism and the others which are turning away from that idea. The *Fordism* companies transfer the organizational culture from the mission statement into the practice. The organization describes how each task should be practiced, and it is imposed to the workforce by continuous trainings and supervision. In this way, through the practice and repetitive tasks, the way of operating is being transferred. The opposite systems from Fordism are the ones which empower the employees to take the initiatives, gave them more power to decision making and group them into the teams.

One another point of view, concerning the way culture is perceived is through the *linguistic angle.* Communicative actors always move within the horizon their life-world (Dallmayr & Habermas, 1984), remarkably it is the linguistic which goes towards the value system and to the institutions. According to Dallmayr and Habermas (1984) everyday praxis yields three life-world spheres (1) culture, (2) society, (3) personality, where culture denotes a reservoir of shared knowledge and pre-interpretations, society a fabric of normative rules, and personality a set of faculties or competences enabling an individual to speak and to act.

In his book Engineering culture, Kunda (1995) has noted the way in which corporate culture was used in order to be distributed to the employees. Kunda showed how events and meetings can have symbolic meaning through which culture is being spread. Furthermore, Kamsteeg and Wels (2004) stated that culture is an *managerial instrument* which may impact upon the lives and identities of the peoples in organizations.

3.1. Groups

In order to have a culture, we must have certain group, formed by individuals who interact with one another. In his work about Organizational Culture, Schein (1984) noted that in order to have *given group*, we need to have people who have been together long enough to have shared significant problems, who have had opportunities to solve those problems and to observe the effect of their solutions and who have taken in new members. In day-to-day communication the group form its own culture. Usually unaware of its creation and existence. We should differentiate the culture which has been present inside the groups and the organization's culture. Organizational culture is the gradually developed type of small group culture.

According to Schein (2010) groups starts by certain *originating event*: (1) An environmental accident; (2) A decision by an originator to bring a group of people together for some purpose; (3) An advertised event or common experience that attracts a number of individuals. Human relations training in one type of advertised event. Number of people come together voluntarily to participate in a one - or two - week workshop for the advertised purpose of learning more about themselves, groups, and leadership (Levinger, 1965; Schein & Bennis, 1965). Individuals volunteer to participate in such events. The events are organized in an isolated place, so called "cultural islands". In such T (training) groups, there is one trainer/mediator. After solving the *new and ambiguous situations* the participants become

closer. With the time passing, during the event, participants form an *immediate alliances*. Rogers (1970) described T groups as *the most significant social invention of the century*.

Each group is unique. Every member has a specific set of values and norms which he brings into the group. In that way, each group is consisted of different perceptual patterns. Schein (2010) regarded the concept of group *understanding* as a process which previously need to be articulated. The articulation needs to be done spontaneously by the member which has the willingness to lead.

3.2. New members

The new members of the organization are influenced by the organizational culture, which comes from the organization's funders. When new members join an organization, the solution to the problems which they use are the ones which are coming from organization's funders. Since the organization is constantly evolving, the new changes and solutions can come from new members as well, after gaining the necessary experience. What is driving our attention are the deep cultural assumptions that, in the end, (a) it is the individual who makes the difference and (b) getting the job done is much more important than relationship building and teamwork (Schein, 2013).

4. MOTIVATION

Maslow (1958) hierarchy of needs shows five aspects of human life, which are motivating people to go forward (see Figure 1). According to Hofstede (2016), this hierarchy is not applicable worldwide. In countries with higher uncertainty avoidance, security is higher motive than self-actualization. That is why in countries with high uncertainty avoidance, people tend to have secure and safe job places. As we can see, self-actualization is on the top of the pyramid. In collectivistic societies, harmony and consensus are beyond individual self-actualization. Meaning that this hierarchy may be applicable exclusively to societies which were analyzed by it. Schein (2015) believed that groups are the critical units of organizations and of society, and he find it paradoxical that we are discussing so little these days on groups as object of research while talking of systems models and the interdependency of everything.

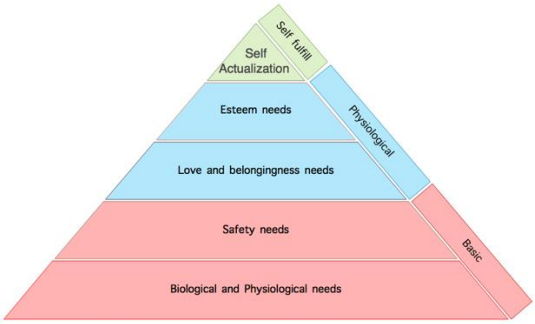


Figure 1. Maslow's hierarchy of needs (Source: Maslow, 1958)

5. CONCLUSION

In conclusion, our paper has conducted research concerning the better understanding of organizational behavior, by examining the values, culture and cognition. Examining different

perspectives has shown that organizational values, national culture and founders of the organizations are having great effects on organizational behavior. Evolution of organizational culture, from when it is founded until adaptation and transmission through organizational practices, underscores the dynamic nature of cultural phenomena within organizations. We have explored traditional and contemporary approaches in the culture formation, highlighting the importance of communication, managerial practice and group dynamics in shaping the organizational principles.

Overall, our paper underscores the complexity of organizational dynamics and the need for multidisciplinary approach in better understanding and managing them efficiently. By synthesizing insights from different disciplines, organizations can have deeper understanding of its values and culture. Insights achieved from our paper could serve as a valuable guide for promoting organizational effectiveness and resilience in the face of ongoing challenges

REFERENCES

Dallmayr, F. R., & Habermas, J. (1984). *Life-world and communicative action*. Helen Kellogg Institute for International Studies, University of Notre Dame.

Hofstede, G. (2016). Culture's consequences: Comparing values, behaviors, institutions, and organizations across nations. *Collegiate Aviation Review*, *34*(2), 108. https://doi.org/10.1016/S0005-7967(02)00184-5

Kamsteeg, F., & Wels, H. (2004). Anthropology, organizations and interventions: New territory or quicksand? *Intervention Research*, *1*, 7-25.

Kunda, G. (1995). Engineering culture: Control and commitment in a high-tech corporation. *Organization Science*, *6*(2), 228-230. https://doi.org/10.1287/orsc.6.2.228

Levinger, G. (1965). T-Group Theory and Laboratory Method: Innovation in Re-Education Edited by Leland P. Bradford, Jack R. Gibb, and Kenneth D. Benne. https://doi.org/10.1080/00207284.1965.11642861

Liu, D., Wellman, H. M., Tardif, T., & Sabbagh, M. A. (2008). Theory of mind development in Chinese children: a meta-analysis of false-belief understanding across cultures and languages. *Developmental psychology*, *44*(2), 523. https://doi.org/10.1037/0012-1649.44.2.523

Lu, H., Su, Y., & Wang, Q. (2008). Talking about others facilitates theory of mind in Chinese preschoolers. *Dev Psychol*, *44*(6), 1726-1736. https://doi.org/10.1037/a0013074

Maslow, A. H. (1958). A Dynamic Theory of Human Motivation. In *Understanding human motivation.* (pp. 26-47). Howard Allen Publishers. https://doi.org/10.1037/11305-004

Quartz, S., & Sejnowski, T. (2002). *Liars, Lovers, and Heroes: What the New Brain Science Reveals About How We Become Who We Are*.

Relations, U. o. O. I. o. G., & Sherif, M. (1961). *Intergroup conflict and cooperation: The Robbers Cave experiment* (Vol. 10). University Book Exchange Norman, OK.

Rogers, C. R. (1970). *Carl Rogers on encounter groups*. Harper & Row.

Schein, E. (2013). *Humble Inquiry: The Gentle Art of Asking Instead of Telling*.

Schein, E., & Bennis, W. G. (1965). Personal and organizational change through group methods: The laboratory approach. New York: JohnWiley and Sons. *Inc. Search in*. https://doi.org/10.1177/07417136670170021

Schein, E. H. (1984). Coming to a new awareness of organizational culture. *Sloan management review*, *25*(2), 3-16.

Schein, E. H. (2010). *Organizational culture and leadership* (Vol. 2). John Wiley & Sons.

Schein, E. H. (2015). Organizational psychology then and now: Some observations. *Annu. Rev. Organ. Psychol. Organ. Behav.*, *2*(1), 1-19. https://doi.org/10.1146/annurev-orgpsych-032414-111449

Wright, S. (1994). Culture in anthropology and organizational studies. *Anthropology of organizations*, *1*, 31. https://doi.org/10.4324/9780203413272

Volume XX, Issue (2) (2024) 13-19

International May Conference on Strategic Management

DOI: *10.5937/IMCSM24051R* *Review Article*

INTANGIBLE ASSETS IN THE FINANCIAL MARKET: FINANCING INTANGIBLE-INTENSIVE COMPANIES

Amer Rastić[*] , Slavoljub Šljivić

High Business College of Applied Studies „Radomir Bojković, PhD, Kruševac, Serbia

Abstract The increase in investments in intangible assets has presented several challenges. One of the open questions is whether intangible assets can mobilize more debt toward companies looking for funding in the financial market. There is a lack of scholarly material that sheds light on the role of intangible assets in the financial market. This paper aims to clarify the role of intangible assets in attracting financial resources for businesses to improve their financial performance.

Keywords: Intangibles, Intangible Assets, Financial Markets.

1. INTRODUCTION

For the essential definition of intangible assets of companies, it is necessary to revert to texts that define knowledge, as it is the fundamental substantial element of intangible assets. Nobel laureate Kenneth Arrow was one of the first to describe the determinants of knowledge as an intangible resource. Thus, he established a distinction between knowledge and other resources, namely (Lambin, 2014, p. 137):

- Knowledge is not consumed or lost through exploitation but represents an inexhaustible resource.
- It is difficult to secure exclusivity over it and exercise-controlled exploitation of knowledge. Consequently, its exploitation results in positive effects for third parties.
- Knowledge is cumulative, meaning its production heavily relies on existing knowledge.

Knowledge implies theoretical and practical familiarity with an object through facts, descriptions, or skills acquired through experience and education (Lambin, 2014, p. 138). It

[*] *Corresponding author: amerstudent@hotmail.com*

Amer Rastić, ORCID: 0000-0001-8042-6674
Slavoljub Šljivić, ORCID: 0000-0003-4864-326X

involves a set of justified beliefs that can empower a company to undertake effective action (Hsu & Sabherwal, 2012, p. 492). Popular literature definitions are the following:
A broad definition of intellectual capital presents itself as the difference between the market and accounting value of the company. Knowledge-based resources contributing to sustainable competitive advantage of the company stem from intellectual capital (Choong, 2008, pp. 610-611); *Intangible assets represent value drivers that transform production resources into resources with added value* (Choong, 2008, pp. 610-611); *Intangible assets are invisible and encompass a wide range of activities such as technology, consumer trust, reputation, corporate culture, and management skills* (Choong, 2008, pp. 610-611).

However, intangible assets constitute a significant component of today's companies' assets. Today, on average, the value of intangible assets occupies up to 90% of the total market value of the company (intangible assets are represented in an attractive light blue color), while 10% of the value belongs to physical assets (physical assets are represented in the form of concrete pillars, *Figure 1*). The continuous change in the ratio of market and accounting values over the last forty years, since 1978, is caused by the emergence of new business models highly intensive in intangible assets (*Figure 1*).

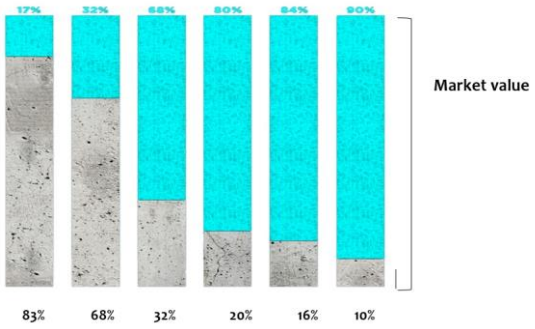


Figure 1. Market to Book ratio in companies over the past half-century in favor of intangible assets, S&P 500 (Adapted from Ali, 2020).

It can be indicated that the source of value creation in the economy belonging to the digital economy does not originate from the value of tangible assets but from the "pool" of intangible assets (see Chen et al., 2005, p. 159). This is confirmed by studies indicating that (Guthrie et al., 2001, p. 369):

- Companies with high-quality human resource management have a higher market value.
- Investments in employee training affect profitability.
- Investments in research and development activities influence productivity and stock value.
- Patents are statistically associated with stock returns and the market-to-book value ratio.
- Disclosure of information triggers market reactions.

In achieving business, financial, and strategic goals, intangible assets enable the realization of the following goals (Harrison & Sullivan, 2000, p. 36):

Generating revenue based on products and services, through:

- sales;
- royalties from licensing;
- revenues within joint ventures;
- revenues within strategic alliances.

Generating revenue based on intellectual property itself, through:

- sales;
- royalties from licensing;
- revenues within donations within joint ventures (through tax write-offs to the company);
- high prices;
- increased sales based on "convoyed" sales (selling patented and non-patented production units together, in bulk, at a high price) and based on repeated sales.

Strategic positioning, through:

- increasing market share;
- achieving leadership in innovation, technology, and the like;
- setting industry standards;
- creating a company brand and reputation.

Adopting innovations from others;
Achieving customer loyalty;
Cost reduction;
Improving productivity.

However, the increase in investments in intangible assets of digital economy companies has produced various challenges for legal, accounting, political, and economic communities. Haskel and Westlake highlighted, among others, a major challenge (adapted from Haskel & Westlake, 2018, pp. 91-239): Financially sustaining the continuity of investments of companies in intangible assets. The most common reasons, in our opinion, are the law of sunk costs and the accounting non-recognition of intangible assets in business books.

2. LAW OF SUNK COSTS

One of the reasons for the unavailability of mechanisms for financing investments in intangible assets is the legality of sunk costs to which intangible assets are subject. This legality implies that investments in intangible assets are highly risky because they usually require high initial investments (Cohen, 2011, pp. 30, 31). It is difficult to recover investment costs because, metaphorically speaking, they sink. The decision to invest in intangible assets is not a reversible process where costs can be recovered by selling such assets as physical ones. Physical tangible assets are defined by standards and are usable across a wide range of companies. They result from mass production, making their sale simpler. Intangible assets are not defined by standards and are not the result of mass production. They are interpreted as special and are most useful to the company that has developed them. Therefore, their connection to the company is much stronger compared to physical assets (Haskel & Westlake, 2018, pp. 68-70).

The effects of sinking the value of intangible assets are manifested in recessive periods of companies or when they cease to operate on a going concern basis. This results in the loss of the surplus market value of the company above its book value (Skinner, 2008, p. 194). Nokia

is a textbook example of a company that faced this effect. In 2012, when Nokia faced significant business difficulties, it decided to sell its headquarters (a complex of buildings) in Espoo, Finland, for 170 million euros (see *Nokia to sell and lease back Finnish headquarters*, 2012). Buildings are a classic example of physical assets. Nokia also possessed intangible assets in the form of the Symbian operating system and professional units to support user engineering. The professional units were sold to Accenture in the third quarter of 2009, but transaction details were not disclosed (Holland, 2009). The Devices and Services unit (including production, distribution, design, operations, sales, marketing, and related support) with patents related to design and licenses was bought by Microsoft for only $7 million in 2013, compared to the market price of Nokia's intangible assets (see *What Microsoft Did and Didn't Buy with Its Nokia Acquisition*, 2013). It is concluded that when a company wants to sell its intangible assets to secure funds to exit a recession, i.e., to divest, it usually values much less compared to physical assets. As a result, participants in the financial market are very cautious when investing their funds in such companies.

3. ACCOUNTING NON-RECOGNITION OF INTANGIBLE ASSETS IN BUSINESS BOOKS

It is important to emphasize that the high risk associated with investments in intangible assets is the main factor resisting accounting rules to recognize such investments as assets in the balance sheet. Therefore, there is usually a high discrepancy between the accounting and market value of the company, as mentioned earlier. Everything not recorded within the net assets of the company is considered in the market aspect. Accounting rules have allowed the recognition of intangible assets but under very demanding rules. One of the main rules is the ability to demonstrate clear benefits flowing into the company from the newly created product. However, this is not always the case. For example, it happens that companies, after spending a large amount of money on research, fail to develop a product later, and such expenses are recognized as costs. Since there is great pressure on accounting regulators regarding this irrationality, a set of conditions has been issued that allows the company to prove that such costs represent an investment that brings regular benefits to the company. It is crucial to prove that such investments provide future economic inflows over the next few years (see more Ernst & Young LLP, 2019, p. 1243), postponing the risk of realizing the sinking costs over a longer period. In practice, it also happens that company management can seemingly convert investment costs in intangible assets into assets to make financial reports look profitable to investors. This reduces costs, but there is a high risk that such assets will suddenly lose value. For example, the reduction in research and development costs of intangible assets at Enron occurred due to accounting allocation and recognition of such costs in the balance sheet, which is a kind of accounting manipulation since rigid accounting criteria for capitalizing investment costs were not met (for *Enron*, see more Skinner, 2008, p. 194).

Due to the law of sunk costs, the intention for innovation in the company must not be weakened, as during the innovation process, which begins with discovery and ends with commercialization, the level of risk is continuously decreasing. With adequate management, the level of risk associated with intangible assets can be reduced to a reasonable level (Lev, 2001, p. 42). Besides the intention to create intangible assets, it is necessary for there to be an intention for their use within the company or sale on the market. This is one of the conditions by accounting regulations for research and development costs of intangible assets to be

converted into the company's intangible assets (see IAS 38, paragraph 57). Continuity of financing intangible assets needs to be regularly practiced. Unfinished innovations entail dramatically high sunk costs. For example, Kodak company invested significant amounts of money in the invention of digital cameras but did not invest in further development and commercialization of the innovations. Authors argue that this is precisely the reason why Kodak went bankrupt in 2012 (Anthony, 2016), forcing them to sell patents at a much lower price than originally offered.

4. INSTEAD OF A CONCLUSION

In the case of bank loans, there is a general rule that they are relatively slow, burdened with bureaucracy, and neglect business reality when it comes to intangible-intensive companies. Most external financing streams for companies are in the form of loans. Banks lend to companies for a fixed period, expecting interest and principal repayment. In situations where the debt is not repaid, the bank resorts to a mechanism of seizing some form of the company's assets or the owner's assets. This mechanism can reduce the risk of bank lending and is particularly popular among capital-intensive companies. However, according to Haskell and Westlake, companies that possess intangible assets are governed by Polonius' rule from Shakespeare's Hamlet, "*neither a borrower nor a lender is, for loan oft loses both itself and friend*" (Haskel & Westlake 2018., p. 164). Since the intangible asset is of a sunk nature, it is very difficult to sell it on the market. In this sense, it is very difficult to support the guarantee of a company's loan with intangible assets. One idea prevalent in academic circles is the establishment of a government bank that would create its offer in the financial market specifically calibrated for this type of company. However, this is an attempt to normalize the financing of intangible-intensive companies in a classical sense. On the other hand, in some countries, there are usually specially tailored programs or institutions that support the development of these innovative companies. Typically, banks, investment funds, or technology and innovation development institutions provide grants in exchange for a stake in the company. However, evidence that such a system is not yet widely recognized is that these companies much more easily obtain investments from private investors (we have all encountered the Shark Tanks show somewhere). In this sense, financing of these companies, especially in the start-up phase, is supported by private crowdfunding systems. All this indicates insufficient adaptability of the public financial scheme when it comes to these companies.

An avenue of financing for this type of company is also IPO, however, this is not straightforward due to the high costs of banking consulting, fees, and other administrative costs. Complex IPO regulations can also burden these companies. Let's remember the whole IPO process. Our fictional company *Intangible* has decided to go public to raise capital for further advancement of its technological innovations. It engages the investment bank *Intangible Investment Bank* as an advisor for the entire process. Intangibles then conduct due diligence or a review of its financial reports, technological patents, and processes. Then, it prepares and submits an official form or registration application to the authorized body (in the USA it is the *SEC*, in Serbia it is *Komisija za hartije od vrednosti*). As part of this phase, the offer is developed, including pricing and offer structure after market analysis (the share price can be 3 000 RSD with a number of issued shares 200 000). It is then necessary to carry out marketing and promotion. The *Intangible Investment Bank* can organize presentations in several major

cities and hold meetings with institutional investors and highly positioned private investors. After completing the presentations, investment banks study the investors' interest and may come up with an offer to distribute shares to 70% institutional investors, 20% to private investors, and 10% to be allocated to employees in Intangibles. Only then does the IPO execution follow, where investment banks sign agreements for the issuance of shares, and the transaction is carried out. *Intangibles* begins trading on the stock exchange where the share price of Intangibles opens at 3 500 dinars, indicating good demand. Our fictional company would only start raising funds for financing its technological innovations at this point. Let's also bear in mind that the capital market in Serbia is underdeveloped.

REFERENCES

Ali, A. (2020, November 12). The Soaring Value of Intangible Assets in the S&P 500. Visual Capitalist. https://www.visualcapitalist.com/the-soaring-value-of-intangible-assets-in-the-sp-500/62.

Anthony, S. D. (2016, July 15). Kodak's Downfall Wasn't about Technology. Harvard Business Review. https://hbr.org/2016/07/kodaks-downfall-wasnt-about-technology.

Chen, M., Cheng, S., & Hwang, Y. (2005). An empirical investigation of the relationship between intellectual capital and firms' market value and financial performance. *Journal of Intellectual Capital*, 6(2), 159–176. https://doi.org/10.1108/14691930510592771.

Cohen, J. A. (2011). Intangible assets: valuation and economic benefit. John Wiley & Sons.

Ernst & Young LLP. International GAAP 2019. (2019). John Wiley & Sons.

Guthrie, J., Petty, R., & Johanson, U. (2001). Sunrise in the knowledge economy. Accounting. *Auditing & Accountability Journal*, 14(4), 365–384. https://doi.org/10.1108/eum0000000005869.

Harrison, S., & Sullivan, P. H. (2000). Profiting from intellectual capital. *Journal of Intellectual Capital*, 1(1), 33–46. https://doi.org/10.1108/14691930010324124.

Haskel, J., & Westlake, S. (2018). *Capitalism without capital: the rise of intangible economy*. Oxford.

Holland, C. (2009, July 20). Nokia to sell Symbian unit to Accenture. Embedded.com. https://www.embedded.com/nokia-to-sell-symbian-unit-to-accenture.

Hsu, I. C., & Sabherwal, R. (2012). Relationship between Intellectual Capital and Knowledge Management: An Empirical Investigation. *Decision Sciences*, 43(3), 489–524. https://doi.org/10.1111/j.1540-5915.2012.00357.x.

IAS 38 — Intangible Assets, (April, 2001), retrieved from https://www.ifrs.org/content/dam/ifrs/publications/pdf-standards/english/2021/issued/part-a/ias-38-intangible-assets.pdf

Choong, K. K. (2008). Intellectual capital: definitions, categorization and reporting models. Journal of intellectual capital, 9(4), 609-638. https://doi.org/10.1108/14691930810913186

Lambin, J. J. (2014). Rethinking the Market Economy. Palgrave Macmillan UK.

Lev, B., 2001. M*anagement Measurement and Reporting. Brookings Institution Press*, Washington D.C.

The Guardian. (2012, December 4). Nokia to sell and lease back Finnish headquarters. https://www.theguardian.com/technology/2012/dec/04/nokia-sell-lease-helsinki-headquarters.

Skinner, D. J. (2008). Accounting for intangibles – a critical review of policy recommendations. *Accounting and Business Research*, 38(3), 191–204. https://doi.org/10.1080/00014788.2008.9663332

ReadWrite. (2013, September 3). What Microsoft Did And Didn't Buy With Its Nokia Acquisition. https://readwrite.com/2013/09/03/what-microsoft-did-and-didnt-buy-with-its-nokia-acquisition/

Volume XX, Issue (2) (2024) 20-29

International May Conference on Strategic Management

DOI: *10.5937/IMCSM24052R* *Review Article*

POSSIBILITIES OF PRACTICAL IMPLEMENTATION OF INDUSTRY 5.0, EXPECTED CHANGES AND RISKS IN MINING

Slobodan Radosavljević *

RB "Kolubara" d.o.o., Svetog Save 1., 11550. Lazarevac, R. Serbia

Abstract: This Further steps of technological development in mining, supported by the implementation of Industry 5.0, are indisputably necessary, realistic and expected, relying primarily on the specifics of current needs in the near and far future. Has the speed of promotion of Industry 5.0 caught the field of mining in positions of practical application, what are the expectations for changes and potential benefits, and potential risks, their synergistic arrangement is a matter for detailed analysis of multidisciplinary expert teams specialized in this field. In particular, there is an apostrophe to some of the interesting problems for the field of business in mining, which are evident and for the solution of which a series of professional practical moves are needed in a longer period of time. The fact is that the field of mining and its development do not suffer too many negative and unstable influencing circumstances without consequences, and that such circumstances are visible as limiting factors that slow down the overall development and progress. The paper analytically discusses the impact of Industry 5.0 on mining, the possibilities and location of practical application of some determinations directly in production practice and partially on technical units in parts of segments of production units. Expectations from the improvement of the functioning of the system are also analysed but also from the upcoming changes that are inevitable, and the generation of the volume of potential risks, with the possibility of their minimization in newly created circumstances. Part of the research for the topic Industry 5.0 in mining was carried out in the second half of 2023 and the beginning of 2024 years.

Keywords: Industry 5.0., mining, risk, implementation, production practice

1. INTRODUCTION

The opinion that Industry 4.0 has not yet been practically verified in the practices of various industries, given that the personnel for its implementation are still in constant education, in the middle of 2022 a completely new concept and paradigm for the need for new industrial transformations will arrive, faster and more radically than ever before. More precisely, all this is the subject of necessary changes through the generation of Industry 5.0. A lot of questions

* *Corresponding author: drslobodanr@gmail.com*

Slobodan Radosavljević, ORCID: 0009-0000-3223-9743

can be asked here in the context of new efforts for change at all levels, all industries and all cards.

Whether the concept of Industry 4.0 is slowly being abandoned and the need for changes require something new, fast and efficient, through the determination of the new concept of Industry 5.0. The answers to such questions are quite problematic, contradictory and sometimes extremely confusing. It can be stated that Industry 4.0 has definitely not fully found its definition and application in the world, more precisely somewhere it is with less or more success. It seems that the world is not ready for transformations according to the requirements and clothing of Industry 4.0. The latest current trends in the world contribute in a certain sense to this, through various limitations, events, time, organization, needs and possibilities of further development from the point of view of stability, efficiency and sustainability of the system at the global level.

The component of the humanization of the industry of the future with the requirement to reduce the pressure on the worker/executor in the work process, definitely leaves Industry 4.0 aside and immediately promotes a new concept of further direction in development through Industry 5.0. The question of possible pre-networking of both industries can be raised or who is ready or not ready for rapid and new development transformations. Ultimately, there is a problem for many in the world who are not even familiar with Industry 4.0 even in its basic conceptual definitions.

Can they even get involved in the new development paradigm, or will they remain behind for a long time and probably in future regression, because they are definitely not able to keep up with the ever faster and more modern methods for progress and development?

A special question is whether we have reached a stage when the dynamics of social development have reached such an acceleration that the cycles of drastic changes in economic paradigms, something that should happen rarely, have reached unprecedented proportions and become shorter than the time frames of the policies we are trying to regulate our economic reality or, perhaps, it is about some completely different changes?

These are basically the questions to which the scientific and professional public in the world are trying to give answers.

2. INDUSTRY 5.0, EXPECTED QUALITATIVE THRESHOLDS

Industry 5.0, according to its strategic orientations and orientations, represents an attempt to define a sustainable way out of the current critical state in which the world finds itself. It is a new development paradigm that abandons the particular concept of Industry 4.0 and its technological dimensions focused exclusively on digital technologies and digitalization in general, and adds new dimensions and new meaningful content to the subject paradigm.

One of the hallmarks of Industry 5.0 is that it is a model of the latest level of industrialization, characterized by the return of labor to factories, distributed manufacturing, intelligent supply chains and hyper-customization, all with the aim of delivering a customized customer experience time after time (Di Nardo et al., 2021).

Industry 5.0 promotes two new alternatives for the future.

The optimistic alternative is to find a way and a path for the necessary economic and social transformations through the approaches offered by Industry 5.0. Therefore, through complete structural changes, we partially, more or less preserve the concept of industrial economy in order to enter as quickly as possible the era of new sustainable development based on the generation of new meaningful industrial development models and cultures.

Pessimistic alternatives would be to persist with the existing models, which undoubtedly lead to the scenario of the collapse of the industrial economy and, in general, the complete

collapse of the world economy, as well as the return of the world to the undoubtedly less successful/unsuccessful past times (Huang et al., 2022)

Based on the report published in early 2022 by the independent expert group ESIR formed by the European Commission-Industry 5.0: A Transformative Vision for Europe-Governing Systemic Transformations to a Sustainable Industry, ESIR Policy Brief No. 3, European Commission, Directorate-General for Research and Innovation, Directorate G-Common Policy Centre, there is also a chapter with a very indicative title: "Industry 4.0 is not the right framework for achieving the goals of Europe 2030", and their expert qualifications almost derive the conclusion that there was no Industry 4.0, that in fact everything is only a theoretical-political construction, and that the understanding of industrial development that is taken for granted through media representation is almost inadequate (https://research-and-innovation.ec.europa.eu/, 2022).

The configured categorical positions offer an argument whose essence is that the Industry 4.0 model is actually technological, focused on the concept of physical cyber objects and systems, and that the digitization of value creation chains excluded from other contents does not have sufficient capacity for other systemic problems, especially in the field of resolving tensions of different forms of social inequality.

The negative critical evaluation of Industry 4.0, as a previously nominated development concept on which Europe and the world spent more than a decade, states that this conceptual model does not have sufficient transformational capacity and that it supports those business models and economic interpretations, which all represent the main the cause of the threats the world is facing today.

In any case, Industry 5.0 recognizes the importance of human participation with the aim of delegating new ideas and enabling changes and building mutually beneficial relationships with customers. This can also be accepted as the rehumanization of automation. This is also about returning the human touch to production with the regulation of instrumentation between people and smart systems with the aim of achieving long-term success (https://www.personalmag.rs/., 2021). In the future, work will be done on combining human and machine intelligence, an example of technological processes, /creation of products and services/, where the qualitative business of some companies will finally be distinguished in relation to others.

The transformation of the industry should not threaten the competence of the economy and its growth, with the condition that it must be much more people-oriented, more stable and flexible in order to withstand major crises caused by sudden and hard-to-predict circumstances, migration, economic downturns and other potential catastrophes. which can globally destabilize the world. Some of the main characteristics of Industry 5.0 which should be achieved in the future are:

- Orientation towards the human factor,
- Elasticity, and
- Sustainability.

Orientation towards the human factor implies technological changes that, with the inclusion of robots and co-robots, will bring about completely new transformational models where humans will recognize their place in the system as well as the need for constant changes. His intelligent projections bring a new dimension to business, and at the same time he will fully enjoy the benefits that will constantly expand and increase thanks to his creativity.

There is almost no limit to the technological growth and progress of society, if the most advanced ideas and thinking are implemented in the system on time, taking into account the limitations that will certainly exist on the way to realization. Elasticity as one of the characteristics of Industry 5.0 implies setting technical, economic and all other observations in

the systems based on the modeling of new approaches, methods, models, competences and as a result of new higher thresholds of benefit requirements. There is no place here for non-product and outdated system integrations, but the integrability of the existing and the new, or rather the latest, is certainly understood and desirable in every system sense and context (Leng et al., 2022). A practical provisional of Industry 5.0 could be considered through the following definitions: Increased focus on the integration of human workers and machines in manufacturing as well as other industrial environments.

- Shifting focus from robots that replace humans to robotic solutions and smart machines that support and augment human work.
- Repositioning human manufacturing workers from assembly line processes and other repetitive tasks to more creative jobs that require problem solving, experience and intuition.
- Moving away from excessive automation and recognizing its shortcomings.
- Moving towards finding a more balanced approach for optimized robotic manufacturing processes of the future.
- Focusing on user experiences and mass customization of smart products for consumers.
- Building smart, responsible and distribution supply chains.
- Design and manufacture of smart interactive consumer products.
- Solving potential security risks and vulnerabilities of modern interconnected industrial automation systems.

Sustainability as a feature of Industry 5.0 implies the ability to maintain the balance of system processes, their constant balancing and balancing with the aim of constant growth and growing product. The recommendations of Industry 5.0 that qualify it for its implementation capacity can be seen through: constant creative work on increasing productivity and qualitative performance of production systems and products, the physical labor of man is significantly reduced, the production time for a given production unit is reduced, constant improvement through creativity in to all business processes and constant education of staff in the system, further education, improvement and change/rotation of staff (Fazal et al., 2022).

Industry 5.0 is a big step forward in the industrial retraining of the existing state with some of the sporadic shortcomings that can be named so far. Although it promotes the creation of new jobs, the question is how many and which jobs? So here, the space is immediately opened for constant and fast education of personnel designed for new jobs. The problem is whether educational systems will be able to fulfill their obligations in configuring new personnel programs and potential with their own transformational models. Industry 5.0 cannot be imagined without the application of artificial intelligence and AL robots and KO robots in all possible processes as well as in newly generated ones. An assumption is made here that a person must work with a robot, and this raises the question of a possible situation of competition in business activities, then ethnic relations in working with robots, primarily towards robots? A person will find himself working with several robots and there is a possibility that he may not fully understand them (https://www.researchnester.com/reports/industry-50, 2023).

The problem is how to release human creativity in systemic productions? How to place a person on the second system level of production control or the third creative level for compatible logistic support? Answers to these nominated questions must follow quickly and immediately, which means that Industry 5.0 must have a constant evolution.

The emphasis is on intelligent balancing that helps system processes reach high quality thresholds. So here we are not only talking about technical processes, but also all other accompanying and logistical processes, which make up a sustainable society. This characteristic can also be recognized in the determinations /*from man and for man or from all for all*/.

3. INDUSTRY 5.0 AND MINING

Generally speaking, mining in the world realities of the previous years experienced an evolution that is appropriate to the needs for general growth and progress in the new times that are ahead of us. Mining implies a rather broad concept and it covers all the world's resources through exploitation and processing suitable for their use and in the context of human well-being. So some events of recent years, such as the pandemic /corona virus/ which suddenly caught the world causing certain shifts, stops, relocations and important rapid changes in the energy transition strategy. It can be said that the world almost stopped for a short while, and realized that very fast turnarounds and relocation of the world's rebirth potentials are needed.

When it comes to coal, by that time, a slight reduction in its exploitation and use had begun, and it seemed that such trends were not only necessary and necessary, but also unstoppable. The situation changed almost instantly and such a trend was stopped. In support of this is the indisputable fact that the end of 2022 years and the whole of 2023 years, will be the time of almost record-breaking coal exploitation in the world ever. In addition to small countries that had almost no alternative choice, they had to rely on their own resource potential. And major world powers like China in 2023 record the largest exploitation and consumption of coal in history ever recorded (https://journalofcloudcomputing-springeropen-com, 2023).

The supply chains were broken then, and this is still the case today, and the energy transition that began has not been slowed to a halt, but has taken on new transformational forms and shapes. Such a constellation of facts indicates imminent and rapid changes that the world certainly needs immediately. One of the questions when it comes to mining, which is quite realistic, is whether sustainable and smart mining exists and is at all possible, taking into account the synergistic effects that are inevitable in the establishment of such determinations?

In the newly emerging circumstances of mining, the question of the place, role, response and effects of Industry 5.0. arises. when implemented in mining? What has been applied and implemented in mining since Industry 4.0.? Did mining have time for Industry 4. to incorporate At least a smaller part of it into itself. It is an indisputable fact that the development technological credibility of mining in the world is questionable, given that mining rests on different degrees of achieved development and technological improvements of mining. This means that large and rich countries such as China have developed and modernized their own technological processes and represent an example of constant development and overall progress when it comes to mining (https://blog-isa-org, 2023).

Surface mining of coal is one of the most complex processes, viewed from the technical, technological, project, sustainable, ecological, social and other aspects directly or indirectly connected in that context. Here, all processes in relation to their arrangements are important, and it is very difficult to fulfill all their requirements, that is, to set up technological models and systems and fully optimize their applications, especially in the production practice of mining. For such reasons, system improvements and their optimization of all processes are inevitable, a necessity in the ever faster and more demanding conditions of their expansion in a multidisciplinary context. Analyzing the impact and implementation of Industry 4.0 in mining, it can be concluded that it is almost at the levels of sporadic recommendations and with a very low degree of practical implementation formats. So that situation has not changed significantly even up to today. There are many reasons for this state of affairs (https://www8-cao-go-jp, 2022).

One of them is very important that mining is complex and it is this component that delegates the need for longer time intervals for application and implementation. In the world, experiences range from total non-application, initial familiarization, partial application, or greater scope of application/implementation. So overall, extremely uneven. It should be noted

that the large countries of the world are far advanced in implementation, while the small ones are almost at the levels of introduction to the initial levels for implementation. An important factor here is large financial logistics. Therefore, the rich in the world have a greater chance of progress, so that they realistically progress faster compared to the small and poor, and that ultimately determines the implementation system format of the application of Industry 4.0 in world relations (https://mitsubishisolutions.com/industry-5/, 2022).

4. INDUSTRY 5.0 AND IMPLEMENTATION POTENTIAL IN MINING

Process analysis in mining is key to identifying process improvements, optimizing operations, risk management and other specifics. Several basic processes in mining that are interesting for analysis and in the context of the application of industry 5.0 can be recognized through the process approach and the decomposition of the process into phases. Steps with defining where and what can be implemented with an assessment of the implementation framework and capacity:

- Exploration: This process includes geological exploration of coal deposits to identify the deposit and assess its economic viability. Analysis of this process may include an assessment of the accuracy of geological data, research costs, and the application of the most appropriate research methods and models.
- Designing: This process includes the design of coal exploitation, which includes the planning and design of mining operations that are necessary for the exploitation of coal in a safe, secure and efficient manner. The elements of the basic phase I of the design process for surface mining of coal are: Geological research; Planning of mining methods; Design of mining operations; Safety and environmental protection; Economic factors; Use of technology.
- Relocation/relocation of settlements due to coal mining involves a series of complex steps and processes to ensure safe, fair and sustainable resettlement of populations affected by mining activities.
- Exploitation: This process includes the surface exploitation of coal, disposal of earthen overburden masses in coal overburden. Next follows the analysis of the complete exploitation processes, including the assessment of the efficiency of surface exploitation methods, the safety of all mining operations, and the impact of surface exploitation on the environment, the local community and waste management.
    - Geological research: The first step is geological research to identify and evaluate potential coal deposits. This includes analysis of geological structures, soil composition, and other characteristics that may affect coal mining.
    - Mine planning: Based on the results of geological research, a coal exploitation plan is made. The plan includes the selection of the optimal location of the mine and mining fields, exploitation methods, exploitation techniques, cost estimation and exploitation time frame.
    - Ground preparation: Before the start of exploitation, the ground is prepared for mining operations. This means the removal of vegetation, leveling of the terrain, construction of access roads, and mining facilities, as well as the establishment of infrastructure for the transport and processing of coal.
    - Surface mining of coal: After the preparation of the terrain, the surface mining of coal is started. Excavation methods and methods depend on geological and

economic factors. Surface exploitation implies the removal of complete layers of earth/earth tailings mass, until the complete discovery of coal blocks.
    - Transport of coal: After coal extraction, it is necessary to transport it to the processing plant. This may include different modes of transport. In surface exploitation, belt conveyors are mostly used for this, although other forms of transport are not excluded.
- Coal processing: After coal extraction, it must be processed and prepared for different categories of consumers, which means that there are several ways of processing coal. These processes include grinding, washing and drying of coal in the range of required granulates. The analysis of this process can include an assessment of the energy efficiency of coal quality, harmful emissions in the process and waste generation.
- Transport and logistics: Transport of coal from the place of extraction to the place of the processing plant /separation and grinding, washing and drying of coal/, transport to the landfill of thermal power plants or to the location of consumption/sale to commercial and non-commercial entities. The analysis of this process includes the evaluation of the efficiency of all transport systems /conveyor belts, railways, trucks/, transport costs, safety and security of transport, the impact of transport on the environment and others.
- Maintenance: Maintenance of equipment and complete infrastructural logistics is crucial for continuous, reliable and safe operation of technical systems for the execution of mining operations. The analysis of this process can include the assessment of reliability of technical systems, equipment reliability, types and models of system maintenance, logistics of system maintenance, maintenance costs, inventory management of spare aggregates, maintenance parts, generation of waste during maintenance and others.
- Waste management and environmental protection: Mining operations can generate large amounts of waste and have a significant negative impact on the environment. The analysis of this process includes an assessment of the waste management strategy, reclamation procedures, environmental protection measures, compliance with the legislation that regulates this matter for the mining sector.

The analysis of the mentioned processes must identify opportunities for improving efficiency, reducing the costs of surface coal exploitation, improving the safety and sustainability of the system, risk management and other specific determinations in mining. In some of the mentioned basic processes of mining and their decomposition into sub-process units, phases and steps, it can be concluded that these are quite complex processes that have a rounded configurational form, but also room for addition for the beginning of at least some of the determinations of Industry 5.0. In the decomposed design process, there is room for real improvement through the positioning of the latest smart methods and models for the area of geological research, when planning mining works, especially when designing the necessary mining processing, equipment and technical systems, smart models for the design of general safety and environmental protection, new models for economic analysis of economic parameters in production and optimal definition of the use of all system capacitative resources in coal production (Leng et al., 2022).

Here, the research shows that in the most mentioned processes it is possible to achieve the compatibility of the application of artificial intelligence, robots and Co-robots with which interaction with humans would be achieved, where in joint work there would be a deep expression of new creative system-formatted solutions with new advantages and, as expected, better quality contributions (Xu et al., 2021).

The following can be realized: the orientation of the dual cooperation of man and robot on certain technical systems for excavation of tailings soil mass/corner discovery as well as surface exploitation/coal mining. In truth, this possibility exists only for technical systems of the latest generation. These are technical systems configured in the 1st generation after 2015. Unfortunately, there are not many such modern technical systems in the systematic exploitation form of work in mining, at least not in Serbia. When the big countries in question are the USA, China, India and others, the situation is much more favorable and technological progress is faster and better. There has already been achieved compatible cooperation in the relationship /Man-Artificial intelligence-Robot-Who is the robot/, and progress is being made towards further improvement and implementation of the latest implementation forms of the module (Longo et al., 2020).

The implementation of interaction between humans and robots in the aforementioned and decomposed processes in mining requires quality planning, testing and training in order to ensure safety and operability accepted by humans. It is very important to take into account the ethnic and social aspects that arise from human-robot cooperation as well as the general use of robots in mining processes (Maddikunta et al., 2022).

In order to achieve dual creative intelligent cooperation on the mentioned relations, it is necessary:

- Training and constant education: Staff must be educated and trained to work together with robots in order to use them safely and effectively through cooperation. This includes training in robot management and operation, programming, maintenance and safety protocols.
- Work in a team: Robots can be used as assistants to team members in all previously mentioned processes for the field of mining.
- Control and supervision: Humans can monitor the operation of the robot through direct observation and application, which refers to the control of the movement, speed and function of the robot. This allows a person to be involved in the process of making creative decisions and to adapt the work of the robot to the new process conditions.
- Safety: Robots can be used to perform dangerous, complex and difficult tasks to protect humans from potential hazards. Robots can be used to inspect dangerous and hard-to-reach areas.
- Assistance: Robots can be used as assistants in business environments, providing assistance in generating new organizational forms and modalities. In communication with people when solving process problems and more.
- Personalization: Robots can be programmed to adapt their functions and behavior to individual needs and preferences.

Industry 5.0 brings with it a series of modern model I methods that are realistically applicable in all analyzed mining processes. Internet of Things (IoT): Enables the connection of physical devices and sensors to the Internet, which enables real-time monitoring and control of mining processes. Artificial Intelligence (AI): AI is used to analyze large amounts of data to identify patterns, optimize processes and made the best and most optimal quick decisions. Al can be used both in autonomous mining systems and in personalized production. Digital Doppelgangers: These are digital replicas of physical objects, systems or processes applicable in mining as well. Blockchain technology: Enables safe storage of data and transactions through a decentralized cryptographically protected database. It can be used to track supply chains, ensure product authenticity, and improve transaction security. Robotics: Robotics plays a key role in the automation of production processes in Industry 5.0. Advanced robots perform the most complex process tasks with great precision and efficiency. Cyber-Physical Production

System: (CPPS): Combines digital and physical elements in a production environment to enable autonomous management and optimization of mining processes (Slavic et al., 2024).

5. INDUSTRY 5.0 AND RISK IN MINING

Risk generation is inevitable in the newly created productive circumstances of Industry 5.0 engineering. In the environments of all smart process units of mining: perception, identification, processing and minimization of all total generated risks, it certainly gets a new approach, new analytical formats on the overall platform of obtaining smart products in both a qualitative and quantitative context (https://www.designsafe.net/, 2024).

Some of the newer models and methods for risk analysis in Industry 5.0 are: Digital Double Ledger (DLT): Using DLT technologies like blockchain and smart contracts to track supply chains and potential non-conformities brings a lot of security and benefits.

Internet of Things (IoT) and sensor technology: The integration of sensor data from devices and equipment in real time enables the identification of potential risks in all processes.

Predictive analytics: Using advanced analytics techniques to analyze data to identify future risks. Simulation modeling: Using simulation tools to model different process scenarios, their impact on processes and their feasibility (Radosavljević et al., 2013).

Cyber Security: Development of advanced methods to detect, prevent and respond to cyber disruptions in processes including Process Controlling (ICS) and Manufacturing Management (MES) (Radosavljević et al., 2009).

Modeling the resilience of supply chains: Analysis of different scenarios in supply chains, identification of critical nodes and development of risk mitigation plans.

Cooperation and System Integration: Development of integrated platforms for risk management that enable cooperation between all process participants in order to manage risks in a holistic way (Radosavljević et al., 2009).

These new models and methods help Industry 5.0 to better understand and manage complex risks arising from digital transformation and process connectivity (It is necessary to fully appreciate the synergy of different risks and hidden risks and reduce and minimize them).

6. CONCLUSION

Industry 5.0 focuses on the interaction of people and machines/robots. The joint work of man and robot combines human creativity and skill with the speed, precision and productivity of robots in order to create smart processes and products in mining. Research shows that implementation formats are possible in almost all process units of mining when it comes to surface coal mining.

In some processes, on some decomposed trees in individual modes, Industry 5.0 codes are symbolically recognizable, but mostly they are absent or unrecognizable on other branch levels. It is possible to gradually implement the modular codes of Industry 5.0 in all previously described mining processes. There remains time and the provision of the necessary financial logistics, which will determine the speed of implementation of the categorical variants of the Industria 5.0 modes. in mining.

REFERENCES

Blog ISA. (n.d.). https://blog-isa-org/

Di Nardo, M., & Yu, H. (2021). Special issue "industry 5.0: The prelude to the sixth industrial revolution". *Applied System Innovation*, 4(3), 45.

European Commission. (n.d.). EU research and innovation. https://research-and-innovation.ec.europa/

Fazal, N., Haleem, A., Bahl, S., Javaid, M., & Nandan, D. (2022). Digital management systems in manufacturing using industry 5.0 technologies. *Advancement in Materials, Manufacturing and Energy Engineering*, Vol. II: Select Proceedings of ICAMME 2021. Singapore: Springer Nature Singapore. 221-234.

Huang, S., Wang, B., Li, X., Zheng, P., Mourtzis, D., & Wang, L. (2022). Industry 5.0 and Society 5.0-Comparison, complementation and co-evolution. *Journal of manufacturing systems*, 64, 424-428.

Journal of Cloud Computing. (n.d.). https://journalofcloudcomputing-springeropen-com/

Leng, J. Sha, W. Wang, B. Zheng, P. Zhuang, C. Liu, Q. & Wang, L. (2022). Industry 5.0: Prospect and retrospect. *Journal of Manufacturing Systems*, 65, 279-295.

Longo, F., Padovano, A., & Umbrello, S. (2020). Value-oriented and ethical technology engineering in industry 5.0: A human-centric perspective for the design of the factory of the future. *Applied Sciences*, 10(12), 4182.

Maddikunta, P. K. R., Pham, Q. V., Prabadevi, B., Deepa, N., Dev, K., Gadekallu, T. R., & Liyanage, M. (2022). Industry 5.0: A survey on enabling technologies and potential applications. *Journal of Industrial Information Integration*, 26, 100257.

Mitsubishi Solutions. (n.d.). Industry 5.0. https://mitsubishisolutions.com/industry-5/

Official Statistics Portal. (2022). Residents of Lithuania (2022 edition). https://www.designsafe.net/

Personal Mag. (n.d.). Personal mag. https://www.personalmag.rs/

Radosavljević, S. and Radosavljević, M. (2009). Risk assessment in mining industry - Apply management. *Serbian Journal of Management*, Vol. 4, No. 1 pp. 91-104.

Radosavljević, S. Dašić, P. and Radosavljević, M. (2013). Appendix specifics of risk management in mining. Metalurgia International, Vol. 18, Special Issue No. 8, pp. 59-68.

Radosavljević, S. Lilić, N. Ćurčić, S. and Radosavljević, M. (2009). Risk assessment and managing technical systems in case of mining industry. *Strojniški vestnik - Journal of Mechanical Engineering*, Vol. 55, No. 2, pp. 119-130.

Research Nester. (n.d.). Industry 5.0. https://www.researchnester.com/reports/industry-50/

Slavic, D., Marjanovic, U., Medic, N., Simeunovic, N., & Rakic, S. (2024). The Evaluation of Industry 5.0 Concepts: Social Network Analysis Approach. *Applied Sciences, 14*, 1291. https://doi.org/10.3390/app14031291

Xu, X., Lu, Y., Voge, Heuser, B., & Wang, L. (2021). Industry 4.0 and Industry 5.0-Inception, conception and perception. *Journal of Manufacturing Systems*, 61, 530-535.

Volume XX, Issue (2) (2024) 30-39

International May Conference on Strategic Management

DOI: *10.5937/IMCSM24053R* *Review Article*

THE FUTURE OF COAL AS A NEW GENERATION OF ENERGY AND POTENTIAL RISKS

Slobodan Radosavljević *

RB "Kolubara" d.o.o., Svetog Save 1, 11550 Lazarevac, R. Serbia

Abstract: Until now, coal as a resource has been the most reliable energy source on the world market. The great world crisis caused by a sudden pandemic almost confirmed this fact. The year 2023 records larger certain shifts in coal consumption that are diametrically opposed. While coal consumption is increasing in some countries, some of the world's countries/a smaller number are experiencing a slight stagnation to a decrease in consumption. All previous efforts to significantly limit the use of coal as an energy resource did not yield satisfactory results. The year 2024 brings new strategic projections and orientation towards other energy sources to the detriment of coal, and special importance is given to investments in energy from nuclear power plants of various configurations, but according to the needs of users. And this could mark the current and next decades in all parts of the world, including in Serbia. Drastically growing energy needs open up new formats of energy configurations in the world as well as their transversal to users/consumers. It is difficult to predict whether such transformations will take place quickly and how long it will take. This is because this kind of transformation is the biggest/never recorded and it is decomposed into individual levels, according to the size of the countries, their economy, the achieved level of energy technologies and development. Risk potentials in the newly created energy turbulent configurations in the world energy redistribution seem to have never been higher and with the synergy of influence, they become very complex for detection and positioning from the aspect of their gradual reduction or minimization. The paper analyzes the newly created energy circumstances and the place of coal as an energy resource with the mapping of potential risks.

Keywords: Coal, mining, energy, energy transition, risk.

1. INTRODUCTION

Coal as a world resource energy potential can be analyzed in conditions of rapid growth of energy needs in the world on the one hand and efforts to limit its use with trends in the status of constant reduction and decline in consumption. The question arises whether this is first of all realistic, given the fact that rapid energy transformations in the world are extremely demanding and expensive, and the energy transition in this context necessarily defines a longer period of

* *Corresponding author: drslobodanr@gmail.com*

Slobodan Radosavljević, ORCID: 0009-0000-3223-9743

time? Based on past experiences, the reduction of coal consumption in the world is not going exactly as everyone would expect. Especially in conditions of global polarization and disruptive transition flows, which is due to the nature of reserves and economic projections that are not the same for everyone and which diametrically affect the redistribution of global coal reserves.

The latest determinations in the world are to reduce the consumption of coal on a global level, but at the same time, everyone is aware of the fact that such an energy strategy is impossible to implement quickly, even for a somewhat slower achievement in a longer period of time. At the same time, the facts show that even when such rigorous energy strategies are adopted, the discipline of their application is quite unstable with a lot of oscillations in different groups and at different levels. The world is simply not so perfect that even a strategy conceived in this way would be solved quickly. The big ones still remain big and the small ones remain small, so the will of the big ones largely influences all world trends, including the aforementioned strategic determinations.

Therefore, it is an indisputable fact that energy strategies are not carried out in ways, exactly as outlined in many national, regional, continental and finally generally defined agendas in the world. Everyone in their own way, according to their personal positions and needs for energy, interprets their own energy priorities, and demands for changes in their own levels, while the world ones often remain either on the sidelines or almost archived in the long term.

This state of affairs leads to a justified fear that the world will not collapse due to energy needs, and that the damages that would result from this could exceed all known economic crises that occurred due to various influences.

A very important question is how to ensure the energy stability, energy independence and energy security of the country in the newly created circumstances, where are the smaller countries identified in this, and how much should it cost overall, viewed through economic parameters? There is also the special question of the large number of risks that are inevitable for such world changes and events, how to detect the greatest number of them at different levels and destinations and how to manage them?

2. WHY COAL IS NOT THE ENERGY OF THE FUTURE

The large imbalance between the production and consumption of electricity points to the conclusion that the world is in the stages of a major energy crisis and that everyone is trying to solve the new situation according to their own preferences, possibilities and needs. Until just a year ago, it seemed that coal as an energy resource potential was coming back into use with the pretensions to once again be the leader in the world's balance configuration formats.

The situation is changing very quickly, although these areas are specific and not as flexible for expected rapid changes, more precisely, these processes require more time for overall consolidation and changes. What is clear is that these are only short-term measures and that the intensive use of coal only overcomes the current energy situation.

There is also the fact that fossil fuels, and coal in particular, cannot or may not be part of a long-term sustainable energy strategy, whether it is economic or especially the aspect of climate perspectives.

Therefore, it remains to follow the new world energy scenario through new configurative forms and system content, which means building a new sustainable energy infrastructure for renewable energy sources, increasing energy efficiency and saving energy.

This would be a long-term world strategy that should be respected and implemented by everyone in the world. Whether it will be like that remains to be verified in time, if it will be possible at all. At the same time, many believe that this is the only way out of the great world economic energy crisis that is on the threshold or, as others believe, is already underway.

On the other hand, there is also the fact that in some EU countries, coal-fired thermal power plants have been restarted with the intensification of their use in order to compensate for the lack of electricity. It seems to be a forced situation for a short time until the existing situation is overcome. But no one gives more precise information, when it should happen or what are the time limits for this kind of situation.

The current circumstances are such that the coal mines of the world operate with high profits, thanks to the high prices of coal. Therefore, coal is still at a price and widely used by everyone of electrical energy systems and is dominant in all electrical energy balances of countries.

What is important is that, at the same time, despite the difficult energy situation when it comes to the EU, new and large investments in energy infrastructure for renewable energy sources are recorded, unlike in the coal mining sector, where investments tend to decrease.

Redirection to energy from nuclear power plants, which are announced as a long-term salvation for the world, was especially emphasized as a way out of this situation. These are really large and financially demanding projects, and the dilemma remains as to who will be able to participate in such investments, when and how much.

Global flows of energy changes in the world are really demanding in all aspects, so it is uncertain who can follow it all and whether a large number of countries will be more or less late, when it comes to respecting the implementation configuration forms at the time of implementation?

This is because the world's energy turbulences are so great that they begin to drastically affect all processes of life and work. Even the price of energy products is not so important for some world energy powers like USA, China, India, Russia and others.

Qualitative energy mix modeling, even with the most developed, is difficult to interpret/understand and often does not lead to optimal goals and results.

For the less developed, it becomes only a dream or a distant chance in the future (https://www.energypolicy.columbia.edu/, 2023).

The most pessimistic scenarios predict that if these energy trends continue, there could be an almost collapse of the world economy, which would bring the world to the brink with catastrophic consequences for everyone. Of course, in that scenario, not everyone would bear the consequences equally, which is somewhat understandable (Henderson et al., 2020).

One of the conclusions is emerging that energy solidarity is slowly ceasing to exist in the world, and that energy relations are drastically tightening in relation to the /most developed-medium developed-under developed/countries in the world.

These are just some of the observations that are not in favor of coal as a renewable energy source, and it is not regarded as an energy source for the future. The world's large coal reserves could probably be left for use by future generations with completely new strategic approaches and new safer, cleaner technologies that will not be so harsh on the climate security of the world and the country on a planetary level.

3. COAL EXPLOITATION STRATEGIES IN THE WORLD AND IN THE REPUBLIC OF SERBIA

Today, the exploitation of coal in the world is seen as a short-term measure, and its long-term use is not an option at all. However, coal reserves in the world are large. According to the US Energy Information Administration (EIA), the ten countries with the largest coal reserves in the world are: USA, Russia, Australia, China, India, Germany, Ukraine, South Africa, Poland and Kazakhstan. However, the largest concentrations of coal reserves in the world are in five

countries. The USA has 22.3% of world supplies, Russia 15.5%, Australia with 14%, China 13.1%, and India 9.5%, so a total of 74.4% of total world reserves (https://www.iea.org/, 2024).

Indonesia, Turkey, New Zealand, Serbia, Brazil, Canada, Colombia, Czech Republic, Vietnam and Pakistan were also on the list of the top 20 countries in terms of coal reserves.

At the same time, the largest coal reserves do not mean that the countries that mine them exploit them the most, so the USA is in third place and Russia in sixth place in terms of coal production in the world.

The three largest producers of coal in the world are: China, India and Indonesia. So Indonesia shares the third place with the USA.

That it is not so easy to give up coal as a resource energy source is shown by the year 2023, when the demand for coal reached 8.53 billion tons, which is the historical maximum.

The places with the highest demand for coal in the world are Asia and its countries.

Only in China in 2023 coal consumption jumped by 220 million tons or 4.9% compared to 2022, in India by 98 million tons or 8% and in Indonesia by 23 million tons or 11%.

In contrast, in the EU, lower coal consumption is recorded in the form of a sudden drop of even 107 million tons or 23%. In the USA, a drop in coal consumption by 95 million tons or 21% was registered for the year 2023.

The export of Russian coal to the countries of the Asia-Pacific region has surprisingly increased /in view of the war events/ by 23% at the end of 2023. Otherwise, the Russian coal industry covers 15% of the world market with this energy source. Coal exports have increased by 70% in the last two years. Russian expectations are that the demand for coal in these markets will reach an increase of at least 15% compared to the previous period, and their goal is to increase coal exports by at least a third by 2030, or about 30% compared to exports in 2023.

There are also some data that coal production in Russia at the end of 2023 decreased by 1.1% to 438.7 million tons compared to 443.6 million tons of coal in 2022.

So it follows that practically there is still a constantly growing demand for coal in the world, and it records records after records.

It is difficult for any country in the world to stop consuming this energy so quickly. This is precisely the problem why no electric energy strategy balanced with the reduction of coal consumption has been achieved so far, and how difficult it will be in the future (https://www.mining-technology.com/, 2022).

More precisely, all the nominated strategies for reducing coal consumption in Serbia were delayed in their adoption and verification. So, for example, the last strategy proposed in 2018, and the deadline for its adoption was 5 years, was not adopted. Such a strategy can now be considered in a certain sense outdated considering the large shifts and oscillations caused by events in the world in several directions of the electric energy sector. In 2022, an identical strategy was adopted, which means that it is practically outdated, and its implementation is limited to the end of 2050 years (Zang et al., 2024).

There are some interpretations that it is not a strategic projection, but a version of an analytical projection that is already being commented on as unrealistic and unachievable. Serbia can hardly give up coal until 2050 years. The time of 26 years as a transformational period is long. No one can predict what events will happen and what scenarios will be realized for that period, when it comes to electrical energy combinatorics. If the strategy from 2018 years is outdated and as such the exact same one is re-nominated in 2022 years, it means that the events and changes in the previous five years were not considered, and there were some that were almost darstic to extremely paradoxical. This points to the fact in the previously defined determinations, how, at least in some visions and directions, energetic events will be directed and realized (Saadia, 2024).

It follows that strategies should be understood as projections or scenarios, which need to be reviewed every five years, and perhaps even for shorter periods. According to these findings, the scenario for Serbia according to (INEKP) is defined as follows:

- By 2030: The share of electricity production from coal should be reduced below 50% of the total production in Serbia for the first time.
- By 2035: The share of production from coal is already drastically lower than the share of renewable sources: 14.7 TWh per year against 25.5 TWh from solar, wind and hydropower combined.
- By 2040: Production from wind and solar alone (17.85 TWh) exceeds the production of electricity from coal, which by then will decrease to only about 10 TWh per year.
- By 2045: Wind, solar and hydropower individually produce more than twice as much electricity in Serbia as coal, whose production decreases to around 6 TWh per year.
- By 2050: Electricity production from coal in Serbia drops to zero, and only some natural gas capacity remains from fossil fuels, with the aim of maintaining grid stability (https://www.mre.gov.rs/, 2023).

The balanced electrical energy mix in the Republic of Serbia is based on coal in the largest percentage (about 65%). If we look at coal reserves, most of which is lignite, only in the Kolubara and Kostolac basins, and according to data (there is a total of about 2,400,000,000 tons (Kolubara 1,700,000,000 and Kostolac 700,000,000).

These two basins have coal of fairly uniform quality. In the Kolubara basin, for the poorer quality of coal from some surface mines, there is technology for coal homogenization/unification of quality (https://rgf.bg.ac.rs/, 2023).

The average annual production of coal in Serbia ranges from 37 to 40 million tons. Taking into account the above-mentioned strategies and the fact that 65% of the share of coal in the energy mix of the Republic of Serbia, coal reserves with current production would be at the level of 50-70 years.

If the participation of coal in the energy mix were to be gradually reduced, then that time can be extended for another 30-40 years.

Observed multi-dimensionally, the situation with the use of coal in the world is quite complicated. Besides England, there is almost no other country in the world that does not have coal in its energy balance.

Countries that do not have it as their own resource, import it from countries that are the largest exporters in the world (Singh et al., 2019).

When positioning the world's energy strategies, there is no solidary consensus that they should be realized for a previously defined period. It is usual that the most objections and resistance to the application come from the world's most developed coal producers.

On the one hand, the profits made from coal seem to be a big barrier, and hardly anyone will give up so easily in that context.

If there is agreement on anything when it comes to coal, it is that the world needs a new flexible strategy of the previous energy mixes, and in their creation, they have the greatest influence.

This is a harsh but also extremely realistic position of today's situation when it comes to the exploitation of coal in the near future (Svobodova et al., 2021).

Figure 1. Hunter valley, New South Wales, an aerial view of an open pit coal mine, Australia (https://www.shutterstock.com, 2024)

Figure 1 shows a surface coal mine of the Hunter Valley, New South Wales, Australia (https://www.shutterstock.com, 2024).

Figure 2. The Tagebau Garzweiler surface mine in the German state of North Rhine-Westphalia. It is operated by RWE and used for mining lignite, Germany, (https://theworld.org/, 2023)

Figure 2 shows the surface mine Tagebau Garzweiler in the German province of North Rhine-Westphalia. It is operated by RVE and used for lignite mining, according to Germany (https://theworld.org/, 2023).

Figure 3. Pereyaslovskiy surface coal mine in Russia (https://www.ruscoal.com/, 2023)

Figure 3 shows the Pereyaslovskiy surface coal mine in Russia, according to (https://www.ruscoal.com/, 2023).

Despite all the contradictions that appear when the participation of coal in the energy mix of countries is evident, there are different scientific views on the further exploitation of coal. The problem here is that the part of coal that is categorized as low-calorie with a lot of moisture and sulfur, such as lignite, is the first to be hit for exclusion from use.

There is a group of scientists who believe that it is necessary to continue using coal as an energy potential, so that energy production from ecologically clean coal (Green Coal Solutions/GCS) is realized in phases and in the long term, in highly efficient smartones thermal power plants.

This implies the phased realization of the use of coal from the initial stages of mining, processing to burning in thermal power plants or other combustion facilities.

Figure 4. Rotary excavator on surface mining of coal in RB "Kolubara", EPS, Republic of Serbia (www.eps.rs., 2024) and (https://www.ekapija.com/, 2023)

Figure 4 shows a picture of a rotary excavator/technical system for the surface mining of coal at the Polje "C" and Radljevo surface mines in RB "Kolubara", EPS, Republic of Serbia, according to: (www.eps.rs. 2024) and (https://www.ekapija.com/, 2023).

Therefore, in the long term, clean coal energy should be realized in three phases.

- In the first phase, revitalization of existing and construction of new smart thermal power plants with increased efficiency, reduced emissions of SO_2, NOx and ash is carried out.
- In the second phase, smart thermal power plants are being built with the highest utilization rate, even over 60%.
- In the third phase, modern smart technologies for extracting and depositing CO_2, or turning coal into gas (IGCC technology) are used.

With the constant modernization of thermal power plants, much greater utilization and extraction and deposition of CO_2, coal is becoming a leader in environmental protection and security of energy supply.

According to Japanese experts, low-caloric coal as a prospective energy source using modern (IGCC) technologies, due to minimal carbon dioxide emissions, has a great chance of becoming a new generation fuel.

In the USA, new smart technologies are going in a completely different direction, namely smart technologies that are primarily adaptable for use in existing thermal power plants or thermal power plants that are about to be shut down/closed (http://www.nakoso-igcc.co.jp/, 2022).

The development of smart technologies can certainly even in the near future completely change today's paradigm when it comes to the use of coal, through changes to a new energy paradigm in which coal becomes the green fuel of the new generation. This situation would certainly change the world energy mix and turn it in completely different directions towards the generation of a new global consumer agenda (https://energetskiportal.rs/, 2023).

The Republic of Serbia must definitely follow the latest trends in the world in the use of coal and gradually implement new smart technologies in its own energy processes, in order to ensure the continued existence of coal in its energy balance mix. Research shows that trends in the further development in all aspects of R. Serbia will generate at least 3-4 times greater need and consumption of electricity by 2050. years, which additionally implies new thoughts, questions and suggestions for additional energy provision of the country.

4. USE OF COAL AND POTENTIAL RISKS

Observing the use of coal in the structure of energy mixes as a potential energy resource can be analyzed in at least two context frames.

The first analytical approach of observation would be the continuation of the use of coal at this threshold of technological applications and the very technologies of application. Here, one should position himself on all valid existing strategic projections as well as the circumstances in which they are realized, partially realized or not realized at all. It is about realistic perceptual frameworks in today's very turbulent world energy practice.

Another analytical approach of observation would be in the direction that coal can be the fuel of the future if the technological frameworks of use were changed, especially in combustion processes in thermal power plants or other thermal energy facilities. This implies a total technological contextual transformation, more precisely a different approach to coal as an energy source, new smart technologies at all levels and in all technological processes, in which this energy source is treated to the final outcome of being a green energy source and ultimately a potential energy resource of the new generation (Radosavljević et al, 2009).

Such an approach would imply new strategic forms and system configurations that would be completely opposite to all the ones valid until now and continuously related to the first approach. At the same time, this understanding of coal as an eco-energy source and energy-generating new fuel generation would generate a new energy paradigm, the world would be additionally relaxed and relieved of the previously negative effects of coal in the energy mix, primarily due to the large balance reserves of all types of coal in the world (Radosavljević et al, 2017).

The projection of a world with ten billion inhabitants by 2050 implies an increase in the need for energy of all kinds by at least 50%. Such a demand with constant annual increase is almost unbearable for the world. If they were to give up coal as an energy source, this seems like an unachievable balance sheet projection. That is why the world is also interested in coal remaining in the energy mix of all countries, provided that the aforementioned conditions are met (Radosavljević et al, 2009).

The risk analysis of the use of coal in the energy mix of countries and energy balancing can be observed in at least the aforementioned contexts. Both analytical contexts are many times different, precisely for the reasons stated in the previously mentioned observations.

This implies new risk configuration forms through new smart models and analytical methods for the second option to the creation of a completely new smart risk integration platform that would be adaptable, operable, functional and realistically applicable to all organizational system configurations and all system users in the world.

These are the modeling of completely new smart risk tools and methods, for the new smart time, completely new smart generations, based on operating smart machine learning, artificial intelligence and new multi-functional smart integration formats that have not been generated so far (Radosavljević et al, 2013).

One of the useful tools for risk analysis and assessment is the software tool Design Safe 9.0. It is a tool that was first designed in 1995 and has undergone significant evolution and practical confirmation in the world of risk analysis. This software tool was first practically applied by the group of authors of this paper in the Republic of Serbia in 2005 in the field of mining and surface exploitation and coal processing. The tool is configured to evaluate the possibility of product design improvement, as a systematic method for implementation and risk assessment based on a specific task, as a technique for minimizing or eliminating hazards, as a safety design tool that is incorporated into the analyzed process (https://www.designsafe.net, 2024).

Design Safe 9.0 gives designers a quick and easy tool to assess hazards and risks throughout design. It helps companies to identify potential dangers and, through methods, delegate adequate responses to them. It helps risk engineers to complete a risk assessment for their own products and processes. It prevents the realization of bad and unsafe scenarios, improves productivity and reduces liability. Assists the Risk Analyst with all risk related project activities. It helps the risk analyst to identify the greatest number of potential hazards that could be overlooked. It helps in emergency situations when it is necessary to reduce/minimize the risk of existing hazards. It can be continuously updated and provides a transparent overview of detected risks as well as newly emerging potential risks. Minimizes risk assessment time and reduces overall risk assessment costs. It is adaptable and can be used for a wide range of different processes and process activities (https://www.designsafe.net, 2024).

It is a very simple method for documenting and assessing risks in processes and decomposed process activities.

5. CONCLUSION

It is indisputable that coal, as an important energy resource in the world, will still occupy a high usage position in almost all countries. Some countries simply use coal at all costs and do not want to eliminate it from their balance energy mix. For now, the situation is similar in the Republic of Serbia. There is a hunger for energy and energy resources in the world. In a short time, thoughts became focused on the long-term level, but also on the achievement of mostly short-term goals for now.

The energy crisis that has determined new transit energy routes in the world, which are often variable even in those circumstances, countries simply cannot follow either in time or economically, so they withdraw from the market and rely on their own carbon balance reserves. So the future of coal is still not in doubt. Especially if we take into account the fact that, along with new technologies and modified ways of use, it can also become a resource of a new generation of energy sources. With all the technological progress that the world is experiencing and new configurative evolutionary forms, methods and models, this kind of setting is apparently possible and achievable. The variant where coal will be completely replaced by new energy sources by 2050, on the other hand, is questionable in its exclusivity, as well as positive that large amounts of coal will be left as a legacy and available for use by the next generations in the future.

Risk analysis will certainly experience new, special and important transitional configuration forms, both tools and models and methods, so that they can follow all new changes and in the case of various destructive potentials, they can be detected in time,

structurally recognized, analytically processed according to priorities, especially in the area of hidden risks, to minimize them until possible complete elimination.

REFERENCES

Center on Global Energy Policy. (n.d.). https://www.energypolicy.columbia.edu/
DesignSafe. (n.d.). https://www.designsafe.net
E-kapija. (n.d.). https://www.ekapija.com/
Electric Power Industry of Serbia. (n.d.). www.eps.rs
Energetski Portal. (n.d.). https://energetskiportal.rs/
Faculty of Mining and Geology, University of Belgrade. (n.d.). https://rgf.bg.ac.rs/
Henderson, J., & Mitrova, T. (2020). Implications of the global energy transition on Russia. *The geopolitics of the global energy transition*, 93-114.
Internal documentation of RB Kolubara, EPS. (2023). (IDRBKEPS1). Republic of Serbia. (Accessed February, March 2024).
Internal documentation of RB Kolubara, EPS. (2024). (IDRBKEPS1). Republic of Serbia. (Accessed February, March 2024).
Mining Technology. (n.d.). https://www.mining-technology.com/
Ministry of Mining and Energy of the Republic of Serbia. (n.d.). https://www.mre.gov.rs/
Nakoso IGCC. (n.d.). http://www.nakoso-igcc.co.jp/
Radosavljevic, S., & Radosavljevic, M. (2009). Risk assessment in mining industry - Apply management. *Serbian Journal of Management*, 4(1), 91-104.
Radosavljević, S., Dašić, P., & Radosavljević, M. (2013). Appendix specifics of risk management in mining. *Metalurgia International*, 18(8), 59-68.
Radosavljević, S., Dašić, P., Ille I., Radosavljević, M., & Radosavljević, J. (2017). Possibility managed by technical systems in mining with artificial intelligence and robotics with risk analyzes. *17th International Conference "Research and Development in Mechanical Industry*", RaDMI-2017 (pp. 73-87).
Radosavljević, S., Lilić, N., Ćurčić, S., & Radosavljević, M. (2009). Risk assessment and managing technical systems in case of mining industry. Strojniški vestnik, *Journal of Mechanical Engineering*, 55(2), 119-130.
Russian Coal. (n.d.). https://www.ruscoal.com/
Saadia, Z. (2024). Global Risks 2034 years: Over the limit. Global Risks Report. World Economic Forum. Retrieved from https://www3.weforum.org/
Shutterstock. (n.d.). https://www.shutterstock.com
Singh, H. V., Bocca, R., Gomez, P., Dahlke, S., & Bazilian, M. (2019). The energy transitions index: An analytic framework for understanding the evolving global energy system. *Energy Strategy Reviews*, (26), 100382, 4-9.
Svobodova, K., Owen, J. R., & Harris, J. (2021). The global energy transition and place attachment in coal mining communities: Implications for heavily industrialized landscapes. *Energy Research & Social Science*, (71), 101831, 4-5.
The World. (n.d.). https://theworld.org/
Zang, Z., Li, Z., Zhang, X., et al. (2024). Electric Potential Response Characteristics of Coal Under Stress Wave Loading. *Natural Resources Research*. https://doi.org/10.1007/s11053-024-10324-6

Volume XX, Issue (2) (2024) 40-50

International May Conference on Strategic Management

DOI: *10.5937/IMCSM24054H*

Review Article

ENERGIZING TRANSFORMATION: EXPLORING MANAGERIAL INNOVATION AND ORGANIZATIONAL AGILITY IN MOROCCO

Chaymae Hamieddine*, Malika Akioud

Interdisciplinary research laboratory in finance and organization management, Faculty of legal, economic and social sciences, Sidi Mohammed Ben Abdellah University-fez, Morocco

Abstract: In the whirlwind of challenges facing organizations today, their ability to adapt strategically and effectively determines their survival and success. In a world of constant change and omnipresent uncertainty, agility is becoming a vital skill for seizing opportunities and coping with a rapidly evolving environment. This is where managerial innovation comes into play, serving as an essential foundation for the transformation to an agile organization. It enables us to anticipate change, encourage creativity and adopt flexible approaches to thrive in a dynamic context. This research has two main objectives: to understand the impact of managerial innovation on the adoption of agile practices, and to identify the most effective strategies for fostering this transition to organizational agility. To do this, we will adopt an exploratory study methodology with a qualitative approach. We will delve into the existing literature on managerial innovation, agile practices and their interrelation, to unpack how organizations are approaching this transition. Our analysis will focus on the challenges encountered, the strategies deployed and the results obtained.

The expected results of this study are twofold: a better understanding of the link between managerial innovation and organizational agility, as well as practical recommendations for organizations wishing to adopt agile practices. These findings could enlighten managers and decision-makers, helping them to successfully navigate the complex contemporary business landscape.

Keywords: managerial innovation; organizational agility; innovative strategies; organizational change; sustainable transition.

1. INTRODUCTION

In contemporary business circles, the importance of innovation is widely accepted and acknowledged. However, there is an imbalance in the literature between technological and managerial innovation. While the former has been the subject of numerous studies, the latter

* *Corresponding author: chaimaehamii123@gmail.com*

Chaymae Hamieddine, ORCID: 0009-0002-6422-1593
Malika Akioud, ORCID: 0009-0002-0694-2683

has been relatively neglected. This gap creates a certain ambiguity around managerial innovation, its implementation processes and implications. (Elouidani et al.,2023; Jrad, 2022; Frimousse & Peretti, 2022; Hauch & Loufrani-fedida, 2020)

Managerial innovation is one response to these challenges, offering companies innovative approaches to managing their operations, human resources and stakeholder relations. However, innovation alone does not guarantee long-term success. That's where organizational agility comes in, a crucial ability to adapt quickly to changes in the environment and seize emerging opportunities. (Boukhedimi et al.,2023)

Organizational agility goes beyond the adoption of innovative practices; it requires a corporate culture that favors experimentation, calculated risk-taking and responsiveness to market signals. This dynamic ability is crucial for integrating, reconfiguring and renewing internal and external competencies to cope with rapid environmental change. (Jissang, 2021; Fotso, 2022)

Organizational transformation is therefore essential to becoming an agile and innovative company, in order to succeed in a complex and ever-changing business environment. This transformation requires not only the adoption of new practices and technologies, but also a genuine cultural shift and a willingness to see change as an opportunity rather than a threat (Bartiche & Erraoui2021; Ibrahim & Benabdelhadi, 2023)

From this perspective, innovation and agility are intrinsically linked, reinforcing each other to create a more dynamic and adaptable organization. Understanding and harnessing this complex relationship is essential to fostering sustainable organizational transformation and ensuring long-term competitiveness (Daoud & Bennis, 2022; Sinapin, 2022). In a global context, our questioning can be summarized as follows:

How can the introduction of managerial innovation impact the integration of agile methods within companies, and which approaches are proving most effective in facilitating this transition to an agile organization? And what impact does this have on long-term organizational transformation?

Our research follows a methodical approach aimed at exploring the transition from managerial innovation to organizational agility. First, we will examine the context of sustainable transformation in morocco, highlighting the economic and social challenges facing the country, as well as the imperatives for change and adaptation. We will then analyze the importance of managerial innovation and agility in responding to these challenges.

We then delve into the concepts and theories surrounding managerial innovation, defining its essential characteristics and exploring the theoretical models that underpin it. We will then delve into the field of organizational agility, defining this emerging concept and examining the different perspectives that stem from it, as well as its links to corporate performance.

We will then focus on the transition from managerial innovation to organizational agility. We will identify the key factors influencing this transition, and examine best practices and strategies for fostering it. Case studies and concrete examples of successes in this transition will illustrate our points.

Finally, we will discuss the challenges and opportunities associated with this transformation. We will highlight the obstacles to implementing organizational agility and propose solutions and recommendations to overcome them. In conclusion, we will summarize the main findings of our research and suggest avenues for future research.

2. LITERATURE REVIEW

2.1 Managerial innovation

Innovation is emerging as one of companies' most powerful weapons, enabling them to defend themselves effectively against competition and rapid market change. According to Francis and Bessant (2005), four types of innovation can be distinguished: innovation focused on improving products, innovation aimed at improving processes, innovation that redefines the positioning of the company or its products, and finally innovation that challenges and redefines the company's dominant paradigm. This last type of innovation attacks organizational values, management policies, structures and business models. It is sometimes referred to as administrative innovation (Damanpour et al., 2009) or managerial innovation (Birkinshaw et al., 2008).

Far from being a recent concept, managerial innovation has always been a force for change and a critique of the classic model, helping it to evolve. This evolution, although often perceived as a continuity rather than a radical break, is taking on increasing importance in the light of societal changes and growing demands for collaboration and innovation within companies.

This evolution is reflected in the emergence of managerial practices that differ from the traditional model of hierarchical command and control, to a greater or lesser extent. According to this perspective, managerial innovation consists in creating new modes of cooperation between individuals, with the aim of achieving objectives effectively and efficiently, while taking account of societal changes.

The term "managerial innovation" was first introduced by Kimberly (1981), with the aim of highlighting non-technological innovations, which had often been neglected until then. This belated recognition is explained by the fact that the main attention of economic and academic players was then focused on technological innovation, relegating other forms of innovation, such as managerial innovation, to the background.

Yet the twentieth century witnessed considerable advances in the field of management, radically overturning the way companies are run. Despite this, recognition of managerial progress remains incomplete to this day.

For Kimberly (1981), a managerial innovation is characterized by a significant departure from the existing state of management at the time of its appearance, impacting the nature, location, quality or quantity of information available in the decision-making process.

Other researchers, such as Damanpour (1984) and Van de Ven (1986), have also proposed definitions that focus on the impact of managerial innovations on the organization's social system, and on the emergence of new ideas or practices perceived as new by the individuals concerned.

Finally, Mol and Birkinshaw (2008) have identified four criteria for recognizing a managerial innovation: it modifies managers' work in concrete terms, represents a significant advance in knowledge at a given point in time, is implemented operationally within the organization and contributes to the achievement of corporate objectives.

Managerial innovation is a complex, multi-faceted concept, encompassing diverse realities and sharing as a common denominator the consideration of the non-technological character of the novelty introduced within an organization. This complexity makes its definition less obvious than that of technological innovation, given the difficulty of apprehending its intangible dimension, unlike technological innovation, which relates primarily to the technical sphere of the company (Armbruster et al., 2008; Domergue et al., 2014). The specific term managerial innovation was first introduced in 1981 by Kimberly. In an eponymous article,

Kimberly describes it as: "Any program, product, or technique that represents a significant change in the state of available knowledge and affects the nature, distribution, quality, or quantity of information available in the decision-making process" (Kimberly, 1981). It manifests itself as a particular form of organizational change, involving the introduction of new things into the organization (Birkinshaw et al., 2008), with the ultimate aim of improving business performance (Mol & Birkinshaw, 2009).

In short, managerial innovation, whether the invention of a new management method or the adoption of an existing but new method for the organization, concerns all corporate functions and plays a central role in the company's constant transformation and adaptation to changes in the market and society.

2.2 Organizational agility

Agility, originally defined in the field of air combat as the ability to change maneuvers over time (Richards, 1996), was transposed to the business domain following a report published in 1991 by Lehigh University's Iacocca Institute, in response to a request from the US Congress on factors favoring the competitiveness of American industry (Nagel et al., 1991; Barzi, 2011).

This report concluded that the rapid evolution of industry, the increased use of IT tools and production technologies, and the importance of information and communication, had created a new industrial order (Goldman, 1994). Agility is then presented as a company's ability to grow in an environment marked by continuous and unpredictable change in a global market, characterized by a demand for superior quality, high performance, low cost and products and services corresponding to consumer requirements (Breu, Hemingway et al., 2001; Yusuf, Sarhadi et al., 1999; Badot, 1997). As a result, the notions of flexibility and responsiveness are central to the concept of agility (Sharifi & Zhang, 1999; Lindberg, 1990).

Kidd (1994) associates them with the notion of adaptability. Reactivity here refers to the speed with which a company, with discontinuous industrial processes, responds to changing customer demands, including unanticipated ones. It thus relates to the time it takes to react to an unexpected development. Flexibility, on the other hand, measures a company's ability to adjust to a given production level, given equivalent technology, while adaptability is a characteristic of the flexibility of a company's production system (Katayama& Bennett, 1999).

Flexibility then corresponds to the number of future alternatives, subsequent to a given decision (Cohendet & Llerena, 1999; Reix, 1989). More recently, Barrand (2006) integrates these notions and extends the concept of agility to a company's capacity to innovate in response to demands for differentiated products (differentiation). Differentiation refers to the production of an offer perceived as different from an original offer (Barzi, 2011).

Many factors drive organizations to become more agile, as several authors point out. Firstly, rapid change is identified as one of the main drivers of agility, stimulating organizations to continually adapt to remain competitive (Goldman & Nagel, 1993; Yusuf et al., 1999; Sharifi & Zhang, 1999; Lin & Tseng, 2011). Rising customer expectations of quality are another significant driver of change, forcing organizations to offer superior products or services while maintaining competitive prices (Yusuf et al., 1999). In addition, the highly competitive market is encouraging organizations to act proactively rather than reactively, with competitiveness criteria now focused on responsiveness, innovation, flexibility and quality (Yusuf et al., 1999).

Lin and Tseng (2011) identify five main areas of change in the external environment. In addition to customer demands for personalization and quality, intense competition, market volatility, technological innovations and social factors such as environmental protection and employee expectations also play a crucial role in the need for organizations to become more agile (Barzi, 2011).

Barzi (2011) identify four drivers of agility: a highly dynamic environment, strong competition, highly complex inter-organizational relationships, and diversity of products, customers and companies. Of these, dynamism and competition are considered the most important, as they directly influence the predictability of the operating environment.

In summary, the main drivers of agility stem from the ever-changing business environment that organizations face. Changing customer expectations, increased market competition and growing interconnectivity between different stakeholders are among the factors most cited in the literature.

3. DATA AND METHODOLOGY

To conduct this study, we opted for a combined approach of literature review and documentary research. The literature review enabled us to explore in depth the concepts of managerial innovation and organizational agility, and their relevance to the moroccan context in terms of sustainable transformation. We examined a variety of academic sources, including scientific articles, books, research reports and official publications, in order to understand current trends, best practices and potential challenges related to these concepts.

In parallel, documentary research involved collecting and analyzing relevant documents, such as government reports, company case studies, sector policies and public initiatives related to innovation and organizational agility in morocco. We used online databases, institutional websites and specialized information sources to collect these documents.

This combined methodological approach enabled us to gain an in-depth understanding of the landscape of managerial innovation and organizational agility in morocco, as well as the strategies and initiatives implemented to promote sustainable transformation in different sectors.

4. RESULTS AND DISCUSSION

4.1. Innovating for success: the drive for managerial innovation in Morocco

Successful managerial innovation can be observed in various sectors in Morocco. The Moroccan Association of Social Assistants (AMAS) is an entity representing over 3,000 social work professionals, operating at different levels: regional (Fès-Meknès), national and international. Thanks to its teams of local volunteers, its 12 regional units and its national and international partnerships, it operates in a variety of fields. Its main objective is to promote excellence in the practice of social work and to facilitate the teaching of this academic discipline. At the same time, it mobilizes all stakeholders to improve the well-being of the population.

Between 2016 and 2017, AMAS went through a critical period, jeopardizing its internal balances, particularly in terms of volunteer mobilization. This phase necessitated a thorough review of its organizational structure, involving a reassessment of the distribution of responsibilities, the commitment of local volunteers and even the legal structure of its regional branches (Lahya,2023). Here are the managerial innovation actions undertaken:

The association has taken advantage of new information and communication technologies (NICT) for both internal and external communication, particularly during the recent health crisis. Using online project management tools, virtual collaboration platforms and innovative database management systems, it has significantly improved its operational efficiency and productivity (Lahya,2023). By promoting a participative management approach,

in which every member is involved in decision-making processes and managerial development, the association has boosted the motivation, commitment and productivity of its teams. Adopting an agile approach to project management, it has been able to adapt quickly to change, reduce implementation times and optimize overall efficiency (Lahya,2023). In addition, by establishing strategic partnerships with other organizations, it has benefited from the sharing of resources, knowledge and skills. By introducing a performance management system including regular appraisals, constructive feedback and individual development plans, the association has established a culture of continuous improvement. Finally, by formalizing an innovation process, it has encouraged its members to propose new ideas and explore new opportunities to ensure its future growth and development (Lahya,2023).

In the same vein, according to the Moroccan Association of Capital Investors (AMIC), ministries have joined forces to draw up national sectoral strategies aimed at stimulating the development and modernization of key economic sectors. To this end, the "Initiative Maroc Innovation" was launched in June 2009, with the aim of positioning Morocco as a producer of innovative technologies and projects. In addition, the National Agency for the Promotion of Small and Medium-sized Enterprises (MarocPME) encourages initiative and creativity to anticipate change, while remaining attentive to the changing environment. These dynamic aims to modernize all levels of responsibility in order to foster innovation and better serve the company.

Following this logic, the Innovation Management Program, launched by the Regional Investment Center (CRI) within the framework of managerial innovation, is designed to offer technical support to small and medium-sized enterprises (SMEs) in order to strengthen their innovation capabilities. Under the program, companies are supported by qualified service providers, with up to 80% of project costs covered. It is administered by MAROC PME, which covers the cost of services up to 80% for SMEs and 90% for very small businesses (VSEs). Eligible companies are those already in existence or in the start-up phase, with annual sales of 200 million dirhams or less, operating in the industrial sector or an industry-related activity. This program aims to meet the needs of companies by strengthening their capacity for innovation and accelerating their development.

Having explored a number of initiatives and programs aimed at encouraging managerial innovation in Morocco, it's clear that the country is firmly on the path to modernization and adaptation to contemporary challenges. Associations such as the Moroccan Association of Social Assistants (AMAS) and programs such as that launched by the CRI (Regional Investment Center) demonstrate the importance attached to innovation in various sectors of the Moroccan economy. These efforts are aimed at strengthening companies' innovation capabilities, accelerating their development and positioning Morocco as an innovation hub in the region.

4.2. Innovating to adapt: Organizational Agility in Morocco

Organizational agility is of particular importance for some Moroccan companies, who must constantly demonstrate flexibility, innovation and adaptability to maintain their competitiveness in a constantly changing environment. Successful examples include startups such as Hmizate, an e-commerce platform, and DabaDoc, specializing in online medical appointments, which have thrived on their agility by quickly adapting to market developments and expanding their online presence. Similarly, established companies such as Atos Maroc, an IT services provider, and Outsourcia, a contact center and outsourcing service provider, face constant technological innovation and changing customer demands. Their agility enables them to adjust quickly to new technologies and changing customer needs.

On the other hand, companies in the agri-food, automotive and textile sectors, operating in demanding and volatile international markets, have also embraced agility to respond quickly to global trends and the demands of foreign customers. Companies such as Les Domaines Agricoles and Renault Tanger-Med have harnessed organizational agility to adapt to rapid market fluctuations, innovate and maintain their competitiveness. Their experience highlights the importance of agility in the Moroccan business landscape and provides tangible examples for other companies seeking to adopt this new paradigm (Abbas,2023).

As part of its commitment to agility and innovation, CIH Bank has implemented a number of practices that reflect these values. These include the ongoing training of its employees at the bank's training center, located in the Oasis district of Casablanca. This initiative testifies to CIH's commitment to developing its staff's skills in order to adapt to changes in the banking sector and remain at the forefront of innovation.

In addition, CIH Bank demonstrated its agility by implementing the Nov@bank system in 2016. This system, whose deployment was a landmark event, enabled the bank to take a significant step forward in its digital transformation. The switchover to this new system took place boldly in a single day, on Monday June 13, 2016, in all its 252 branches. This "big bang" transition illustrates CIH's ability to make rapid decisions and execute major changes successfully, testifying to its agility and commitment to innovation (cihbank.ma).

In addition, CIH Bank has made the most of its presence in urban spaces, notably by dressing streetcars with the bank's logo in Casablanca in May 2014. This initiative demonstrates CIH's determination to be present in the daily lives of citizens and to reinforce its visibility while adopting innovative marketing strategies (cihbank.ma).

In the same context, in the public sector, Moroccan public administration has turned to digital as an agile practice to generate more public value by simplifying citizens' and businesses' interactions with the State. This transition to digital has already begun, with strategies ranging from E-Maroc 2010 to Maroc Digital 2020. The latter strategy is one of the pillars in the construction of a transparent public administration, focused on the experience of individuals.

This transformation is making the Moroccan government more agile, thanks to several agile IT projects set up as part of the implementation of the aforementioned strategies. The aim is to achieve complete dematerialization of the administration, with concrete achievements already observed in various fields.

4.3. Creating a Sustainable Future: Managerial Innovation and Agility at the Heart of Transformation

Studies on agility highlight its importance for the competitiveness and performance of organizations. They emphasize that organizational agility enables companies to adapt to rapid changes in their environment, thus fostering their ability to innovate in their managerial practices. For example, research has shown that companies with high levels of agility are more inclined to adopt managerial innovations (Sharifi & Zhang, 1999).

The need to develop dynamic capabilities and agility stems from the economic crises of the 90s, which highlighted the need for innovation, creativity and responsiveness. Agile practices, focused on social interaction and exchange, aim to promote a sustainable working model in an uncertain environment, fostering both performance and employee well-being (Frimousse & Peretti, 2015).

Autissier and Moutot (2015) highlight the philosophy of the agile mode, focused on the co-construction of change and collaboration between all stakeholders. Companies are increasingly adopting these agile approaches to innovate their managerial practices, fostering collective learning and co-creation.

In this spirit, the adoption of the agile mode in managerial practices responds to the need for organizations to adapt to changing market demands, and to unleash their employees' potential for innovation and responsiveness.

Managerial innovation and agility play a crucial role in Morocco's sustainable transformation, complementing each other to meet the country's economic, social and environmental challenges. Managerial innovation, through the introduction of new management and governance methods, makes it possible to rethink organizational processes to better respond to the demands of sustainable transformation. On the other hand, agility, by enabling companies to adapt quickly to change and make effective decisions (Kadoussi et al.,2023), promotes more efficient resource management and better collaboration between teams. Together, these approaches strengthen the resilience of Moroccan companies in the face of market fluctuations while minimizing risks, thus promoting sustainable transformation (Kadoussi et al.,2023). By adopting an innovative approach to management and fostering agility, Moroccan companies can improve their operational efficiency, productivity and competitiveness in the marketplace. Managerial innovation rethinks processes and organizational structures, while agility enables rapid adaptation to market changes, thus contributing to enhanced performance and greater business resilience in the face of the challenges of sustainable transformation (Eddahani et al.,2022; Kadoussi et al.,2023)

Analysis and discussion of the key success factors for sustainable transformation in Morocco highlight several crucial aspects. First and foremost, the leadership and commitment of top management are fundamental. They must not only promote innovation and agility within their organization, but also embody these values in their own management. Their ability to communicate a clear vision of transformation, encourage risk-taking and actively support the change process are major determinants of success.

Secondly, change management and resistance represent major challenges to overcome. While sustainable transformation is crucial, it can be hampered by the reluctance of employees and stakeholders to change. It is therefore crucial to implement effective change management strategies, which include transparent communication, ongoing stakeholder involvement and proactive management of resistance to change.

Moreover, creating a corporate culture conducive to innovation and agility is a key factor in fostering sustainable transformation. This culture must encourage creativity, risk-taking and collaboration, while valuing employees' innovative initiatives. Leaders play a central role in fostering this culture, creating an environment where new ideas are encouraged and mistakes are seen as learning opportunities.

When it comes to the potential benefits of managerial innovation and agility in morocco, there are several aspects to consider. Firstly, the adoption of more efficient management structures and methods can enable companies to better organize their resources and optimize their processes. In addition, the use of more accurate costing tools can help companies reduce their costs and improve their competitiveness in the marketplace. In addition, the development of more flexible communication systems and new management methods can promote faster, more informed decision-making, contributing to companies' responsiveness and adaptability to market changes.

In terms of recommendations, several actions can be envisaged to foster managerial innovation and agility in morocco. It is crucial to adopt public policies and provide government support to encourage innovation and agility in companies. In addition, it is essential to set up training and skills development programs for managers and employees, to equip them with the knowledge and skills they need to innovate and be agile. Finally, the sharing of best practices and collaboration between companies can play an essential role in strengthening innovation and agility within the country.

5. CONCLUSION

In conclusion, sustainable transition in Morocco is both a complex and essential challenge for the country's economic, social and environmental future. Determinants of success, such as leadership, change management and the promotion of a corporate culture conducive to innovation and flexibility, are the foundations on which it is essential to build in order to achieve this ambitious goal (Essaidi & Etouzani, 2023).

Analysis of the potential benefits arising from managerial innovation and agility highlights the significant opportunities they offer in terms of operational efficiency, market competitiveness and ability to meet future challenges. However, in order to realize these benefits, it is necessary for government players, businesses and society as a whole to work harmoniously together to put in place the requisite policies, training programs and cooperation mechanisms. (Jrad, 2022; Frimousse & Peretti, 2022).

By adopting a collaborative approach and investing in skills and infrastructure development, Morocco has the opportunity to become a regional leader in sustainable transformation. This transition to more innovative and agile business models is not only essential to meet current challenges, but also to prepare the country to face future challenges with resilience and prosperity.

ACKNOWLEDGMENT

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

REFERENCES

Abbas Z. (2023, October 27). Organizational Agility: The New Paradigm of Moroccan Companies. [L'agilité organisationnelle : le nouveau paradigme des entreprises marocaines]. (In French). https://leseco.ma/opinion/agilite-organisationnelle-le-nouveau-paradigme-des-entreprises-marocaines.html

Armbruster, H., Bikfalvi, A., Kinkel, S., & Lay, G. (2008). Organizational innovation: the challenge of measuring non-technical innovation in large-scale surveys. *Technovation*, 28(10), 644-657. https://doi.org/10.1016/j.technovation.2008.03.003

Autissier, D., Metais-wiersch, E., Peretti, j. (2019). Presentation. In: d. Autissier, e. Metais-wiersch & j. Peretti (dir), the managerial innovation toolbox (pp. 34-35). Paris: Dunod.

Barrand, J. (2006). The agile manager: towards a new management style to cope with turbulence, Paris, Dunod.

Bartiche, S., & Erraoui, E. H. (2021). The new public management: a performance tool for public organizations. *International journal of accounting, finance, auditing, management and economics*, 2(6-1), 227-246. https://doi.org/10.5281/zenodo.5730588

Barzi, R. (2011). Sme and organizational agility: an exploratory study. *Innovations*, 35, 29-45. https://doi.org/10.3917/inno.035.0029

Birkinshaw, J., Hamel, G., & Mol, M. J. (2008). Management innovation. Academy of management review, 33(4), 825-845.

Boukhedimi, F. Z., Zerrouki, k., & Merad, M. A. (2023). The state of managerial practices in an agile organization in Algeria. [Les pratiques managériales dans les organisations agiles en Algérie. Etat des lieux] (In French). https://www.asjp.cerist.dz/en/PresentationRevue/703

Breu, K., Hemingway, C. J., Strathern, M., Bridger, D. (2001). Workforce agility: the new employee strategy for the knowledge economy, *Journal of information technology*, 17, 21-31. https://doi.org/10.1080/02683960110132070

Cohendet, P., Llerena, p. (1999). Flexibility and organization, revue française de gestion, (march-may), 72-79.

Damanpour F., walker R., Avellaneda C.N. (2009). Combinative effects of innovation types and organizational performance: a longitudinal study of service organizations, *Journal of management studies*, vol. 64, no. 4, pp. 650-675. https://doi.org/10.1111/j.1467-6486.2008.00814.x

Daoud, M., Bennis, A. (2022). Managerial innovation, agility and performance: an attempt to develop a conceptual model. Revue de management et cultures (remac), (7).

Domergue, M., Escaffre, L., & Soparnot, R. (2014). Managerial innovation in question: a proposal for an integrative model. *Management & avenir*, 7(70), 183-204.

Eddahani, M., Mohamed, B. A. L., & Bengrich, M. (2022). New managerial practices in public organizations in the covid 19 era: organizational resilience and managerial innovation. *Revue française d'economie et de gestion*, 3(1). [Nouvelles pratiques managériales dans les organisations publiques à l'ère du covid 19 : résilience organisationnelle et innovation managériale] (in french). Https://www.revuefreg.fr/index.php/home/article/view/532

Elouidani, A., Karim, H., & Laassilia, F. Z. (2023). The influence of managerial innovation on the adoption of socially responsible practices: the case of Moroccan companies. International journal of accounting, finance, auditing, management and economics, 4(3-2), 143-158. [L'influence de l'innovation managériale sur l'adoption des pratiques socialement responsables: cas des entreprises du Maroc] (in French). https://doi.org/10.5281/zenodo.7981928

Essaidi, A., & Etouzani, L. (2023). Growth In Morocco from 1960 To 2016: Progress and Challenges Ahead. International Journal of Accounting, Finance, Auditing, Management and Economics, 4(6-1), 538-552. [État de lieux de la croissance au Maroc de 1960 à 2016 : progrès et Défis à relever] (In French). https://www.ijafame.org/index.php/ijafame/article/view/1372/1252

Fotso, H. E. (2022). Organizational agility and sme performance: exploratory study within a Gabonese SME. https://theses.hal.science/tel-03643537/document

Francis, D., & Bessant, J. (2005). Targeting innovation and implications for capability development. Technovation, 25(3), 171-183. https://doi.org/10.1016/j.technovation.2004.03.004

Frimousse, S. & Peretti, J. M. (2022). Managerial innovation in public organizations. Question(s) de management. https://doi.org/10.3917/qdm.219.0147

Goldman, S. L., Nagel, R. N. (1993). Management, technology and agility: the emergence of a new era in manufacturing, *International journal of technology management*, 8, (1/2), 18-38. https://doi.org/10.1504/IJTM.1993.025758

Hauch, V. & Loufrani-Fedida, S. (2020). The liberated enterprise as an innovative and transformative managerial approach: the case of a SME in digital services. La revue des sciences de gestion. [L'entreprise libérée comme démarche managériale innovante et transformative] (In French). https://www.cairn.info/revue-des-sciences-de-gestion-2020-5-page-43.htm

Ibrahim, A. K., & Benabdelhadi, A. (2023). Transforming public administration: agile leadership and adapting to technological change. *International journal of accounting, finance, auditing, management and economics*, 4(3-1), 710-723. [Transformer

l'administration publique : le leadership agile et l'adaptation au changement technologique] (In French). https://doi.org/10.5281/zenodo.8092690

Jissang, M. (2021). The influence of culture on organizational agility. https://biblos.hec.ca/biblio/memoires/jissang_melodie_m2021.pdf

Jrad, A. (2022). The adoption of managerial innovation in public companies: between tensions and obstacles. https://theses.hal.science/tel-04206185/file/2022_arch_jrad_a.pdf

Kadoussi, E., Atlassi, M., & Abriane, A. (2023). Determinants of organizational resilience. Exploratory study among manager-owners of private schools in Agadir. *Alternatives managériales économiques*, 5(4), 360-379.

Katayama, H., Bennett, D. (1999). Agility, adaptability and leanness: a comparison of concepts and a study of practice, *International journal of production economics*, (60-61), 43-51.

Kidd, T. P. (1994). Agile manufacturing: forging new frontiers, London, Addison-Wesley.

Kimberly J.R. (1981). Managerial innovation, handbook of organizational design, Nystrom p.c. and Starbuck w.h., vol. 1, Oxford University Press, New York, pp. 84-104.

Lahya. S (2023). Managerial innovation in associations: the case of the Moroccan association of social workers. *African scientific journal*, 03(17) pp: 345-359. https://doi.org/10.5281/zenodo.7892896

Lin, C. T., Chiu, H., Chu, P. Y. (2006). Agility index in the supply chain, International journal of production economics, 100, 285-299. https://doi.org/10.1016/j.ijpe.2004.11.013

Mol, M. J., & Birkinshaw, J. (2009). The sources of management innovation: when firms introduce new management practices. *Journal of Business Research*, 62(12), 1269-1280. https://doi.org/10.1016/j.jbusres.2009.01.001

Nagel R. N., Dove R., Goldman, S., Preiss k. (1991). 21st century manufacturing enterprise strategy: an industry led view, Iacocca institute, Lehigh university, Bethlehem.

Richards, C. W. (1996). Production and inventory management Journal: journal of the American Production and Inventory Control Society, Inc. - Washington, D.C: Soc., ISSN 0897-8336, ZDB-ID 10542929. - Vol. 37.1996, 2, p. 60-64.

Sharifi, H., Zhang, Z. (1999). A methodology for achieving agility in manufacturing operations: an introduction, *International journal of production economics*, 62 (1/2), 7-22. https://doi.org/10.1016/S0925-5273(98)00217-5

Sinapin, M. N. (2022). Telecommuting: more than an agile approach. Stakes and risks for the organization. In oriane: 20ème Colloque francophone sur le risque. https://hal.science/hal-03807227/document

Van de ven A.H. (1986). Central problems in the management of innovation, *Management science*, vol. 32, no. 5, pp. 590-607.

Yusuf, Y. Y., Sarhadi, M., Gunasekaran, A. (1999). Agile manufacturing: the drivers, concepts and attributes, *International journal of production economics*, 62 (1/2) 33-43. https://doi.org/10.1016/S0925-5273(98)00219-9

Volume XX, Issue (2) (2024) 51-55

International May Conference on Strategic Management

DOI: *10.5937/IMCSM24055R* *Review Article*

ANALIZA RADA DOBROVOLJNIH PENZIJSKIH FONDOVA U SRBIJI U 2023. GODINI

Ivan D. Radojković *, Kristina R. Stevanović

Univerzitet u Nišu, Pedagoški fakultet u Vranju, Republika Srbija

Apstrakt: Tema ovog rada je analiza poslovanja dobrovoljnih penzijskih fondova u Srbiji u 2023. godini, gde je posebno istražena stopa prinosa ovih fondova. U Srbiji funkcioniše obavezno i dobrovoljno penzijsko osiguranje. Uvođenje privatnih dobrovoljnih penzijskih fondova zajedno sa državnim penzijskim fondom je suština reforme penzijskog sistema i taj proces reforme je krenuo 2005. godine. Razvijeni sistemi penzijskog osiguranja funkcionišu kao trostubni, ali je kod nas uvođenje drugog stuba ostavljeno za „bolje dane", tj. ne treba očekivati uvođenje drugog stuba u skorije vreme. Interesantno je da je, predsednik Republike Srbije, gospodin Aleksndar Vučić, na gostovanju na RTS-u, napomenuo da treba da razvijamo privatne penzione fondove i da je premijer Narodne Republike Kine, gospodin Li Ćijang, na Svekineskom narodnom kongresu 14. saziva, u svom izveštaju o radu vlade, naveo da će privatni penzijski sistem biti implementiran širom zemlje.

Ključne reči: penzijski sistem, dobrovoljni penzijski fondovi.

1. PENZIJSKI SISTEM U REPUBLICI SRBIJI

Predmet istraživanja ovog rada je analiza poslovanja dobrovoljnih penzijskih fondova u Srbiji. Rad treba da ukaže da je ovaj vid štednje dobar za starost.

U Republici Srbiji trenutno funkcionišu dva penzijska stuba, obavezni – državni – prvi stub i dobrovoljni – privatni – treći stub.

Kada su dobrovoljni penzioni fondovi počeli sa radom, verovalo se da će državni sistem biti značajno rasterećen, a akumulirana štednja mnogima omogućiti bezbrižnu starost (Stevanović, 2022/2023). „*Pay as you go*", prvi stub, sistem penzija je sistem obaveznog penzijskog sistema. Prosečan iznos penzije za januar 2024. godine iznosi 45.742,00 dinara. (Podatak je objavljen 23. februara 2024. godine na sajtu PIO).

Drugi penzijski stub je mešoviti sistem. Prema ovom sistemu, poslodavac uplaćuje doprinose za penzijsko osiguranje, s tim što se procenat doprinosa koji određuje država, uplaćuje u fond dobrovoljnog osiguranja. Zaposleni bira fond u koji želi da poslodavac uplaćuje doprinose. Ovaj stub ne funkcioniše u Republici Srbiji.

* *Corresponding author: ivanradojkovic1972@gmail.com*

Ivan D. Radojković, ORCID: 0009-0009-1048-1489
Kristina R. Stevanović, ORCID: 0009-0000-8405-7204

Dobrovoljni penzijski fondovi funkcionišu kao ***fully funded*** **sistem finansiranja,** treći stub, koji se često naziva sistemom akumulacije kapitala ili sistemom kapitalizovanih fondova. U osnovi, visina privatne penzije zavisi od visine akumuliranih sredstava na ličnom računu člana fonda i prinosa na investirana sredstva (Kočović et al., 2010).

2. NAČIN FUNKCIONISANJA DOBROVOLJNIH PENZIJSKIH FONDOVA

Članovi fonda mogu da počnu povlačenje novčanih sredstava sa navršenih 53 odnosno 58 godina, u zavisnosti od datuma kada su pristupili fondu. Čim član dobrovoljnog penzijskog fonda izmiri doprinos na lični račun, on se po odbitku naknade za dobrovoljno penzijsko društvo, pretvara u odgovarajući broj obračunskih jedinica na osnovu njene dnevne vrednosti (Žarković, 2015).

Penzijski fondovi u Republici Srbiji funkcionišu po principu kapitalisane štednje, gde se članovima fonda ne garantuje unapred nivo prinosa koji će fond da ostvari (Radojković, 2023). Uplate u iznosu od 8.101,00 dinara mesečno po zaposlenom od strane poslodavca oslobođenje su poreza na zarade i doprinosa za socijalno osiguranje. Ovaj iznos se menja svakog 01. februara u godini.

Republika Srbija je 2005. godine zakonski regulisala rad dobrovoljnih privatnih penzijskih fondova Zakonom o dobrovoljnim penzijskim fondovima i penzijskim planovima („Službeni glasnik RS”, br. 85 od 06. oktobra 2005, 31 od 09. maja 2011.). Primena ovog Zakona je počela 1. aprila 2006. godine, dok je njegova prva dopuna i izmena izvršena 09. maja 2011. godine. Zakonom je uređen pravni okvir za treći penzijski stub, sa ciljem obezbeđivanja dodatnih prihoda u starosti, kao dodatak državnom sistemu, koji ostaje glavni izvor penzijskih prihoda.

Dobrovoljne penzije su potpuno nezavisne u odnosu na državne penzije i zasnivaju se na principu ličnih računa člana fonda. Sredstva privatnog penzijskog fonda se investiraju u finasijske instrumente koji obezbeđuju optimizaciju portfelja, tj. daju najbolji odnos rizika ulaganja i stope ostvarenog prinosa. Sredstva dobrovoljnog penzijskog fonda investiraju se u skladu sa sledećim zakonom propisanim investicionim načelima:

- ***načelo sigurnosti,*** koje se ostvaruje investiranjem u hartije od vrednosti izdavalaca sa visokim rejtingom;
- ***načelo diversifikacije portfelja,*** koje se ostvaruje ulaganjem u različite finansijske instrumente (državne obveznice, korporativne obveznice, trezorski zapisi, akcije, bankarski depoziti, hipotekarne obveznice, itd).
- ***načelo održavanja likvidnosti,*** koje se postiže ulaganjem u hartije od vrednosti koje se brzo mogu prodati i kupiti po stabilnoj ceni. Cilj fonda je da u portfelju ima dovoljan procenat likvidnih finansijskih instrumenata kako bi u svakom trenutku mogao da ispunjava svoje obaveze (Radojković, Gajić, 2017).

U ovom trenutku, prema sajtu Narodne banke Srbije (Narodna banka Republike Srbije 2024), u Republici Srbiji, posluje 4 društva za upravljanje dobrovoljnim penzijskim fondovima:

- Generali
- Raiffeisen Future
- DDOR-Garant
- Dunav

Trenutno u Republici Srbiji ima sedam dobrovoljnih penzijskih fondova.

Tabela 1. Stope prinosa dobovoljnih penzijskih fondova u 2023. godini (mojnovac, penzijski fondovi, raiffeisenfuture, 2024)

Naziv fonda	**Stopa prinosu u 2023**
DUNAV	10.45%
GENERALI BASIC	7.50%
GENERALI INDEX	2.15%
DDOR GARANT EKVILIBRIO	5.17%
DDOR GARANT ŠTEDNJA	7.64%
RAIFFEISEN FUTURE	6.04%
RAIFFEISEN FUTURE EURO	4.21%

Tabela 1. prikazuje da su dobrovoljni penzijski fondovi ostvarili pozitivnu stopu prinosa u 2023. godini. Ovakve stope prinosa su pokazatelj da su dobrovoljni penzijski fondovi dobar izbor za štednju za starost. Kao što se vidi iz priložene tabele najveća godišnja stopa prinosa je 10,45%, što ukazuje na to da članovi fonda mogu da očekuju dobru akumulaciju sredstava na ličnom računu, a samim tim i dobru privatnu penziju.

Tabela 2. Primer penzije iz dobrovoljnog penzijskog osiguranja

Naknada	2.70%	**Prosečna stopa prinosa**	5.00%	
Mesečni penzijski doprinos			6 000.00	DIN
Period uplate			40	godina.
Akumulirana sredstva			8 690 240.04	DIN
Period programirane isplate			20	godina.
Prosečna programirana isplata			56 819.96	DIN

Tabela 2. pokazuje primer penzije iz dobrovoljnog penzijskog osiguranja. Na ovom primeru može se videti da ukoliko član dobrovoljnog penzijskog fonda uplaćuje 40 godina, konstantnu sumu od 6 000.00 dinara, sa prosečnom stopom prinosa od 5%, može da akumilira na svom ličnom računu znos od 8 690 240.04 dinara i ukoliko se odluči da prima penziju narednih 20 godina, može da očekuje penziju u iznosu od 56 819.96 dinara.

Kalkulator koji je upotrebljen za obračun penzije je iz dobrovoljnog penzijskog fonda Dunav (Dunav penzije, 2024). Od značaja je informacija da je iznos na ličnom računu člana fonda nasledan. U slučaju da član fonda ne počne da prima penziju ili počne da je prima pa u toku trajanja primanja penzije premine, iznos dobrovoljne penzije se prenosi na naslednike. Član fonda može da odredi naslednika u postupku pred fondom ili se naslednik određuje zakonskim putem.

3. ZAKLJUČAK

Dobrovoljni penzijski fondovi mogu biti jedan od stubova razvoja društva sa imovinom koju prikupljaju od članova fondova. Predsednik Republike Srbije, gospodin Aleksandar Vučić, je na svom gostovanju na RTS-u izjavio da je potrebno razvijati privatne penzije. Njegova očekivanja su da sa porastom BDP-a i plata zaposlenih, dobrovoljni penzijski fondovi uđu u period ekspanzije i da je realno predviđanje da broj članova u ovim fondovima poraste na 500000. Na ovaj način dobrovoljni penzijski fondovi bi stvorili značajan investicioni potencijal, koji bi, uz praćenje strateških ciljeva i ekonomske politike države, mogao da se uloži u kapitalne projekte koji će članovima dobrovoljnih penzijskih fondova da daju sigurne prinose. Obezbeđivanjem sigurnih stopa prinosa kroz ovakvo investiranje sredstava dobrovoljnih penzijskih fondova, postaće atraktivni za buduće članove (Fisklani savet, 2022).

Od značaja za budući rad dobrovoljnih penzijiskih fondova je podatak da je premijer Narodne Republike Kine, gospodin Li Ćijang, na Svekineskom narodnom kongresu 14. saziva, u svom izveštaju o radu vlade, naveo da će privatni penzijski sistem biti implementiran širom zemlje. Mogućnost otvaranja dobrovoljnih penzijskih fondova u Narodnoj Republici Kini je od strateškog značaja za njihov dalji razvoj, imajući u vidu broj stanovništva i ekonomsku moć ove države, zbog potencijalno velike mogućnosti akumulacije novačnih sredstava od uplata pojedinaca u fondove. Treba pratiti finansijska dešavanja u Narodnoj Republici Kini i stvoriti održivi plan osvajanja ovog tržišta.

Autori zaključuju da dobrovoljni penzijski fondovi imaju budućnost i da u njih treba ulagati, jer će članovima dobrovoljnih penzijskih fondova, pored državne penzije, da daju dodatnu sigurnost u starosti koja je sigurno svima potrebna.

LITERATURA

Dunav penzije. (2024, April 4). Kalkulator penzija. Retrieved from https://dunavpenzije.com/sh/dunav-fond-kalkulator-penzija

Kočović, J., Šulejić, P., & Rakonjac, Antić T. (2010). Osiguranje. Centar za izdavačku delatnost, Ekonomski fakultet u Beogradu, Beograd.

Narodna banka Srbije. (2024). Društva za upravljanje dobrovoljnim penzijskim fondovima. Mojnovac. (2024, March 23). Penzijski fondovi. Retrieved from https://www.nbs.rs/sr_RS/finansijske-institucije/penzijski-fondovi/dpf/

Radojković, I. (2023). Analiza rada dobrovoljnih penzijskih fondova u Srbiji u 2022. godini. Tokovi osiguranja, 2(23).

Radojković, I., & Gajić, B. (2017). Razvijenost dobrovoljnih penzijskih fondova u Srbiji. Tokovi osiguranja, 4(17).

Raiffeisen Future. (2024, April 4). Fondovi. Retrieved from https://www.raiffeisenfuture.rs/wp-content/uploads//Ostvareni-rezultati-DPF-Raiffeisen-Future-31.12.2023

Republički fond za penzijsko i invalidsko osiguranje. (2024, March 23). Prosečna penzija. Retrieved from http://www.pio.rs/sr/aktuelnosti/prosechna-penzija

Republika Srbija, Fiskalni savet. (2022). 15 godina privatnih penzijskih fondova u Srbiji: Dosadašnji razvoj i preporuke za reforme

Stevanović, M. (2015). Ima li nade za pristojnu starost, *Biznis&Finansije*, TOP 2022/2023
Žarković, N. (2015). Pitanje bez odgovora, Svet osiguranja

ANALYSIS OF THE VOLUNTARY PENSION FUNDS IN SERBIA IN 2023

Ivan D. Radojković, Kristina R. Stevanović

University of Niš, Pedagogical Faculty in Vranje, Republic of Serbia

Abstract: The topic of this paper is the analysis of the work of voluntary pension funds in Serbia in 2023, with emphasis on return rates from the funds' investments. In Serbia, both mandatory and voluntary pension insurance operate. The introduction of private voluntary pension funds together with the state pension fund is the essence of the reform of the pension system and that reform process started in 2005. Insurance system is based on three pillars. The introduction of the second pillar was left for "better days" and should not be expected soon. It is interesting that the President of the Republic of Serbia, Mr. Aleksandar Vučić, during his guest appearance on RTS, mentioned that we should develop private pension funds and that the Prime Minister of the People's Republic of China, Mr. Li Jiang, at the All-Chinese People's Congress of the 14th convocation, in his report on the work of the government, stated that the private pension system will be implemented throughout the country.

Keywords: pension system, voluntary pension funds.

Volume XX, Issue (2) (2024) 56-63

International May Conference on Strategic Management

DOI: *10.5937/IMCSM24056N* *Original Research*

THE USE OF DIGITAL BANKING BY PERSONS WITH DISABILITIES

Sladjana Neogradi[1,2] *

[1] *University "Union - Nikola Tesla", Faculty of Business Studies and Law Belgrade, Serbia*
[2] *Addiko bank a.d. Belgrade, Serbia*

Abstract: The aim of the research is to examine the use of banking services by employed persons with disabilities, viewed through the assessment of daily life activities and the use of digital banking services. The research will cover about 350 bank clients who are employees with disabilities, of both sexes, over 18 years of age. A specially designed questionnaire for research purposes will be used to assess the use of digital banking services. The questionnaire for employed persons with disabilities, consisting of 8 multiple-choice questions, was forwarded to the respondents via e-mail, and part of the respondents was surveyed using the personal interview method. The research was conducted by sending questionnaires to the e-mail addresses of 350 respondents in the territory of the city of Belgrade. During the empirical research, 155 questionnaires were collected. We consider this sample to be representative for the territory of the city of Belgrade. The total number of employed persons with disabilities on the territory of Serbia is 17.500 compared to the total number of inhabitants, which is 6.690.887 (data from the Bureau of Statistics from 2022), which represents 0.26%. Accordingly, the geographical focus only on the city of Belgrade is a limitation of this research, and further scientific and research activity of the author will be directed to the implementation of similar research in a wider geographical area of Serbia and a greater coverage of municipalities throughout the territory of our country. This will more accurately determine the influence of the respondents' geographical characteristics on the degree of development of the attitudes of employed persons with disabilities when it comes to digitalization, the most acceptable distribution channels and client information about the advantages of mobile banking.

Keywords: digital communication, social networks, sales channels, limited work activity, CRM

* *Corresponding author: sneogradi@gmail.com*

Sladjana Neogradi ORCID: 0009-0002-0976-5483

1. INTRODUCTION

Life habits are activities and social roles that a person performs in their environment. A person with a disability, in the legal sense, is a person with permanent consequences of a physical, sensory, mental or spiritual impairment or disease that cannot be removed by treatment or medical rehabilitation, who faces social and other restrictions affecting their ability to work and who has limited opportunities to, under equal conditions, join the labor market and apply for employment with other persons.

Physical frailty is one of the risk factors associated with mobility problems. Given that aging is characterized by the deterioration of the physical and physiological system, deterioration can be expected with age during the realization of daily activities that require the contribution of physical abilities (physical strength). In addition, the realization of tasks in the household requires that the physical system (muscle mass, strength, flexibility, balance, coordination, cardiovascular system) exert effort (Rapaić & Nedović, 2011).

A person with a disability loses or is often forced to forcibly change their social role, which represents a new "defense mechanism" that causes additional erosion in the already shaken sense of self-worth. Limited work activity and the difficulty of establishing economic independence trigger a cascade of cause-and-effect relationships that affect the experience of personal unfulfillment and dependence (Brojčin, 2013). People with physical disabilities live in an environment that is not always stimulating and ready to provide them with support. They often find themselves in difficult and unpleasant situations, because people are not open to help, and they do not approach people with disabilities or other difficulties. Certain branches of medicine and its directions do not define physical disability only as a problem of the individual, but also as a problem of society. Society must change and adapt in order to meet the specific needs of each individual - through new legislative policies, new educational and social policies and by adjusting social institutions through the removal of various barriers in the environment from architectural to psychosocial (Bajić, 1970). Starting from the fact that "in the essence of a person's personality, regardless of time epoch, status, education, religion or race, lies the unique desire to live life in satisfaction" (Mirić, 2014). According to one pilot study (Trgovčević et al., 2012), it is expected that persons with physical disabilities strive to improve the quality of their lives, and one of the key prerequisites for that is certainly the acquisition of economic independence.

Advancements in technology have made communication easier for people with disabilities. Although technological progress is an important life aspect of people with physical disabilities, what is inevitable is a high degree of dependence of people with physical disabilities on other people. Most often, these are family members such as parents and siblings.

People with physical disabilities in our country face a large number of different social and psychological barriers, which by their action contribute to the development of complex problems, which can relate to all life habits and skills of people with disabilities. In this paper, the basic and auxiliary hypotheses are defined.

Basic hypothesis:

• We assume that there are gender differences in the use of banking services by persons with disabilities.

Special hypotheses:

• We assume that digital banking facilitates the use of banking services by persons with disabilities.

2. METHODOLOGY

The scientific methods used in this research are the analytical-synthetic method, concretization method, comparison method and qualification method. The research is based on the analysis of foreign and domestic literature, with special focus on practical research through a pilot study. Respecting the postulates of modern theoretical approaches to the problem of the influence on the life habits of persons with disabilities when using electronic banking, this research will be based on the application of methods that are characteristic of economic and social sciences. Accordingly, the basic methodological principles from which the dialectical and synthetic method derive will be used.

The application of these methods will enable the perception of connection and mutual dependence, using correlation analysis, of phenomena relevant to the planned research, their movement, change and development. Basic theoretical concepts will be elaborated through the research desk method, synthesis and crossing of relevant theoretical materials, as well as empirical research of business practice. In doing so, special attention is paid to a critical review of the results of practical research through case studies ("Case Study"), historical data analysis, comparative analysis and benchmarking; but, above all, to the analysis of secondary data obtained from empirical and quantitative research of eminent international institutions and authors on the subject of banking services and their connection with the lifestyle habits of athletes with disabilities.

3. RESEARCH RESULTS

Government of the Republic of Serbia is on the Action Plan for implementing the Improvement Strategy position of persons with disabilities in the Republic of Serbia for the period from 2020 to 2024, in the period from 2021 to 2022 (Marković, 2014). According to the results of the Census in the Republic of Serbia from 2011, of the total number of persons with disabilities, 71,107 persons (12.4%) were economically active.

Table 1. Persons with disabilities in the Republic of Serbia according to economic activity, Census 2022. (Marković, 2014)

Republic of Serbia	%	Total
Economically active	1	4.982
They used to work	12	71.107
They have an occupation	2	14
They are looking for a job	9	51.714
Final total	**25**	**127.817**

Based on data provided by the Ministry of Labour, Employment, Veterans, and Social Affairs in 2020, the majority of employed individuals with disabilities hold a III degree of professional education (46.3%). This is followed by those with a IV degree of professional education (20.4%) and semi-skilled workers with a II degree vocational education (12.6%). The lowest representation among employed individuals with disabilities are those who have completed elementary education (12.2%). Our research examines the effects of digitization on people with disabilities in Serbia when it comes to utilizing banking services.

The results obtained through empirical research by measuring the attitudes of male and female disabled persons towards the use of banking services enable the modification of existing distribution channels and greater focus on this part of clients. The research was conducted on a sample of 350 bank clients. The questionnaire that was used in the empirical research on client

attitudes was filled out 155 by respondents. Of the total number of respondents, 45.3% of clients were female and 54.7% were male.

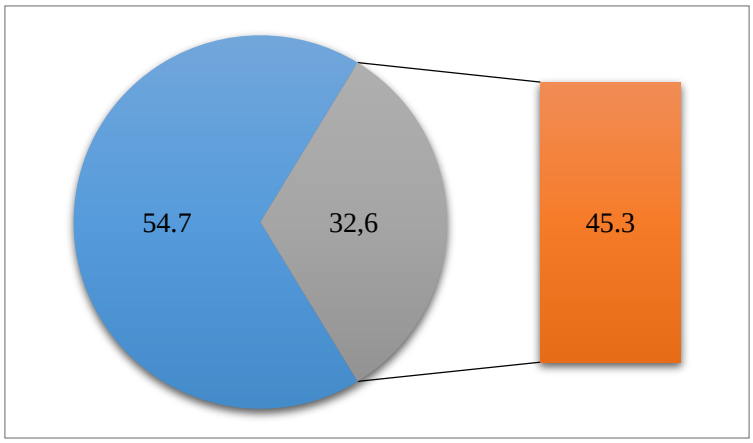


Chart 1. Distribution of respondents by gender (Editing by the author 2023)

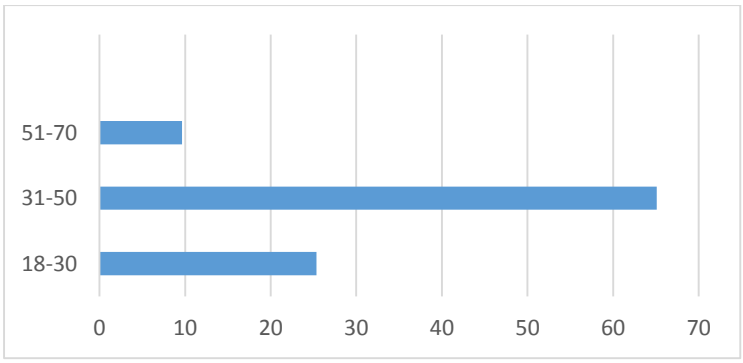


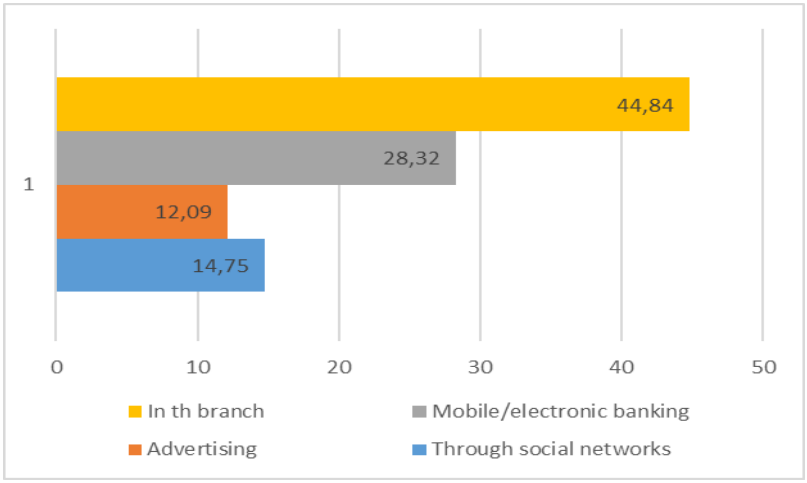
Chart 2. Distribution of respondents by age (Editing by the author 2023)

The largest number of surveyed clients (65.1%) are aged between 31 and 50, while the smallest number of respondents (9.64%) are aged 51-70.

Table 2. Distribution of answers to the question (in %): Through which sales channels do you think the client will be best informed? - according to gender (Editing by the author)

Distribution channels	Total	Male	Female
Social networks	14.75	36.02	63.98
Advertising	12.09	45.5	54.5
Mobile/ Electronic banking	28.32	72.8	27.2
In person at the branch	44.84	34.3	65.7

Surveyed male clients believe that they are best informed via mobile phones in the amount of 72.8%, while female disabled persons believe that they are best informed via social networks and in person at a branch in an almost identical percentage.

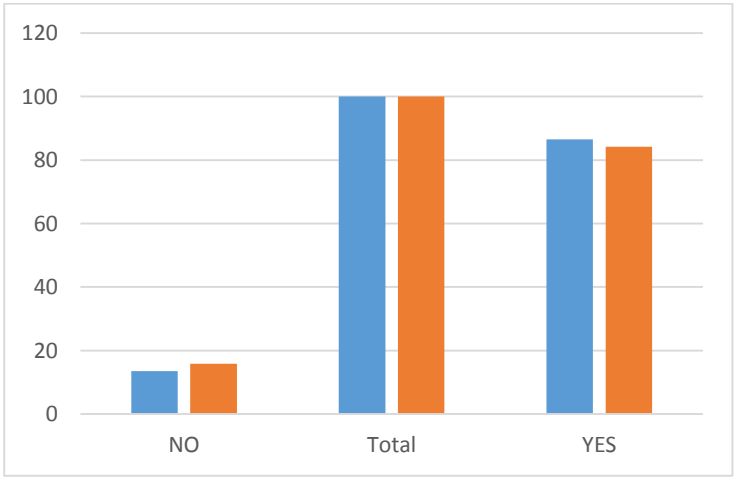


Graph 3. Distribution of answers to the question (in percentages): Through which sales channels do you consider that you are best informed about the bank's services as a disabled person? (Editing by the author)

Table 3. Distribution of answers to the question (in %): How do you pay bills? - according to gender (Editing by the author)

Distribution channels for payment	Total	Male	Female
I make payment exclusively through electronic banking	63.40	53.50	37.60
Directly in the branch	23.50	35.20	50.50
By combining both			49.50
Total	100.00	100.00	100.00

From the presented results, we can conclude that the digitization of bank operations is gaining importance, because a large number of clients use electronic payment methods.



Graph 4. Distribution of answers to the question (in percentages): Have you applied for a loan via mobile phone? - according to gender (Editing by the author 2023).

Table 4. Distribution of answers to the question (in percentages): Do you communicate with bank agents via a mobile application? - according to gender (Editing by the author)

Distribution of answers to the question (in %):	Total	Male	Female
Yes	10.10	9.20	7.25
No	89.90	90.80	92.75
Total	100.00	100.00	100.00

The results of the conducted research indicate that the majority of clients (89.90%), regardless of gender, do not communicate with the bank agents through the mobile application, and (11.1%) of the respondents get information that way.

Table 5. Cross tabulation statistics - on cost comparison when it comes to mobile banking at banks - by gender (Editing by the author)

Chi-Square Tests	Column 1	Column 2	Column 3
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	0.078	1	0.78
Continuity Correction[b]	0	1	0.995
Likelihood Ratio	0,078	1	0.779

There is no correlation between the comparison of costs when it comes to mobile banking at banks and the attitude of the bank's clients towards gender, that is, there is no dependence between the gender of clients and the costs of mobile banking.

Table 6. Distribution of answers to the question (in percentages): Have you ever applied for a loan via mobile phone? - according to gender (Editing by the author) (Editing by the author)

Distribution of answers to the question (in %):	Male	Female
Yes	86.5	84.2
No	13.5	90.80
Total	100	100

The results of the conducted research show that 79% of the respondents applied for a loan from the bank via mobile phone this year in 8 municipalities of Belgrade. This data indicates that people with disabilities also prioritized digital services due to health protection and cost reduction.

Table 7. Distribution of answers to the question (in percentages): Distribution of respondents according to the ability to complete transactions by filling online forms at banks (Editing by the author)

Distribution of answers to the question (in %):	Male	Female
Yes	72.5	62.2
No	27.5	37.8
Total	100	100

The research shows that, on average, both males and females with disabilities perceive themselves as having a high level of general digital competencies, particularly information literacy.

Table 8. Distribution of answers to the question (in percentages): What social networks do you use? (Editing by the author)

Social networks	Male	Female
Facebook	28.8	33.4
Twitter	11.1	5.2
LinkedIn	4.1	5.1
Instagram	43.9	45.1
YouTube	12.1	11.2

The research results shown in Table 8. show that the bank's clients use the social network Facebook the most, followed by Instagram. From the total number of patients with disabilities, based on empirical research, social networks Facebook are used by 28.8% of men and 33.4% of women.

4. CONCLUSION

This research is motivated by the need to propose solutions to the banking sector aimed at improving accessibility of persons with disabilities to banking services on the territory of the Republic of Serbia. In order for the financial organization to attract a more significant number of clients, represented by the target group with disabilities, it is necessary to implement regular monitoring of all social networks.

For the financial organization to increase its market share, it is necessary to enable people with disabilities to use banking services without paying fees for individual transactions, especially those who receive their income on the basis of social benefits.

Financial organizations must work on improving mobile applications that enable sound vibration for the visually impaired.

In all banks in the Republic of Serbia, it is necessary to provide access to branches for people with disabilities by building ramps and installing elevators.

The results of the research in this paper should be taken with a certain amount of reserve. Namely, it should be noted that the primary survey research is based on the self-assessment of the selected group on the territory of Belgrade and is recommended to be carried out on the territory of the Republic of Serbia in the coming period. It is necessary to take into account that the questionnaire for this work was forwarded to users of banking services who are members of one of the associations of persons with disability.

When analyzing the basic hypothesis, gender differences in the use of banking services among persons with disabilities are almost identical with small deviations depending on the service distribution channel.

Digital banking has made it easier to use banking services that are increasingly available through digital platforms and mobile applications.

The results of the research indicate the necessity of active monitoring of digital communications in improving banking services and being a complementary part of integrated marketing activities in order to achieve a synergistic effect and consequently improve competitive advantage and success in the market for persons with disabilities.

The findings from the research can aid in developing communication tactics for specific demographics, such as individuals with disabilities. The outcomes suggest that online

communication is a preferred method for bank clients with disabilities, which reveals a new trend in marketing strategies to cater to their unique preferences when it comes to banking services. We suggest that future research focus on specific disability groups and the challenges each of these groups faces when using banking services.

REFERENCES

Bajić, B. (1970). General psychology. Stena press.

Brojčin, B. (2013). Inclusive education. Faculty of Special Education and Rehabilitation, CIDD. ISSN 0354-8759.

Marković, M. (2014). Census of population, households and apartments in 2011 in the Republic of Serbia - People with disabilities in Serbia. Belgrade: Republic Institute of Statistics.

Mirić, F. (2014). Quality of life of persons with disabilities in Serbia. *Social Thought*, 47–57. https://doi.org/10.22190/FULP2102111M

Paragraph Lex. (2021). Action plan for the implementation of the strategy for improving the position of persons with disabilities in the Republic of Serbia for the period from 2020 to 2024, in the period from 2021 to 2022 ("Official Gazette of RS", No. 37/2021). Retrieved from http://demo.paragraf.rs/demo/combined/Old/t/t2021_04/SG_037_2021_001.html

Rapaić, D., & Nedović, G. (2011). Cerebral palsy: Practical and cognitive functions. Belgrade: University of Belgrade, Faculty of Special Education and Rehabilitation, CIDD. Monograph, ISBN 978-86-6203-014-6, (COBISS.SR-ID 184736524).

Trgovčević, S., Nedović, G., Kljajić D., Eminović F., & Urošević J. (2012). Quality of life persons with medulla spinalis lesions - pilot study. *HealthMED*, *6*(8). ISSN: 1840-2291

Volume XX, Issue (2) (2024) 64-74

International May Conference on Strategic Management

DOI: *10.5937/IMCSM24057I* *Review Article*

EBIT – EPS ANALYSIS

Milos Ivanis *

Faculty of Economics and Engineering Management in Novi Sad, University Business Academy, Novi Sad, Republic of Serbia

Abstract: The search for the optimal degree of indebtedness of the company requires the use of several analytical procedures, among which the most attention is paid to the methods of analysis of ratios in the capital structure, such as: EBIT-EPS analysis, coverage coefficients (ratios) and the group of so-called informal methods of ratio analysis in the capital structure of the company. The analysis of financial leverage factors has showed that the growth of indebtedness causes disproportionate variability of operating profit (EBIT) and earnings per share (EPS). Observing these effects, the so-called operating profit - earnings per share analysis (EBIT - EPS analysis) was developed in theory, including analysis of the coverage point or financing indifference, since such analytical procedure can be presented graphically and mathematically. We need two points for the graphic display. We obtain the first by calculating earnings per share (EPS) for a given level of operating profit (EBIT). The second point is the level of operating profit (EBIT) required to cover fixed expenses for various financial alternatives. For a mathematical representation, a tabular calculation or calculation by equations is required. The aim of this paper is to present both ways of analytical procedure of the so-called EBIT-EPS analysis, as well as the method of determining the coverage (indifference) point.

Keywords: capital structure, leverage, EBIT, EPS, expenses.

1. INTRODUCTION

The role of financial managers in a corporate enterprise is to recognize investment opportunities, analyze and evaluate them, and make decisions about whether and how much to invest. Also, their obligation is to establish as flexible a capital structure as possible that will be able to adapt to alternative methods of company financing. At the same time, it is necessary to maximize the price of the company's shares. However, the inability to accurately measure the expected relevant costs for different levels of indebtedness makes the problem of finding a company's optimal capital structure a very complex one. Accordingly, many years of research in financial theory and business practice in the direction of finding a generally valid model for establishing and maintaining an optimal capital structure of a company have not yielded satisfactory results (Damodaran, 2014).In this regard, a logical conclusion is that

* *Corresponding author: mivanis97@gmail.com*

Milos Ivanis, ORCID: 0000-0003-2493-9576

the relationships in the optimal capital structure, cannot be formulated in terms of a generally valid norm, and accordingly, each company must seek its own optimal solution of capital structure in specific conditions. The search for the optimal degree of indebtedness of the company necessarily implies the use of several analytical procedures (Hajzer & Render, 2011). In this context, the so-called EBIT-EPS analysis, by which it is possible to set a flexible capital structure of a corporate enterprise, is highly significant.

By gaining insight into the basic theoretical postulates of the capital structure of a corporate enterprise, it can be clearly seen that the analysis of financial leverage factors indicates that the rise in indebtedness causes: first, disproportionate variability of net earnings (earnings per share) relative to changes in operating profit, and second, growth in net earnings (earnings per share) for a given level of operating profit. By observing these effects, the financial theory has developed the so-called analysis of a company's operating profit - earnings per share, i.e. EBIT - EPS analysis, which tries to identify the capital structure which provides the maximum net earnings at a given level of company's profit. Namely, this analysis starts from the relation between earnings before interest and taxes (EBIT) and earnings per share (EPS). The application of EBIT - EPS analysis implies determining the coverage point, i.e. the so-called indifference point at which the lines of common and preferred stock intersect, i.e. the lines of common stock and credit indebtedness of a corporate enterprise. The indifference point represents the level of EBIT where EPS is equal for two (or more) alternative capital structures. The higher the expected level of EBIT, assuming that it is above the indifference point, the stronger is the motivation of the company to use borrowing in financing, of course assuming that other factors remain unchanged. Furthermore, it should be said that the indifference point can be determined in two ways: graphically and mathematically. We will consider both of these ways of determining the indifference (coverage) point in the following presentation.

2. EBIT – EPS ANALYSIS

To illustrate the EBIT - EPS analysis, we start from a hypothetical example of a company that has 10 000 000 equity (200 000 common stock with a nominal value of 50.00 dinars. In addition, the company needs another 5 000 000 of additional sources, which it can obtain through the following alternatives:

a) By issuing common stock (100 000 common stock of nominal value of 50.00 dinars);
b) Long-term borrowing with an interest rate of 12 percent per annum;
c) By issuing preferred stock (100 000 of preferred stock of nominal value of 50.00 dinars, with a preferential dividend of 11 percent);
d) Income tax rate is 50 percent, while the expected level of operating profit (EBIT) amounts to 2 400 000.

In order to determine the EBIT - EPS indifference point, i.e. the indifference point between different financial alternatives, it is necessary to calculate earnings per share (EPS) for a hypothetical level of operating profit (EBIT). This is done through the following formula (Besley & Brigham, 2015):

$$\text{EPS} = \frac{(EBIT - I)(1-t) - PD}{NS} \tag{1}$$

where the given symbols denote the following:

I - interest on borrowed funds paid annually

t - income tax rate
PD - preferential dividend paid annually
NS - number of common stock in circulation

Suppose we want to know what the earnings per share (EPS) were for all three alternative plans for additional financing, bearing in mind the fact that the expected level of operating profit (EBIT) is 2 400 000. However, for purely methodological reasons, it should be noted that the amount of EBIT is hypothetical and that in technical terms the amount of EBIT which is included in the calculation of the impact of financing structure variation on earnings per share (EPS) is not important at all. In the context of the above, specific calculations for all three of financing alternatives are shown in Table 1.

*Table 1.*Calculation for the three alternatives of additional financing (Ivanis, 2019, p. 585)

No.	Name of the position	Variant A	Variant B	Variant C
	CAPITAL STRUCTURE			
I.	Debts (12%)	0	5 000 000	0
II.	Preferred stock (11%)	0	0	5 000 000
III.	Common stock	15 000 000	10 000 000	10 000 000
	Total capital	15 000 000	15 000 000	15 000 000
	INCOME STATEMENT	A	B	C
1.	Operating profit (EBIT)	2 400 000	2 400 000	2 400 000
2.	Interest on borrowed assets (I x 12%)	0	600 000	0
3.	Earnings before tax	2 400 000	1 800 000	2 400 000
4.	Income tax (3 x 50%)	1 200 000	900 000	1 200 000
5.	Net earnings (3 - 4)	1 200 000	900 000	1 200 000
6.	Preferential dividend (II x 11%)	0	0	550 000
7.	Net earnings for common stakeholders (5 – 6)	1 200 000	900 000	650 000
8.	Number of common stock in circulation	300 000	200 000	200 000
9.	Earnings per share (EPS)	4.00	4.50	3.25
10.	Amount of EBIT for EPS = 0	0	600 000	1 100 000
11.	Degree of financial leverage (DFL)	1.00	1.33	1.85

A comparative analysis of the data from the previous table shows the impact of different ways of financing on the level of earnings per share (EPS) for identical operating profit (EBIT). At the same time, it is clear that variant A is characterized by the fact that each amount of EBIT enables the realization of a respective EPS. However, this is not the case for variants B and C, due to the obligation to first cover priority issues based on loans, i.e. based on preferred stock. Taking the above into consideration, it is obvious that in variant B EPS can be expected for EBIT $\geq$ 600 000 (amount of interest), while in variant C EPS can be expected for EBIT $\geq$ 1 100 000 (amount of preferential dividend before tax payment).

With the available data from Table 1, we can construct an EBIT-EPS graph. In doing so, we enter the earnings before interest and taxes (EBIT) on the horizontal axis, while we enter earnings per share (EPS) on the vertical axis (Malinic et al., 2019). For each financial alternative, we need to chart a direction that will show EPS for all possible levels of EBIT. Since the direction is determined from two points, we need two data for each financial alternative. To determine the first point of each of the directions, EPS is calculated for a hypothetical EBIT level of 2 400 000. In doing so, we start from the previously given formula for calculating earnings per share (EPS), and by applying it to specific data, we obtain the following results:

$$EPS_1 = \frac{(2400000 - 0)(1 - 0.5) - 0}{300000} = \frac{2400000 * 0.5}{300000} \quad (2)$$

$$EPS_1 = \frac{1200000}{300000} = 4.00 \quad (3)$$

$$EPS_2 = \frac{(2400000 - 600000)(1 - 0.5) - 0}{200000} = \frac{1800000 * 0.5}{200000} \quad (4)$$

$$EPS_2 = \frac{900000}{200000} = 4.50 \quad (5)$$

$$EPS_3 = \frac{(2400000 - 0)(1 - 0.5) - 550000}{200000} = \frac{(2400000 * 0.5) - 550000}{200000} \quad (6)$$

$$EPS_3 = \frac{650000}{200000} = 3.25 \quad (7)$$

a) For the common stock alternative, we have the following:

$$\begin{aligned} 0 &= (EBIT_1 - I)(1 - t) - PD \\ &= (EBIT_1 - 0)(1 - 0.5) - 0 \\ &= (EBIT_1)(0.5) \end{aligned} \quad (8)$$

$$EBIT_1 = 0/0.5 = 0 \quad (9)$$

b) For the debt alternative we have the following:

$$\begin{aligned} 0 &= (EBIT_2 - I)(1 - t) - PD \\ &= (EBIT_2 - 600\,000)(1 - 0.5) - 0 \\ &= (EBIT_2)(0.5) - 300\,000 \end{aligned} \quad (10)$$

$$EBIT_2 = {}^{300\,000}/_{(0.5)} = 600\,000 \quad (11)$$

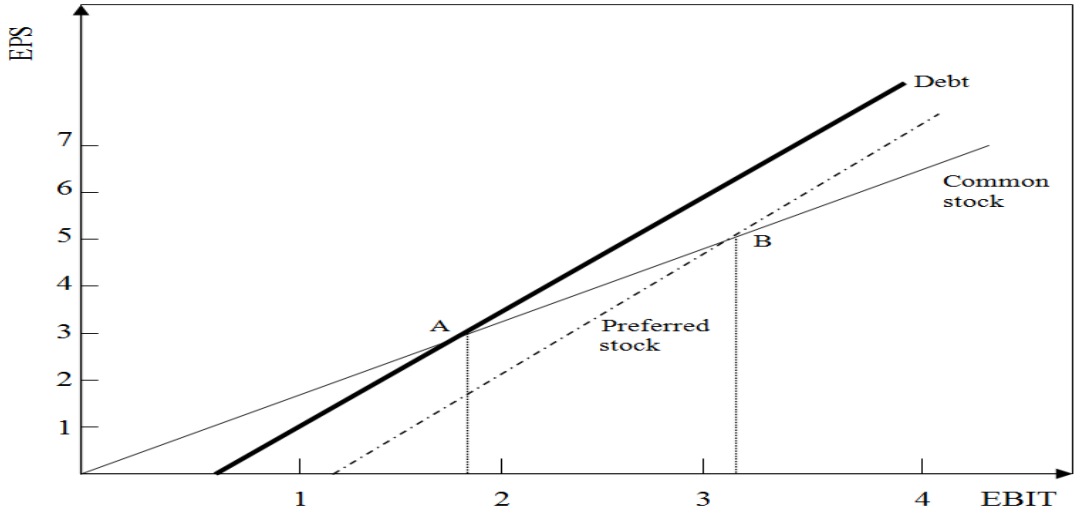
c) For the preferred stock alternative, we have the following:

$$\begin{aligned} 0 &= (EBIT_3 - I)(1 - t) - PD \\ &= (EBIT_3 - 0)(1 - 0.5) - 550\,000 \\ &= (EBIT_3)(0.5) - 550\,000 \end{aligned} \quad (12)$$

$$EBIT_3 = 550\,000/(0.5) = 1\,100\,000 \quad (13)$$

Based on the obtained results, several important facts should be emphasized. With the common stock alternative, there are no fixed financing costs. Therefore, EPS is equal to zero for zero EBIT. With the debt alternative, we need EBIT of 600 000 to cover interest costs.

Finally, with the preferred stock alternative, we need EBIT of 1 100 000 to cover dividends of preferred stock, of course assuming a tax rate of 50 percent. Observing the abovementioned, as well as the obtained results through mathematical calculations, it is possible to draw the appropriate directions of the lines for each set of points in the EBIT-EPS graph, and the point where these directions intersect represents the EBIT-EPS coverage point or the so-called indifference point (Graph 1).



*Graph 1.*EBIT – EPS graph for the three alternatives of additional financing (Author's construction based on data in Table 1.)

From the analytical standpoint, the intersection points of movement of earnings per share (EPS) by individual alternatives (A and B on the chart) are very important (Antony & Biggs, 2016). These intersection points are called the indifference points and are defined as the level of activity of the company (sales) at which the realized EBIT provides the same earnings per share (EPS) regardless of the composition (mix) of financing sources of individual variants (Besley & Brigham, 2015). Graph 1 clearly shows that the indifference point of earnings per share (EPS) is between alternatives of additional financing through debt and common stock for EBIT of 1 000 000. If EBIT is below that point, the common stock alternative yields higher earnings per share. Above this point, the debt alternative yields higher earnings per share. The indifference point between preferred stock and common stock alternatives is EBIT of 3 300 000. Above that point, the preferred stock alternative yields more favorable earnings per share. Below this point, the common stock alternative yields higher earnings per share.

However, the indifference point between the two financial alternatives can be determined in another way, i.e. mathematically. In doing so, we start from the equation for calculating the EPS for each alternative, and then the obtained expressions are equalized (Ivanis, 2019):

$$\frac{(EBIT_{12} - I_1)(1-t) - PD_1}{NS_1} = \frac{(EBIT_{12} - I_2)(1-t) - PD_2}{NS_2} \qquad (14)$$

where the given symbols denote the following :

$EBIT_{1,2}$ - the indifference point of EBIT between two financial alternatives

$I_{1,2}$ - interest on borrowed funds paid annually for alternatives 1 and 2

t - income tax rate

$PD_{1,2}$ - annual payment of preferential dividends for alternatives 1 and 2

$NS_{1,2}$ - number of common stock that will be traded in alternatives 1 and 2.

In the context of the above mentioned, let us assume that in our hypothetical example we want to determine the indifference point between alternatives of financing by common stock and by means of debt. Starting from the above formulas and applying cross multiplication, by rearranging the above equations, we obtain the following results:

$$\frac{(EBIT_{12} - 0)(1 - 0.5) - 0}{300000} = \frac{(EBIT_{12} - 600000.)(1 - 0.5) - 0}{200000} \quad (15)$$

$(EBIT_{1,2})(0.50)(200\ 000) = (EBIT_{1,2})(0.50)(300\ 000) – (0.50)(600\ 000)(300\ 000)$

$(EBIT_{1,2})(50\ 000) = (300\ 000)(300\ 000)$

$(EBIT_{1,2})(50\ 000) = 90\ 000\ 000\ 000$

$(EBIT_{1,2}) = 90\ 000\ 000\ 000 / 50\ 000$

$EBIT_{1,2} = 1\ 800\ 000$ (16)

The obtained result of the presented calculation shows that the indifference point of earnings per share (EPS) is between the alternatives of additional financing through debt and common stock for EBIT of 1 800 000. If EBIT is below that point, the common stock alternative yields higher earnings per share. Above this point, the debt alternative yields higher earnings per share. In other words, the above calculation shows that variants A and B, regardless of the different share of debt in total sources of financing, at the level of EBIT = 1 800 000 provide the same earnings per share EPS = 3.00, as evidenced by the following calculation:

$$EPS_1 = \frac{(1800000 - 0)(1 - 0.5) - 0}{300000} = \frac{900000}{300000} = 3.00 \quad (17)$$

$$EPS_2 = \frac{(1800000 - 600000)(1 - 0.5) - 0}{200000} = \frac{600000}{200000} = 3.00 \quad (18)$$

In the second case, suppose that in our hypothetical example we want to determine the indifference point between alternatives of financing by common stock and preferred stock. In this case, starting from the above formulas and applying the identical multiplication methodology, by rearranging the equations, we obtain the following results:

$$\frac{(EBIT_{1,3} - 0)(1 - 0.5) - 0}{300000} = \frac{(EBIT_{1,3} - 0)(1 - 0.5) - 550000}{200000} \quad (19)$$

$$(EBIT_{1,3})(0.50)(200\,000) = (EBIT_{1,2})(0.50)(300\,000) - (550\,000)(300\,000)$$
$$(EBIT_{1,3})(50\,000) = (550\,000)(300\,000)$$
$$(EBIT_{1,3})(50\,000) = 165\,000\,000\,000$$
$$(EBIT_{1,3}) = 165\,000\,000\,000/50\,000 \quad (20)$$

The obtained result of the presented calculation shows that the indifference point of earnings per share (EPS) is between the alternatives of additional financing through preferred stock and common stock for EBIT of 3 300 000. Above that point, the preferred stock alternative yields more favorable earnings per share. Below this point, the common stock alternative yields higher earnings per share. In other words, the above calculation shows that variants A and C, at the level of EBIT = 3 300 000 provide the same earnings per share EPS = 5.50, as evidenced by the following calculation:

$$EPS_{1,3} = \frac{(3300000-0)(1-0.5)-0}{300000} = \frac{1650000}{300000} = 5.50 \quad (21)$$

$$EPS_{1,3} = \frac{(3300000-0)(1-0.5)-550000}{200000} = \frac{1100000}{200000} = 5.50 \quad (22)$$

However, it should be borne in mind that on the basis of EBIT - EPS analysis, i.e. finding the indifference point, general rules for combining the financing structure cannot be set without taking into account the relationship between earnings and risk (Zhong et al., 2018). In this regard, the quantitative measure of sensitivity of earnings per share (EPS) to changes in EBIT is called the degree of financial leverage – DFL (Brealey et al.,2017). At a certain level of operating profit, the degree of financial leverage shows the percentual change in earnings per share in relation to the percentual change in operating profit that causes a change in earnings per share.

$$\text{Degree of financial leverage (DFL) for EBIT of x dinars} = \frac{\text{Percentual change in earnings per share (EPS)}}{\text{Percentual change in operating profit (EBIT)}} \quad (23)$$

This formula is a simple alternative form which can be used in practice. However, for the actual calculation of DFL values in practice, a formula with a wider application is used. In doing so, it has the following form:

$$DFL = \frac{EBIT}{EBIT - I - [PD/(1-t)]} \quad (24)$$

This equation shows that the degree of financial leverage (DFL) at a certain level of operating profit is calculated by dividing the operating profit by the monetary (dinar) difference between operating profit and the amount of operating profit before tax required to cover total fixed costs of financing. In doing so, the calculation itself implies the use of the expected, i.e. the most probable level of EBIT. In our specific example of the company for which we performed calculations, we find that alternative B is significantly riskier (DFL_2 =

1.33) compared to alternative A (DFL_1 = 1.00), while the riskiest alternative is C (DFL_3 = 1.85). This conclusion is indicated by the results of the following calculations:

$$DFL_1 = \frac{2400000}{2400000 - 0 - [0/(1-0.5)]} = 1.00 \quad (25)$$

$$DFL_2 = \frac{2400000}{2400000 - 600000 - [0/(1-0.5)]} = 1.33 \quad (26)$$

$$DFL_3 = \frac{2400000}{2400000 - 0 - [550000/(1-0.5)]} = 1.85 \quad (27)$$

Observing the results obtained for the values of $DFL_{1,2,3}$, it should be borne in mind that if in the particular example of the company, there is a reasonable belief that the level of operating profit margin (EBIT) will exceed 1 800 000 (the indifference point) in the long run, borrowing can be considered an acceptable method of financing and using the positive effects of high DFL (degree of financial leverage). However, in determining how far to go with the borrowing strategy, one must keep in mind the expected range of variations in future expected operating profits, i.e. the assessment of the probability that the level of EBIT will fall below the indifference point of financing. In this regard, if the value of EBIT is slightly higher than the indifference point with a projection of its significant decline in the future, then it is risky for the company to borrow. But, if the EBIT is significantly above the indifference point, with the tendency of its slight decrease in the future, then it is justified for the company to borrow and make maximum use of borrowed funds in the function of its further financing (Samuels et al., 2000).

3. OTHER METHODS OF ANALYSIS

Different financing sources involve different amounts and dynamics of fixed financial expenses. Therefore, it is possible for two companies with the same degree of indebtedness to have different expenses depending on the composition (mix) of financing sources. Similarly, in order to determine a favorable degree of financial leverage for a company, it is necessary to analyze its cash flows to cover fixed expenses. In addition, the company's fixed expenses refer to the loan principal, interest paid on the loan, and dividend on preferred stock. The task of the financial management of the company is to analyze the expected future cash flows before employing additional fixed expenses. This is necessary because any inability to meet fixed expenses can result in the insolvency of the company. In this regard, the coverage ratio analysis is one of the ways through which we can find out what the company's ability to borrow is. For this purpose, a special group of indicators has been developed, among which the following stand out:

(a) Interest Coverage Ratio, i.e. the ratio of fixed expenses based on interest,
(b) Debt-Service Coverage Ratio, i.e. ratio of total debt coverage.

(a) Interest Coverage Ratio – is calculated using the following formula:

$$\text{Interest Coverage Ratio} = \frac{\text{Operating profit (EBIT)}}{\text{Interest expense (loan)}} \quad (28)$$

Interest Coverage Ratio equal to 1 indicates that the profit is just enough to cover the interest expenses. However, if we assume, as in our example, that the company has EBIT of 2 400 000 and that the interest expenses are 600 000 then the interest coverage ratio is 4. This means that the company's profit is four times higher than the interest and that the company can easily settle due interest obligations. However, having in mind that the interest coverage ratio does not say anything about the company's ability to settle the principal on its debts, it is necessary to calculate another indicator, which is the Debt-Service Coverage Ratio, i.e. the ratio of total debt coverage.

(b) Debt-Service Coverage Ratio – is calculated using the following formula:

$$\text{Debt} - \text{Service Coverage Ratio} = \frac{\text{Operating profit (EBIT)}}{\text{Interest expense} + \frac{\text{Principal payment}}{1 - \text{tax rate}}} \qquad (29)$$

Debt-Service Coverage Ratio (ratio of total debt coverage) is a test of the company's ability to service total debt obligations, i.e. to repay both interest and principal. Based on the above formula, we see that principal payments are increased by tax effects. The reason lies in the fact that operating profit (EBIT) represents profit before tax. Since principal payments are not subject to tax deduction, they must be repaid from profit after tax. Therefore, it is necessary to adjust the principal payments so that they are consistent with EBIT. If we keep all the previous assumptions in our hypothetical example, adding the assumption that at the end of the current year 15% of long-term debt matures, which amounts to 750000 (5000 000 x 15%), then the debt-service coverage ratio will be 1.14% or:

$$\text{Debt - Service Coverage Ratio} = \frac{2400000}{600000 + \frac{750000}{1 - 0.5}} = \frac{2400000}{2100000} = 1.14 \qquad (30)$$

The calculated Debt-Service Coverage Ratio shows that operating profit (EBIT) can be reduced by up to 1.14% at most, since any further reduction of EBIT could lead to the company’s insolvency. Such potential insolvency of the company could be overcome only if the lender (creditor) approves a new loan in order to settle the previously assumed debt (loan), which is now due for payment. Similarly, it follows that any result ≤ 1 can be assessed as unsatisfactory since such result indicates that operating profit is unlikely to be able to service liabilities to debt sources. However, in making a final assessment of a company's ability to repay total debt liabilities, it must be borne in mind (as for most ratio numbers) that there is not a single generally accepted standard, so one should be extremely cautious in interpreting the results obtained. Therefore, it is recommended that the result obtained be evaluated in the context of normal values from previous accounting periods and those expected in the future (trend analysis). In doing so, it is quite useful to compare the same indicators with similar companies or with the average for the branch to which the company belongs.

In addition to the previously mentioned ratios that are used to assess the risk of inability to pay, a group of so-called informal methods of ratio analysis in the capital structure of the company are used in practice. The most commonly used measure of the company's risk of inability to pay is the rating of its shares and bonds. Empirical research has shown that there is a high correlation between bond ratings and total debt coverage ratios, as highly rated bonds (ranging from AAA to BBB) generally have total debt coverage ratios above 4. Therefore, before each debt issue, it is especially important to assess the impact of the new indebtedness on the rating, both of those already issued and newly issued securities.

Viewed individually, all the methods presented in this paper do not offer a definitive answer regarding the possibilities of establishing a capital structure that could be considered optimal. However, at the same time, it is difficult to dispute the fact that the approaches presented here still enable the conceptualization of the optimal capital structure of the company in the given circumstances, because in practice it is not possible to constantly maintain the optimal capital structure of the company.

4. CONCLUSION

The use of financial leverage has two key effects on shareholders' earnings, namely: (1) increased risk in earnings per share (EPS), due to an increase in the share of fixed financing costs in the capital structure, and (2) changes in the level of EPS for the given level of EBIT, which is related to the specific capital structure. The first effect is measured by the degree of financial leverage, while the second effect is analyzed through EBIT-EPS analysis. Therefore, this analysis is very important because it represents a practical tool that allows financial managers to evaluate alternative methods of corporate financing, by exploring their effects on EPS through a range of EBIT levels. In doing so, the primary goal of the EBIT-EPS analysis is to determine the indifference point for EBIT,that is the indifference point for different financing alternatives (Hiller et al., 2012).

In order to determine the indifference (coverage) point as precisely as possible and make the right decision when choosing possible financing alternatives, it is necessary for the financial managers of a corporate enterprise to assess the most probable movement of EBIT in the future. If the value of EBIT is slightly higher than the indifference point with the projection of its significant decline in the future, then it is risky for the company to borrow. However, if the EBIT is significantly above the indifference point, with a tendency to slightly decrease in the future, then it is justified for the company to borrow and make maximum use of borrowed funds in the function of its further financing.

However, it should be noted that on the basis of the stated relations, no general and comprehensive rule can be adopted for composing the capital structure of a corporate enterprise. This is because the problem of corporate financing in each case largely depends on various subjective factors, as well as on many uncertainties regarding future operating profit, which also increases the risk of adverse effects of financial leverage with all the repercussions it brings.

REFERENCES

Antony, M., & Biggs. N. (2016). Mathematics for Economics and Finance, Cambridge, Cambridge University Press, United Kingdom.

Besley, S., & Brigham, E. (2015). Corporate Finance (in Serbian), Belgrade, Data Status.

Brealey, A.R., Myers, C.S., & Marcus, F.A. (2017). Principles of Corporate Finance, New York, McGraw-Hill International Edition, USA.

Damodaran, A. (2014). Applied Corporate Finance, New York, John Wiley & Sons, USA.

Hajzer, DZ., & Render. B. (2011). Operations Management, New Jersey, Pearson Prentice Hall, New Jersey, USA.

Hiller, D., Grinblatt, M., & Titman, S. (2012). Financial Markets and Corporate Strategy, London, McGraw-Hill, United Kingdom.

Ivanis, M. (2019). Corporate Finance, Novi Sad, Faculty of Economics and Engineering Management, Novi Sad, University Business Academy in Novi Sad, Serbia.

Malinic, D., Milicevic, V., & Stevanovic, N. (2019). Management Accounting, Faculty of Economics, Belgrade, University of Belgrade, Serbia.

Samuels, J.M., Wilkes, F.M., & Brayshaw, R.E. (2000). Management of Company Finance, London, International Thomson Business Press, United Kingdom.

Zhong, H., Frantz, P., Payne, R., & Favilukis, J. (2018). Principles of Corporate Finance, The London School of Economics and Political Science, University of London, UK.

Volume XX, Issue (2) (2024) 75-83

International May Conference on Strategic Management

DOI: *10.5937/IMCSM24058I* *Review Article*

COST – BENEFIT ANALYSIS

Milos Ivanis *

Faculty of Economics and Engineering Management in Novi Sad, University Business Academy, Novi Sad, Republic of Serbia, mivanis97@gmail.com

Abstract: In order to estimate realistically the investment process and assess the justification of realization of an investment project, it is necessary to establish and analyze the total effect brought by the realization of certain investments. The effects of an investment project can be assessed and analyzed both from the aspect of a company and from the aspect of a wider social society. Companies as investors are most often interested only in direct economic effects of an investment which can be measured with sufficient exactness and expressed in quantitative terms, whereas they are usually not interested in indirect economic effects which are harder to measure and express quantitatively. However, it should be borne in mind that some investments are such that they must be considered and assessed, first of all, from a broader aspect (e.g. in transportation system, energetics and alike). In that context, cost-benefit analysis presents the method used at making investment decisions which influence the development of broader social society – certain region, economy, society as a whole. The aim of this supplement is to point to the basic elements of cost-benefit methodology for the assessment of investment projects.

Keywords: analysis, investments, cost, benefits, investment criteria.

1. INTRODUCTION

The investment process is characterized by single or multiple investments which are made in the present, but whose effects are expected in the future. In order to realistically observe and assess the justification for the realization of an investment project, it is necessary to identify and analyze the total effects that the realization of certain investments can have (Andjelic & DJakovic, 2010). Companies as investors, for the most part, are interested only in direct economic effects of investments that can be accurately measured and quantitatively expressed. On the other hand, companies are not particularly interested in indirect, non-economic effects of investments which are very difficult to accurately measure and quantitatively express. However, when assessing the justification of an investment project realization, the effects that the project has on other companies or the wider society should always be borne in mind. In this context, cost-benefit analysis (CBA), i.e. the benefit-cost analysis, represents a technique which determines, analyzes and compares total costs and benefits from a specific investment (Zerbe & Belas, 2006).

* *Corresponding author: mivanis97@gmail.com*

Milos Ivanis, ORCID: 0000-0003-2493-9576

In cost-benefit analysis, the costs and results of an investment project are not predetermined, but the selection of projects is compared to the predetermined values of costs and results. In addition, there is a possibility that all alternatives for reaching of a development goal are to be rejected as unsatisfactory. Namely, cost-benefit analysis starts from the idea that the same effect may not be positive for the company and for society as a whole, which means that the goals of individual companies and society as a whole may not always be perfectly aligned. An investment project can bring investors significant positive economic effects, but at the same time it can be detrimental to society as a whole (e.g. due to environmental pollution, etc.). Because of such potential differences in with respect to the individual and the social objectives, cost-benefit analysis insists on the social effects of investments, i.e. the perception and evaluation of their effects in terms of the society as a whole, and that is exactly the main feature of this method (Vukadinovic & Jovic, 2012).

The basic concept of cost-benefit analysis has to take into account and calculate or assess all social benefits and costs of an investment project, and that based on comparison (weight) of the total costs and benefits its viability is assessed. Thereby, only projects where the total benefits outweigh the total costs may be perceived as positive, meaning that they are acceptable for the implementation. Therefore, no matter which of them is concerned, cost-benefit analysis requires taking into account the total costs and total benefits that the society can have from a particular investment project (Malesevic & Malesevic, 2011).

Cost-benefit analysis is carried out in a very complex manner, through methods that include identification of a large number of assumptions with regard to the exactness of the scale and evaluation of the benefits and costs, a time frame, the method for measuring and so on. However, it should be noted that the results obtained depend on the type of cost-benefit analysis (Ivanis, 2019). The exceptional complexity of the problem of cost-benefit analysis, as well as its adequate implementation in practice, requires knowledge of several important issues that we will discuss briefly below, namely:

a) Determination of costs and benefits of an investment project;
b) Evaluation of costs and benefits of an investment project;
c) Basic execution phases of cost-benefit analysis;
d) The criteria used in cost-benefit analysis.

2. DETERMINATION OF COST AND BENEFIT

Cost-benefit analysis is based on the concept that should be taken into account to determine, quantitatively assess and financially express all the costs and benefits that an investment project brings to the whole society. Similarly, the identification and measurement of social costs and benefits is of great importance in the application of cost-benefit analysis, but because of the many peculiarities and difficulties, it also represents the biggest problem in the whole procedure of using this method in the evaluation of investment projects. Cost-benefit analysis is used in the so-called economic analysis of projects, and it defines the contribution to total social objectives, as opposed to the so-called financial analysis which determines their effects from the point of view of a private investor (Boarman, 2018).

The application of cost-benefit analysis is especially recommended by the World Bank. In this regard, it suggests that, when determining costs and benefits for the society as a whole (economic analysis) we should start from the effects which a specific project provides for the investor (financial analysis), and that through the inclusion or exclusion of certain groups of costs and benefits total results in terms of society as a whole are reached In this regard, there are:

a) Transfer payments – refer to payments that do not involve the actual use of resources, but make them. These are repayments and interests on domestic loans, taxes, subsidies, grants and premiums. Since these payments do not represent actual spending of resources, from the standpoint of society as a whole, they should be excluded from the analysis. This is because transfer payments do not represent an economic cost, but only a financial transaction.

b) Unforeseen costs – refer to costs which may appear during the implementation of a project. In this regard, it is necessary to pre-determine the way they will be treated in the evaluation of the investment project. In addition, any unforeseen costs, which are excluded from the basic data, should be examined in the context of risk analysis and sensitivity analysis.

c) Previous costs – refer to all costs incurred before the project evaluation, and thus cannot be avoided. They should be excluded from the total cost when deciding whether or not to continue with the project since they can no longer be avoided.

d) External effects – refer to actions which are beyond the scope of the project. They should be included in the economic analysis, although they are sometimes very difficult to identify and even harder to measure. However, regardless of whether they are quantifiable or not, they should be taken into account and a qualitative analysis should be made.

e) Multiplier effect – are typical of the economy suffering from excess capacity and in which the investment can lead to revenue growth, because the realization of investments causes additional consumption and reduces excess capacity. However, this is not typical for developing countries since they often do not have excess capacity. Multiplier effects should be included in the analysis, although they are difficult to assess.

f) International effects – refer to the results of projects beyond the borders of the observed country and are treated as international. For example, if the implementation of an investment project in one country adversely affects the environment of another country (pollution of the river), then it makes the international effects. They should be included in the analysis for certain projects, but they are difficult to assess.

3. EVALUATION OF COSTS AND BENEFITS

After determining all social costs and benefits of an investment project, they need to be evaluated and expressed in the monetary form. In this regard, a suitable price system that allows translating a variety of effects in monetary terms is utilized. In order to measure social effects effectuated by projects, cost-benefit analysis uses corrected market prices, which are usually called shadow prices. They are usually significantly different from market prices, which are used in the financial evaluation of the project and are not able to express all of their social effects, and therefore are not suitable for use in cost-benefit analysis. Market prices are a valid indicator of valorization of results only in conditions of perfect market. In imperfect market conditions, market prices do not present a reliable measurement of the effects of projects on development goals, and should be corrected and replaced with shadow prices. In the above context, transfer prices represent a way of correcting distortions and anomalies that exist in market prices due to imperfect markets, poor economic policy of the country, the existence of monopolies or other reasons.

Generally, shadow prices represent a principled approach to measuring and evaluating the effects of projects, while the exact way of their calculation may be different and quite complex. The basic question that should be resolved in determining shadow prices is whether there are the so-called tradable (market) or non-tradable (non-market) goods, but it depends primarily on whether these goods, merchandise or services, can be exported or imported. Tradable (market) goods are those that can realistically be imported or exported, a non-tradable (non-market) are those whose domestic production costs (including transportation costs) are

too high to enable competitive exports, or too low to enable competitive imports. In other words, it is a price that is higher than FOB price for exports and lower than CIF price for imports.

There are two basic methods for determining shadow prices: (1) the Little Mirrlees method (LM method) and (2) the UNIDO method (Masic, 2021). They differ primarily according to the adopted system of prices and choice of accounting units of measure. While the LM method starts from the assumption that the world price (CIF for export, FOB for import) is a very good approximation of shadow prices, the UNIDO method determines them based on the characteristics of domestic demand and willingness of users to pay for a product or a service. The LM method is based on world prices as the basis for determining shadow prices, while the UNIDO method starts from domestic prices as the basis for determining shadow prices (Jovanovic, 2006). Bearing in mind the importance of the mentioned methods, we will try to explain them more precisely.

1. The Little-Mirrlees method takes world prices as the basis for determining shadow prices. According to this method, world prices are taken as shadow prices. The prices at the border are used as world prices, which are CIF (cost, insurance and freight) prices for export, and FOB (free on board) for import. In this approach, it is considered that most of the project's inputs and outputs belong to tradable (marketable) goods that are valued at world prices, that is, prices at the border. In the case of non-tradable (non-marketable) goods, the Little-Mirrlees method suggests a procedure that is reflected in the following: (a) Non-tradable goods should be broken down into several constituent elements; (b) Some of these elements belong to tradable goods and should be valued using border prices as shadow prices; (c) The remaining elements of non-tradable goods can be convertedto world prices using standard conversion factors (Jakupovic et. al., 2008). When it comes to world prices, tradable goods are converted from world foreign prices to world prices in the domestic currency, through the official exchange rate, whereas the conversion of non-tradable goods from the domestic to the world price system (in the domestic currency) is conducted through the so-called standard conversion factor.

Conversion factors are used to convert prices from one system to another, and from one currency to another. They are used to convert the prices of non-tradable goods, on the domestic market and in the domestic currency, into shadow prices. Although conversion factors can be determined for each non-tradable good separately, in practice they are usually determined for groups of similar non-tradable goods. When conversion factors for each non-tradable good cannot be determined, standard conversion factor is used as an average for all non-tradable goods. The standard conversion factor is the ratio of the official and shadow exchange rate, which is presented in the following form:

$$SCF = OER / SER \quad (1)$$

In this equation we have:

SCF – Standard conversion factor
OER – Official exchange rate
SER – Shadow exchange rate

As a result, the shadow exchange rate can be obtained as the product of the official exchange rate and the reciprocal of the standard conversion factor, which represents the foreign exchange conversion factor (FECF):

$$SER = 1 / SCF \times OER = FECF \times OER \quad (2)$$

The standard conversion factor (SCF) is used to convert from one price system to another. The official exchange rate (OER) serves to convert one currency into another, and the shadow exchange rate (SER) performs a combined conversion from one (world) price system and one currency to another (domestic) price system and another currency. However, the shadow exchange rate (SER) corrects only existing price disparities at the aggregate level (tradable – non-tradable goods)but not price disparities within tradable goods. Therefore, world price systems in the domestic currency are most commonly usedand the standard conversion factor (SCF) for converting domestic prices of non-tradable goods to world prices.

2. The UNIDO method takes domestic prices as the basis for determining shadow prices. With this method, shadow prices are determined based on the characteristics of domestic demand, that is, based on the "willingness to pay" for certain goods or services. The domestic demand is taken as the unit of measure (numeraire) and analogously, all variables are expressed in domestic prices. Since non-tradable goods are calculated here in domestic prices and domestic currency, they can be directly included in the analysis and evaluations without any changes or conversions. In the case of tradable goods that are imported, the prices expressed in foreign currency are converted into domestic prices and domestic currency, using the shadow exchange rate (Obradovic & Milosevic, 2019). According to the UNIDO methodology, the relevant effects of the project can be divided into three basic groups: (a) Direct social economic results, or net outputs of the project; (b) Direct social economic costs, as project inputs; (c) Indirect social economic results and costs, which can be seen as positive and negative external effects.

In the context of the above, we should take into account the fact that the cost-benefit analysis also requires tackling the problem of the time lag of the effects, from the perspective of making decision today. As a result, the need for discounting arises (DJuricin & Loncar, 2019). The discount rate is most commonly defined as the rate of value decline over time of a specific unit of measure. In the UNIDO method, the discount rate is the so-called discount rate of consumption, while in the Little-Mirrlees method, the discount rate is the so-called shadow interest rate, which generally differs from the discount rate of consumption. At the same time, the UNIDO methodology is one of the most well-known methodologies for evaluating investment projects in the world and is used to evaluate industrial development projects in terms of assessing the commercial and national profitability of projects.

To conclude, it could be saidthat despite many doubts and justified objections in this regard, such as concerns whether individual investment projects can be quantitatively evaluated from a macro aspect and whether social benefits and costs can accurately and reliably justify the effort required for these evaluations, cost-benefit analysis is nonetheless widely used in the world today. Thus, despite all the problems and shortcomings, it still remains the most appropriate method for specific types of investment projects which bring various social benefits and costs for various users (Loncar, et al., 2015).

4. PHASES OF THE PROCESS OF COST – BENEFIT ANALYSIS

Cost-benefit analysis is very complex and usually quite an extensive process, with much evaluation, calculation, forecasting and comparisons. Therefore, the use of cost-benefit analysis in the assessment of investment projects requires observance of certain procedures based on several basic phases or steps. Generally, it is very similar to the general procedure of investment decision making between several alternatives, and is realized in the following ten phases (Ivanis, 2012):

1. Definition of projects for analysis;

2. Definition of the time period for which the analysis is applicable;
3. The determination of all the benefits and costs for individual projects;
4. The calculation of costs and benefits in the monetary form for individual projects;
5. Determination of analysis criteria;
6. Determination of the discount rate to be used;
7. Calculation of the values of certain criteria for each project;
8. Comparison of the criteria values for individual projects with a certain measure;
9. Determination of the additional criteria of the analysis;
10. The final choice - making investment decisions.

In the first phase, the number and types of investment projects whose justification should be examined are identified. Those can be alternative solutions of a single project (A, B or C) or a number of different projects that achieve the same developmental goal. However, cost-benefit analysis still insists on more potential projects and the selection of the best one and finds that it is necessary to start from a given development objective and identify projects, i.e. alternatives that allow the objective to be achieved.

In the second phase, the time period to which the analysis refers is defined. Therefore, the time in which certain costs and benefits are calculated should be taken. With the analysis of a number of different projects, the longest lifespan of one of them is always taken.

In the third phase, costs and benefits of each project are determined, as well as their direct and indirect, primary and secondary, and measurable and non-measurable effects. This is a very important and very complex task. Bearing in mind that the effects of the projects are very different, it is logical that the benefits and costs vary.

In the fourth phase, costs and benefits are measured, and then expressed in the monetary form. This is a very important and complex phase in which there are numerous problems. The outcome of cost-benefit analysis depends on their solution. First of all, the key problem is that prices will be used to reduce the effects expressed in the monetary form. In this regard, in spite of the various proposals and possibilities, it seems that the most acceptable solution to use is shadow prices.

It should be noted that *the third and the fourth phase* constitute the main part of cost-benefit analysis. They reflect its basic ideas and principles and it is necessary for them to be very well done so that the whole analysis could be valid. Due to the presence of many problems, these two stages are difficult and very complex, but it is necessary to perform them in the best way, because without them there is no proper cost-benefit analysis.

In the fifth phase, the criteria to find the best cost-benefit analysis are determined. There are several of those, such as: the present value of net benefits, the ratio of benefits and costs, internal rate of return and repayment period on investment. Whether all four criteria will be used, or only one of them, depends on the particular case or the specific project and the very approach to cost-benefit analysis.

In the sixth phase, the value of the discount rate used in the transformation of future values to the current value is determined. This phase is very important, given the large impact of the discount rate on the value of certain decision criteria, and thus the final decision on the project.

In the seventh phase, the actual values of individual criteria for each project are calculated. Bearing in mind the availability of mathematical apparatus and mathematical expressions for the selected criteria and the availability of all necessary input parameters, it can be concluded that the calculation of the values of certain criteria in this phase of the analysis should not be a problem.

In the eighth phase, calculated values of criteria for individual projects with predetermined normative values are compared, and a mutual comparison is also carried out. The purpose of this phase of the analysis is to find a project that has the highest value of certain criteria and determine whether their values meet the required normative sizes. This comparative analysis is used to find projects which give the best results according to the chosen criteria.

In the ninth phase, it is necessary to carry out further analysis if it is estimated that the previous phase is not sufficient to choose the best solution. In this phase it is necessary to do new calculations of existing or additional criteria, as well as make certain changes to the new analysis. In this regard, it is necessary to perform the so-called sensitivity analysis if it is considered that certain types of costs (benefits) are exposed to a higher degree of variation.

In the tenth phase, which is the last phase of cost-benefit analysis, the final selection of the best project is carried out, i.e. an investment decision on the selection of the best from the available ones is made.

5. THE CRITERIA USED IN COST – BENEFIT ANALYSIS

The basic principle of cost-benefit analysis of the project implies that a project meant for realization is justified only if the total benefits it brings are greater than the expected costs. This principle is also used in defining appropriate criteria for assessing the efficiency of investment projects, of course paying attention to the other elements which are necessary to consider in these cases. When assessing investment projects, by applying cost-benefit analysis, it is possible to use a larger number of assessment criteria (DJuricin et al., 2021). Four criteria will be presented here, namely:

1. Criterion of the net present value of a benefit
2. Criterion of the internal rate of return,
3. Benefit-cost criterion
4. Criterion of the time of return on investment.

1. Criterion of the net present value of a benefit is the difference between the discounted total benefits and total discounted costs in the realization of investment projects. Accordingly, this criterion can be expressed using the formula:

$$Kns = Ks - Ts \quad (3)$$

Kns – Criterion of the net present value;
Ks – The total discounted benefits;
Ts – The total discounted costs.

The evaluation of investment projects, using this criterion, is done in a way that each of them with a value greater than zero (Kns > 0), is considered to be economically efficient and justified on this basis for implementation. In the selection among multiple mutually exclusive projects, most suitable for implementation is the one that has the largest positive value of the criterion of the net present value of benefit. As an indicator which operates with absolute values, costs and benefits, this criterion is much more suitable for the assessment of individual projects, rather than for selecting one among multiple investment alternatives. Namely, in the evaluation of the validity of a project there are no major interferences in the decision because the decision-maker relies on a positive net present value of the benefit. However, when choosing between

multiple projects, there are observed differences and further factors of influence are taken into account, which in turn greatly hinders the application of this criterion.

2. Criterion of the internal rate of return represents the discount rate at which the sum of the discounted benefits is equal to the sum of discounted costs, i.e. its net present value of the benefit is equal to zero. Defining this criterion can be expressed by the following form:

$$Kns = Ks – Ts = 0 \quad (4)$$

Evaluation of investment projects using this criterion is performed in a way that each project, in which the size of the internal rate of return is higher than the interest rate on the capital market (or than the adopted discount rate), is considered reasonable and economically justified for implementation. If it is a choice between several mutually exclusive projects, in principle, the one that has a higher internal rate of return is considered to be more favorable. However, this postulate is rarely applied in practice, because it is considered that the criteria of internal rate of return are not suitable for selecting and deciding between several projects. In addition, the calculation of internal rate of return is quite a complicated operation which is the biggest obstacle to the application of this criterion in practice.

3. Benefit-cost criterion is expressed, in fact, with the ratio of their mutual relations and represents, quantitatively speaking, relations of the total discounted benefits and discounted costs of such an investment project. The ratio of benefits and costs shows how many benefit units are brought by each unit of the funds spent. Defining this criterion can be represented by the following form:

$$Kns = Ks / Ts \quad (5)$$

Evaluation of investment projects using this criterion is performed in a way that each project in which the value of this criterion (benefit-cost ratio) is greater than 1 ($K > 1$) is considered to be economically efficient and justified on this basis for implementation. When selecting among multiple mutually exclusive projects, the most suitable one for implementation is the one which has the highest benefit-cost ratio. This criterion is quite suitable for use in practice, especially for switching between multiple projects and it should be used in these cases. It is not sensitive to the different structure of benefits and costs, and in such cases it is more realistic in relation to the criterion of the present value of net benefits. Therefore, it is preferable when selecting between multiple investment projects.

4. Criterion of the time of return on investment is a period expressed in years, for which the present value of net benefits from the investments will pay off the total funds invested. Defining this criterion in the above sense, can be represented using the following form:

$$t = Is / Ksk \quad (6)$$

t – Time limit for the return of investment;
Is – The present value of total investments;
Ksk – The annual discounted value of net benefits.

Evaluation of investment projects by using this criterion is performed in a way that each of them is considered to be economically effective and thus justified for the realization if its repayment period is shorter than any pre-determined, normative return period. The normative return period can be approximately represented by the economic life of the equipment installed

in the investment. In the case of opting for one among several mutually exclusive projects, priority shall be given to the one with the shortest period of return. It should be said that the test time of the return of investment can be used for evaluation of projects, but it happens only in the case of the same projects or projects with multiple variants of the same one. In other cases, this criterion is unreliable because its drawbacks become apparent, since it does not account for the entire period of exploitation of investment projects.

6. CONCLUSION

This paper gives a brief overview of the basic elements of cost-benefit methodologies for the assessment of the economic feasibility of investment projects. No matter what the project concerned is cost-benefit analysis requires taking into account total benefits and costs that society has from them. The basic idea of cost-benefit analysis has to take into account, calculate and evaluate all social benefits and costs of a project, and then based on a comparison of total costs and benefits assess the validity or profitability of a specific investment. Given that the importance and complexity of this methodology requires a systematic and serious work in the field of training of human resources in science, economy, banking, etc. A wider application of this methodology in practice requires a time-consuming process that should lead to an improvement of the situation in the field of investment in our country, especially to improve the efficiency of investment projects of broader social significance (investment projects in energy, water management, agriculture, etc.).

REFERENCES

Andjelic, G., & DJakovic, V. (2010). Fundamentals of Investment Management, Novi Sad, Faculty of Tehnical Sciences in Novi Sad, University of Novi Sad, Serbia.

Boarman, A.E. (2018). Cost-Benefit Analysis – Concept and Pratice, Cambridge, Cambridge University Press, United Kongdom.

DJuricin, D, & Loncar, D. (2019). Project Management, Begrade, Faculty of Economics in Belgrade, University of Belgrade, Serbia.

DJuricin, D., Kalicanin, DJ., Loncar, D., & Vuksanovic-Herceg, I. (2021). Management and Strategy, Belgrade, Faculty of Economics in Belgrade, University of Belgrade, Serbia.

Ivanis, M. (2019). Corporate Finance, Novi Sad, Faculty of Economics and Engineering Management in Novi Sad, University Business Academy in Novi Sad, Serbia.

Ivanis, M. (2012). Company Finance, Belgrade, R & B College, Serbia.

Jakupovic, S., Bahtic, S., & Novaković, Z. (2008). Project and Investment Management, Prijedor, College „Janjoš“, Republic of Srpska.

Jovanovic, P. (2006). Investment Management, Belgrade, Faculty of Organizational Sciences, Belgrade, University of Belgrade, Serbia.

Loncar, D., Barjaktarovic, L., & Pindzo, T. (2015). Cost-effectiveness Analysis of Investment Project (in Sebian), Economics Institute, Belgrade.

Malesevic, E., & Malesevic, DJ. (2011). Investment Management, Subotica, Faculty of Economics, University of Novi Sad, Serbia.

Masic, B. (2021). Strategic Management (in Serbian), Data Status, Belgrade, Serbia.

Obradovic, M., & Milosevic, S. (2019). Project Financing (in Serbian), Sluzbeni glasnik, Belgrade, Serbia.

Vukadinovic, P., & Jovic, Z. (2012). Investments, Belgrade, Singidunum University, Serbia.

Zerbe, R., & Belas, A. (2006). Cost – Benefit Analysis, Massachusetts, Edward Elgar Publishing Ltd., USA.

Volume XX, Issue (2) (2024) 84-93

International May Conference on Strategic Management

DOI: *10.5937/IMCSM24059S* *Review Article*

REVIEW OF SECURITY ISSUES IN THE APPLICATION OF BLOCKCHAIN TECHNOLOGY IN E-GOVERNMENT

Marko Štaka*, Miroslav Stefanović, Darko Stefanović, Đorđe Pržulj, Vladimir Fabri

University of Novi Sad, Faculty of Technical Sciences, Serbia

Abstract: E-government represents a segment of public service modernization. The goal of e-government is to make administrative processes more accessible and easier to use for all citizens. E-government relies on information and communication technologies to improve access and efficiency of services for citizens and the business sector. One of the challenges institutions face for wider acceptance of e-government is distrust that citizens have in online services. For data that is used by e-government services question of data security represents a rather important consideration. Blockchain technology offers a range of advantages in this context, including decentralization, transparency, data integrity, process automation, and a high level of privacy. However, the question of data security arises considering the sensitivity of information in e-government. This paper explores the potential benefits of using blockchain technology in e-government while also emphasizing the need to research security aspects to ensure data reliability and protection. Through literature analysis and identification of key challenges, this paper highlights the significance of security in the application of blockchain technology in e-government and suggests directions for further research and development.

Keywords: e-government, blockchain, security

1. INTRODUCTION

Using technology is being used to simplify every aspect of life. The aim of every organization is to expedite basic processes and make them more accessible to users. E-government is a concept that plays a crucial role in the modernization and automation of public services. By utilizing information and communication technologies, the public sector aims to make its services more accessible to all citizens and thereby improve living conditions.

The public sector relies heavily on a large number of paper documents. Every interaction with the administration requires collecting a large number of papers from various institutions. This process often takes a lot of time. E-government represents a significant improvement because the goal is to digitize all documents. This significantly simplifies processes and saves time (Singh, 2023).

* *Corresponding author: marko.staka@uns.ac.rs*
Marko Štaka, ORCID: 0009-0004-5557-9096
Miroslav Stefanović, ORCID: 0000-0002-0767-365X
Darko Stefanović, ORCID: 0000-0001-9200-5092
Đorđe Pržulj, ORCID: 0000-0001-5951-563X
Vladimir Fabri, ORCID: 0000-0002-6218-7240

One of the key challenges that government institutions face is the distrust of citizens towards e-government. This distrust becomes a barrier to fulfilling the basic functions of public administrations and governments. The goal of every public administration and government is to build trust among citizens and demonstrate their capability and authority through an efficient and transparent system. However, when citizens lose trust in e-government due to fear of their data being misused, it negatively impacts the perception of government institutions. Data in e-government systems can often be exposed to third parties, whose access can result in alteration and misuse of the data. Lack of trust can lead to reduced collaboration between citizens and institutions, resulting in poorer service delivery efficiency and reduced legitimacy of government programs and policies. Therefore, it is important for government institutions to actively work on building trust through stringent security measures, transparency in data processing procedures, and educating citizens about their rights and the security measures in place.

Blockchain, as a distributed ledger of technology, offers a range of potential benefits for e-government (Lykidis et al., 2021). These benefits include decentralization, transparency, data integrity, process automation, and a high level of privacy. However, considering the sensitivity of the data processed within e-government, the question of data security and protection arises. The security aspects of blockchain technology require deeper research to ensure the reliability and protection of data from attacks, misuse, or unauthorized access.

Therefore, in this research, we explore the application of blockchain technology in e-government, highlighting the potential benefits of this technology, while also emphasizing the need to research security aspects to ensure safe and reliable use of blockchain technology in e-government. The application of blockchain technology in e-government is still a relatively new concept. Consequently, security shortcomings in the implementation of blockchain technology in e-government are mostly observed based on past applications and by analyzing the general security shortcomings of blockchain technology. In this section, a review has been conducted of previous papers that analyzed the application of blockchain technology in e-government services.

The paper presents examples of e-government in various countries based on blockchain technology. The paper is organized into 5 sections. Following this introductory paragraph, related works dealing with the application of blockchain in e-government are presented. The concept of e-government is outlined in the third paragraph. The fourth paragraph explains blockchain technology, its application in e-government, and identifies previous security shortcomings. The conclusion is presented in the fifth section, followed by a list of referenced works.

2. RELATED WORKS

A systemic review of software architecture types of blockchain-based applications in public administrations was conducted in (Lykidis et al., 2021). The result of this paper is the identification of e-government services that can benefit from the use of blockchain and the types of different technologies that would be used in these solutions. The aim of the work is to demonstrate the potential contribution of blockchain in this area.

In (Elisa et al., 2023) addresses the advantages and benefits brought by the implementation of blockchain in e-government. The theoretical analysis in this paper indicates that cryptography, immutability, and decentralized management and control offered by blockchain technologies can provide a certain level of security and privacy in e-government systems. The question arises whether that level is sufficient for mass adoption of e-government services. Security challenges regarding the application of blockchain in e-government are

presented in (Elisa et al., 2023). This paper identifies the most common attacks on devices and proposes a new model based on artificial intelligence to reduce the likelihood of these attacks.

In Kadhum & Hamad (2023) it is conclude, through the analysis of two scenarios, that the performance of a blockchain network is influenced by hardware and software configurations, the complexity of smart contracts, and the scale of the organization.

The concept of applying blockchain technology in e-government is still primarily analyzed within a theoretical framework. Practical implementation may influence further research to fully understand the potential of blockchain technology in this area.

3. E- GOVERNMENT

The concept that involves the use of information and communication technologies for providing public services, managing processes, and facilitating communication between government institutions and citizens and the business sector is referred to as e-government. The goal of this concept is to digitize and automate traditional administrative processes to increase the availability of government services (Vereinte Nationen, 2022). Such digitalization enables the acceleration of administrative processes, faster processing of requests, reduction of administrative procedures, resulting in a decrease in the time required to obtain various documents and permits. There are four different types of interactions within e-government (Rachmawati et al., 2022):

- **G2C (Government-to-Citizen),** a term referring to communication between public administration and citizens. Services are usually provided through electronic channels. Examples of such services include online application for personal documents, tax filings, and permits.
- **G2G (Government-to-Government),** a term indicating communication between different sectors of public administration. It can involve communication between sectors at the same level or at different levels. An example is the exchange of information between ministries and local authorities.
- **G2B (Government-to-Business),** a term indicating communication between different sectors of public administration. It can involve communication between sectors at the same level or at different levels. An example is the exchange of information between ministries and local authorities.
- **G2E (Government-to-Employee),** a term indicating communication between the public sector and the employees comprising that sector.

The scheme of e-government types is depicted in Figure 1.

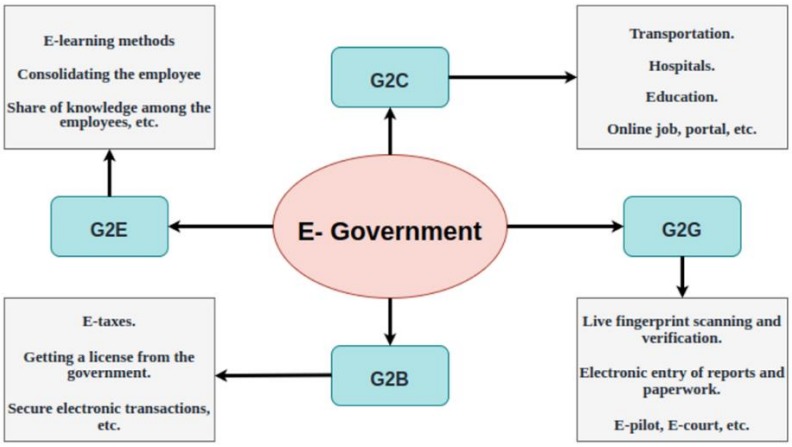


Figure 1. Types of e-government (Elameer, 2021)

The monitoring of the development and implementation of e-government on a global level is supported by the United Nations. When discussing e-government development, the levels of G2C and G2B interactions are typically observed. The United Nations report for the year 2022 indicates that e-government is to some extent present in every country worldwide (Vereinte Nationen, 2022). The e-government development index (EDGI) is a measure of the level of e-government development in a country and is represented by a value between 0 and 1. According to the 2022 report, 60 UN member countries have an EDGI value in the range of 0.75 to 1. Compared to 2020, there has been an increase of 5.3% in this group, as there were 57 countries within this range at that time. 73 UN member countries have e-government developed in the range of 0.5 to 0.75, 53 countries in the range of 0.25 to 0.5, and only 7 countries have an EDGI value lower than 0.25. However, it is noted that no country has a value of 0, indicating that the e-government system is implemented to some extent worldwide.

The increased scope of e-government results in increased complexity and sensitivity of the system. The e-government system is one that needs to be distributed over typically large geographical areas and ensure data privacy. As a large number of different processes with a multitude of government, citizen, and business data are automated, maintaining the privacy and security of such transactions is challenging. Therefore, stricter measures and detailed analyses are required to prevent potential issues.

Every e-government system must guarantee confidentiality, integrity, and availability of services (Singh, 2023). Confidentiality implies that data within the e-government are not accessible to unauthorized persons. Integrity refers to ensuring that data within e-government are not modified or deleted by unauthorized users. The biggest challenge in maintaining most existing e-government systems is that websites and electronic identity management systems are centralized on duplicated servers and databases (Vereinte Nationen, 2022). The centralization of the system makes it vulnerable in terms of security and privacy because there is a "single point of failure." Such systems are targets of attacks such as DDoS (Distributed Denial of Service), DOS (Denial of Service), and malware. DOS attacks are a type of cyber attack aimed at disabling or limiting access to services, systems, or networks by flooding the target system or network with a large number of requests or traffic. The main goal of DOS attacks is to make services unavailable to legitimate users by preventing them from accessing the system or network. Therefore, the top priority of any government must be to ensure the highest level of privacy and security when using e-government services.

4. BLOCKCHAIN TECHNOLOGY

Blockchain is a relativity new technology. The beginning of blockchain technology is marked by the event of the publication of the paper 'Bitcoin: A Peer-to-Peer Electronic Cash System' in 2008. This paper was published by an individual or individuals using the pseudonym Satoshi Nakamoto. Blockchain is also referred to as a distributed ledger (Ibrahimy et al., 2024). The original purpose of blockchain technology was the exchange of digital currencies. The benefits of this technology have led to the recognition of its potential applications in other areas. Today, blockchain is used in the Internet of Things (IoT) (Huh et al., 2017), smart home development (Dorri et al., 2017), smart cities (Theodorou & Sklavos, 2019), the education system (Turkanovic et al., 2018), and healthcare (Peterson et al., 2016).

4.1. Application of blockchain technology in e-government

Blockchain technology emerges as a potentially safer solution in the development of e-government compared to previously created centralized systems. Blockchain technology

achieves a decentralized environment for information exchange (Mukhopadhyay et al., 2016). The functioning of blockchain is recognized as a technology capable of providing a transparent and secure platform resistant to unauthorized storage and sharing of information. The idea is to utilize smart contracts for automating the delivery of government services, ensuring they are delivered in a secure and transparent manner, which is crucial for public administration (Kadhum & Hamad, 2023).

Smart contracts are programmable scripts that execute automatically when predefined conditions are met. They are a fundamental component of blockchain platforms like Ethereum. Smart contracts enable the automation and execution of various types of transactions or agreements without the need for intermediaries or centralized authorities. Smart contracts provide additional support for the development of e-government by allowing users to establish mutual agreements without the involvement of third-party intermediaries. These contracts are recorded on a public ledger. The application of smart contracts in establishing various agreements increases transaction speed.

The implementation of blockchain by governments and public institutions began by recognizing blockchain as a technology that would serve to replace previously implemented technologies, making processes more optimized. Alongside e-government, public institutions have started implementing blockchain in modern smart cities (Theodorou & Sklavos, 2019). In this paper, it is noted that this has led to improvements in the security of public data, as they are now being stored in various locations in block form. Each location contains an authentic copy of the stored information, and the absence of a third party reduces resource consumption.

In (Elisa et al., 2023) records the countries where e-government platforms based on blockchain were first implemented. The table is shown below.

Table 1. The list of countries with e-government projects based on blockchain technology is as follows

Country	Project description	Year of launch
Estonia	Implemented blockchain technology in electronic identification, e-health and e-residency.	2014.
UAE	Dubai initiated the implementation of a blockchain-based platform for the Department of Land. Since 2020, all public transactions have been conducted using blockchain technology.	2016.
China	Add blockchain integration to e-health, e-ID and e-voting systems.	2016.
France	Support the development of blockchain systems by banks and other business to enable secure business transactions.	2016.
Mexico	Embrace blockchain technology in finance, agriculture and public procurement.	2017.
Russia	Investigate the use of blockchain to manage government records, e-health services and land and property register.	2017.
Singapore	Since 2019, educational institutions have used the Ethereum blockchain to provide digital certificates.	2017.
Canada	Implemented blockchain technology in electronic identification, e-health and e-residency.	2018.
New Zealand	In 2018, blockchain was used in electronic voting.	2018.
Switzerland	The city of Zug launched an e-residency platform based on Ethereum.	2019.
Luxembourg	Create a public framework that will enable blockchain applications to be integrated into all industries.	2019.

Blockchain is now being applied in various e-government systems worldwide. One of the early examples is the launch of a platform by the Dubai Land Department (Theodorou & Sklavos, 2019). The platform allows citizens to register all property documents, such as ownership deeds, sale contracts, and inheritance contracts, without the need to physically visit a building or office. This has significantly expedited the process of obtaining such documents

and shortened the time for property transactions. The platforms started operating in 2016, and by 2020, all public transactions were conducted using blockchain.

Another example of blockchain implementation in e-government is registered in Estonia (*Become an E-Resident of Estonia, How to Apply*, 2024). Estonia introduced the concept of e-residency as early as 2014, which served as a precursor to today's e-government system in the country. Today, the system is called e-Estonia (*E-Estonia*, 2024) and features various blockchain-based platforms that allow citizens to establish companies online, conduct business banking, electronically sign documents, and electronically submit tax and other business filings.

4.2. Security vulnerabilities

It has been determined that more than 80% of websites worldwide were vulnerable to Cross-Site Scripting (XSS) and Structured Query Language (SQL) Injection attacks due to the lack of appropriate authentication mechanisms applied to user input (Moen et al., 2007). Due to the nature of the data within e-government frameworks, this system often faces various security issues. Data loss within e-government can have significant economic, legal, and social consequences. Social consequences manifest in decreased support and trust from e-government users. The e-government support issue is precisely the lack of confidence among citizens who are unsure whether they can leave their private data on various websites. Past negative experiences have a detrimental impact on citizen trust. In 2014, Singapore experienced an attack on over 1,500 user accounts (*The Role of Central Signing and Authentication in E-Government Security*, 2024). Following the attack, hackers gained access to opening new businesses and applying for work permits. One of the biggest hacks on the e-government system was in 2015 in the United States when over 4 million government employee records were leaked (*The Role of Central Signing and Authentication in E-Government Security*, 2024). The leaked data included security clearance information, social security numbers, identities, and passwords of official accounts. A year later, in 2016, cyber terrorists attacked the Tanzanian government, causing around $85 million in damages (Elisa et al., 2023).

The main reason for the adoption of blockchain technology is achieving a higher level of interoperability. Therefore, the application of blockchain in these applications can alleviate some of the drawbacks of other technologies. However, the implementation of blockchain can also bring about new challenges. A potential issue arises when multiple system components are built using different technologies. Different generations of blockchain are vulnerable to different attacks.

Security risks in blockchain applications in e-government are usually divided into two main categories. The first category includes risks that can affect both Blockchain 1.0 and Blockchain 2.0/3.0, while the second group consists only of those affecting Blockchain 2.0/3.0.

The Majority Attack or 51% Attacks are described in (Mansour et al., 2023) as a flaw in blockchain that can have negative effects on its implementation in systems such as e-government. It is one of the most commonly mentioned risks of blockchain-based applications. The attack is executed if one organization or a coalition of other organizations enhances mining capability using the proof of work algorithm (POW). When 51% control of the total chain's power is achieved, the organization has the ability to invalidate transactions or decide which block will be allowed to execute. In such a case, the entity has the ability to create the longest chain of blocks. The chain created by that entity can be accepted by the entire network without being validated, representing a security risk (Singh et al., 2021). This flaw should be especially considered regarding implementation in e-government, given that e-government systems must be protected from malicious attacks that could cause interruptions or data leaks.

The self-mining approach to mining is a risk that belongs to the first category of security risks. It represents a malicious occurrence where a malicious entity is provided with more tokens than it rightfully owns. The entity is called a pool and represents a group of miners who combine their computational resources to collectively work on finding new blocks and securing transactions on the blockchain. This can lead to certain entities having control over the network, even though their share is less than 51%. In this case, the malicious entity has the ability to reap all the benefits of transactions. This will make the network unprofitable for other nodes, which may decide to leave. In such a scenario, the malicious pool can facilitate double spending and prevent the execution of transactions they do not wish to be executed (Sapirshtein et al., 2017).

Eclipse attacks occur when an attacker gains control over the connections of the victim node, taking control of both outbound and inbound connections. This effectively blinds the victim node, leading to unnecessary resource consumption. Subsequently, the attacker has an easier time executing a 51% attack or other malicious activities (Heilman et al., n.d.).

DDoS attacks are not specific to blockchain applications alone. The attacker's objective is to take control of the network by overwhelming it with a large number of requests. In (Vasek et al., 2014), it was shown that about 25% of observed pools between 2011 and 2013 were subjected to DDoS attacks.

The second group of risks to Blockchain 2.0/3.0 consists of risks associated with smart contracts. As highlighted earlier, a significant number of applications in e-government today are based on smart contracts, making it crucial to analyze these vulnerabilities. In Wang et al. (2018), it is highlights the vulnerability of systems built on the principle of smart contracts. When a contract invokes multiple transactions, the order of their execution affects the new state of the chain. A re-entrant call to the contract can pose a security flaw, as in this case, an attacker can exploit the intermediate state and cause unexpected behavior, currency theft, or influence increased spending. This undesired outcome is referred to as Transaction-Ordering Dependence. Such a security breach can impair various functionalities of e-government.

Executing a smart contract requires paying a fee. The fee price depends on the contract structure and the gas price at the time of execution. Poorly structured smart contracts affect the increase in the contract execution price. A negative impact on gas price has a dead code. Dead code is part of the code that exists but will never be executed. Such code affects the increase in the cost of executing a smart contract. Poorly structured code that consumes more gas during execution makes it easier for attackers to launch a DDoS attack on Ethereum.

In Atzei et al. (2017), a taxonomy of smart contract vulnerabilities is highlighted. Within it, vulnerabilities are classified based on levels and causes. At the level of the Solidity programming language, which is characteristic for writing smart contracts, vulnerabilities such as Call to unknown, Gasless send, Reentrancy, and Keeping secrets are mentioned.

The first vulnerability mentioned, Call to unknown, refers to the situation when the *fallback()* method is invoked in the Solidity programming language. When this call does not correspond to any existing function, it allows an attacker to invoke certain built-in functions that enable the transfer of Ether to another address. Examples of functions that an attacker can call include *call(), send(),* or *delegateCall().*

When creating a smart contract, care should be taken to ensure gas forwarding to avoid the occurrence of Gasless send. If a sufficient amount of gas is not forwarded to the smart contract function during invocation, the transaction will be reverted, and gas will be charged (Macrinici et al., 2018).

The previously mentioned *fallback()* mechanism can disrupt the rule that a non-reentrant function should be called before its completion. This can lead to the occurrence of reentrancy, where the function execution happens continuously until all gas is consumed.

Keeping secrets cause represents a case when we want a variable in the smart contract to be private. Such fields should be hidden. Setting the value of a private field requires sending a transaction to the smart contract, and transactions in the blockchain are public elements, so it is possible to see the values of private fields from them. Therefore, the solution for keeping values private involves the application of cryptographic techniques.

In addition to blockchain characteristics, legal and regulatory barriers can also have a negative impact on security. State legal regulations may influence the faster implementation of blockchain-based services in some areas compared to others. This affects the slowdown in the broader implementation of blockchain applications for e-government.

The e-government system encompasses a vast amount of important data. Besides the internal security issues mentioned, there arises a question of the credibility of this data upon entry into the system. One of the issues regarding smart contract technology is the inability to interact with resources outside the network of nodes on which the smart contracts are executed. If smart contracts were implemented to rely solely on a centralized data source, the essence of decentralization would lose its advantages. Chainlink presents a solution to this problem. Chainlink utilizes various nodes to obtain the requested data. They provide consensus and establish consensus before returning the data to the smart contract. This way, the smart contract does not rely solely on one source.

Blockchain drawbacks can particularly manifest when the technology is applied for various purposes. The basic idea presented in Elisa et al. (2023) and Mansour et al. (2023) is to structure a combination of such models that, in addition to blockchain, will also use other technologies, such as artificial intelligence, to protect the system from potential attacks. Governance model, storage criteria, and access control are fundamental elements with potential vulnerabilities that need attention. Conducting empirical studies can reveal a greater number of drawbacks and issues to consider when developing a component of a serious system like the e-government system.

5. CONCLUSION

Blockchain technology has been identified as a significant tool in building complex systems with a large number of participants and important tasks, such as e-government systems. Based on previous research and various systems worldwide, it has been concluded that blockchain-based e-government can provide a higher level of security and integrity. Such a system remains decentralized and more transparent while maintaining data integrity.

However, considering that blockchain is a relatively new technology, its implementation should be carefully considered and addressed whenever used in building components of e-government systems. Despite being the best solution today, its application presents certain security challenges.

This paper provided an overview of the application of blockchain technology in e-government systems worldwide and emphasized their significance. Subsequently, the basic drawbacks of blockchain technology that have negative effects on e-government operations were summarized. It was observed that in certain cases, the system becomes more susceptible to attacks, which should not be tolerated in e-government development. Additionally, certain use cases of e-government pose security challenges regarding privacy, performance, and scalability.

Addressing these challenges requires thorough research, the development of advanced security mechanisms, and collaboration among information security experts, legal professionals, and government agencies to ensure the secure and efficient use of blockchain technology in e-government.

ACKNOWLEDGMENT

This research (paper) has been supported by the Ministry of Science, Technological Development and Innovation through project no. 451-03-47/2023-01/200156 "Innovative scientific and artistic research from the FTS (activity) domain".

REFERENCES

Atzei, N., Bartoletti, M., & Cimoli, T. (2017). A Survey of Attacks on Ethereum Smart Contracts (SoK). In M. Maffei & M. Ryan (Eds.), *Principles of Security and Trust*, Vol. 10204, 164–186. Springer Berlin Heidelberg. https://doi.org/10.1007/978-3-662-54455-6_8

Become an e-resident of Estonia, how to apply. (2024, April 7). E-Residency. https://www.e-resident.gov.ee/become-an-e-resident/

Dorri, A., Kanhere, S. S., Jurdak, R., & Gauravaram, P. (2017). Blockchain for IoT security and privacy: The case study of a smart home. 2017 IEEE International Conference on Pervasive Computing and Communications Workshops (PerCom Workshops), 618–623. https://doi.org/10.1109/PERCOMW.2017.7917634

E-estonia. (2024, April 7). Estonia.Ee. https://estonia.ee/enter/

Elameer, A. (2021). COVID-19 and real e-government and e-learning Adoption in Iraq. https://doi.org/10.1109/IICETA51758.2021.9717570

Elisa, N., Yang, L., Chao, F., & Cao, Y. (2023). A framework of blockchain-based secure and privacy-preserving E-government system. *Wireless Networks*, *29*(3), 1005–1015. https://doi.org/10.1007/s11276-018-1883-0

Elisa, N., Yang, L., Chao, F., Naik, N., & Boongoen, T. (2023). A Secure and Privacy-Preserving E-Government Framework Using Blockchain and Artificial Immunity. *IEEE Access*, *11*, 8773–8789. https://doi.org/10.1109/ACCESS.2023.3239814

Heilman, E., Kendler, A., Zohar, A., & Goldberg, S. (n.d.). Eclipse Attacks on Bitcoin's Peer-to-Peer Network.

Huh, S., Cho, S., & Kim, S. (2017). Managing IoT Devices using Blockchain Platform.

Ibrahimy, M. M., Norta, A., & Normak, P. (2024). Blockchain-based governance models supporting corruption-transparency: A systematic literature review. *Blockchain: Research and Applications*, *5*(2), 100186. https://doi.org/10.1016/j.bcra.2023.100186

Kadhum, O. I., & Hamad, A. H. (2023). Performance Evaluation of Multi-Organization E-Government Based on Hyperledger Fabric Blockchain Platform. *Ingénierie Des Systèmes d Information*, *28*(2), 499–507. https://doi.org/10.18280/isi.280227

Lykidis, I., Drosatos, G., & Rantos, K. (2021). The Use of Blockchain Technology in e-Government Services. *Computers*, *10*(12), 168. https://doi.org/10.3390/computers10120168

Macrinici, D., Cartofeanu, C., & Gao, S. (2018). Smart contract applications within blockchain technology: A systematic mapping study. *Telematics and Informatics*, *35*(8), 2337–2354. https://doi.org/10.1016/j.tele.2018.10.004

Mansour, M., Salama, M., Helmi, H., & Mursi, M. F. M. (2023). A Survey on Blockchain in E-Government Services: Status and Challenges. *International Journal of Engineering Research*, *12*(04).

Moen, V., Klingsheim, A. N., Simonsen, K. I. F., & Hole, K. J. (2007). Vulnerabilities in e-governments. *International Journal of Electronic Security and Digital Forensics*, *1*(1), 89. https://doi.org/10.1504/IJESDF.2007.013595

Mukhopadhyay, U., Skjellum, A., Hambolu, O., Oakley, J., Yu, L., & Brooks, R. (2016). A brief survey of Cryptocurrency systems. 2016 14th Annual Conference on Privacy, Security and Trust *(PST)*, 745–752. https://doi.org/10.1109/PST.2016.7906988

Peterson, K., Deeduvanu, R., Kanjamala, P., & Boles, K. (2016). A Blockchain-Based Approach to Health Information Exchange Networks.

Rachmawati, Aswar, K., Sumardjo, M., Wiguna, M., & Hariyani, E. (2022). Personal and reliability factors affecting adoption and utilization of e-government: An effect of intention to use. *Problems and Perspectives in Management*, *20*(2), 281–290. https://doi.org/10.21511/ppm.20(2).2022.23

Sapirshtein, A., Sompolinsky, Y., & Zohar, A. (2017). Optimal Selfish Mining Strategies in Bitcoin. In J. Grossklags & B. Preneel (Eds.), *Financial Cryptography and Data Security*, Vol. 9603, 515–532. Springer Berlin Heidelberg. https://doi.org/10.1007/978-3-662-54970-4_30

Singh, D. A. (2023). *E-GOVERNANCE: MOVING TOWARDS DIGITAL GOVERNANCE*. *2*(1).

Singh, S., Hosen, A. S. M. S., & Yoon, B. (2021). Blockchain Security Attacks, Challenges, and Solutions for the Future Distributed IoT Network. *IEEE Access*, *9*, 13938–13959. https://doi.org/10.1109/ACCESS.2021.3051602

The Role of Central Signing and Authentication in e-Government Security. (2024, April 7). https://www.cryptomathic.com/news-events/blog/key-for-egovernment-security-central-signing-authentication

Theodorou, S., & Sklavos, N. (2019). Blockchain-Based Security and Privacy in Smart Cities. In *Smart Cities Cybersecurity and Privacy* (pp. 21–37). Elsevier. https://doi.org/10.1016/B978-0-12-815032-0.00003-2

Turkanovic, M., Holbl, M., Kosic, K., Hericko, M., & Kamisalic, A. (2018). EduCTX: A Blockchain-Based Higher Education Credit Platform. *IEEE Access*, *6*, 5112–5127. https://doi.org/10.1109/ACCESS.2018.2789929

Vasek, M., Thornton, M., & Moore, T. (2014). Empirical Analysis of Denial-of-Service Attacks in the Bitcoin Ecosystem. In R. Böhme, M. Brenner, T. Moore, & M. Smith (Eds.), *Financial Cryptography and Data Security* (Vol. 8438, pp. 57–71). Springer Berlin Heidelberg. https://doi.org/10.1007/978-3-662-44774-1_5

Vereinte Nationen (Ed.). (2022). The future of digital government. United Nations.

Wang, S., Yuan, Y., Wang, X., Li, J., Qin, R., & Wang, F.-Y. (2018). An Overview of Smart Contract: Architecture, Applications, and Future Trends. 2018 IEEE Intelligent Vehicles Symposium (IV), 108–113. https://doi.org/10.1109/IVS.2018.8500488

Volume XX, Issue (2) (2024) 94-102

International May Conference on Strategic Management

DOI: *10.5937/IMCSM24060V* *Review Article*

THE ROLE OF THE QUALITY HIGHER EDUCATION INSTITUTIONS FOR HIGHER ECONOMIC DEVELOPMENT. THE NEED FOR NEW MODEL FOR MEASURING THE QUALITY OF HIGHER EDUCATION INSTITUTIONS

Marija Vasilevska*, Ana Tomovska – Misoska

University American College Skopje, Faculty of Business Administration, Republic of N. Macedonia

Abstract: This paper delves into the intricate relationship between higher education quality and economic development, emphasizing the pivotal role of education in driving societal progress. It argues that superior quality higher education fosters a skilled workforce essential for economic growth and innovation. Through a comprehensive review of literature, it explores the significance of quality management in higher education and the methodologies used to measure economic development. The study proposes a new university ranking model aimed at elucidating the correlation between higher education quality and economic development. Analyzing data from QS Rankings, GDP growth, and UNDP Human Development Indexes, the study finds limited correlation between the number of top-ranked institutions and GDP growth. It emphasizes the need to align rankings with economic indicators for a holistic evaluation. In conclusion, the paper advocates for investing in quality higher education to promote sustained economic progress and improve societal well-being, underscoring the importance of aligning educational goals with economic objectives for comprehensive development.

Keywords: Quality of Higher Education, Economic Development, Measuring of Quality, Economic Development and Higher Education.

1. INTRODUCTION

This paper seeks to demonstrate that higher education plays a crucial role as a primary catalyst for economic development. A superior quality of higher education ensures that the upcoming workforce attains the necessary qualifications to propel the nation towards elevated levels of development. Quality management in higher education involves adhering to established standards and achieving higher rankings on various indexes. When higher education institutions prioritize quality, it paves the way for improved economic development. This, in

* *Corresponding author: marija.vasilevska@gmail.com*

Marija Vasilevska, ORCID: 0009-0002-0055-0777
Ana Tomovska - Misoska, ORCID: 0000-0003-2018-1606

turn, sets the stage for a sustained upward trajectory in both Gross Domestic Product (GDP) and Gross National Income (GNI), ultimately expected to contribute to higher rankings in the UNDP`s Human Development Index for countries. The author wants to create a new university ranking model that will specifically show and measure the relations between the quality of the higher education institutions and the level of economic development. The model will make visible how the quality of the national education systems are influencing the economic development.

2. LITERATURE REVIEW

Today, the global economy is extremely dynamic and variable, with strong migration of labour resources, global competition, and constant changes in the situation. Education stands as a highly valued quality, boosting individuals' capabilities and professional expertise, thereby facilitating their effective and efficient contribution to the economic advancement of a nation. It is often said that the difference between developed and developing nations are in the quality of their education. Education supports the growth of any society, democracy, and political stability, allowing people to learn about their rights and acquire the skills and knowledge necessary to exercise them (Kinser & Lane, 2017), and contributing to increased life quality and the development of educational field in most countries of the world, and particularly in European countries, where the education has been contributing to it (Stevens & Weale, 2003).

2.1. Quality Management for Higher Education

As referenced by Cobbinah and Agyemang (2020) the term quality management refers to the policies, systems and processes designed to ensure the maintenance and enhancement of quality within an institution' (Csizmadia, 2006). Quality Manahement for Higher Education for the causes of this paper is perceived as a way of managing institutions towards achieving the national and international standards for quality in higher education which is reflected in their position in the Universities` Rankings. People inside and outside the sector want to understand higher education, and ranking is the simplest way to do so (Marginson, 2017). Rankings have popped up as a supposedly "objective" means for evaluating institutions and conveying this information to the public (Hazelkorn, 2016). They are perceived as a measure for checking the quality management of the Higher Education globally. The three most famous ranking systems are 1) Shanghai rankings; 2) Times Higher Education's (THE) World University Rankings and 3) Quacquarelli Symonds' (QS) World University Rankings. Each of these ranking systems utilizes distinct methods for collecting data and information, relying on different indicators to measure success, which are typically categorized into specific groups or criteria. The rankings are subject to many critics, most of which connected with the methodology of measuring the quality, and specifically due to their coverage on the research part of the higher educations` missions, leaving the teaching and learning aside. Current global rankings can provide little useful information on issues such as the quality of teaching and learning, accessibility, regional involvement, involvement in lifelong learning, cost efficiency and others, simply because the indicators used do not cover such issues. The strongest of the biases is that of favoring research in natural sciences and medicine, under-representing engineering and social sciences, and completely or almost ignoring the humanities (Rauhvargers, 2011). Although it faces challenges and obstacles, the QS World University Rankings stands out as the most suitable ranking system due to the indicators incorporated in its methodology and the measurement approaches it employs. The QS rankings consider a wide range of factors, including academic reputation, employer reputation, faculty-to-student ratio, international diversity, and research

impact. This comprehensive approach provides a holistic view of a university's performance (Sowter, 2016). For the causes of this paper the QS System is taken as the most appropriate for making analysis. The higher education systems require more precise and streamlined methods for assessing their impact on national development. This stems from the acknowledgment that these systems play a direct role in advancing economies and societies (Vasilevska, 2024).

2.2. Measurement of Economic Development

Economic development encompasses a manifold approach aimed at initiating transformations within national institutions and societal perspectives., regarded as being good for the economy and its people, since it leads to increase in economic welfare (Panth, 2020). Development is a target for every country and every nation and as term is used in many other synonymous terms such as economic growth, economic welfare, secular change, social justice, and economic progress (Azam, 2015). It is a business that must always be carried out, which aims to increase national income (gross national product), then divide the national income to citizens fairly, the progress of the industrial sector to absorb a high workforce and reduce unemployment and poverty (Todaro & Smith, 2004). Economic growth is one indicator of the success of development. Thus, the increasing economic growth usually increases the welfare of society, although there are still other indicators, namely the distribution of income. Economic growth can be achieved by doing specialization or division of labor. Efficiency and productivity do not have to be done by adding resources or changing technology which according to classical theory is a determinant of economic recovery, but enough to do and practice the division of labor (specialization) (Annisa, 2019). Economic growth – takes place when there is a sustained (ongoing for at least 1-2 years) increase in a country's output (as measured by Gross Domestic Product -GDP or Gross National Product - GNP) or in the per capita output (GDP or GNP per person) – the growth of GDP per capita or GNP per capita is a better indicator of growth than GDP or GNP because if the population grows faster than output, output (GDP or GNP) could grow while output per person (GDP or GNP per capita) falls – in this case it is misleading to say "growth" is occurring (Azam, 2015). Multiple researchers bring distinct components to defining development. This variation stems from the importance of economic advancement, regional differences, unique requirements of various locales, and notably, the essential aspect of time, with longer durations considered vital for development. The political economy is also important in the analysis of development. This is because the historical, political, economic, and social factors of each less developed country are different from those of the "developed countries" and from each other. Another key factor in the economic growth is the innovation (Wang, Wong, Wang, Albasher, Alsultan, Fatemah, 2023). Azam (2015) added the sustainability aspect to the economic development thus highlighting its effect on an increased flow of goods and services based on the conclusions and analysis by few different authors. Contrary to this, Panth (2020) highlights that economic development might happen with or without structural changes in the economy. Economic development is recorded when there is a transition from an agrarian or resource-based to a knowledge- and industry-based economy, adopting new technologies and general improvement in living standards (Nnadozie & Jerome, 2019). The introduction of more mechanized and updated technologies to increase labor productivity, employment, incomes, and standard of living of the population accompanied by improvements in infrastructure, as well as social, political, and institutional factors to facilitate transformation of the economy are important for economic development (Myint & Krueger, 2016). According to Yulhendri (2019) economic development can be achieved if there are investment, increasing knowledge, increasing skills, using technology, adding management skills and organizing. Nnadozie and Jerome (2019) establish that there is no one definition or

measure of development and that its meaning keeps changing in relation to its application and the context.

2.3. Exploring the Interconnection of Economic Progress and the Quality of Higher Education

Higher education plays an important role in enhancing people's capacity to acquire and use knowledge (Adedeji & Campbell, 2013), while at the same time is production line whose output is qualified human resources. Higher education nurtures skilled labor, elevating overall societal productivity, while also fostering technological and institutional innovation to enhance production efficiency. The investment in higher education will affect the lives of people in a country (Trinh & Cicea, 2019), such as increasing the gross national income of a country (Soyer, et al., 2020), and highlight competitiveness in higher education as it enhances welfare and economic performance (Januškaitė & Užienė, 2018). Furthermore, higher education, and universities in particular, serve as an essential force for technological innovation and long-term economic growth in society (Zhu et al., 2018). Günay (2022) concluded that there is widespread consensus that higher education degrees encourage economic growth and employment opportunities for any country. It is reasonable to assume that countries with higher levels of education will also have stronger economic growth education benefits people economically (Stevens & Weale, 2003). Sianesi and Van Reenen (2000) found that tertiary education is important for growth in OECD countries, while Bloom et al. (2006) found that higher education is important for growth in developing countries such as Sub-Saharan Africa. Asteriou and Agiomirgianakis (2001) investigated the relationship between human capital (analyzed by rates in primary, secondary, and higher education) and economic growth in Greece, and found out that causality runs through educational variables to economic growth, except for higher education where exists reverse causality. Howitt (2013) suggested that university research can boost economic growth. The findings from the research conducted by Günay in 2022 suggest a correlation between a country's GDP and the number of universities ranked in the top 500 globally, indicating that economic size influences university rankings. However, there is no correlation found between employment rates and the number of top-ranked universities in 2019. This implies that GDP performance, rather than employment rates, impacts university rankings. The study suggests enriching correlation analysis with causality analysis to determine whether economic performance or university rankings come first. This raises the question of whether countries have highly ranked universities because of their economic performance or vice versa. However, a notable gap exists in the literature regarding the precise ways in which higher education fosters the economic development of nations. Based on the literature review and the final goal of the research the main research hypothesis are the following: H1: Effective quality management of higher education correlates with higher educational quality, thereby potentially elevating their standings within Higher Education Indexes used as a tool for measuring the quality of the higher education systems. H2: The higher education serves as a primary catalyst for economic development, influencing various aspects of societal progress, including labor productivity, technological innovation, and overall prosperity. This hypothesis posits that nations with a stronger emphasis on reaching higher level of quality in their higher education will exhibit greater economic growth and advancement compared to those with limited investment in educational opportunities. This article also specifies certain measure system to portray the quality of higher education and the measure of economic development as a step towards checking the effect that higher education has over the economic development.

3. DATA AND METHODOLOGY

The paper is grounded in a thorough secondary desk research approach, which entailed an exhaustive review of literature and analysis of existing materials pertinent to related subjects. This involved examining databases to survey and chart current research concerning the correlation between rankings of higher education institutions and their potential influence on economic development. Furthermore, this article analyzes the 2024 rankings from the QS Higher Education Institutions Ranking, the GDP growth in 2024 for countries with higher education institutions among the top 100 and their ranks in the UNDP Human Development Indexes. The correlation between these factors was examined.

4. RESULTS AND DISCUSSIONS

This paper is a step towards creating a new model for ranking of the Higher Education Institutions. The new model will aim to close the gap in presenting the influence and correlation between the quality of higher education and economic development specifically showing how the quality of the higher education influence the economic development. As an initial step, the analysis delved into the significance of higher education quality, its potential impact on economic development, and the methodologies used to measure both factors. This involved examining how higher education quality contributes to various aspects of economic growth and development, as well as understanding the metrics and indicators employed to assess the quality of higher education institutions. Similarly, the paper explored the diverse measures utilized to gauge economic development, considering factors such as GDP growth, innovation indices, employment rates, and human capital development. By examining these aspects, the study aimed to establish a foundational understanding of the interplay between higher education quality and economic development. An economically thriving nation necessitates a skilled workforce that is not only receptive to novel challenges but also committed to continuous capacity enhancement, strategically aligning itself with progressive levels of development. Education serves as the overarching factor and primary catalyst for enhancing the quality of the labor force, thereby instigating positive transformations in economic development. Previous studies confirmed that higher education plays a huge and vital role in developing a country by providing quality human resources to meet market demand and a competitive economy. Thus, higher education becomes an "input" creating the development and growth of commerce and industry; besides, higher education is a condition to expand opportunities in life for learners. According to this approach, higher education is seen as an opportunity for learners to participate in personal development through regular and flexible learning modes. Nearly every nation has recognized the importance of quality higher education to their economic prosperity as well as the economic well-being of its citizenry (Lane, 2012). There are various educational paths available, each leading to distinct profiles and skill sets, allowing individuals to tailor their learning to their unique interests and career goals, each of them connected with the European Qualifications Framework. In formulating educational policies across all levels, it is imperative for nations to consistently integrate the labor market perspective. This ensures that skills and learning outcomes align with the evolving needs of the workforce. Higher education institutions play a pivotal role in this regard, illustrated by the incorporation of labor market engagement in the development, execution, and evaluation of study programs, as outlined in the European Standards for Quality Assurance in Higher Education 2015. These standards are used by the institutions and quality assurance agencies for ensuring quality internally within the institutions but also externally on external quality assurance systems in higher educations. They are developed by the European Association for Quality Assurance in Higher Education (ENQA)

European Students' Union (ESU) European University Association (EUA) European Association of Institutions in Higher Education (EURASHE) in cooperation with: Education International (EI) BUSINESSEUROPE European Quality Assurance Register for Higher Education (EQAR). Their impact on the higher education institutions is focused into showing them the path towards achieving quality management. They have guiding role for the institutions themselves, while the Indexes are only measuring the quality. There are three main aspects of measuring economic development can be taken into consideration. The first one is comparing the economic indicators that are measuring economic performance of a country, each of them are measuring different economic activity but with their comparation and seeing them as one measurement a clear picture for the countries` economic development can be made. The second one is using the World Bank division, while the third one are the UNDP`s measurement (Human Development Index and the Sustainable Development Goals and the level of their achievement). Analyzing various definitions and considering the different aspects they encompass; it can be inferred that the Gross Domestic Product and Gross National Product (GNP) or Gross National Income (GNI) per capita serve as primary indicators for gauging economic development. It is essential to incorporate the timeframe as a critical factor, recognizing that the measurement is an ongoing process rather than a one-time assessment. Leave no one behind is the defining principle of the 2030 Agenda for Sustainable Development or a shared promise by every country to work together to secure the rights and well-being of everyone on a healthy, thriving planet. There are 17 Sustainable Development Goals (SDGs), each of them covering different targets aiming to measure and focus the world into achievement of sustainable and continuous development. The SDG 8 is directed into decent work and economic growth targeting sustained per capita economic growth, achieved higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus of high value added and labor sensitive sectors; full employment, with specific focus on youth employment; structural and systematic growth. The UNDP`s Human Development Index checks the countries` achievement in different important dimensions of human development. Through this Index, three main dimensions are measures: 1) Long and healthy life; 2) Knowledge; 3) A decent standard of living. Indicators used for measuring are 1) Life expectancy at birth; 2) Expected years of schooling; and Mean years of schooling; 3) GNI per capita. To assess economic development, the best approach is considering indicators and outcomes from three perspectives: 1) UNDP Human Development Index (HDI); and 2) growth of the Gross Domestic Product (GDP). Another crucial factor in assessing economic development is the role of the education, particularly higher education, in the overall economic landscape. To examine their correlation, the author decided to compare the measurement methods for economic development with those used to assess the quality of higher education. This stems from the observation that as education becomes more advanced and of higher quality, the economic development of a country tends to rise correspondingly. The most accurate way for measuring quality is through the higher education rankings, which stand as a testament to the upheld standards and quality by educational institutions. They often reflect the excellence in teaching, research, infrastructure, and overall academic environment, offering a gauge for prospective students, researchers, governments, and stakeholders to assess the caliber of an institution. As already concluded in the section literature review the QS World University Rankings stands out as the most suitable ranking system due to the indicators incorporated in its methodology and the measurement approaches it employs. They consider a wide range of factors, including academic and employer reputation, faculty-to-student ratio, international diversity, and research impact. This comprehensive approach provides a holistic view of a university's performance (Sowter, 2016). The QS rankings can serve as an initial reference point and their indicators can be refined and tailored to measure the impact more

precisely and/or influence that higher education institutions exert on the economic development of countries. From 2021 to 2024, the QS Rankings consistently feature three countries: the United States, the United Kingdom, and Switzerland among the ones having higher education institutions ranked among the first 10th. While there are minor fluctuations in rankings, the scores remain closely matched. The Massachusetts Institute of Technology consistently secures the top position, reflecting the growing influence of digitalization and technology on society and the economy, which in turn fuels demand in the labor market for the technology sector. Additionally, a noteworthy observation is that all top ten-ranking institutions are situated in major urban centers, with none located in smaller regions or cities. The rankings for 2024 indicate that 22 countries have higher education institutions among the top 100 in the QS Rankings for that year. Among those countries are the following with the following number of institutions among the first 100 in brackets: United States (27), United Kingdom (16), Australia (9), China (5), Hong Kong (5), South Korea (5), France (4), Japan (4), Germany (4), Switzerland (3), Canada (3), Netherlands (2), Sweden (2), Singapore (2), Belgium (1), Malaysia (1), New Zealand (1), Taiwan (1), Ireland (1), Brazil (1), Russia (1), Mexico (1) and Argentina (1). In terms of the GDP growth for 2024 for these countries it can be noticed that all of them except Argentina have positive percentage of increase. However, the country with the highest number of higher education institutions in the first 100 does not have the highest percentage of GDP growth. The average GDP growth is higher than 1 %. The correlation coefficient between the number of higher education institutions among the top 100 and the percentage of GDP growth is 0.080. While this indicates a limited correlation, it is not strong enough to draw definitive conclusions. It is unclear whether countries with quality higher education institutions among the top-ranked also have significant low GDP growth. In addition, to this the author did not find a correlation between the number of higher education institutions among the top 100 and their ranks on the UNDP Human Development Index. This leads to a conclusion that Indexes are mostly connected and related to the GDPR growth rather than to UNDP Human Development Index. It is expected that the Higher Education Institutions with higher position in the Indexes, including the ones of the QS Ranking have higher growth some of that growth is based on the quality of education and the measures should be in the same line. Indeed, aligning the rankings with an Index that incorporates economic indicators is crucial. The indicators utilized in both the Indexes reflecting economic development and the rankings should harmonize, demonstrating a consistent level of development across both assessments. This ensures a comprehensive and cohesive evaluation of the correlation between higher education and economic development. Finally, it highlights the need of development of a new model that will clearly show the relation and the effect of the quality of higher education over the economic development.

5. CONCLUSIONS

In conclusion, economic development is a multifaceted process that involves structural shifts in societal organizations and attitudes, aimed at improving both the economy and the well-being of its people. It encompasses various dimensions, including economic growth, social justice, and technological innovation, all contributing to the overall progress of a nation. The sustainability aspect has been integrated into economic development, emphasizing the importance of long-term viability in economic policies and practices. Education, particularly higher education, plays a pivotal role in driving economic development by enhancing the quality of the labor force and fostering technological innovation. Quality higher education institutions not only produce skilled human resources but also contribute to economic growth, innovation, and long-term prosperity. The correlation between higher education and economic

development is evident in various studies, highlighting the significance of investing in education for sustained economic progress. Measuring economic development involves considering indicators from multiple perspectives, including the Human Development Index (HDI), Gross Domestic Product (GDP), and Gross National Product (GNP) or Gross National Income (GNI). These indicators provide valuable insights into the overall progress and well-being of a nation. Furthermore, aligning higher education rankings with economic development indexes is essential for a comprehensive evaluation of the relationship between education and economic progress. Consistent measurement approaches ensure that the quality of education reflects and contributes to the overall economic development of a country. In essence, fostering a conducive environment for quality of higher education and aligning educational goals with economic objectives are crucial steps in promoting sustainable economic development and improving the quality of life for all citizens.

REFERENCES

Adedeji, O. & Campbell, O. (2013). The Role of Higher Education in Human Capital Development Available at SSRN: https://ssrn.com/abstract=2380878 or http://dx.doi.org/10.2139/ssrn.2380878 http://dx.doi.org/10.2139/ssrn.2380878

Asteriou, D., & Agiomirgianakis, G. M. (2001). Human capital and economic growth. *Journal of Policy Modeling*, 23 (5), 481-489. https://doi.org/10.1016/S0161-8938(01)000540

Azam, A. (2015). Project on Economic Growth and Economic Development. Acedmia.edu. https://www.academia.edu/11781548/Economic_Development_vs_Economic_Growth

Bloom, D. E., Hartley, M., & Rosovsky, H. (2007). Beyond Private Gain: The Public Benefits of Higher Education. In J.J.F. Forest & P.G. Altbach (Eds.), International Handbook of Higher Education (293–308). Springer. https://doi.org/10.1007/978-1-4020-4012-2_15

Chakrabarti, A., & Dhar, A. Economic Development. Marxian Handbook of Economics (1st ed. 1-21). (2016). Publisher: Routledge.

Csizmadia, T. (2006). Quality management in Hungarian higher education: Organizational responses to government policy. CHEPS: Enschede.

European Standards for Quality Assurance in Higher Education. (2015). 6-21. https://www.enqa.eu/wp-content/uploads/2015/11/ESG_2015.pdf

Günay, A. (2022). Analyzing the Correlation Between University Rankings and the Economic Performance of Countries. *Journal of University Research*, 5(2), 205 – 211. https://doi.org/10.32329/uad.1144764

Hazelkorn, E. Global Rankings and the Geopolitics of Higher Education. Understanding the influence and impact of rankings on higher education, policy and society. (2016). London: Routledge.

Kinser, K., & Lane, J. E. (2017). An Overview of authorization and quality assurance of higher education institutions. Background paper prepared for the 2017/8 Global Education Monitoring Report. Accountability in education: Meeting our commitments.

Lane, J. E. (2012). Higher Education and Economic Competitiveness. In J.E. Lane & D.B. Johnstone (Eds.), Universities and Colleges as Economic Drivers: Measuring and Building Success (1-30). SUNY Press, Albany, NY.

Marginson, S. (2017). Do Rankings Drive Better Performance?. *International Higher Education*, 89, 6–8. https://doi.org/10.6017/ihe.2017.89.9833

Myint, H., & Krueger, A. O. (2016). Economic development. https://www.britannica.com/money/economic-development

Nnadozie, E., & Jerome, A. (2019). Definition and Measurement of Growth and Development. Emerald Publishing Limited, Leeds, 39-56. https://doi.org/10.1108/978-1-78743-783-820192003

Panth, P. (2020). Economic Development: Definition, Scope and Measurement. In W. Leal Filho, A.M. Azul, L. Brandli, A. Lange Salvia, P.G. Özuyar, & T. Wall (Eds.), Encyclopedia of the UN Sustainable Development Goals: No Poverty (1-38). Springer, Cham. https://doi.org/10.1007/978-3-319-69625-6_38-1

QS World University Rankings. (2023). Rankings. https://www.topuniversities.com/university-rankings/world-university-rankings/2023

Rauhvargers, A. (2011, July 10). Global University Rankings and Their Impact: Report II. https://eua.eu/downloads/publications/global%20university%20rankings%20and%20their%20impact%20-%20report%20ii.pdf

Shanghai Ranking. (2023). Academic Ranking of Universities. https://www.shanghairanking.com/rankings/arwu/2023

Sianesi, B., & Van Reenen, J. (2000). The Returns to Education: A Review of the Macro-Economic Literature. *Journal of Economic Survey*, 17(2), pp. 157-199.

Sowter, B. (2016). Global University Performance Report 2016. London: QS Quacquarelli Symonds. https://www.topuniversities.com/university-rankings/world-university-rankings/2015

Stevens, P., & Weale, M. (2003). Education and Economic Growth. International Handbook on the Economics of Education, Chapter 4. https://doi.org/10.4337/9781845421694

Sustainable Development Goals. (n.d.). https://sdgs.un.org/goals

Todaro, M. P., & Smith, S. C. Economic Development (8 th ed.) 2004. Longman Publication, New York, 110.

Times Higher Education. (2023). World University Rankings. https://www.timeshighereducation.com/world-university-rankings/2023/world-ranking

Vasilevska, M. (2024). Towards Development of a New Higher Education Institution Ranking, Model That Establishes a Meaningful Linkage Between Higher Education And Economic Development. *Knowledge - International Journal*, 62 (2), 205-210.

Wang, F., Wong, W.-K., Wang, Z., Albasher, G., Alsultan, N., & Fatemah, A. (2023). Emerging pathways to sustainable economic development: An interdisciplinary exploration of resource efficiency, technological innovation, and ecosystem resilience in resource-rich regions. *Resources Policy* vol. 85. https://doi.org/10.1016/j.resourpol.2023.103747.

Zhu, X., Zhang, Y., & Wu, H. (2018). The Influence of Higher Education Development on Economic Growth: Evidence from Central China. *High Education Policy*, 31, 139-157. https://doi.org/10.1057/s41307-017-0047-7

Volume XX, Issue (2) (2024) 103-107

International May Conference on Strategic Management

DOI: *10.5937/IMCSM24061S* *Review article*

STRATEGIC MANAGEMENT PRINCIPLES APPLIED TO AN EFL CLASSROOM

Slavica Stevanović*, Sandra Vasković

University of Belgrade, Technical Faculty in Bor, Serbia

Abstract: This article explores how the principles of strategic management can be applied effectively in English as a Foreign Language (EFL) teaching. By drawing parallels between organizational success and student achievement, it explores how teachers can use strategic planning, needs analysis, differentiation, and continuous improvement to create a stimulating and effective learning experience for their students. The article highlights the importance of aligning with educational goals, understanding student needs, and taking a student-centered approach to improve instructional effectiveness. It highlights the importance of conducting a needs assessment to develop instructional strategies, as well as the critical role of curriculum design and resource allocation in accommodating diverse learning styles and maximizing student engagement. In addition, the article discusses the importance of assessment and monitoring to track student progress and make instructional decisions. Finally, it explores the importance of utilizing innovation and new technologies to enhance language acquisition and create a dynamic learning environment. By applying these strategic management principles, EFL classrooms can transform from static environments into dynamic centers for language learning where both teachers and students are active participants in the learning process.

Keywords: strategic management principles, EFL classroom, language acquisition.

1. INTRODUCTION

The world of education, much like the world of business, thrives on strategic planning and effective management. While traditional teaching methods rely heavily on sound content knowledge and clear delivery, designing a successful EFL (English as a Foreign Language) class goes beyond simply presenting grammar rules and vocabulary lists. Just like a business competing in a global market, an EFL teacher works in a dynamic environment with diverse learners, ever-changing learning styles and a constant need for innovation. Here, the principles of strategic management provide a valuable framework for not only managing this complexity, but also creating a thriving learning environment in which students achieve their goals. In this

* *Corresponding author: sstevanovic@tfbor.bg.ac.rs*

Slavica Stevanović, ORCID: 0000-0001-7026-0412
Sandra Vasković, ORCID: 0000-0002-1624-841X

article, we explore how the key principles of strategic management can be applied effectively in the EFL classroom. By drawing parallels between organizational success and student achievement, we will look at how teachers can use needs assessment, resource allocation, differentiation, assessment and monitoring, and continuous improvement to create a stimulating and effective learning experience for their students.

2. STRATEGIC MANAGEMENT PRINCIPLES IN EFL TEACHING

The landscape of EFL teaching is constantly evolving. Students come from an ever-widening range of backgrounds, learning styles and motivations. In addition, the advent of technology has created new opportunities and challenges for language learning. Traditional one-size-fits-all approaches are no longer sufficient. Today's teachers need to be adaptable, responsive and able to tailor their approach to the specific needs of each individual learner. Just as a company would not develop products without first knowing its target market and competition, an EFL teacher must have a clear understanding of their students' individual strengths, weaknesses and learning goals. The principles of strategic management provide a framework for gathering this information, analyzing it, and then developing a targeted, actionable plan to achieve the desired results in the classroom.

2.1. Needs assessment in the EFL classroom

Needs assessment is a crucial component of strategic management in EFL teaching. It serves as a comprehensive diagnostic tool that provides a detailed understanding of students' current language skills, learning styles and specific needs.

Formal assessments, such as standardized tests or placement tests, provide a quantitative perspective on students' abilities. These tools can reveal strengths, such as a student's ability to grasp grammatical structures, or weaknesses, such as difficulties with pronunciation.

However, a needs analysis goes beyond mere numbers. Informal assessments, such as interviews with students, self-questionnaires and observations during classroom activities, provide valuable qualitative data.

Using these informal assessments, teachers can uncover students' learning goals, their preferred learning styles and any anxieties or learning difficulties they may have.

For example, a needs assessment may reveal that a student works well in a collaborative environment and has a good visual memory (Alicia, 2018). This information may prompt the teacher to incorporate more pair or group activities into the curriculum and use visual aids such as flashcards or charts that match the student's learning style.

Similarly, a needs assessment may reveal that a student has difficulty with speaking and listening (Hayati et al., 2021). In this case, the teacher can devote more time and resources to promoting these areas, for example through role-play, listening comprehension exercises and opportunities for structured conversation.

By conducting a thorough needs assessment, EFL teachers can tailor their teaching strategies, curriculum design and allocation of resources to meet the different needs of their students (Espinosa Cevallos & Soto, 2020). This student-centered approach, based on the principles of strategic management, helps to create a stimulating and effective learning environment in which both teachers and students are actively engaged in the language learning process.

2.2. Curriculum design and resource allocation

Curriculum design and resource allocation are critical aspects of strategic management in EFL instruction, just as a company carefully allocates its resources to maximize profits.

The information gained from the needs assessment serves as a template for developing a customized curriculum that addresses the diverse needs and learning styles of students. It is no longer a one-size-fits-all approach, because that would be like a company ignoring consumer preferences and focusing only on production (Palah et al., 2022).

2.3. Differentiation

Differentiation, a cornerstone of strategic management, plays a critical role in curriculum design. For example, imagine a student who enjoys meticulously dissecting grammar rules, while another thrives in the chaos of a group discussion. Recognizing these different learning styles is crucial.

For the analytical learner, the curriculum can include online grammar exercises and interactive quizzes. For the kinesthetic type of learner, traditional grammar exercises can be limiting, so the curriculum may include role-playing games or activities that require physical movement to reinforce grammatical concepts.

In addition to textbooks, the modern world offers a wealth of resources that can be used to create a dynamic and engaging learning environment. By incorporating authentic material such as news articles, movie clips or even popular music, students learn about language use in the real world. Online learning platforms can also be used. They offer interactive exercises, game-based learning elements and personalized feedback loops that cater to a variety of learning styles and actively engage students (Kazemi & Soleimani, 2016).

By strategically designing the curriculum and allocating resources based on insights gained from the needs analysis, EFL teachers can create a stimulating and effective learning environment in which students are actively engaged and empowered to achieve their language learning goals.

2.4. Assessment and monitoring in EFL teaching

Assessment and monitoring in EFL classrooms are integral parts of strategic management principles that are essential for effectively guiding students on their language learning journey.

Effective assessment methods not only measure student progress but also highlight areas where support is needed to ensure that all students are progressing effectively. A blend of traditional and innovative assessment tools provides teachers with comprehensive data on student performance. Formative assessments, such as in-class activities, quizzes and exit tickets, provide ongoing feedback on learning progress. Summative assessments, such as unit tests or final exams, measure overall performance. Analyzing this data allows teachers to identify strengths, weaknesses and areas that need additional support and tailor instructional decisions to meet student needs.

Continuous monitoring through observations, student conferencing and ongoing feedback allows teachers to adjust their approach in real time. This agile mindset, rooted in the principles of strategic management, fosters a dynamic learning environment where both teachers and students are actively engaged in the learning process (Hayati et al., 2021).

For example, imagine a scenario where ongoing formative assessments show that a group of students is struggling with a particular grammar concept. The teacher can then adapt

the lesson plan to include additional practice activities for that particular area. Similarly, if the summative assessments show that a student is excelling in reading comprehension but is struggling in speaking, the teacher can adjust the lesson plan to address this. Then the teacher can adapt the lesson to provide more practice opportunities for speaking while maintaining the student's interest and engagement.

In addition, the use of self-assessment tools, peer evaluations and student portfolios can empower learners to take responsibility for their progress and development. By involving students in the assessment process, teachers encourage self-reflection, goal setting and a deeper understanding of their own learning needs.

By integrating a variety of assessment methods and fostering a culture of continuous monitoring and feedback, EFL teachers can create a supportive and dynamic learning environment that maximizes student growth and achievement.

2.5. Innovation in language learning

Innovation in language learning is a key aspect of strategic management principles that emphasize a continuous cycle of reflection and adaptation to improve EFL teaching practice. Much like successful businesses that constantly evaluate their processes and seek new opportunities, effective language teaching thrives through a commitment to continuous improvement and innovation.

Creating a dynamic learning environment where both teachers and students actively participate in the learning process is crucial. Regular self-evaluation allows teachers to recognize the strengths and weaknesses of their teaching strategies, fostering a culture of continuous improvement. In addition, gathering student feedback provides valuable insight into areas that need improvement and allows teachers to better tailor their approaches to meet student needs.

Integrating new technologies and resources into EFL lessons can significantly improve language acquisition and create a more engaging learning environment. Online learning platforms, learning apps and multimedia resources provide opportunities for personalized feedback, gamified learning experiences and authentic language use. By embracing innovation, EFL teachers can adapt to the evolving needs of their students and cultivate a passion for language learning.

For example, language learning apps that offer interactive exercises tailored to individual learning styles can increase student engagement and motivation. Virtual reality simulations can provide immersive language practice and make learning more interactive and memorable. The use of social media platforms for language practice and cultural exchange can broaden students' exposure to real-world language use and promote communication skills in authentic contexts.

In addition, innovative teaching methods such as project-based learning, flipped classrooms or content-based instruction can provide students with diverse and engaging learning experiences. By keeping abreast of new trends in language teaching and experimenting with new approaches, EFL teachers can create a vibrant and effective learning environment that inspires students to excel in language learning.

3. CONCLUSION

By applying strategic management principles, EFL classrooms can transform from static environments into dynamic centers for language learning. Through comprehensive needs assessment, targeted curriculum design, strategic resource allocation, and a commitment to

continuous improvement and innovation, EFL teachers can create a learning experience that addresses the diverse needs of their students and pushes them to achieve their language goals. This article is aimed at serving as a guide for EFL teachers on their journey to creating successful learning environments that are based on strategic planning and focused on student achievement. By taking these principles to heart, EFL teachers can foster a love of language learning, provide students with the skills necessary to navigate an increasingly globalized world, and ultimately contribute to their students' academic and professional success.

REFERENCES

Alicia, V. (2018). EFL classroom management (a descriptive case study at the tenth grade of MAN 4 Jakarta) (Doctoral dissertation, UIN Syarif Hidayatullah Jakarta: Fakultas Ilmu Tarbiyah dan Keguruan). Retrieved from https://repository.uinjkt.ac.id/dspace/handle/123456789/37874

Espinosa Cevallos, L. F., & Soto, S. T. (2020). EFL Classroom Management. *MEXTESOL Journal*, 44(2). Retrieved from http://www.mextesol.net/journal/

Hayati, A. R., Afriani, Z. L., & Akbarjono, A. (2021). Teacher's Teaching Strategies in EFL Class . *Jadila: Journal of Development and Innovation in Language and Literature Education*, *1*(3), 330-341. https://doi.org/10.52690/jadila.v1i3.126

Kazemi, A., & Soleimani, N. (2016). On the relationship between EFL teachers' classroom management approaches and the dominant teaching style: A mixed method study. *Iranian Journal of Language Teaching Research*, 4(2), 87-103. Retrieved from http://www.urmia.ac.ir/ijltr

Palah, S., Wasliman, I., Sauri, R. S., & Gaffar, M. (2022). Principal Strategic Management In Improving The Quality Of Education. *International Journal of Educational Research & Social Sciences*, 3, 2041-2051. https://doi.org/10.51601/ijersc.v3i5.497

Volume XX, Issue (2) (2024) 108-117

International May Conference on Strategic Management

DOI: *10.5937/IMCSM24062S* *Original Research*

GALLERY BRAND IMPACT ON ARTIST NAME RECOGNITION: EVIDENCE FROM RUSSIA

Marina Sheresheva[1], Ekaterina Kovalenko[1], Daniel Pavlov[2] *

[1] Lomonosov Moscow State University, Russia
[2] University of Ruse "Angel Kanchev", Bulgaria

Abstract: This paper examines the influence of the gallery brand on artist name recognition in the contemporary art market in Russia. The authors first discuss theoretical approaches to understanding the phenomenon of branding in the art market, as well as private gallery brand formation, and offer a brief description of the art market structure, specifying the features of branding in this sphere. Then they present and discuss the empirical data obtained by means of semi-structured expert interviews and online survey conducted in 2024. The main findings from expert interviews show that gallery brand formation is an important part of artist promotion and art industry development. The used questionnaire consists of both questions based on the relevant literature, and questions elaborated by authors based on the insights gained from interviews. The analysis of survey results leads to the conclusion that gallery brand has a positive effect on artist recognition, and setting a higher price for his works; the main functions of a contemporary art gallery include promoting the artist, selling works of art, and developing contemporary art.

Keywords: art market, private gallery brand, artist brand, artist recognition, contemporary art.

1. INTRODUCTION

Nowadays, artists face the need to respond to challenges caused by the changing demands of people and the development of market relations in the field of culture (Gürşen, 2020). Accordingly, the urgency of finding marketing solutions that will help contemporary Russian artists increase the recognition and attractiveness of their works is growing. International experience indicates the important role of galleries in promoting artists (Prinz et al., 2015). Therefore, it is important to understand new developments in the galleries activity in connection with their impact on the destiny of artists in the contemporary world that moves to business relations in all its parts.

* *Corresponding author: dpavlov@uni-ruse.bg*

Marina Sheresheva, ORCID: 0000-0002-8153-7111
Ekaterina Kovalenko, ORCID: 0009-0005-9968-280X
Daniel Pavlov, ORCID: 0000-0002-4515-2206

Gallery owners have long neglected management practices in their businesses. They felt protected from the irritations common in other markets, such as inefficiency or bankruptcy. Trying to impose business thinking on art galleries was considered a violation of the art world (Resch, 2011). However, now many galleries turn to building new business models, with clear development strategies and clear marketing communications. One can attribute this to the fact that new art platforms and opportunities to buy art online are emerging, giving access to a larger base of potential buyers to attract (Habelsberger & Bhansing, 2021).

Currently, academics and practitioners pay growing attention to issues of art marketing. Still, there are many gaps in the literature on the subject. In most papers on emerging markets, including Russia, relevant issues are considered from the art history point of view or as part of cultural studies, while marketing aspects remain insufficiently studied. There are virtually no studies examining the impact of gallery branding on artist recognition in the contemporary art market.

In this paper, we present the results of the study conducted in 2023-2024 on the Russian contemporary art market. The main research goal was to examine and identify the influence of a gallery brand on an artist's name recognition.

The structure of the paper is as follows. In the literature review, we discuss theoretical approaches to understanding the phenomenon of branding in the art market, as well as private gallery brand formation. In the Data and Methodology section, we offer a brief description of the methods used and put forward the research hypotheses. In the next section, we present and discuss the empirical data obtained by means of semi-structured expert interviews and online survey. Finally, we provide conclusions and paths for future research.

2. LITERATURE REVIEW

2.1. Branding in the art market

Issues of branding in the field of art have become the subject of close researchers' attention relatively recently: the first significant papers appeared at the end of the twentieth century (Plattner, 1996; Kotler & Scheff 1997; Wu, 1998). In the first decades of the 21st century, the volume of scientific literature on this topic has increased significantly (Lacey, 2002; Schroeder, 2005; Williams, 2011; Camarero et al., 2012; Pusa & Uusitalo, 2014). One can explain the growing interest by the fact that in the field of art, business issues become more and more important, and this requires new marketing approaches (Colbert, 2009; Brown, 2023). At the turn of the century there were revolutionary changes in the number and type of scientific articles on art marketing: they increasingly document the dramatic shifts in strategy, power, structure and control in the art market (Rentschler, 2002; Milano, 2020).

One of the main ideas reflected in the arts marketing and branding literature is the need for a holistic and strategic approach (Williams, 2011; Byrnes, 2022). For arts organizations, this means a new leadership model controlled by professionals (including professional marketers). It also means that arts organizations have become more institutionalized and more dependent on stable sources of funding—in other words, a move toward Mintzberg's "professional bureaucracy" (Mintzberg, 1980). Accordingly, such professionalization will entail an increase and diversification of the audience and that the role of branding as an effective tool for creating additional value for the consumer will increase (Swaminathan et al., 2020).

The dichotomy of the art market is that an object of art, endowed with a halo of an object that is impossible to assess in the material equivalent, becomes the subject of assess from the investment attractiveness point of view, not so much in terms of aesthetic and conceptual qualities. Accordingly, art becomes an investment value (Seshanna et al., 2021; Li et al., 2022).

In the investment literature, there are comparisons between art and gold, real estate, or securities in terms of investment effectiveness (Ekelund et al. 2000; Rengers & Velthuis, 2002; Velthuis, 2003). However, there is also an opinion that collectors rarely use acquired objects as an investment component and prefer not to sell them.

The art market is multifaceted and has a multi-level structure, combining educational, sociocultural, pricing, and intermediary functions. The key property of the contemporary art market is the merging of the institution of mediation with the institution of art criticism (Bertrand, 2021). Participants in the primary market are artists, gallery owners, and art critics. The secondary market comprises collectors, auctions, art dealers, museums, international art fairs, and biennials. Therefore, brand plays a particularly important role here from the point of view of forming a network of relationships connecting different market agents.

An important point of contention in the art market is the idea of the importance and place of the client. P. Kotler promotes the idea that the customer-value approach, which has proven successful in commercial business, is the best approach for art marketing, as long as it applied within the framework of the artistic mission (Kotler & Scheff 1997; Kotler & Kotler 1998). Some other scholars, on the contrary, oppose the introduction of the language and philosophy of business into the field of art (Bernstein, 2006; Fillis, 2006).

It is worth noting that both viewpoints contain important truths. There is no doubt that most artists and arts organizations need an audience. Building an audience is one of the main tasks of arts management (Boorsma, 2006). Therefore, one should neither prematurely reject the customer-value approach, nor mindlessly copy the marketing philosophy applied to commercial business. Rather, one should adhere to the logic of relationship marketing that aims at establishing, developing, and maintaining successful relational exchanges (Christopher et al., 2013). Due to the specifics of the art market, the relationship marketing approach is most useful in creating the prerequisites for successful sales based on building trust and long-term relationships with the buyer and sustainable mutually beneficial interaction between all market participants.

2.2. Private gallery brand

In the field of art, galleries are not only a financial instrument for converting artistic value into monetary value, but also a place where symbolic capital circulates. Each gallery director acts as a curator and producer for the artists. In turn, collectors act as intermediaries between the artist and the gallery. This is how one can describe the purpose of the gallery.

A gallery, as an intermediary, has the task of inserting art objects into the economy of society by transforming aesthetic value into economic value (Becker, 1990). All large foreign private galleries gained the names of their founders. These galleries have grown into a big brand with a large rotation of artists. After decades of work and completed large projects, they have the market power and reputation to promote a budding artist in a couple of years and make him or her an expensive market actor. Private branded galleries can also have a great influence on the choice of public museums (Quemin, 2020).

Galleries serve a specialized market that they influence and educate (Joy & Sherry, 2003). An important function of the gallery is the creation of exhibitions and projects that increase the artist's recognition and the turnover of his/her art objects on the market (Velthuis, 2011; McKenna-Cress & Kamien, 2013). The gallery also sets trends, based on which it can give recommendations to its artists about popular styles and directions.

So far, an art gallery is an organization engaged in collecting art collections, holding exhibitions, promoting artists on the art market, selling works of art, and shaping the art market.

Therefore, we can define a gallery brand as a unique set of benefits perceived by target audiences due to a set of elements, including reputation based on the artists exhibited by the gallery; sales levels; participation in prestigious contemporary art fairs; the collector base; the professionalism of the gallery owner.

3. DATA AND METHODOLOGY

To achieve the research goal, we used mixed qualitative and quantitative approach. To form a more detailed idea of the Russian art market and the factors increasing artist recognition, we conducted a set of semi-structured expert interviews with gallerists, artists and collectors of the domestic contemporary art market. A semi-structured interview is a tool that provides insights, learning from experience regarding the issue under study (Fawcett et al., 2014). During the interview, direct, indirect, guiding, clarifying questions helped to unveil the main trends in the art market. The average interview duration was 50 minutes. The interviews were audio recorded and then transcribed, the content analysis performed.

Based on the analysis of academic literature and data obtained by means of in-depth interviews, our research hypotheses were as follows:

H1. On the Russian art market, one of the main functions of a contemporary art gallery is to promote the artist

H2. The technique of an artist's work is the main factor of recognition for representatives of the art market

H3. In the Russian art market, the gallery's brand has a positive effect on the formation of the brand of the artist who collaborates with it.

H3a. The fact that an artist collaborates with a branded gallery influences his recognition by visitors to contemporary art galleries.

H3b. Gallery brand has a significant positive effect on setting a higher price for works by artists with whom it collaborates on an ongoing basis.

A questionnaire for an online survey was developed. The online survey platform was used to conduct the survey. The survey was conducted in February-April 2024. The information was collected anonymously and did not imply the processing of the respondent's personal data. Respondents were informed that the results of the survey would only be used in an anonymous form as part of the study.

The total sample was 309 people, of which 66.3% were gallery visitors, 33.7% - the art market actors. In the sample, the largest number of market actors that took part in the survey belong to the groups "art dealer," "curator," and "collector". Thus, the main part of respondents consisted of persons directly related to the sale and purchase of art works.

A descriptive method was used to test hypotheses H1 and H2. A graph of respondents' answers about the main functions of a contemporary art gallery, as well as a graph of their responses about their attitude to the degree of influence of the artist's work technique on his recognition were analyzed. To test hypothesis H3, sub-hypotheses H3a and H3b were tested using the least squares method. The dependent variable being the recognition of a contemporary artist and the price of the artist's works, respectively. The regressors in sub-hypothesis H3a were ways of promoting an artist on the art market: cooperation with galleries; independent promotion; collaboration with an art dealer. The regressors in sub-hypothesis H3b were factors that influence the formation of prices for artists' works: gallery brand; sales; solo exhibitions; collective exhibitions; auctions; education.

4. RESULTS AND DISCUSSION

The results of semi-structured expert interviews with actors of Russian art market are consistent with the results of previous studies. Respondents noted fragmentation in the Russian art market, pointing out that this complicates the formation of a sustainable, transparent art market and consumer-friendly pricing. It also complicates the work of galleries and art dealers, causing mistrust to grow and difficulties to arise when collaborating with artists.

Respondents also pointed to the trend of introducing marketing into the gallery activity and said that in art, there is often added value to the artist's work and it is often formed from many elements, including gallery brand that represents him/her, and the brand of the artist. Based on this, gallery owners and artists think about the importance of creating added value. Artists strive to get noticed by established galleries to hold collective and personal exhibitions. A personal exhibition demonstrates the gallery owner's trust in the artist and attracts public attention.

However, it is also important to consider the technique and skill of the artist himself, as well as the tastes of a particular gallery's collector base. Gallerists pointed out the difficulties in developing a promotion strategy in additional ways than personal exhibitions, social networks and participation in auctions, as this can affect the image and artistic value of the work (implying the value of art). Collectors noted the great importance of "own taste".

All respondents underlined a high level of trust in experts at the initial stage. Answering the question about the value of art and the factors that influence its formation, they say that this area is highly susceptible to "taste." However, some respondents indicated that if they have the task of purchasing a work as an investment value, then the opinion of experts plays a significant role for him, since he/she evaluates the work as an asset, and not as a work of art.

Among the top 10 galleries in Russia that could be classified as a branded contemporary art gallery, respondents mentioned the following galleries: Vladey, Sample, XL, Anna Nova, Pop/Off/Art, Triumph, Ovcharenko, Alina Pinsky, Iragui, Fragment.

In general, based on the interviews, we can conclude that market participants evaluate the gallery as a business and that the art market has the features of any other market where there is a consumer. However, there are peculiarities of the gallery business in the Russian art market. In the Russian art market, organizational and relational resources play the greatest role. The main criterion in creating the value of such organizations is the development of informal connections that create special conditions for a customer-oriented approach. Based on this, we can say that relationship marketing is an important part of the art business.

The results of the survey are as follows.

We can conclude that for the majority of respondents, visiting a contemporary art gallery is timed to coincide with the opening of exhibitions. It is worth noting that a significant portion of respondents received information about new artists from gallery invitations to exhibition openings, as well as visits to contemporary art fairs.

Based on the survey data, we can conclude that the majority of respondents (both art market participants and visitors) consider personal exhibitions to be the main factor in an artist's recognition. Cooperation with galleries greatly helps the artist in holding personal exhibitions and facilitates sales to famous collectors. Getting into the private collections of famous collectors was also noted as one of the main factors for representatives of the art sphere. Representatives of the art sphere believe that the third factor in increasing the artist's recognition is the inclusion of his works in the museum's collection.

Turning to the results obtained from a survey of gallery visitors, we see that only the first factor coincides with the opinion of representatives of the art sphere; the second and third factors turned out to be different. Thus, gallery visitors highlight the participation of the artist's

works in bidding at auctions, as well as personal pages on the artist's social networks. For representatives of the art market, personal pages on social networks occupy second to last place.

Participants in the Russian art market highlight three major functions of a contemporary art gallery: sales of art objects (82%); development of contemporary art (79%); promotion of artists (72%). Based on this, hypothesis H1 was confirmed.

76% of respondents rather disagree with the statement that the recognition of an artist is primarily influenced by the technique of his work. Therefore, hypothesis H2 was not confirmed.

When testing hypothesis H3a, the dependent variable was recognition of the artist, and the following factors were selected as regressors: gallery collaboration, self-promotion, the art dealer services.

The study was carried out to assess the impact of the artist's collaboration with a branded gallery on his recognition in the professional community and among visitors to contemporary art galleries. For this purpose, a multiple linear regression model was built using the least squares method (OLS).

The results of the analysis showed that the coefficient for the art dealer services variable did not reach statistical significance (p = 0.6185), indicating that this factor does not have a significant influence on the recognition of the artist. Also, no statistically significant effect on the level of artist recognition was found for the self-promotion variable (p = 0.6968). However, the coefficient for the gallery collaboration variable has a statistically significant p-value (p = 0.0248), which indicates the presence of a positive effect of an artist's collaboration with a branded gallery on his recognition in the professional community and among visitors to contemporary art galleries.

Table 1. OLS used observations 1-363. Dependent variable: recognizability.

	Coefficient	*St. error*	*t-statistics*	*p-value*	
const	2.64838	0.316422	8.370	1.30e-15	***
art dealer services	-0.0298788	0.0599503	-0.4984	0.6185	
self-promotion	0.0230466	0.0591028	0.3899	0.6968	
gallery collaboration	0.123668	0.0548785	2.253	0.0248	**
Mean dependent var	2.959800		St. disconnect. depend. altern.	1.160748	
Sum squared resid	480.0338		St. Error	1.156348	
R-squared	0.015791		Adjusted R-squared	0.007567	
F(5, 421)	1.919998		P-value (F)	0.125936	
Log. plausibility	-565.7955		Akaike info criterion	1139.591	
Schwarz criterion	1155.169		Hannan-Quinn criter.	1145.783	

Thus, based on the analysis of the OLS model data, we can conclude that subhypothesis H3a was confirmed.

Based on the econometric model results analysis, we can conclude about the influence of the gallery brand on setting prices for artists' works. The coefficient for the "brandfactor" variable is positive and statistically significant (p-value = 0.0327), indicating a significant positive impact of the gallery brand on the price of art works.

Having analysed in detail other factors, such as sales, personal and group exhibitions, participation in auctions, and artist's education, we unveiled that their influence on pricing turned out to be insignificant or even unnoticeable. For example, the coefficients for the variables "sales", "education", "groupexcibition", "auction" have negative values or are close to zero, and their statistical significance has not been achieved (p-values above the significance level of 0.05). This means that these factors probably do not have a significant impact on the pricing of artists' works within this model. It is also important to identify the relationship with the variable "personalexcibition", which has a positive coefficient (0.0256735) and statistical significance (p-value = 0.6631). This indicates that an artist's personal exhibitions may influence the setting of higher prices for his works.

We analysed in detail other factors, such as sales, personal and group exhibitions, participation in auctions, and artist's education. It should be noted that their influence on pricing turned out to be insignificant or even unnoticeable. For example, the coefficients for the variables "sales", "education", "groupexcibition", "auction" have negative values or are close to zero, and their statistical significance has not been achieved (p-values above the significance level of 0.05). This means that these factors probably do not have a significant impact on the pricing of artists' works within this model.

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Thus, the data analysis confirms sub-hypothesis H3b about the significant positive impact of the gallery brand on the pricing of artists' works, and indicates the importance of holding personal exhibitions of an artist as an additional factor influencing pricing in this model.

Based on the confirmation of sub-hypotheses H3a and H3b, it can be argued that hypothesis H3 was confirmed. In the Russian art market, the gallery's brand has a positive effect on the formation of the brand of the artist who collaborates with it.

Based on the study, one can draw the following conclusions:

- According to representatives of the art community, one of the main functions of a contemporary art gallery in the Russian art market is to promote artists, sales of art works, and development of contemporary art.
- The technique of an artist's work affects recognition, but is not the main factor, according to representatives of the Russian art market.
- In the Russian art market, the gallery's brand has a positive effect on the development of an artist's brand, as well as on setting a higher price for his work and recognition.

5. CONCLUSION

The research confirmed that the gallery business plays a key role in the maintenance and development of contemporary art in the Russian market. Galleries are important in determining the value of art objects, but also in shaping the cultural significance of those works. They open doors to new talent, promote the spread of ideas, and contribute to the preservation of cultural heritage. According to experts, a gallery has intermediary, pricing, information, regulatory, stimulating, socio-cultural functions. The factors influencing the recognition of an artist in the modern art market of Russia include cooperation with galleries, auction sales, acquisition from museum collections, and famous private collectors.

As a result, following recommendations for artists are expedient.

Public Relations and Media Coverage

- Develop relationships with art critics, journalists, bloggers and influencers to generate press coverage and media attention for gallery exhibitions and artists' work.
- Submission to art publications, online platforms and mainstream media can significantly increase an artist's visibility and credibility.

Interaction with collectors

- A personal, formed base of collectors increases the attractiveness of the gallery and the possibility of promoting artists.
- Offering personalized consulting services, private viewings and exclusive gallery-based events.
- Providing collectors with the opportunity to meet artists and be the first to purchase works by providing expert advice on the artwork and its investment value, thereby increasing demand and recognition in the art market.

Curatorial vision

- Develop a strong curatorial vision that is relevant to the contemporary art scene and resonates with the gallery's target audience.
- It makes sense to curate exhibitions that showcase emerging and established artists whose work is innovative, engaging, and relevant to your target audience.

Digital presence

- It is important to strengthen the gallery's digital presence with a well-designed website and active social media presence.

Art fairs and biennales

- Participation in prestigious art fairs, biennales and international exhibitions allows artists to be presented on a global level, reaching new audiences of collectors, curators and art professionals, raising the profile of artists and expanding their market reach.

The recommendations presented above are based on the understanding that the modern art market is largely built on relationship marketing. Relationship marketing in the art market involves establishing long-term relationships with collectors, artists, galleries, and other stakeholders. It helps to build trust and loyalty, and create mutual value.

Central to relationship marketing in the art market is understanding preferences, tastes, and collecting habits of collectors. For galleries, it is important to understand the interests of collectors through personalized interactions, surveys, and data analytics. It will allow them to tailor their offerings and communications accordingly. Trust and reliability are of paramount importance in the art market, as transactions often involve significant financial investment and emotional attachment, as well as being based on personal, individual experience. Galleries must prioritize personalized experiences, customer satisfaction, and ongoing engagement.

REFERENCES

Becker, H. S. (1990, September). "Art Worlds" Revisited. Sociological Forum (497-502). Eastern Sociological Society.

Bernstein, J. S. (2006). Arts marketing insights: The dynamics of building and retaining performing arts audiences. John Wiley & Sons.

Bertrand, S. (2021). Contemporary curating, artistic reference and public reception: reconsidering inclusion, transparency and mediation in exhibition making practice. Routledge. Retrieved from https://www.routledge.com/Contemporary-Curating-

Artistic-Reference-and-Public-Reception-Reconsidering-Inclusion-Transparency-and-Mediation-in-Exhibition-Making-Practice/Bertrand/p/book/9780367536367

Boorsma, M. (2006). A strategic logic for arts marketing: Integrating customer value and artistic objectives. *International journal of cultural policy*, 12(1), 73-92. https://doi.org/10.1080/10286630600613333

Brown, K. (2023). Art markets, epistemic authority, and the institutional curation of knowledge. *Cultural Studies*, 37(4), 626-646. https://doi.org/10.1080/09502386.2022.2030777

Byrnes, W. J. (2022). Management and the Arts. Routledge. Retrieved from https://www.managementandthearts.com/pdf/MgtandArts-Preliminary.pdf

Camarero, C., Garrido-Samaniego, M. J., & Vicente, E. (2012). Determinants of brand equity in cultural organizations: the case of an art exhibition. *The Service Industries Journal*, 32(9), 1527-1549. https://doi.org/10.1080/02642069.2011.567414

Christopher, M., Payne, A., & Ballantyne, D. (2013). *Relationship Marketing*. Routledge.

Colbert, F. (2009). Beyond branding: Contemporary marketing challenges for arts organizations. *International Journal of Arts Management*, 14-20. https://www.jstor.org/stable/41065005

Ekelund Jr, R. B., Ressler, R. W., & Watson, J. K. (2000). The "Death-Effect" 'in Art Prices: A Demand-Side Exploration. *Journal of Cultural Economics*, 24(4), 283-300. https://doi.org/10.1023/A:1007618221648

Fawcett, S. E., Waller, M. A., Miller, J. W., Schwieterman, M. A., Hazen, B. T., & Overstreet, R. E. (2014). A trail guide to publishing success: tips on writing influential conceptual, qualitative, and survey research. *Journal of Business Logistics*, 35(1), 1-16. https://doi.org/10.1111/jbl.12039

Fillis, I. (2006). Art for art's sake or art for business sake: an exploration of artistic product orientation. *The Marketing Review*, 6(1), 29-40. https://doi.org/10.1362/146934706776861573

Gürşen, A. E. (2020). Art marketing as an emerging area in an emerging market. *Arts and the Market*, 10(1), 34-52. https://doi.org/10.1108/AAM-01-2019-0004

Habelsberger, B. E., & Bhansing, P. V. (2021). Art galleries in transformation: is COVID-19 driving digitisation? *Arts*, 10(3), 48. https://doi.org/10.3390/arts10030048

Joy, A. N. N., & Sherry Jr., J. F. (2003). Disentangling the paradoxical alliances between art market and art world. *Consumption, Markets and Culture*, 6(3), 155-181. https://doi.org/10.1080/1025386032000153759

Kotler, P. & Kotler, N. (1998). Museum Strategy and Marketing: Designing Missions, Building Audiences, Generating Revenue and Resources. San Francisco.

Kotler, P., & Scheff, J. (1997). Standing room only: Strategies for marketing the performing arts. Harvard Business School Press.

Lacey, R. (2002). Sotheby's: Bidding for Class. London: Time Warner.

Li, Y., Ma, M. X., & Renneboog, L. (2022). Pricing art and the art of pricing: On returns and risk in art auction markets. *European Financial Management*, 28(5), 1139-1198. https://doi.org/10.1111/eufm.12348

McKenna-Cress, P., & Kamien, J. (2013). Creating exhibitions: Collaboration in the planning, development, and design of innovative experiences. John Wiley & Sons.

Milano, R. (2020). Economic Freedom and Inequality in the Art Market: The Case of the Commercial Gallery. *Arts*, 9(4), 126. https://doi.org/10.3390/arts9040126

Mintzberg, H. (1980). Structure in 5s. *Management Science*, 26(3), 322-341. https://www.jstor.org/stable/2630506

Plattner, S. (1996). High art down home: An economic ethnography of a local art market. University of Chicago Press.

Prinz, A., Piening, J., & Ehrmann, T. (2015). The success of art galleries: A dynamic model with competition and information effects. *Journal of Cultural Economics*, 39, 153-176. https://doi.org/10.1007/s10824-014-9217-2

Pusa, S., & Uusitalo, L. (2014). Creating brand identity in art museums: A case study. *International Journal of Arts Management*, 17(1), 18.

Quemin, A. (2020). The market and museums: the increasing power of collectors and private galleries in the contemporary art world. *Journal of Visual Art Practice*, 19(3), 211-224. https://doi.org/10.1080/14702029.2020.1804705

Rengers, M., & Velthuis, O. (2002). Determinants of prices for contemporary art in Dutch galleries, 1992–1998. *Journal of Cultural Economics*, 26, 1-28. https://doi.org/10.1023/A:1013385830304

Rentschler, R. (2002). Museum and performing arts marketing: The age of discovery. *Journal of Arts Management, Law, and Society*, 32(1), 7-14. https://doi.org/10.1080/10632920209597330

Resch, M. B. F. (2011). Management of art galleries: Business models. Diss., University of St. Gallen.

Schroeder, J. E. (2005). The artist and the brand. *European Journal of Marketing*, 39(11/12), 1291-1305. https://doi.org/10.1108/03090560510623262

Seshanna, M., Periasamy, P., & Seshanna, S. (2021). Art as an alternative investment asset class in emerging economies: A study linking personality factors to investor behavior. *Turkish Online Journal of Qualitative Inquiry*, 12(6), 5149-5153. https://tojqi.net/index.php/journal/article/view/2276

Swaminathan, V., Sorescu, A., Steenkamp, J. B. E., O'Guinn, T. C. G., & Schmitt, B. (2020). Branding in a hyperconnected world: Refocusing theories and rethinking boundaries. *Journal of Marketing*, 84(2), 24-46. https://doi.org/10.1177/0022242919899905

Velthuis, O. (2003). Symbolic meanings of prices: Constructing the value of contemporary art in Amsterdam and New York galleries. *Theory and Society*, 32, 181-215. http://www.velthuis.dds.nl/velthuis_theory%20%20society.pdf

Velthuis, O. (2011). Art markets. A Handbook of Cultural Economics, Second Edition. Edward Elgar Publishing.

Williams, E. (2011). Branding the art world. *Creative Review*, 31(10), 52-56. https://www.creativereview.co.uk/branding-the-art-world/

Wu, C. T. (1998). Embracing the enterprise culture: art institutions since the 1980s. *New Left Review*, (230), 28. Retrieved from https://newleftreview.org/issues/i230/articles/chin-tao-wu-embracing-the-enterprise-culture-art-insitutions-since-the-1980s.pdf

Volume XX, Issue (2) (2024) 118-126

International May Conference on Strategic Management

DOI: *10.5937/IMCSM24063M* *Review Article*

ANALYSIS OF BUSINESS PROCESSES IN RAILWAYS AND PUBLIC ENTERPRISES OF SERBIA

Filip Marković[1]*, Snežana Urošević

[1] *Academy of technical and art applied studies Belgrade Department School of Railroad Transport, Serbia*
[2] *University of Belgrade, Technical faculty in Bor, Serbia*

Abstract: Managing an organization of any kind and achieving its goals, especially in terms of increasing effectiveness, efficiency and realization of set goals and strategies, requires a thorough understanding of its internal functioning and structure. It is crucial to understand that the organization's activities are realized through a series of connected and goal-oriented business processes. Through the review of the conceptual definition of business processes and the consideration of models for their analysis, the specifics of the application of these processes in the context of the railway and the public sector in the Republic of Serbia are explored. The current context of research in the field of business processes in Serbia is analyzed, with a focus on the characteristics of the railway and public sectors.

Keywords: business processes; business process modeling; business process management, railways, public companies

1. INTRODUCTION

When talking about business processes, one should first start from the very meaning of the word "process". Namely, the word process has a number of meanings. In addition to the fact that it can be taken as meaning that it is "flow, action", the word process can also be used in the context of the passage of time, sequence of events, progress and the like.

When talking about processes, it should be said that they are not a new concept and something that is a product of modern language and the world. Processes have been around for a long time and as such have been used in various ways. When viewed historically, the word "process" was used for the first time by Charles Babbage. He was an industrial philosopher in England in the first half of the 19th century. He predicted the determination of time for the processes that would take place in the industry, but also some other techniques in management. During the 20th century, the development of various methods for the rationalization of processes, which are usually called Work Study (Radović et al., 2012).

* *Corresponding author: filip.markovic@vzs.edu.rs*
Filip Marković, ORCID: 0009-0009-3541-4434
Snežana Urošević, ORCID: 0000-0002-6647-0449

Process engineering in particular begins its development during the middle of the 20th century with the appearance of BDR (Business Process Reengineering). Process engineering continued to develop, the organizational structure became more and more process oriented. Various international standards are emerging. Today, various techniques, software and methods for process modeling are recognized, all with the aim of recording the state, then analysis and certain restructuring of the process (Radović et al., 2012).

Business processes in railways and public enterprises are very specific in Serbia and in other neighboring countries. Namely, it is about large systems that in our country have numerous problems that are part of a broader picture of events in this area in the past decades. All that had certain implications for business processes in these systems.

Business process management is sometimes equated with business process improvement initiatives. Namely, business process improvement initiatives usually refer to various projects, or a set of one-time unique improvements when some processes are redesigned (Dobrosavljević & Urošević, 2019).

2. DEFINING BUSINESS PROCESSES

Throughout the history of development, there have been many definitions of business processes. Accordingly, some definitions of business processes will be highlighted.

Table 1. Definitions of business processes through the literature

Author/s	Year	The paper/book where the definition is given	Definition
Michael Hammer James Champy	1993.	*Reinventing the Corporation: A Manifesto for Business Revolution"*	"A business process is a continuous and repeatable activity that has a clearly defined input and output and that contributes to the creation of value for the client"
Thomas Davenport	1993.	*Process Innovation: Reengineering Work Through Information Technology"*	"A business process is a series of interrelated activities aimed at producing value for the client"
Carlota Perez Robert Freeman	The period during the 90s of the 20th century	* There is no information	"A business process is a structure that defines the way an organization works, integrating people, processes and technologies to achieve business goals"
Robert Johnston Graham Clark	2000.	*Service Operations Management: Improving Service Delivery"*	"A business process is a sequence of activities that an organization performs to create value for its customers"
Roger Burlton	2001.	*There is no information	"A business process is a set of related activities that are performed to create a product or service and deliver it to users ".

When all previous definitions are taken into account for the business process, one general definition can be given which reads: "A business process is a structured, analytical cross-functional set of activities that requires constant improvement. It is about activities with a clearly defined beginning and end during which value is created for consumers at more or less constant intervals" (Bosilj Vukšić et al., 2008).

Modern organization management emphasizes the management of its processes because the achievement of the organization's goals directly depends on the success of those processes. The success of the processes, that is, their ability to meet the organization's goals, is measured using defined key performance indicators. In other words, effective management of an organization requires systematic monitoring and evaluation of its processes to ensure that they

contribute to the achievement of goals. Key performance indicators serve as a measure of the success or failure of a process, allowing the organization to identify areas that require improvement or optimization. This enables the organization to focus its resources on the most important aspects of its business and to continuously adapt to changes in the environment (Simeunović, 2015). Based on the available literature, the existence of various models and methods for the analysis of business processes can be observed, and some of the most commonly used are:

1. BPMN - enables the precise definition of activities, data flows, roles and decisions in the process, which facilitates the analysis and optimization of business processes;
2. SIPOC model - this is a tool used to identify key elements of the business process, including suppliers (Supplier), input data (Input), processes themselves (Process), output results (Output) and end users or customers (Customer);
3. Value Stream Mapping – this is a technique often used in manufacturing environments. This model allows mapping the value stream through the entire process, identifying steps that add value and those that do not, identifying potential losses or downtime;
4. Six Sigma DMAIC is a methodology that includes five steps: Defining the problem, Measuring performance, Analyzing the cause of the problem, Improving the process and Controlling new processes;
5. PDCA cycle - is a concept that implies continuous iterative improvement practice. This model encourages organizations to plan their activities (Plan), implement them (Do), check the results (Check) and take actions for improvement (Act).

Modeling of business processes can be reduced to two activities, namely the presentation of the current state on the one hand and the future state of the process on the other. According to Sharp and Dermott, the models can be divided into the following two groups:

1. Iconic that has almost all similarities with a physical object, but is simpler and smaller in appearance (eg a model of a building or complex);
2. Symbolic which consists of different symbols, text and the like and are not similar to the things they describe ie represent (Sharp & MCDermott, 2001).

Some of the criteria that the model should fulfill, regardless of which group it is in, are:

1. To highlight certain facts that are important, and to "remove" some things, i.e. details;
2. It is basically easier to manipulate a model than an object. With the process model, the model enables a better understanding and design of the process without the actual implementation and observation that follows (Radović et al., 2012).

When modeling business processes, there are several basic guidelines to consider:

1. A clearly defined way of defining the process: It is important to have a certain method for defining business processes because it enables consistency and understanding of all participants in the process;
2. Modeling in accordance with the definition of the scope of work: Modeling of the process should correspond to the agreed definition of the scope of work in order to ensure compliance with the goals and requirements;
3. Defining the basic model: It is necessary to have a basic model that clearly shows the structure and elements of business processes;
4. Adherence to naming conventions: Using standardized naming conventions facilitates model understanding and communication among participants;
5. Consistent notation: All models should use the same notation to facilitate communication and understanding among team members;

6. Agreed level of modeling: It is important to agree in advance the level of detail of modeling in order to ensure consistency and efficiency in the modeling process;
7. Defining who, what, when, where, how and why: Every process should have clearly defined elements such as who is responsible, what is done, when it is done, where it is done, how it is done and why it is done;
8. Evaluation of the integrity of process components: It is necessary to evaluate the integrity of all process components (Gudelj, 2021).

There are three basic levels of process modeling. The first and at the same time the highest level are value chains. The middle level is already elaborated value chains by processes at the tactical level. The last level is the one where the processes are elaborated to the level of steps (Gudelj, 2021).

Figure 1. Modeling levels (Gudelj, 2021)

Most organizations approach the analysis of business processes from top to bottom, known as the "top-down" principle. This means that organizations/companies first determine the scope of the process, i.e. the value chain of the company, then identify the processes and their goals, and finally identify the activities and specific steps as the basic elements of those activities (Gudelj, 2021).

3. OVERVIEW OF CURRENT RESEARCH REGARDING THE IMPROVEMENT OF BUSINESS PROCESSES

"Internet technologies in business processes" - This paper presents an innovative model of electronic business that relies on advanced Internet technologies. Basically for the realization of business processes, service users play a key role by initiating e-mails for the procurement of the necessary services, while IT administrators ensure the availability and security of the available capacities in the organization. The model includes entities of business processes such as human resources, applied technology, organizational processes, virtual environment and service/product (Pavlović, 2019).

"Analysis of the performance of business processes to achieve business excellence: a case study of a Croatian insurance company" - In this paper, the authors present an analysis of the performance of business processes with an emphasis on controlling (measurement and evaluation) of business processes, all with the aim of reducing business costs, influencing the acceleration of processes and continuous improvement of service quality and general customer satisfaction (Bosilj Vukšić & Ivandić Vidović, 2009).

"Methodology for Optimizations of Business Processes in Macedonian Railways - Transport in the Republic of Macedonia" - In this paper, the company Macedonian Railways - Transport was analyzed with the aim of determining whether it has an effective quality system by monitoring the way business processes are managed (identification, documentation and

control) and whether documentation for the system's effectiveness has been built in it (Prihoda Mitreva et al., 2016).

"Process-Oriented Changes in the Slovak Railways" - Since 2000, the state-owned Slovak Railways has gradually transformed into a group of modern companies that had to adapt to become competitive in the European transport markets. An analysis was carried out to design a new business structure and new processes for two separate passenger and freight companies that would be spun off from ZSSK (ZSSK — Železničná spoločnost' Slovensko, Slovak Railways Transport Company) (Ondáš et al., 2006).

"The digitalization of business processes of railway transport of the Republic of Uzbekistan" - The data for this paper were purposely collected through secondary sources and analyzed using the content analysis approach. This paper examines Nigerian public enterprises and tries to explain their performance status from the point of view of modern organizational theory, as well as business processes in them (Rakhmanberdiev et al., 2022).

"Determinants of business process reengineering success in small and large enterprises: An empirical study in the Canadian context" - This paper presents research on business process reengineering in 134 Canadian enterprises, including 28 small and medium enterprises and 106 large enterprises. The study confirms that the level of organizational support, compliance with the principles of business process reengineering and the diversity of human resources participating in the project determine the achievement of advantages such as increased productivity, higher quality of offered goods and services and reduced costs (Raymond et al., 1998).

"Optimization of business processes in the context of the implementation of ICT solutions in public administration" - It is emphasized that the optimization of business processes is a key prerequisite for the successful implementation of electronic services. The focus of this work is on the case study entitled "Opening a company account", where it is emphasized that this scenario represents a point of intersection of the work and interests of authorities and institutions, the banking sector and the end user, i.e. the founder of the company (Radinković & Vučić, 2012).

4. ANALYSIS OF BUSINESS PROCESSES ON RAILWAYS AND IN PUBLIC ENTERPRISES

4.1. Business processes on railways

The railway represents a transport system that is capable of meeting transport needs and at the same time adapting to the growth of social productive forces. From its inception until the emergence of road and air traffic, railways played a dominant role in the provision of transport services. In the railway sector, business processes are designed to enable the efficient functioning of all segments of railways and railway traffic. The key roles of business processes in railways include the following:

- optimization of operations, which includes fleet deployment, traffic management, train and track maintenance, as well as efficient handling of cargo and passengers;
- increasing safety where through safety management processes, the railway can identify potential risks and take appropriate measures to minimize incidents and accidents;
- improving the quality of services, which primarily aims to provide high-quality service in the transportation of passengers and goods. Through processes such as reservation management, ticket sales and travel planning, railways can ensure comfort, punctuality and reliability in providing transportation (Stegnjajić & Vesković, 2024);

- efficiency in resource management implies the management of human resources, material resources and finances. Through well-defined human resource management processes, railways can recruit, train and motivate their staff to ensure optimal functioning. Also, financial management processes enable the railway to properly allocate its resources and maintain financial stability (Torrington et al., 2004).

Business processes in railways are extremely diverse and complex, but they are essential to ensure the efficient, safe and reliable functioning of this vital transport system.

4.2. Business processes in public enterprises

In today's economy, we encounter a distinction between the public and private sectors. The public sector includes state, provincial and municipal administration, as well as their administrative institutions. In addition, there are public services, in the form of public institutions and public companies. A particularly important place in this structure is occupied by public companies. The definition of public enterprises can be found in the Law on Public Enterprises ("Official Gazette of RS", no. 15/2016 and 88/2019), where in Article 3 of this law there is a definition that reads: *"A public enterprise is an enterprise that performs activities from of general interest, which is established by the Republic of Serbia, an autonomous province or a unit of local self-government."* From the point of view of their wider social importance, public enterprises are understood as *"economic subjects of wider social importance for the normal functioning of the overall economic and social system of society"* (Radovanović, 1995).

Business processes in public companies are an essential part of the efficient functioning of these organizations. These processes include all the steps and activities that a public company carries out in order to achieve its goals and fulfill its tasks. Public companies often have complex business processes due to the specific requirements and regulations they must comply with.

When speaking in the context of management and business processes in public companies in Serbia, it is necessary to mention that there are certain problems that can be classified into four groups: unclearly defined business goals, lack of control over management, non-transparent operations and problems with the composition of supervisory boards. These problems make effective governance difficult and require systematic reforms to overcome them (New Economy, 2014).

The key elements related to business processes in public enterprises, in addition to planning, which is the basis for defining priorities and resource allocation, execution, monitoring and control, is inevitable optimization and improvement, where, based on monitoring and evaluation, public enterprises identify areas in which they can optimize their business processes and achieve better results. Process improvement may include the introduction of new technologies, changes in the organizational structure or adaptation of legal regulations.

It is crucial to emphasize that transparency, responsibility and efficiency are important principles that guide business processes in public companies, because they are responsible to citizens or users of services. Maintaining integrity and trust in the public sector often requires a special focus on transparency in business and openness to the public (Beke-Trivunac & Jeremić, 2023). In order to improve the situation, it is crucial to implement efficient business processes. For example, clearly defined business processes can help in setting and tracking business goals more precisely. Also, the establishment of a process of control and supervision can ensure responsibility and transparency in the work of management. Therefore, the

implementation of efficient business processes can be crucial in solving the problems of managing public enterprises and in creating a transparent, responsible and efficient business environment.

4.3. The context of researching business processes in railways and public enterprises in Serbia

The context of research in the field of business processes in railways and public enterprises in Serbia includes a number of specific factors and characteristics that influence the way of functioning, efficiency and competitiveness of these organizations. The key aspects of this research context are:

- Industry structure: The railway industry and public companies in Serbia are often part of a complex regulatory framework and market environment. The research must take into account the market structure, competition, legal regulations and political factors that affect the operations of these organizations;
- Specificities of the railway sector: The railway sector is characterized by specific operational characteristics, such as large infrastructural capital, long-term project cycles, high maintenance costs and significant influence of regulatory bodies. Research should focus on understanding these specifics and identifying best practices for business improvement;
- Technological innovation: Technological progress plays a key role in the transformation of the railway industry and public enterprises. Research should follow trends in technological innovations, such as digitization, automation, smart infrastructures and management systems, in order to identify opportunities for optimizing business processes;
- Customer experience: Service quality and customer experience play a key role in the competitiveness of the railway industry. Research should focus on understanding user needs and preferences, as well as identifying areas for improving user experience through efficient business processes;
- Sustainability and environmental protection: Sustainability is an increasingly important topic in the railway sector. Research should analyze the impact of business processes on the environment, identify opportunities to reduce negative impacts and promote sustainable business practices;
- Organizational culture: Organizational culture plays a key role in the successful implementation of changes in business processes. Research should analyze organizational culture, leadership and employee engagement to identify obstacles and opportunities for business improvement.

In short, research in the field of business processes in railways and public enterprises in Serbia should focus on understanding the specific context and identifying best practices for improving the efficiency, competitiveness and sustainability of these organizations.

Analysis of business processes in railways and public enterprises of Serbia can provide valuable insight into the efficiency and productivity of these organizations, as well as the identification of key points that require optimization. The research that is being carried out is focused primarily on the identification of the efficiency of the process and its analysis, the identification of challenges such as the lack of technological infrastructure, insufficient automation of the process, lack of experts or capacity, administrative obstacles and proposals for improvement and improvement.

5. CONCLUSION

Business processes are the subject of research in a large number of areas of economy and business and accordingly represent an inseparable part when it comes to business. Analysis of business processes in the railways and public enterprises of Serbia reveals the complexity of operations in these sectors. Many authors in the world and in our country have dealt with business processes in different areas, analyzed them and expanded insight into the complexity, importance and way of functioning of business processes with certain solutions and conclusions that can be effectively implemented.

A number of challenges were identified, including administrative barriers, infrastructure problems and the need for modernization. Through the analysis, key efficiency factors were also observed, such as resource management, optimization of routine operations and implementation of modern technological solutions.

This paper emphasizes the importance of continuous monitoring and improvement of business processes in order to improve services, reduce costs and increase competitiveness and other activities in business. Taking into account the complexity of the railway sector and public companies, further research and implementation of innovative approaches are essential for achieving the long-term goals of sustainable development and efficient business in Serbia.

REFERENCES

Bosilj Vukšić, V., & Ivandić Vidović, D. (2009). Analiza performansi poslovnih procesa za postizanje poslovne izvrsnosti: studija slučaja hrvatskog osiguravajućeg društva. *Poslovna izvrsnost vol. 3.* 113-130.

Bosilj Vukšić, V., Hernaus, T., & Kovačić, A. (2008). Upravljanje poslovnim procesima. Zagreb: Školska knjiga.

Bundalo, Z., & Pavlović, Z. (2020). Utvrđivanje stava korisnika usluga prema modelu e-poslovanja u železničkom transportu. MENADŽMENT 2020 - ZITEH 2020. (163-168) Beograd: Poslovni i pravni fakultet.

Bursać, M., Tričković, G., & Vulović, R. (2016). Projektovanje informacionog Sistema za automatizaciju poslovnih procesa radio lokomotivskih uređaja. U: Krstajić, B. (ured.). XXI međunarodni naučno-stručni skup Informacione tehnologije - sadašnjost i budućnost (61-64). Žabljak.

Cross Ogohi, D. (2014). Analysis of the Performance of Public Enterprises in Nigeria. *European Journal of Business and Management* vol. 6, 24-32.

Dobrosavljević, A., & Urošević, S. (2019). Evaluacija usmerenosti na performanse i poboljšanja procesa u proizvodnim organizacijama. *Tehnika – menadžment 69*, 287-294.

Dobrosavljević, A., & Urošević, S. (2022). Research of the Influence of CSR Dimensions Integration in Business Processes on the Reduction of the Employee Turnover in Apparel Industry Organizations Using AHP and TOPSIS Methods. *Engineering Management Journal*, 34, 394-405. https://doi.org/10.1080/10429247.2021.1940043

Dobrosavljević, A., Urošević, S., Vuković, M., & Štrbac, N. (2021). Modelling factors of influence on business process management in the organizations of the clothing industry. *Industrija tekstila* vol. 72, 477-484. DOI: 10.35530/IT.072.05.1816

Gudelj, M. (2021) Model upravljanja performansom poslovnih procesa u procesno orijentisanom operativnom menadžmentu (doktorska disertacija). Novi Sad: Fakultet tehničkih nauka.

Jeremić, N., & Beke-Trivunac, J. (2023). Jedinstvene karakteristike interne revizije u javnom sektoru i globalni standardi revizije. *Revizor*, 23, 83–93.

Mitreva, E., Nikolov, E., Nikolova, B., Taskov, N., & Dimitrov, N. (2016). Methodology for Optimizations of Business Processes in Macedonian Railways - Transport in the Republic of Macedonia. *Mediterranean Journal of Social Sciences*, 7 (3). 394-402.

Ondáš, J., Jaborek, A., Glasa, R., L'os, M., & Sirota, J. (2006). Process-Oriented Changes in the Slovak Railways. In: Scheer, AW., Kruppke, H., Jost, W., Kindermann, H. (eds) AGILITY by ARIS Business Process Management. Springer, Berlin, Heidelberg. 129-141.

Pavlović, Z. (2019). Internet tehnologije u poslovnim procesima. U: Slović, D., Stojanović, D. (ured). XII Skup privrednika i naučnika SPIN '19 (189-196). Beograd: Fakultet organizacionih nauka.

Pavlović, Z. (2020). Model elektronskog poslovanja u železničkom saobraćaju zasnovan na naprednim Internet tehnologijama (doktorska disertacija). Beograd: Fakultet organizacionih nauka.

Radinković, M., & Vučić, D. (2012). Optimizacija poslovnih procesa u kontekstu implementacije IKT rješenja u javnoj upravi. U: Milojković, S. (ured.) *INFOTEH-JAHORINA Vol. 11, March 2012*. (580-584). Jahorina.

Radović, M., Tomašević, I., Stojanović, D. & Simeunović, B. (2012). Inženjering procesa. Beograd: Fakultet organizacionih nauka.

Rakhmanberdiev, R., Gulamov, A., Masharipov, M., & Umarova, D. (2022). The digitalization of business processes of railway transport of the Republic of Uzbekistan. The 1st International conference on problems and perspectives of modern science: ICPPMS-2021. doi: https://doi.org/10.1063/5.0091195

Raymond, L., Bergeron, F., & Rivard, S. (1998). Determinants of business process reengineering success in small and large enterprises: An empirical study in the Canadian context. *Journal of Small Business Management* vol. 36, 72-85.

Rentzhog, O. (2000). Temelji preduzeća sutrašnjice. Novi Sad: Prometej.

Sharp, A., & McDermott, P. (2001). Workflow modeling- tools for process improvement andapplication development, Artech House, London.

Simeunović, B. (2015). Razvoj modela za merenje performansi procesa (doktorska disertacija). Beograd: Fakultet organizacionih nauka.

Stegnjajić, S., & Vesković, S. (2024). Analiza kvaliteta prevoza putnika na pruzi Beograd-Novi Sad. *Železnice* 2023(2), 64 – 77.

Varjačić, H. (2019). Analiza poslovnih procesa u event menadžmentu. Zagreb: Fakultet organizacije i informatike, Varaždin.

Volume XX, Issue (2) (2024) 127-144

International May Conference on Strategic Management

DOI: *10.5937/IMCSM24064Z* *Review Article*

REMOTE EMPLOYEE PERFORMANCE MANAGEMENT: THE NEAR / EARN MODEL PROPOSAL

Vladimir Zlatić *

Arhion Finance DOO Beograd

Abstract: An important consequence of communication technology accelerated development is remote work, which in recent years, especially with the outbreak of the Covid-19 crisis, has become more the rule than the exception in all sectors. Apart from the inevitable changes in labor law and the definition of the very concept of employment, remote work as a specific way of organizing work also opens up other issues, such as effective remote employee performance management. Through a systematic review of the relevant literature, a theoretical framework (model) for remote employee performance management was conceived. The proposed model identifies four basic determinates of remote employee performance: workplace environment, job autonomy, employee reward system & nurturing employee development. As a mediating variable, the model identifies job satisfaction along with work-life balance and occupational well-being. The name of the model represents an acronym made of the keywords (Environment, Rewards, Autonomy & Nurturing): NEAR / EARN, which is clearly related to its very idea - how to keep (physically distant) employees "close" (within the organization), i.e. how to "earn" their loyalty and retain them. Herzberg's Two-Factor Theory and Job Demands-Resources Model, developed by Baker and Demerouti, make the theoretical foundation of the model.

Keywords: remote work, employee performance, job satisfaction, workplace environment, job autonomy.

1. INTRODUCTION

The development of broadband internet and the third, fourth and fifth generation mobile networks since the beginning of this century has influenced the emergence and development of new industries, products and services, as well as professions and jobs, fundamentally changing traditional understandings of employment and work organization. These comprehensive social processes are encompassed by the concept of digital transformation. An important consequence of digital transformation is that remote work is becoming a global phenomenon and more the rule than the exception in almost all sectors, especially since the outbreak of the Covid-19 crisis.

Remote work in this paper refers to various modalities of remote work, including work from home (WFH), telecommting / telework, as the work outside the employer's premises, done

* *Corresponding author: vzlatic1@gmail.com*

Vladimir Zlatić, ORCID: 0009-0008-1066-0586

either at home or some other place - cafe, library, coworking space (Doyle, 2020), remote work, as the work of employees who live at a significant geographical distance from the employer's premises, e.g. in another country or continent (Savić, 2020), as well as various hybrid work models, in which employees work remotely for a proportion of their contracted working hours (Grzegorczyk et al., 2021).

Specifics of remote work compared to work at the employer's premises are reflected in differences in the work environment (physical and social) and monitoring and assessment of the work performance. These specificities, depending on how they are managed, can have both positive and negative implications for:

- job satisfaction,
- work-life balance,
- personal well-being,
- work motivation, and
- employee performance and loyalty (organizational commitment).

After the end of the pandemic and lifting of the mandatory social distancing measures, research has shown that employees and employers, i.e. workers and managers have conflicting views on remote work, including hybrid work models. In the survey, conducted by Microsoft in 11 countries (2022), 87% of employees who mostly work remotely claimed that they are as productive as in the office, i.e. that remote work does not reduce their productivity. At the same time, 85% of business decision makers (business owners or managers) stated that they are not convinced that remote work does not have a negative impact on productivity, and 82% of them said that it is in their interest for employees to return to the office. In this regard, a tendency to return employees to offices was noted, i.e. a decrease in the percentage of employees working remotely, compared to the period when the pandemic measures were in force.

In EU, an average of 5.5% of employees aged 20-64 mostly worked remotely in 2019, so that percentage would increase to 12.3% in 2020, and to 13.5% in 2021 (Eurostat, 2022). In 2022 this share declines: 10.2% of EU employees predominantly worked remotely (Statista, 2023a). According to the Statistical Office of the Republic of Serbia (2023), 7.5% of employees in Serbia worked remotely in 2019, 10.3% in 2020, 11.3% in 2021 and 8.2% in 2022.

The share of remote work after the lifting of pandemic measures is therefore globally declining, but not to the level it was at in 2019 (before the pandemic outbreak). The conclusion is clear: the change in the traditional understanding of work organization, induced by digital transformation and strongly encouraged and accelerated by the pandemic crisis, is irreversible.

In the post-Covid era, the effective management of remote employee job satisfaction, motivation and performance will be particularly important in the sectors where market survival and growth is entirely dependent on the employee knowledge, skills and engagement and where the remote work was widely represented even before the pandemic outbreak, such as IT and telecommunication, professional (consulting, design, research) and educational services (Milasi et al, 2020).

It can be said that there is a substantial body of research in the field of remote employee performance management, which has increased especially in the last several years, after the Covid-19 pandemic outbreak and introduction of mandatory measures to switch to remote work wherever possible, when this form of work covered a majority of the global workforce. Through theoretical considerations as well as empirical research, authors have sought to identify key factors which ultimately affect the remote employee performance. The largest number of empirical studies, however, focused on the context of the pandemic crisis and the partial influence of one or two to three specified factors on employee performance in a specific sector in a limited geographical area, without examining the possible difference between the impact of employee performance factors in remote versus in-office work, which represent the main

limitations of those studies. At the same time, the number of studies conducted with the aim to provide a comprehensive framework for understanding factors influencing the performance of remote employees in the post-Covid era is still relatively modest. The main contribution of this work is that it, based on the systematic and critical review of the relevant literature, indicates this gap and offers a comprehensive approach to the problem of managing the performance of remote employees in the post-covid era, through the proposal of a general theoretical framework - a model for effective remote employee performance management. The model synthesizes the impact of a greater number of employee performance factors, identified in the reviewed and analyzed studies, in four basic categories:

- work environment,
- job autonomy,
- employee reward system,
- nurturing employee growth and development.

The defined synthetic factors are classified into two categories:

- hygiene factors - workpace environment and employee reward system
- growth (motivator) factors - job autonomy and nurtiring employee development,

in accordance with Herzberg's two-factor theory (Herzberg, 1968), in order to clearly indicate the strategic importance of each of them.

The proposed descriptive model represents a possible basis for further empirical and theoretical research.

2. METHODOLOGY

"Total knowledge production in the field of business and management is accelerating at a tremendous speed while at the same time remaining fragmented and interdisciplinary, making it hard to keep up with state-of-the-art research and assess the collective evidence in a particular research area. It is why the literature review as a research method is more relevant than ever." (Snyder, 2019)

A literature review as a research method can broadly be described as a systematic way of collecting and synthesizing previous research (Baumeister & Leary, 1997). An effectively conducted literature review creates a firm foundation for advancing knowledge and facilitating theory development (Webster & Watson, 2002).

In order to collect and analyze relevant data related to the problem of remote employee performance management, a systematic literature review was conducted. The reviewed studies are analyzed and their results are systematizated rigorously, transparently, and in a reproducible manner (De-la-Calle-Durán & Rodríguez-Sánchez, 2021). The search has been carried out by using the Scopus and Web of Science (WoS) databases, as the two most widely used databases for academic research. The type of search cunducted was a keyword search. The selcted search terms included: "remote work", "knowledge work" and "employee performance".

3. LITERATURE REVIEW

Employee performance in human resource management (HRM) practice is considered as results, outcomes and achievement of employees towards organizational and sectional goals (Khoshnaw & Alavi, 2020). Thus, optimizing employee performance in the long run to make it a key organizational competitive advantage, can be understood as the ultimate goal of HRM in the knowledge-based industries. The first and most important step in the process of conceiving

an efficient employee performance management system would be to identify the key employee performance drivers and understand their driving mechanisms.

Work motivation is theoretically well-established and empirically proven as a direct and strong determinant of productivity and employee overall performance. Defined broadly as a person's atitude towards job tasks or the driving force of job tasks execution, it is commonly viewed as two-dimensional concept, consisting of intrinsic (internal) and extrinsic (externally driven) motivation. This implies that it can be influenced (driven), where the possible impact largely depends on one's personal traits. According to Blumberg and Pringle (1982), the concept of (work) motivation includes "motivation, job satisfaction, job status, anxiety, legitimacy of participation, attitude, perceived task characteristics, job involvement, ego involvement, self-image, personality, norms, values, perceived role expectations, and feelings of equity". Further, it can be concluded that a person's atitude towards / perceptions of / feelings about the job and the totality of work environment, along with his/her ability (qualification, skills), determine the job tasks execution and output delivered. This overall internal driving force can be influenced systematically by organizational policies and management practices and driven towards desired outcomes. Numerous empirical proofs support this thesis. On top of that, work motivation, job satisfaction, well-being in the workplace and work-life balance are so interrelated concepts, that can be regarded as a whole. The later two are often used as synonyms and are also known as an occupational wellness. According to Wright at al. (2007), job satisfaction is a predictor of job performance only if a worker has a high level of personal well-being. Vividly expressed, these intrinsic factors of employee performance make a core envelope, where employee performance is the core.

A key task in front of the top and HR management of any organization, but especially a knowledge-based ones, therefore, is to identify key external driving forces of job satisfaction, work motivation, and employee performance.

In the contemporary context of the remote work, an additional question arises: Are there any significant specificities in the structuring of the employee performance management system in remote work models?

As previously stated, there are few works aiming to comprehensively examine factors of remote employee job satisfaction, motivation and performance and to propose a theoretical framework for the remote employee performance management practice.

Ali et al. (2023) conducted an empirical research of factors that affect remote workers' job satisfaction and personal well-being in Utah, USA, based on AMO theoretical framework, which considers the role of three employee performance determinants: ability, motivation and opportunity, driven by three key HR bundles: skill-, motivation-, and opportunity-enhancing (Beltrán-Martín & Bou-Llusar, 2018). As well as for motivation, Blumberg & Pringle (1982) provide a definition of ability and opportunity. Ability (or capacity to perform) refers to "the physiological and cognitive capabilities that enable an individual to perform a task effectively" (Blumberg & Pringle, 1982), while the concept of opportunity includes "tools, equipment, material and supplies, working conditions, actions of co-workers, leader behaviour, mentorism, organizational policies, rules and procedures, information, time, and pay" (Blumberg & Pringle, 1982).

According to AMO framework, ability-enhancing HRM practices include training and career development, as well as recruitment and selection. Motivation-enhancing practices are consisted of extrinsic and intrinsic motivation practices, where the top practices under extrinsic motivation are performance appraisal and extrinsic incentives, while less common practices include individual and team performance based pay, recognition, job security, promotion, social activities, and work-life balance opportunities.

Ali et al. summarized the results of their research in the following model:

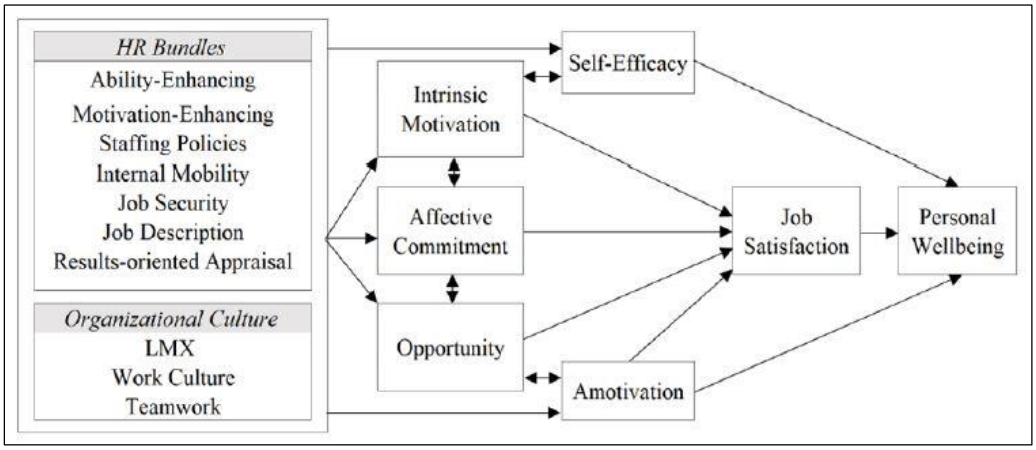


Figure 1. The influence of HR bundles and organizational culture on remote employee job satisfaction and personal well-being (Ali et al., 2023)

The clear contribution of this work is that it emphasize the importance of organizational culture along with HR practices in employee job satisfaction and wellbeing within remote work. According to the authors, organizational culture "played an indirect, but important role in job satisfaction" of the surveyed remote workers (Ali et al., 2023).

Another valuable attempt of comprehensive approaching to the problem of employee performance management in remote work environment was made by De-la-Calle-Durán & Rodríguez-Sánchez (2021) by developing a theoretical framework for strengthening employee engagement and well-being in times of COVID-19 i.e. in remote working environment. The five categories are proposed as the determining factors for reinforcing employee engagement, namely: conciliation, cultivation, confidence, compensation, and communication. Although the proposed model can be applied in any other circumstances, as the authors point out, it has been used to reflect how the pandemic is affecting employee wellbeing (De-la-Calle-Durán & Rodríguez-Sánchez, 2021). Each of these categories contain three specific factors of employee engagement:

- Conciliation: remote working, professional-private life, family diversity
- Cultivation: professional career, new technology, development opportunities
- Confidence: health, safety, leadership
- Compensation: remuneration, endeavour, non-monetary benefits
- Communication: networking, job and career feedback, involvement

Among other things, the results of the study suggest that managers, in order to achieve employee well-being and engagement, should focus on:

- facilitating remote work conditions so that employees can reconcile work and family life,
- inhouse training, as an opportunity to improve employee attitudes, expectations, and motivation.
- a compensation policy that corresponds to the new circumstances, including not only monetary, but also non-monetary benefits,
- facilitating communication, information sharing, and informal relations among colleagues and supervisors (De-la-Calle-Durán & Rodríguez-Sánchez, 2021).

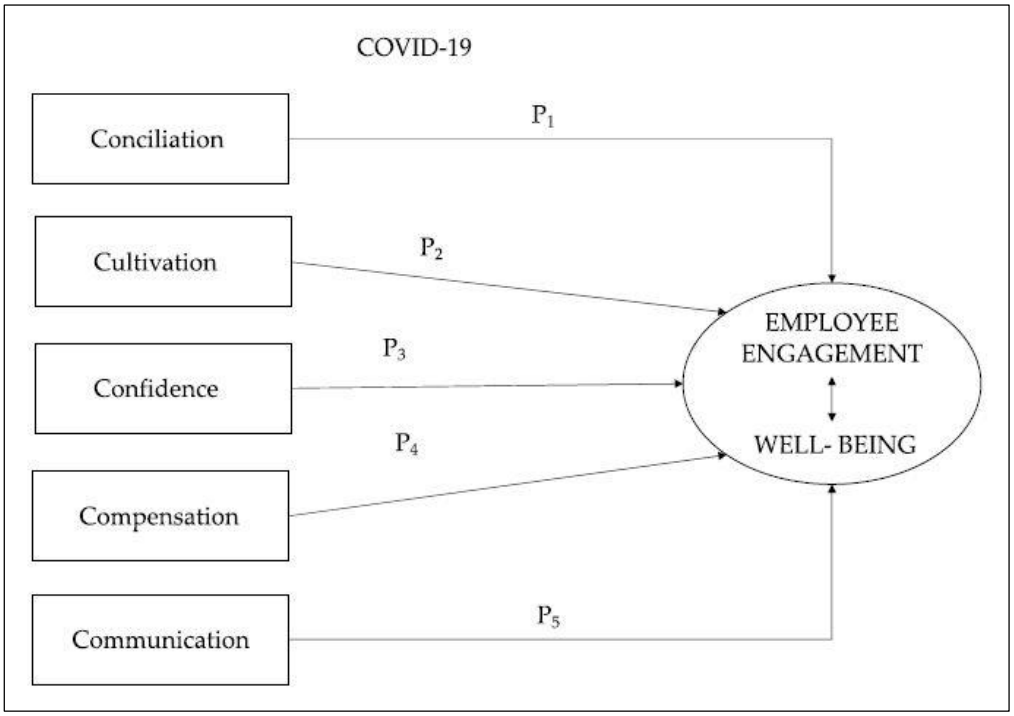


Figure 2. Structural representation of 5C model (De-la-Calle-Durán & Rodríguez-Sánchez, 2021)

The majority of the empirical studies reviewed were designed as explanatory research with quantitative approach, based on the structural equation modelling or multiple regression analysis, with random or convenient sampling, using mainly Likert scale questionnaires as the data collection technique. The studies were conducted in order to analyze and determine the relationship between various employee performance factors as the independent variables and employee performance as the dependent variable, whether directly or using other employee performance determinants (intrinsic motivators) as the mediating variables. No relevant study examining the difference between the impacts of a particular employee performance factor in the remote work conditions versus in-office work was found (which is by no means an assertion that such studies do not exist or are not available). The focus of the studies reviewed dominantly was on the context of the pandemic crisis and the partial influence of one or two-three specified factors on employee performance in a specific sector in a limited geographical area, which is their main limitation.

Performance drivers for remote workers most widely tested in the reviewed studies are:

- compensation,
- work environment,
- organizational support,
- job autonomy,
- employee engagement,
- organizational commitment,
- job satisfaction,
- work motivation,
- work-life balance,
- occupational well-being,

where the last five factors (employee engagement, organizational commitment, job satisfaction, work motivation, work-life balance and personal well-being) has dominantly been used as the

intervening variables as direct and strong determinants of the employee productivity and overall performance in general.

Compensation has been proven to have significant impact on productivity and overall performance of remote employees in the most of the reviewed empirical studies, both directly (Azmy et al., 2022; Khoirunnisah & Siregar, 2023) and indirectly, through work motivation as a mediating (intervening) variable (Lubis, 2021; Syamsuddin et al., 2021). There are few opposite findings, as those of Johannes et al. (2023), where the influence of compensation on the organizational commitment of remote employees in FMCG sector in Indonesia was found insignificant. In all reviewed studies, compensation is taken generally, including all its usual components - base salary, performance-based pay and bonus schemes.

As for workplace environment in remote work, three dimensions of this factor of remote knowledge employee performance can be identified: physical, digital (i.e. virtual) and social environment, where physical environment addresses the physical space (surroundings) where work is conducted, digital environment refers to information and communication technology as well as collaborative virtual workspace, and social environment includes organizational culture, structures and values, leadership and management practices (Lindeberg et al., 2023). The results of empirical studies reviewed indicate that workplace environment has a siginifcant impact on motivating and engaging employees in remote work arrangements (Chatterjee et al., 2022; Lubis, 2021; Khoirunnisah & Siregar, 2023).

There are numerous evidences showing the positive relation between job autonomy and job performance (Khoshnaw & Alavi, 2020). In reviewed empirical studies, authors define job (task) autonomy as a job resource with the significant positive effect on job satisfaction and job performance (Nguyen et al., 2003; Morgeson et al., 2005; De Carlo et al., 2016; Dong et al., 2023), as well as on organizational commitment (Sisodia & Das, 2013) and psychological well-being (Clausen et al., 2022). According to Dong et al. (2023), "it is not high demands per se, but high demands combined with a lack of job resources (such as job autonomy) that undermine desirable work outcomes such as job satisfaction, while flexible work schedules as well as high decision-making autonomy increase employees' satisfaction with work".

Organizational support is another factor which impact on employee performance has been tested in a number of the reviewed studies. According to organizational support theory, perceived organizational support represents an employee's perception of the extent to which the organization values his/her contribution and cares about his/her well-being (Eisenberger et al., 2020). The antecedents of this intrinsic factor of employee well-being, job satisfaction and performance are: organizational fairness (justice), leader/supervisor support and HR practices among which the practice of providing developmental opportunities has the strongest impact.

Kohont & Ignjatović (2022), based on the results of their empirical research, conclude "that a company's readiness for WFH and organizational support are the keys to the successful implementation of WFH. This includes the technical side, different ways and extent of support for employees, (re-)transformation of work and working time arrangements, the provision of training and development of required competencies and the supporting role of leaders".

Perceived organizational support produces a positive significant influence on the job satisfaction of managers working remotely (distance managers) of all levels (Ipsen et al., 2022). Organisational technical as well as social support for teleworkers is associated with positive wellbeing outcomes, increased job satisfaction and reduced psychological strain (Bentley et al., 2016). Perceived organizational support can increase engagement and job performance and decrease occupational stress in WFH (Junça Silva & Lopes, 2023).

4. THEORETICAL FRAMEWORK

Based on the reviewed previous works which proposed comprehensive approach to the problem of employee motivation and performance management while working remotely and the results of reviewed empirical studies, the following four aspects i.e. four driving forces of employee performance in remote work models are identified:

- ✓ **E**nvironment - as the workplace environment,
- ✓ **A**utonomy - as the job/task autonomy and work flexibility,
- ✓ **R**ewards - as the rewarding / compensation system,
- ✓ **N**urturing - as the recognition and provision of developmental opportunities.

Workplace environment in terms of remote work comprises three previously mentioned dimensions: physical, digital (virtual) and social environment.

Job autonomy is defined here as the employee autonomy of choice regarding when, where and how the work assigned is done. It includes flexible scheduling and work structuring, but goes beyond, including accountability and employee empowerment.

The concept of rewards / rewarding system here refers to compensation plans including all monetary payments to an employee and non-monetary benefits (health insurance coverage, retirement plans, vacation paid, child daycare etc). It does not include any form of recognition for achievement, promotion and benefits in form of tuition assistance programs.

By nurturing, all types of systematic organizational support to employees towards their professional and career development are understood as well as recognition, promotion and job congruence.

In order to set up a comprehensive descriptive model of remote employee performance driving forces, that could serve as a theoretical basis for practical purpose of designing effective employee performance management system in a contemporary knowledge-based organization with high share of remote workers, it is necessary to determine the basic driving mechanism as well as the strategic impact for each of the four identified employee performance driving forces.

As the AMO theory and its operationalization for remote work context, made by Ali et al. (2023), suggest, HR policies along with organizational culture (which is the part of the social environment of the workplace) impact job satisfaction and, consequently, personal well-being. In the model proposed by De-la-Calle-Durán and Rodríguez-Sánchez (2021), the five factors of employee engagement simultaneously and directly affect employee engagement and well-being. In both models, however, the ultimate goal of understanding and controlling of employee satisfaction, well-being, motivation and engagement is to enhance the employee productivity and overall performance, that is, to align it with organizational goals. Also, numerous empirical studies examined emphasized the mediating role of job satisfaction, work motivation, employee engagement and organizational commitment, work-life balance and well-being in explaining the relationship between employee performance and its antecedents. The conclusion is:

- *Autonomy, Environment, Rewards & Nurturing impact Employee Performance through direct impact on an employee's job satisfaction, work motivation, work-life balance and well-being.*

To determine the strategic impact of each of the four driving forces, I rely on the Job Demands-Resources (JD-R) theory, developed by Demerouti and Bakker and on the Herzberg's Two-Factor theory.

The job demands-resources (JD-R) model categorize working conditions in two broad categories: job demands and job resources, which are related to employee specific outcomes in different ways (Demerouti et al., 2001). Demerouti and Bakker describe job demands as those aspects (physical, psychological, social, organizational) of work which require an effort from an employee and therefore can be associated with the costs of a physical and/or psychological

nature, such as strain and burnout, while job resources are physical, psychological, social and organizational aspects of work capable of reducing the costs associated with job demands and favouring the goal achievement and personal growth (Demerouti et al., 2001). It suggests that stress is a result of imbalance between the job demands placed before an employee and the resources an employee has to deal with the demands. The resources can be internal (cognitive features and action patterns) and external (organizational and social). In their study, the authors focus on external resources, as there is no general agreement which internal resources can be changed by adequate job design (Demerouti et al., 2001).

According to Demerouti et al. (2001), job demands are:

- physical workload,
- time pressure,
- recipient contact,
- physical environment, and
- shift work,

while job resources are:

- feedback,
- rewards,
- job control,
- participation,
- job security, and
- supervisor support.

With the high level of job demands, employees experience increased exhaustion, while the lack of job resources leads to high levels of disengagement. In jobs with both high demands and limited job resources, employees develop both exhaustion and disengagement, which represents the burnout syndrome. Exhaustion and disengagement are not necessarily causally related i.e. disengagement is not an outcome of exhaustion but of a shortage of job resources (Demerouti et al., 2001).

On the other hand, Herzberg (1968) in his Two-Factor (Motivation-Hygiene) theory argues that the factors of job satisfaction are separate and distinct from the factors of job dissatisfaction. Since separate factors are considered, depending on whether job satisfaction or dissatisfaction is being examined, it follows that these two feelings are not opposite to each other. The opposite of job satisfaction is not job dissatisfaction but, rather, no job satisfaction; similarly, the opposite of job dissatisfaction is not job satisfaction, but no job dissatisfaction.

The growth or motivator factors intrinsic to the job are:

- achievement,
- recognition for achievement,
- the work itself,
- responsibility and
- growth or advancement.

The dissatisfaction-avoidance or hygiene factors that are extrinsic to the job include:

- company policy and administration,
- supervision,
- interpersonal relationships,
- working conditions,
- salary,
- status, and
- security.

The motivation-hygiene theory suggests that work be enriched to bring about effective utilization of personnel, where job enrichment feres to the provision of the opportunity for the employee's psychological growth (Herzberg, 1968).

Key points of these two models of employee motivation and engagement can be related to the four singled out remote employee performance factors as follows:

- workplace environment is an aspect of job demand (related to but not only to physical workload and environment in JD-R model) and a hygiene factor (related to but only to working conditions, security, company policy and administration, interpersonal relationships in Two-Factor theory);
- job autonomy is a job resource (related to job control in JD-R model) and a motivator (related to responsibility in Two-Factor theory);
- reward system is a job resource (related to rewards in JD-R model) and a hygiene factor (related to salary in Two-Factor theory);
- nurturing employee development is a job resource (related to participation, feedback and supervisor support in JD-R model) and a motivator (related to but not only to recognition for achievement and growth or advancement in Two-Factor theory).

While three of four factors - workplace environment, job autonomy and nurturing - are consistently categorized in these two models, there is an obvious inconsistency when it comes to rewards. The problem is that the broad concept of rewards is not more precisely determined as it generally includes salary (as the base pay), performance-based pay/incentives and bonuses (which can be monetary or non-monetary). Some authors through empirical research argue that salary as the base pay is undoubtedly a hygiene factor, while performance-based pay can be regarded as a form of recognition-part of motivation (Uduji, 2013). Others, again, empirically are proving that even bonuses for performance are merely a hygiene factor, without significant motivating power in the long-run (De Waal & Jansen,2013).

Taking all this into account, my standpoint is that rewards i.e. reward system in a whole, particularly in knowledge-based jobs (including remote work models), is a hygiene factor of motivation. According to Nguyen et al. (2003), job satisfaction depends on the gap between outcomes and aspirations and aspirations increase with the level of education. This argument can interpreted in a way that highly qualified (which also refers to remote knowledge workers) employees cannot be sustainably motivated and highly engaged based primarily on salary plus incentives and bonuses. Where it should be underlined once again that "rewards" in this paper do not include recognition (which falls under the "nurturing" category). The conclusion is:

- *Job Autonomy and Nurturing employee recognition and development represent growth (motivator) factors while Workplace Environment and Reward System represent hygiene factors, with the direct impact of each of them on employee job satisfaction, motivation, engagement and overall performance.*

5. NEAR / EARN MODEL FOR REMOTE EMPLOYEE PERFORMANCE MANAGEMENT

The four identified factors represent four broader categories of specific factors (aspects, determinants, antecedents) of overall performance of remote employees (and more specifically, knowledge workers in the knowledge-based industries, as they will continue to have the highest shares of remote workforce). These categories are shortly named as Environment, Autonomy, Rewards & Nurturing in order to emphasize (draw attention to) the essence of those concepts. Those keywords form two acronym words: NEAR and EARN, both clearly (intuitively) related to the very idea of the model - how to keep (physically distant) employees "close" (within the organization), i.e. how to "earn" their loyalty and retain them.

Although such a conceptual framework is generally applicable to any other type of work organization, the purpose of this work is to provide general guidelines i.e. a basic framework for employee performance management practices in the remote work conditions. In that sense, it is necessary to clearly define each specific factor of employee performance with arguing its relevance in remote work context, as well as the constituent elements of the complex mediating variable (catalyst force): job satisfaction, work motivation, work-life balance and well-being.

In the next table, the factors of remote employee performance are given.

Table 1. Remote employee performance

Category	Factor
Workplace **ENVIRONMENT**	Physical environment Digital environment Social environment
Job **AUTONOMY**	Scheduling autonomy Work method autonomy Accountability
REWARDS System	Salary Incentives & bonuses Benefits
Employee development **NURTURING**	Training, mentoring & education sponsoring Evaluation & feedback Recognition & promotion

5.1. Hygiene factors

5.1.1. Workplace Environment

As previously notes, physical work environment refers to characteristics of the physical space where an employee works - conditions and surroundings. Digital (virtual) environment includes digital tools used for work and communication with colleagues and supervisors as well as tools for employee performance evaluation. The social environment refers to organizational culture, structures and procedures and management practices (Lindeberg et al., 2023).

The job demands (as per JD-R model) specifically related to the physical remote work environment, with significant influence on employee well-being and productivity, are: family-work conflict, social isolation and distracting environment. These job demands of remote work can significantly decrease productivity and work engagement and increase job stress (Galanti et al., 2021).

Remote employees has to be adequately digitally equipped, in terms of both hardware and software, with stable internet connection, in order to perform their job tasks regularly and without unnecessary disruptions based on technical issues. The ongoing technical support and assistance is also important to be provided.

As for social environment, the results of Microsoft's research from 2022, conducted in 11 countries with 20.000 remote workers surveyed, are indicative: the total number of online meetings per week, overlapping meetings and meeting invites had significantly increased for the average Microsoft Teams user since the start of the pandemic, causing employee strain and exhaustion (Microsoft, 2022). It is in line with the finding that 85% of leaders lack confidence in ther employees' productivity. As in in-office work, the productivity paranoia phenomenon is present in remote work settings. 80% of workers surveyed said „they would personally benefit from more clarity on impactful priorities - clarity is key in a distributed work world" (Microsoft,

2022). Even if these findings are not fully valid for every sector and every company that use remote working widely, it is worthwhile to point out that leaders have to „pivot from worrying about whether their people are working enough to helping them focus on the work that's most important" (Microsoft, 2022).

5.1.2. Employee Reward System

Some earlier empirical studies indicated that performance-based pay (Uduji, 2013) and bonuses (Rani & Mariappan, 2011) have significant influence on employee satisfaction, well-being and motivation. However, in the proposed model, these factors are considered hygiene, as the model is oriented primarily to knowledge workers, to which higher levels of aspirations are attached, as argued before, referring to the findings of Nguyen et al. (2003).

Compensation plans must be:

- competitive, which is the ultimate necessity for an organization which depends on its workforce skills and knowledge;
- flexible, meaning that key employees can tailor compensation packages to their specific needs, within the set limits (which ensures the competitiveness of the compensation plan);

Competitive and flexible compensation (reward) plans are "conditio sine qua non" for retaining key people within the organization.

An effective employee rewards system includes an adequate performance evaluation system, which is clear, fair and operable.

5.2. Growth (motivator) factors

5.2.1. Job autonomy

Job autonomy represents one of the two well-consolidated job resources, along with the organizational support, that promotes motivational process of work engagement and its positive organizational consequences - job satisfaction and job performance (De Carlo et al., 2016). Hackman and Oldham (1976) defined the two main dimensions of job autonomy: job schedule (having the autonomy to schedule the work) and work procedures (to have autonomy to choose approach). This refers to scheduling and work method autonomy as defined in the Table 1. But, job autonomy as a job resource must include the decision-making autonomy i.e. accountability (responsibility). For the workers with higher level of qualifications and aspirations, this should be the necessary element of total job autonomy provided, at least to a certain level, according to individual expertise, experience and aspiration.

5.2.2. Nurturing employee development and recognition

The true motivator for any knowledge worker (or any other highly skilled professional), along with job autonomy, should be the opportunity to grow within the organization. Perceived organizational support is essential for achieving employee satisfaction and well-being. It refers to recognition for achievement, prospects of promotion and support in career developing. It is managed by training and mentoring programs, tuition assistance programs (external education sponsoring) as well as through promotion and recognition strategies.

Growth and development expectations within the organization, based on personal traits, working experience and skills and family commitments, directly impact employees' decisions to stay or leave the post (De-la-Calle-Durán & Rodríguez-Sánchez, 2021).

5.2.3. Job satisfaction, motivation, work-life balance and well-being

As already argued, work motivation, job satisfaction, well-being in the workplace and work-life balance are so interrelated concepts, that can be regarded as a whole for the purpose of this work.

However, it is important to closely define job satisfaction here as a composite category. Nguyen et al. (2003) describe overall job satisfaction as "determined by satisfaction with pay, job security, promotion prospects, fringe benefits and the importance attached to the job". It relates well to the relationship between job satisfaction and its four driving forces of the model.

Work-life balance is defined as an individual's perceptions of how well a person's life roles (i.e. work and private life) are balanced, which definition is grounded in the perception-centred approach that considers work-life balance to be a holistic concept, depending upon a person's life values, priorities and goals (Haar et al., 2014).

Personal well-being can be defined as a perception or experience of personal health, happiness and prosperity, including mental health, overall life satisfaction and sense of purpose (Davis, 2019). In the workplace context, well-being refers to a perception of overall satisfaction with the job and work environment.

5.3. NEAR / EARN model graphical representation

The following scheme provides the graphical representation of the proposed NEAR / EARN model:

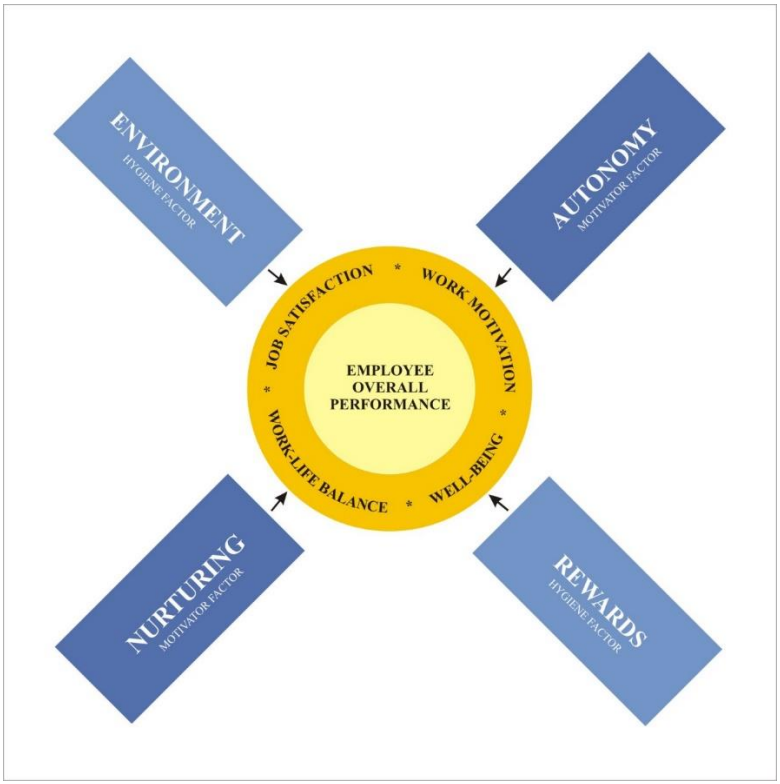


Figure 3. Graphical representation of NEAR / EARN model

Note: The graphical representation of the model was inspired by the view of NEAR Shoemaker space probe that was launched in 1996 to study the near-Earth asteroid Eros from close orbit (NASA, 2023)

6. CONCLUSION

This study represents the attempt to summarize available research findings in the field of employee performance management in remote working context in order to provide general guidelines for management practices in the post-Covid era and for further empirical research. It is done through the proposal of a model (framework) for understanding key driving forces of remote employee performance, especially in knowledge-based industries that continue to have the highest share of remote workers. The model recognize four key factors of remote employee performance: Environment (workplace environment), Autonomy (job autonomy), Rewards (employee rewards system) and Nurturing (employee recognition and development nurturing). Those broad categories contain specific factors of employee performance as specific aspects of each of those four broadly defined employee performance factors.

A systematic literature review was applied as the research method. Few works, aiming to examine in a comprehensive way the factors of job satisfaction, work motivation, well-being and overall performance for remote employees, was found. Indicating this gap and offering a comprehensive perspective on the problem of remote worker performance management in the post-covid era thorugh a theoretical model proposal could be considered the main contribution of this work. The proposed model can serve as the basis for further empirical research and for managerial practice of conducting an effective employee performance management system in a particular remote organizational environment.

The model identifies four driving forces of remote employee performance: Environment (workplace environment), Autonomy (job autonomy), Rewards (employee reward system) and Nurturing (employee recognition and development nurturing). These four keywords make two acronyms: NEAR and EARN, with clear relation to the idea of the proposed model - to "earn" the employees' loyalty and keep them "close" (within the organization) although they are or can be physically distant. The model's driving forces influence employee performance through intrinsic motivational factors: job satisfaction, work motivation and perceived work-life balance and well-being in the workplace. As highly interrelated, these intrinsic factors form a complex catalyst force (a mediating variable) with a direct and strong impact on employee engagement and overall performance, so that it can be seen as a core envelope, where employee performance represents a core.

Two widely used workplace motivation theories make the theoretical foundation of the model: Job Demands-Resources Theory developed by Evangelia Demerouti and Arnold Bakker and Two-Factor Theory developed by Frederick Herzberg. Using these theoretical frameworks, the four conceptualized employee performance driving forces were categorized as job resources / job demands and growth (motivator) / hygiene factors. Three of these four driving forces were consistently categorized as a job resource / growth (motivator) factor (Autonomy, Nurturing) or as a job demand / hygiene factor (Environment), while Rewards, although representing a job resource, was categorized as a hygiene factor, based on the reviewed relevant empirical findings and theoretical considerations of the author.

The main limitation of this work is reflected in its theoretical nature. Empirical testing and critical considerations of the model are not just welcome but necessary. Empirical research, among other objectives, should be directed towards examining the significance of difference in specific employee performance factors' impact in remote and in-office conditions in a particular industry.

REFERENCES

Ali, A. D., Narine, L. K., Hill, P. A., & Bria, D. C. (2023). Factors affecting remote workers' job satisfaction in Utah: An exploratory study. *International Journal of Environmental Research and Public Health*, 20(9), 5736. https://doi.org/10.3390/ijerph20095736

Azmy, A., Risza, H., & Adhykusuma, A. (2022). Implications of work motivation, employee discipline, and compensation on employee performance while working from home at a digital marketing company. *Jurnal Manajemen dan Pemasaran Jasa*, 15(1), 13-36. https://doi.org/10.25105/jmpj.v15i1.12791

Baumeister, R. F., & Leary, M. R. (1997). Writing Narrative Literature Reviews. *Review of General Psychology*, 1(3), 311-320. https://doi.org/10.1037/1089-2680.1.3.311

Beltrán-Martín, I., & Bou-Llusar, J. C. (2018). Examining the intermediate role of employee abilities, motivation and opportunities to participate in the relationship between HR bundles and employee performance. *BRQ Business Research Quarterly*, 21(2), 99-110. https://doi.org/10.1016/j.brq.2018.02.001

Bentley, T. A., Teo, S. T., McLeod, L., Tan, F., Bosua, R., & Gloet, M. (2016). The role of organisational support in teleworker wellbeing: A socio-technical systems approach. *Applied ergonomics*, 52, 207-215. https://doi.org/10.1016/j.apergo.2015.07.019

Blumberg, M., & Pringle, C. D. (1982). The missing opportunity in organizational research: Some implications for a theory of work performance. *Academy of management Review*, 7(4), 560-569. https://doi.org/10.2307/257222

Chatterjee, S., Chaudhuri, R., & Vrontis, D. (2022). Does remote work flexibility enhance organization performance? Moderating role of organization policy and top management support. *Journal of Business Research*, 139, 1501-1512. https://doi.org/10.1016/j.jbusres.2021.10.069

Clausen, T., Pedersen, L. R. M., Andersen, M. F., Theorell, T., & Madsen, I. E. H. (2022). Job autonomy and psychological well-being: A linear or a non-linear association? European *Journal of Work and Organizational Psychology*, 31(3), 395–405. https://doi.org/10.1080/1359432X.2021.1972973

Davis, T. (2019). What Is Well-Being? Definition, Types, and Well-Being Skills. Psychology Today. https://www.psychologytoday.com/intl/blog/click-here-happiness/201901/what-is-well-being-definition-types-and-well-being-skills

De Carlo, N., Corso, L. D., Falco, A., Girardi, D., & Piccirelli, A. (2016). To be, rather than to seem: The impact of supervisor's and personal responsibility on work engagement, job performance, and job satisfaction in a positive healthcare organization. TPM-Testing, Psychometrics, *Methodology in Applied Psychology*, 23(4), 561-580. https://doi.org/10.4473/TPM23.4.9

De-la-Calle-Durán, M.-C., & Rodríguez-Sánchez, J.-L. (2021). Employee Engagement and Wellbeing in Times of COVID-19: A Proposal of the 5Cs Model. *International Journal of Environmental Research and Public Health*, 18(10), 5470. https://doi.org/10.3390/ijerph18105470

Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The job demands-resources model of burnout. *Journal of Applied Psychology*, 86(3), 499–512. https://doi.org/10.1037/0021-9010.86.3.499

De Waal, A., & Jansen, P. (2013). The bonus as hygiene factor: the role of reward systems in the high performance organization. *Evidence-Based HRM*, 1 (1), 41-59. https://doi.org/10.1108/20493981311318601

Dong, R., Wu, H., Ni, S., Lu, T. (2023). The nonlinear consequences of working hours for job satisfaction: The moderating role of job autonomy. *Current Psychology*. 42 (14), 11849-11870. https://doi.org/10.1007/s12144-021-02463-3

Doyle, A. (2020). What Is Telecommuting? Definition & Examples of Telecommuting. The Balance. https://www.thebalancemoney.com/what-is-telecommuting-2062113

Eisenberger, R., Rhoades Shanock, L., & Wen, X. (2020). Perceived organizational support: Why caring about employees counts. *Annual Review of Organizational Psychology and Organizational Behavior*, 7, 101-124. https://doi.org/10.1146/annurev-orgpsych-012119-044917

Eurostat (2022). Rise in EU population working from home. https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20221108-1

Galanti, T., Guidetti, G., Mazzei, E., Zappalà, S., & Toscano, F. (2021). Work from home during the COVID-19 outbreak: The impact on employees' remote work productivity, engagement, and stress. *Journal of occupational and environmental medicine*, 63(7), 426-432. https://doi.org/10.1097/JOM.0000000000002236

Grzegorczyk, M., Mariniello, M., Nurski, L., Schraepen, T. (2021). Blending the physical and virtual: A hybrid model for the future of work, Bruegel Policy Contribution, 14. https://hdl.handle.net/10419/251067

Haar, J. M., Russo, M., Suñe, A., & Ollier-Malaterre, A. (2014). Outcomes of work-life balance on job satisfaction, life satisfaction and mental health: A study across seven cultures. *Journal of vocational behavior*, 85(3), 361-373. https://doi.org/10.1016/j.jvb.2014.08.010

Hackman, J. R., & Oldham, G. R. (1976). Motivation through the design of work: Test of a theory. *Organizational behavior and human performance*, 16(2), 250-279.

Herzberg, F. (1968). One more time: how do you motivate employees?, *Harvard Business Review*, 46 (1), 53-62.

Ipsen, C., Kirchner, K., Andersone, N., & Karanika-Murray, M. (2022). Becoming a distance manager: managerial experiences, perceived organizational support, and job satisfaction during the COVID-19 pandemic. *Frontiers in psychology*, 13, 916234. https://doi.org/10.3389/fpsyg.2022.916234

Johannes, J., Limakrisna, N., & Anggiani, S. (2023). Effect of Job Demand, Compensation, and Personality Traits on Organizational Commitment Moderated by Work by Remote Employees in the Fast Moving Consumer Goods (FMCG) Sector. *International Journal of Environmental, Sustainability, and Social Science*, 4(3), 718-730. https://doi.org/10.38142/ijesss.v4i3.562

Junça Silva, A., & Lopes, C. (2023). Cognitive and affective predictors of occupational stress and job performance: the role of perceived organizational support and work engagement. *Journal of Economic and Administrative Sciences*, 39(4), 1013-1026. https://doi.org/10.1108/JEAS-02-2021-0020

Khoirunnisah, A. I., & Siregar, O. M. (2023). The Effect Of Work From Home (WFH) And Compensation On Employee Productivity During The Covid-19 Pandemic. *Journal of Economics and Business (Jecombi)*, 3(02), 73-82. https://doi.org/10.58471/jecombi.v3i02.45

Khoshnaw, S., & Alavi, H. (2020). Examining the interrelation between job autonomy and job performance: A critical literature review. *Multidisciplinary Aspects of Production Engineering*, 3(1), 606-616. https://doi.org/10.2478/mape-2020-0051

Kohont, A., & Ignjatović, M. (2022). Organizational support of working from home: Aftermath of COVID-19 from the perspective of workers and leaders. *Sustainability*, 14(9), 5107. https://doi.org/10.3390/su14095107

Lindeberg, P., Saunila, M., Lappalainen, P., Juhani, U., & Rantanen, H. (2023). The relationship between various social work environment elements and hybrid worker well-being. Emerald Publishing Limited. https://doi.org/10.1108/F-03-2023-0019

Lubis, F. R. A. (2021). The Effect of Compensation and Work Environment on Employee Work Motivation during the Covid 19 Pandemic at PT. Asoka Arians Properti - Medan. *Jurnal Mantik*, 5 (2), 1014-1018. https://doi.org/10.35335/jurnalmantik.Vol5.2021.1441.pp1014-1018

Microsoft (2022). Hybrid Work Is Just Work. Are We Doing It Wrong? Work Trend index Special Report. https://www.microsoft.com/en-us/worklab/work-trend-index/hybrid-work-is-just-work

Milasi, S., González-Vázquez, I., Fernández-Macías, E. (2020). Telework in the EU before and after the COVID-19: where we were, where we head to. Science for Policy Briefs. https://joint-research-centre.ec.europa.eu/document/download/1ccf7717-ab52-4215-b14a-08d74e9d44fc_en

Morgeson, F. P., Delaney-Klinger, K., & Hemingway, M. A. (2005). The Importance of Job Autonomy, Cognitive Ability, and Job-Related Skill for Predicting Role Breadth and Job Performance. *Journal of Applied Psychology*, 90(2), 399–406. https://doi.org/10.1037/0021-9010.90.2.399

Rani, S. V., & Mariappan, S. (2011). Work/life balance reflections on employee satisfaction. *Serbian Journal of Management*, 6(1), 85-96. https://doi.org/10.5937/sjm1101085R

NASA (2023). NEAR Shoemaker. https://science.nasa.gov/mission/near-shoemaker/

Nguyen, A. N., Taylor, J., & Bradley, S. (2003). Job autonomy and job satisfaction: new evidence. Lancaster University Management School, Working paper, 50.

Savić, D. (2020). COVID-19 and Work from Home: Digital Transformation of the Workforce. *The Grey Journal*, 16 (2), 101-104.

Sisodia, S., & Das, I. (2013). Effect of Job Autonomy Upon Organizational Commitment of Employees at Different Hierarchical Level. *Psychological Thought*, 6(2), 241-251. https://doi.org/10.5964/psyct.v6i2.65

Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines. *Journal of business research*, 104, 333-339. https://doi.org/10.1016/j.jbusres.2019.07.039

Statista (2023). Percentage of employed people usually working from home in Europe 2022, by country. https://www.statista.com/statistics/879251/employees-teleworking-in-the-eu/

Statistical Office of the Republic of Serbia (2023). Labour Force Survey. https://www.stat.gov.rs/sr-latn/oblasti/trziste-rada/anketa-o-radnoj-snazi/

Syamsuddin, R. A., Pratama, A., Sunarsi, D., & Affandi, A. (2021). The Effect of Compensation and Work Discipline on Employee Performance with Work Motivation as an Intervening Variable. *Kontigensi: Jurnal Ilmiah Manajemen*, 9(1), 89-94. https://doi.org/10.56457/jimk.v9i1.99

Uduji, J. I. (2013). Hygiene factors: The foundations for heightening the marketing executives motivation in the banking industry in Nigeria. *European Journal of Business and Management*, 5 (15), 68-75. https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=6e76045b7c4e8a1bcce69aaba7b9868eaf563537

Webster, J., & Watson, R. T. (2002). Analyzing the Past to Prepare for the Future: Writing a Literature Review. *MIS Quarterly*, 26(2), xiii–xxiii. http://www.jstor.org/stable/4132319

Wright, T. A., Cropanzano, R., & Bonett, D. G. (2007). The moderating role of employee positive wellbeing on the relation between job satisfaction and job performance. *Journal of Occupational Health Psychology*, 12(2), 93–104. https://doi.org/10.1037/1076-8998.12.2.93

Volume XX, Issue (2) (2024) 145-154

International May Conference on Strategic Management

DOI: *10.5937/IMCSM24065V* *Review article*

ETIČKA PITANJA U PRAKSI ODNOSA S JAVNOŠĆU

Milovan Vuković[1*], Danijela Voza[1], Aleksandra Vuković[2]

[1]Univerzitet u Beogradu, Tehnički fakultet u Boru, Srbija
[2] Akademija tehničko-umetničkih strukovnih studija (ATUSS), Beograd

Abstrakt: Odnosi s javnošću (OSJ), značajan deo medijske industrije, predstavljaju funkciju menadžmenta koja pomaže u uspostavljanju i održavanju korisnih veza između organizacije i deoničara. Razvoj odnosa s javnošću kao profesije obično se sagledava kao otklon od neetičke prakse, koja je dominirala decenijama u periodu posle 1920-ih godina, prema strateški i etički vođenim kampanjama u savremenom poslovanju. Ipak, kada se sagledava praksa OSJ u prvim decenijama XXI veka, javljaju se u brojne nedoumice u vezi sa etičkim dilemama, problemima, i, sledstveno tome, procesom donošenja etički zasnovanih odluka. Glavni cilj ovog rada je da razmotri ulogu etike u razvoju OSJ. U radu se u tom smislu diskutuju osnovni etički principi koji počivaju na utilitarizmu, deontologiji, sutuacionoj etici i etici vrline. U radu se takođe analiziraju etički problemi koji se najčešće javljaju u savremenoj praksi OSJ.

Ključne reči: Odnosi s javnošću, Etika, Etički kodeksi

1. UVOD

Etika i moral označavaju veoma složene i višedimenzionalne društvene fenomene i duhovne pojave. U svakodnevnom govoru ovi termini se koriste kao sinonimi premda se razlikuju. Moral se može definisati kao oblik društvene svesti, ali i kao oblik društvenog ponašanja, odnosno kao istorijsko i praktično ispoljavanje ljudske prakse. Moral čine pravila i norme ponašanja ljudi u društvu. Istovremeno, moral je i skup principa koji su nastali spontano i dobrovoljno, kao i normi ponašanja kojima se reguliše odnos pojedinaca i društvene zajednice (kao i društvene zajednice prema njima). Etika je, s druge strane, filozofska disciplina koja izučava moral. Etikom se označava sistem vrednosti koji je osnova za odlučivanje u smislu šta je ispravno ili pogrešno, dobro ili loše. Odlučivanje mora da uzme u obzir sve kockice „mozaika" koji obuhvata istinoljubivost, držanje obećanja, lojalnost i posvećenost. Za razliku od etike, koja pripada filozofskim disciplinama, poslovna etika opisuje i objašnjava

[*] *Corresponding author*: *mvukovic@tfbor.bg.ac.rs*

Milovan Vuković, ORCID: 0000-0003-1715-1078
Danijela Voza, ORCID: 0000-0003-0895-731X
Aleksandra Vuković, ORCID: 0000-0003-4864-2080

praksu poslovno-etičkog ponašanja. Blek (2003) ističe da je pitanje poslovne etike najvažnije pitanje u radu svih profesionalaca koji se bave odnosima s javnošću. On suštinu poslovne etike sagledava na sledeći način: *Etiku jedne organizacije određuje sve što kompanija čini, a ne sve što govori. Potrebno je da ona posluje na način koji služi, a i jasno se vidi da služi, opštem dobru. Etičke i moralne vrednosti nisu apsolutni pojmovi i njihova artikulacija u bilo kojoj organizaciji mora biti povezana sa kulturom te organizacije, a ne sa njenom strateškom ili taktičkom politikom* (Blek, 2003: 195).

Poslovna etika je prisutna kod sagledavanja odnosa između organizacije i različitih javnosti. Najvažnije relacije su: organizacija – proizvod ili usluga (organizacija mora biti odgovorna za nekvalitetne proizvode ili usluge); organizacija – kupac i(ili) korisnik (organizacija je odgovorna za poruke putem ekonomske propagande); organizacija – zaposleni (organizacija je odgovorna za postojanje, odnosno nepostojanje organizacione kulture) i organizacija – okruženje (organizacija ne može pravdati svoje postupke koji dovode do oštećenja radne i životne sredine) (Cvetković, 2003):.

Da bi se uspostavio neophodan nivo moralnih vrednosti i preciznije utvrdilo šta je dobro a šta loše, pribegava se definisanju opštih standarda ponašanja u ostvarivanju odnosa s javnošću (OSJ) – kodeksa. Kodeks predstavlja formalizovani sistem pravila koji važi unutar profesije OSJ. Etička osetljivost odnosa s javnošću proističe prvenstveno iz nesklada između gledišta komunikatora i recepijenata (Mejden, 1993). Etički kodeks se definiše za različite nivoe – moguće je govoriti o kodeksima odnosa s javnošću na nivou pojedinačnih organizacija, na nivou vladinih institucija, kao i na međunarodnom nivou. Primer za ovu poslednju kategoriju kodeksa je etički kondeks Međunarodnog udruženja za odnose s javnošću, IPRA. Etičkim kodeksom, kada je o organizacijama reč, definišu se pitanja kao što su (Cvetković, 2003: 172):

(1) odgovornost stručnjaka u odnosima s javnošću,
(2) čestitost i poštenje,
(3) pravila i obaveze učesnika u procesu komuniciranja,
(4) način ostvarivanja odnosa s internom javnošću,
(5) ponašanje prema praksi odnosa s javnošću,
(6) ponašanje prema poslodavcima i klijentima, kao i
(7) ponašanje prema kolegama.

U svakodnevnom obavljanju poslova stručnjaci za odnose s javnošću suočavaju se sa situacijama u kojima se pojavljuje sukobi različitih dužnosti među kojima su: (1) dužnost prema sebi, (2) dužnost prema organizaciji ili klijentu, (3) dužnost prema profesiji i (4) dužnost prema društvu.

Odnos prema pomenutim dužnostima uglavnom se zasniva na usvojenom sistemu vrednosti i normi. Polazna osnova moralnog ponašanja jeste usvojeni lični sistem vrednosti stručnjaka za OSJ, to jest njihova *individualna etika* koja obuhvata moralne principe kao što su: integritet, poštenje, pouzdanost, otvorenost, samopoštovanje i uvažavanje drugih, kompetentnost itd. Ponekad stručnjaci za OSJ treba da se uzdrže od nekih namera organizacije, ili klijenta, čije interese zastupaju, ukoliko to može da naruši više interese; na primer, profesije OSJ ili društva. U „Kodeksu Društva Srbije za odnose s javnošću", recimo, jasno se ističe: „Ako preduzimanje neke aktivnosti iz oblasti odnosa s javnošću može značiti ozbiljnu povredu profesionalnog ponašanja ili biti u suprotnosti sa načelima ovog Kodeksa, stručnjak za odnose s javnošću mora odmah o tome izvestiti svog klijenta ili poslodavca i učiniti sve kako bi se ispoštovao ovaj Kodeks. Ukoliko organizacija, ili klijent, i dalje istrajava na spovođenju etički

spornih namera, stručnjak za OSJ trebalo bi da se pridržava Kodeksa, po cenu i da izgubi angažman (Krstić, 2009: 171). U ovom slučaju preimućstvo stiču profesionalna i socijalna etika u odnosu na etiku organizacije.

Odnosi s javnošću, kao svako drugo profesionalno polje, zasnivaju se na određenim standardima i normama ponašanja. Etički kodeksi raznih udruženja u oblasti odnosa javnošću propisuju norme moralnog ponašanja poslenika ove profesije. Oni su zapravo svojevrsni „vodiči za korektno ponašanje" (Blek, 2003: 202). Utvrđivanje etičkih standarda profesije odnosa s javnošću ne znači „automatsko" prihvatanje moralnog ponašanja (Katlip i dr., 2006: 159).

Od zaposlenih na poslovima odnosa s javnošću očekuje se da ispune neke obaveze prema društvu i da pokažu odgovornost prema javnom interesu. Društvenu odgovornost nije moguće ispoljiti prema svim javnostima, odnosno nije moguće raditi neprestano u korist svih. Uvek treba računati na sukobljenost različitih interesa. Organizacije su takođe odgovorne za sprovođenje politike korporativne društvene odgovornosti u čijem stvaranju stručnjaci OSJ imaju presudnu ulogu.

2. ETIKA U ODNOSIMA S JAVNOŠĆU

Sagledavanje etike u odnosima s javnošću predstavlja deo šireg pitanja koje obuhvata poslovnu etiku i etičko ponašanje u savremenom poslovanju. Etički aspekti OSJ sve više dolaze do izražaja zbog neprestane izloženosti bilo koje organizacije javnosti (Voza i dr., 2009; Krstić, 2009; Milas, 2012; Necić, 2021; Vuković i dr., 2023). Povećava se istovremeno zainteresovanost najšire javnosti za objektivno informisanje te se uvećava broj etički osetljivih pitanja. Pred stručnjake za odnose s javnošću ispostavljaju se i dodatne dileme budući da odluka mora da zadovolji (1) javni interes, (2) poslodavca, (3) etički kodeks organizacije i (4) lični sistem vrednosti (Vilkoks i dr., 2006). Svojevremeno je Volter Lipman, 1955. godine, jasno odredio „javni interes": „Pretpostavimo da je javni interes upravo ono čemu bi se ljudi priklonili kada bi nesmetano gledali, racionalno razmišljali, postupali nepristrasno i dobronamerno" (Blek, 2003: 194).

Za odnose s javnošću važi pretpostavka da pripadnici ove profesije u obavljanju poslova slede poveći skup principa, koji uljučuje „istinitost, poštenje, privrženost, lojalnost, pouzdanost, angažovanost, odgovornost i poštovanje" (Filipović i Kostić-Stanković, 2014: 266). Ove vrednosti su preduslov za izgradnju međusobnog razumevanja organizacije i različitih javnosti, koje se prvenstveno temelji na poverenju i poštovanju usvojenih vrednosti.

U praksi dolazi do, u većoj ili manjoj meri, odstupanja u sprovođenju aktivnosti OSJ, koja često poprimaju razmere grubog kršenja etičkog kodeksa koji uređuje ovu profesiju. Upravo zbog toga etička pitanja su postala nezaobilazni sadržaj u izučavanju sadržaja komunikologije, odnosa s javnošću i menadžmenta. Etičkim pitanjima i udruženja za odnose s javnošću posvećuju sve više pažnje. Međunarodno udruženje za OSJ (IPRA) je, 1991. godine, objavilo monografiju o „Etičkim dilemama u odnosima s javnošću" (*Ethical dilemmas in public relations - a pragmatic examination*).

2.1. Normativna etika i odlučivanje u odnosima s javnošću

Važan deo procesa moralnog odlučivanja, kao što je istaknuto u prethodnom odeljku, predstavlja vrednovanje neke situacije polazeći od različitih etičkih teorija. Normativna etika je deo opšte etike koji istražuje razvoj opštih teorija, pravila i principa moralnog rasuđivanja. Ti principi olakšavaju proces donošenja etički zasnovanih odluka. Primenjena etika (na primer,

poslovna etika, etika odnosa s javnošću, etika odnosa s medijima itd) bavi se rešavanjem problema u određenom segmentu društvene prakse. Primenjena etika razrešava konkretna etička pitanja u konkretnim situacijama na temelju saznanja izvedenih iz metafizike i opštih principa i pravila normativne etike.

U praksi odnosa s javnošću, polazeći od različitih vrednosnih orijentacija, prepoznaju se apsolutistička, egzistencijalistička i situaciona etika (Vilkoks i dr., 2006). Prema apsolutistima svaka odluka je ili "dobra" ili "loša". Egzistencijalisti smatraju da svoje odluke donose na osnovu trenutnog racionalnog izbora. Situacionisti svoje odluke donose polazeći od kriterijuma posledice; dobra odluka je ona koja donosi najveću korist. Ova klasifikacija je bliska podeli teorija normativne etike na etiku vrline, deontološku etiku i teleološku etiku. Praksa odnosa s javnošću uglavnom sledi principe Kantove deontologije, Milove etičke teorije korisnosti (utilitarizam), etike vrline i situacione etike.

2.1.1. Deontologija

Nemački filozof Imanuel Kant (Immanuel Kant, 1724-1804), u svojoj Krititici praktičnog uma, polazi od pojma "dobre volje", koja je jedini pravi moralni motiv kojim osoba treba da se vodi kada odlučuje o nečemu. Moralno dobro nekog čina proističe jedino iz dobre namere, a ona je takva samo ukoliko je pokreće osećaj dužnosti, odnosno poštovanje moralnog zakona. Prema deontološkoj etici neki akti sami po sebi loši, kao, na primer, laganje. Usled toga takve radnje ne bi trebalo da steknu status univerzalnosti, te su one inherentno etički neodržive. Kantova deontologija definiše moralnost kao skup neophodnih, obavezujućih principa (kategoričkih imperativa) otkrivenih samim praktičnim rezonovanjem. U njenoj osnovi su razum i autonomno shvatanje čoveka.

Koncept univerzalne dužnosti predstavlja ono što bi svi racionalni ljudi prihvatili kao etički ispravno, gledano iz perspektive svake individue. Kategorički imperativ glasi: "Radi tako da maksima tvoje volje može postati opšti princip zakonodavstva!" Kategorički imperativ se izražava preko dva aspekta: namere osobe i poštovanja i uvažavanja drugih ljudi. Pod namerom se podrazumeva želja koja stoji u pozadini donošenja neke odluke, odnosno "dobra volja".

Deontološke teorije su usmerene na sprečavanje neželjenih posledica. Korišćenje deontološkog pristupa u etički spornim situacijama znači da se odluke donose na osnovu prosuđivanja šta je dobro ili loše, a ne na osnovu toga ko ima najveće koristi od donešene odluke. Kod ovakvog vida odlučivanja stručnjaci za komunikaciju uzimaju u obzir pozicije različitih interesnih grupa, razumeju njihove vrednosti i moralne principe, čime se otklanjaju komunikacione barijere zasnovane na predrasudama.

Prepoznaju se uglavnom dve dobre strane korišćenja deontološkog etičkog pristupa u praksi odnosa s javnošću:

1. Organizacija, ukoliko se odluke donose u skladu sa deontološkom etikom, ima mogućnost da uspostavi ravnotežu sa željama svih interesnih grupa od značaja za samu organizaciju;
2. Ovaj pristup je otvoren za promene kroz otvoren model komunikacije (Katlip i dr., 2006).

U "trouglu" etičkog odlučivanja u duhu deontologije nalaze se tri "temena", to jest principa: dužnost, namera i poštovanje, odnosno uvažavanje (Katlip i dr., 2006: 141). Neophodno je, sledstveno tome, iznaći redosledno odgovore na tri pitanja:

(1) Da li radim ispravno i ne nanosim nikakvu štetu?
(2) Da li nastupam sa moralno ispravnom dobrom voljom?
(3) Da li se prema drugim odnosim sa poštovanjem i uvažavanjem?

2.1.2. Utilitarizam

Prema etičkoj teoriji korisnosti (utilitarizam), koju su utemeljili Džeremi Bentam (Jeremy Bentham, 1748-1832) i Džon Stjuart Mil (John Stuart Mill, 1806-1873), kao i ostalim oblicima posledične etike, etično je sve ono što doprinosi koristi najvećeg broja ljudi. Svaki akt (radnju) treba procenjivati polazeći od kriterijuma da li je njegov konačan efekat veći od napora (cene) koji se morao podneti. Ono što je bitno jeste posledica nekog akta, a ne njegova intrinzična priroda. Principi ove etike umnogome su prisutni u vojsci (kao društvenoj instituciji) i osnova su mnogih formalnih procedura. Makijaveli se smatra pretečom ovog tipa etike zahvaljujući poznatom stavu da "cilj opravdava sredstvo".

Mil korist izjednačava sa srećom pojedinca. Bentam, s druge strane, stremi "opštem dobru", odnosno zagovara "princip opšte sreće". Drugim rečima, neko delovanje može se smatrati prihvatljivim ukoliko ishodi "najvećom srećom za najveći broj ljudi" na koje se to delovanje odnosi (Wood & Somerville, 2008: 146).

Utilitarizam je najčešće korišćen pristup u donošenju etički ispravnih odluka u poslovanju. Uprkos tome ovaj pristup ima i određene nedostatke: Utilitarizam se može koristiti da se održava stanje status quo u kome je većina srećna, ali nije i manjina, bez obzira da li se to radi namerno ili ne. Činjenica da se željama većine stalno daje prednost, može da spreči organizaciju da sprovede neophodne promene koje iniciraju različite javnosti i druge interesne grupe. Ovaj pristup takođe zahteva od PR stručnjaka da tačno predvidi kakve će posledice u budućnosti imati svaka od alternativa. Međutim, mnoge posledice se ne mogu predvideti i time se stvara mogućnost da dođe do ozbiljnih i skupih pogrešnih kalkulacija tokom utilitarne analize (Katlip i dr., 2006: 138).

2.1.3. Etika vrline

Pored deontologije i utilitarizma jaku tradiciju ima i etička teorija vrline čiji je rodonačelnik starogrčki filozof Aristotel. Ova teorija polazi od koncepcije idealnog ljudskog života, onog u kojem osoba uživa visok stepen moralne sreće (u kojem ona cveta u punom smislu te reči) – osnovnog moralnog dobra. Da bi osoba dostigla takvo stanje, ona mora posedovati niz karakternih osobina – vrlina. Suština etike vrline se pre svega ogleda u tome što se pažnja pre posvećuje samoj osobi, nego njenom delovanju. Važnije je "biti dobar" nego "činiti dobro". Etika vrline je, čini se, posebno značajna za praktičare odnosa s javnošću. Premda je važno iskazati lojalnost prema poslodavcu, menadžer za odnose s javnošću ne sme da dozvoli da mu klijent ili poslodavac oduzme samopoštovanje.

Uprkos činjenici da kodeksi profesionalne etike u oblasti OSJ nude mnoštvo principa za razrešavanje etičkih nedoumica, i na individualnom nivou mogu se ispoljiti etička pitanja kao što su (Vilkoks i dr., 2006: 76):

Da li ću lagati svog poslodavca?
Da li ću namestiti nagradnu igru tako da pobedi moj klijent?
Da li ću na prevaru dobiti informacije o klijentu od neke druge agencije?
Da li ću zataškati ozbiljan problem?
Da li ću u saopštenju za javnost navesti samo poluistine?
Da li ću podmititi novinara ili zakonodavca?
Da li ću prećutati neke informacije na konferenciji za novinare?
Da li ću dati otkaz ili učestvovati u sumnjivoj aktivnosti?
Da li ću odstupiti od sopstvenih moralnih uverenja?
Do koje mere ću kompomitovati sopstvena uverenja?

Osnovni pokazatelj karaktera osobe koja se bavi odnosima s javnošću je uvažavanje profesionalnih standarda ponašanja, odnosno nezavisnost u radu.

2.1.4. Situaciona teorija

Situaciona etika, kao poseban oblik moralne filozofije, počiva na stanovištu da se nijedan moralni zakon ili princip ne može univerzalno primeniti. Moralne norme nisu apsolutne već su podložne odstupanjima u zavisnosti od konkretnih okolnosti. Moralna odgovornost otuda nalaže da donosioci odluke u ime viših ciljeva postupe kako situacija nalaže. Ponašanje na ovaj način je uglavnom svojstveno za praksu odnosa s javnošću u SAD.

U savremenoj etičkoj teoriji uglavnom se ističu tri determinante koje treba uzeti u razmatranje prilikom odlučivanja o tome da li je neko delovanje moralno ili ne: (1) samo delovanje, (2) motivi, odnosno svrha i (3) okolnosti vezane za konkretno delovanje (Gregory, 2009: 280). Razmatranje prve determinante svodi se na traganje za odgovorom na pitanje: Šta to pojedinac radi? Analiza motiva delovanja odnosi se na pitanje: Zašto to pojedinac radi? Naposletku, sagledavanje okolnosti delovanja uključuje odgovore na pitanje: Kako, gde i kada pojedinac nešto radi?

3. ETIČKE DILEME U ODNOSIMA S JAVNOŠĆU

Etičke dileme nastaju u mnogim oblastima prakse odnosa s javnošću. Za poslenike OSJ vezuje se čitav spektar neželjenih pojava kao što su obmanjivanje, skandali, manipulacije, zastupanje ličnih interesa umesto društvenih ciljeva, (ne)kompetentnost, sukob interesa i sl. Odnosi s medijima se smatraju etički najosetljivijim pitanjem.

Neke oblasti OSJ na prvi pogled izgledaju kao da su lišene etičkih nedoumica premda praksa pokazuje suprotno. U ovom smislu je interesantno pomenuti istraživanje, kao jedno o specijalizovanih područja OSJ. Mnogi istraživači smatraju da uključenjem poverljivosti, privatnosti i dobijene saglasnosti ispitanika prilikom dizajniranja upitnika, problem vezan za etiku naprosto prestaje. Daleko od toga. Etička pitanja su kompleksnija da bi se mogla obuhvatiti u pripremljenom upitiniku. Neophodno je razmišljati o nameni i očekivanim rezultatima (odnosno, posledicama) sprovedenog istraživanja.

U nekim slučajevima se etička pitanja lako prepoznaju i razrešavaju. Mnoge etičke probleme ipak nije lako uočiti. U takvim situacijama istraživači razmišljaju o tim pitanjima, analiziraju ih te modifikuju prvobitno oblikovani upitnik kako bi etičke nedoumice sveli na najmanju moguću meru. Nesaglasnost oko etičkih pitanja često je prisutna, što se i očekuje. Razmatranje ovih pitanja, kao i analiza ovih razmimoilaženja, značajno je kako bi došlo do etički gledano dobrih postupaka.

Dobra etika doprinosi boljoj atmosferi za istraživanje. Na primer, potpuna saglasnost (pristanak) ispitanika da učestvuje u određenom ispitivanju povećava njegovu pažnju, a, takođe, i smanjuje učestalost pitanja u smislu koliko dugo traje, ko sprovodi, te kako će ispitanici raditi anketu. Etički ispravan pristup utiče na to da su ispitanici pre koncentrisani na pitanja iz upitnika, a manje na moguće rezultate ispitivanja. Dobijeni pristanak ojačava poziciju intervjuiste, a uz osiguranu privatnost može se postići daleko veći stepen iskrenosti u odgovorima ispitanika.

Etičke dileme se ne mogu izbeći kod većine istraživačkih projekata. Ilustrujmo to sledećim primerom. Pretpostavimo da nacionalna institucija za zapošljavanje sprovodi ispitivanje u kom se ispitanici, korisnici naknada za lica koja su ostala bez zaposlenja, intervjuišu o njihovom prethodnom petogodišnjem iskustvu u svetu rada. Cilj ovog ispitivanja je da se iznađu odgovarajuće mere po osnovu kojih bi se lica sa tržišta rada prevela u stanje

pune zaposlenosti. Postavlja se pitanje da li bi ispitivač trebalo da kaže učesnicima ispitivanja da će ono trajati dva minuta, iako istraživač zna da je za ovu aktivnost potrebno pola časa. Da li je obmanjivanje ispitanika o dužini trajanja intervjua dobro ili loše? Na ovu dilemu može se gledati iz dva različita ugla.

S pozitivne strane gledanja, razumno je pretpostaviti da će istraživač pre dobiti pristanak ispitanika ukoliko on misli da će intervju trajati kratko. Pretpostavimo takođe da je laganje o vremenu trajanja intervjua jedini način da se stupi u kontakt sa najproblematičnijim, ali, u isto vreme, i najvažnijim ispitanicima. Oni od kojih je najteže dobiti pristanak (menadžeri kompanija, na primer) mogu biti voljni da učestvuju u kratkom intervjuu. S obzirom na dugoročna kretanja istraživač će, u svetlu primera koji je ovde opisan, ponuditi rešenje za značajan društveni problem (nezaposlenost) slabo plaćenih kategorija stanovništva. Kratkoročno gledano, međutim, istraživač laže ispitanika. Da li bi trebalo lagati u ovom slučaju?

3.1. Kompetentnost

Od stručnjaka za odnose s javnošću se očekuje da, kako to smatra Frenk Vajli (Frank Wylie), poslove obavljaju ,,odgovorno" u skladu sa etičkim principima i sposobnostima (Blek, 2003: 195). Minimalni uslovi uspeha počivaju na poverenju u etičko ponašanje i/ili stečeno iskustvo.

Kompetentnost poslenika OSJ, na prvi pogled neupitna, u nekim situacijima postaje etički osetljivo pitanje. Kompetentnost obuhvata najmanje tri elementa: (1) posedovanje neophodnih veština za obavljanje određenog posla; (2) neprestano usavršavanje znanja i veština; te (3) uzdržavanje od davanja obećanja (poslodavcu ili klijentu) i garantovanja uspeha (Gregory, 2009: 283). Treći oblik ponašanja se najčešće prepoznaje u praksi odnosa s javnošću. Sasvim opravdano je otuda među 12 članova Etičkog kodeksa Međunarodne asocijacije za poslovnu komunikaciju (IABC) svoje mesto našla 11. odredba: ,,Profesionalni komunikatori ne garantuju rezultate koje nisu u stanju da ostvare" (Vilkoks i dr., 2006: 69). Slična preporuka se nalazi u Etičkom kodeksu Američkog udruženja za odnose s javnošću (PRSA):,,Precizno definišite šta sve može da se postigne u odnosima s javnošću" (Katlip i dr., 2006: 160).

3.2. Sukobi interesa

Mukotrpno sticano poverenje u poslenike OSJ može preko noći nestati zbog sukobaa interesa. Etički kodeks Američkog udruženja za odnose s javnošću (PRSA) ističe ključni princip: ,,Poverenje klijenata, poslodavaca i javnosti gradi se izbegavanjem realnog, potencijalnog ili uočenog sukoba interesa (Vilkoks i dr., 2006: 63). Zaposleni na poslovima OSJ trebalo bi da svoje poslodavce (klijente) pisanim putem obaveste ukoliko do ovakvih konflikata dođe. U sutuacije ovog tipa uglavnom dospevaju agencije za OSJ kada zastupaju dve konkurentske kompanije. U ovakvim situacijama, budući da je teško sačuvati nepristrasnost, najbolje je odustati od zastupanja jedne kompanije. Stručnjaci za OSJ mogu da odustanu od zastupanja interesa neke kompanije ukoliko bi to delovanje bili suprotno njihovim ličnim uverenjima i moralnim osećanjima (Gregory, 2009: 283). Opšta preporuka je ipak da se radi u najboljem interesu klijenta, čak i ako se to kosi sa ličnom etikom.

3.3. Odnosi s medijima

Odnosi s medijima su najznačajniji i etički najosetljiviji deo odnosa s javnošću. Obe profesije bi trebalo da istrajavaju na tačnosti informacija i poštenju. Premda su i novinari i najveći deo zaposlenih u odnosima s javnošću upućeni na medije, to ne znači da se istim

kodeksom može regulisati njihovo ponašanje u različitim okolnostima. Razlike proističu iz misija ovih dveju profesija.

Misija novinarstva je da otkriva činjenice, izveštava o društvenim institucijama i daje poštene i uravnotežene izveštaje (što bi neko nazvao ‚objektivnost') o svakodnevnim saznanjima. Etički novinari, prema tradicionalnom gledištu, ne bi trebalo ništa da promovišu niti bilo šta da rade iz ličnih interesa. Zaposleni u službama za odnose s javnošću, s druge strane, po definiciji su nečiji zastupnici i posvećeni su ostvarivanju ciljeva organizacije koju zastupaju. Oni takođe pružaju informacije za javnu upotrebu, ali to obično rade tako da ostvare što povoljniji rezultat za svoju kompaniju ili klijenta (Dej, 2004: 124).

Skladni odnosi novinara i stručnjaka za OSJ zasnivaju se na izgrađenom poverenju. Ono opstaje i u situaciji kada portparol organizacije izjavi da "nema komentara" povodom nekog problema ili odbije da odgovori na pitanja koja se ne tiču neposredno izdatog saopštenja (Vilkoks i dr., 2006: 78). Etički sporna ponašanja se odnose na plaćanje objava o organizaciji u medijima, negovanje saradnje samo sa jednim medijima, upućivanje novinara na turistička putovanja i sl.

Etička osetljivost odnosa s javnošću i novinarstva proističe iz njihovih različitih ciljeva. Mediji na tržištu prodaju vesti dok odnosi s javnošću štite interes kompanije, odnosno zaradu. Nekada je u novinama i časopisima od 40 do 50% novinarskih sadržaja poticalo iz službi za odnose s javnošu; odnosno oko 15% kada je o informativnom programu radio i TV stanica reč (Hunt & Grunig, 1995: 60). U skorije vreme se dolazi do tačke da se u medijima objavljuje i do 60% vesti koje nastaju u "radionicama" odnosa s javnošću te, u tom smislu, Dario Terzić primećuje da nastaje novi, "izmišljeni" novinarski žanr – saopštenje za štampu (2013: 285). Tačnost i verodostojnost objavljenih podataka na ovaj način postaje sve upitnija. U vreme kada saopštenja za štampu "preplavljuju" medijski prostor, kada ih je nemoguće kontrolisati, stvara se jedan novi, "krnji žurnalizam" čiji se negativne posledice osećaju u mnogim zemljama (Terzić, 2013: 288). Pitanje transparentnosti izvora informacija postaje sve složenije – "informacija više nije pravo", kako je primetila Vesna Laban, nego privilegija, što se negativno odražava ne samo na novinarstvo već i na društvo u celini (2005: 113).

3.4. Spinovanje

U skorije vreme jedan poseban etički problem, a vezan za medije, poprima zabrinjavajuće razmere. Reč je spinovanju, odnosno predstavljanju nečega boljim nego što to u stvarnosti jeste. Ova praksa je sa stanovišta postizanja dugoročnih ciljeva odnosa s javnošću kontraproduktivna budući da urušava godinama sticano poverenje i kredibilitet. Problem sa spinovanjem postajao je izražen kada se udeo informativnog medijskog prostora poreklom iz OSJ naglo uvećao. Mogućnosti za zloupotrebu, friziranje i manipulaciju informacija narasle su do neslućenih razmera. "Spin doktori", na temelju znanja o osobinama različitih medija i tehnologijama rada u njima, oblikuju povoljne percepcije javnosti o ljudima i događajima, odnosno društvenim pojavama i procesima. Spin-doktori veruju da ubrzavaju proces širenja određenih vesti i informacija. Služe se pri tom brojnim aktivnostima kao što su odbrana od novinara, odobravanje ili odbijanje intervjua, podučavanje onih koji daju intervjue, komentarisanje priloga novinara ili učestalo isticanje određene sintagme ili interpretacije događaja. Osnovni cilj delovanja spin doktora je da vestima daju željeni smer interpretacije, odnosno da se javnost ubedi u korist ili protiv određene ideje, organizacije ili ličnosti (uglavnom nosilaca političkih funkcija). Razlika između spinovanja i odnosa s javnošću ogleda se u tome što se OSJ pretežno zasnivaju na informacijama i činjenicama, a spin na "manipulaciji i trikovima" (Šćekić, 2013: 249).

4. ZAKLJUČAK

Cilj upravljanja odnosima s medijima je osiguranje uslova za slobodan protok važnih informacija. Takvo poimanje odnosa s medijima dolazi do izražaja samo u demokratskim društvima, što potvrđuje društveni značaj odnosa s javnošću. Praksa odnosa s medijima nije potrebna nedemokratskim političkim režimima koji je, štaviše, često zabranjuju i proganjaju (Verčič i dr., 2006: 27). Vraćanje etičkim vrednostima i profesionalnim standardima struke, koji počivaju na istinitosti informacije, postaje imperativ za razvoj savremene medijske industrije.

ACKNOWLEDGMENT

Istraživanje sprovedeno za potrebe ovog rada je finansijski podržano od strane Ministarstva za nauku, tehnološki razvoj i inovacije RS, a u okviru fonda za naučna istraživanja na Tehničkom fakultetu u Boru Univerziteta u Beogradu, u skladu sa ugovorom pod brojem 451-03-65/202403/200131.

REFERENCES

Blek, S. (2003). *Odnosi s javnošću*. Beograd: Clio.

Cvetković, Lj. V. (2003). Odnosi s javnošću. Leskovac: Tehnološki fakultet u Leskovcu.

Dej, L. A. (2004). *Etika u medijima – primeri i kontraverze*. Beograd: Medija centar i Plus

Filipović, V. i Kostić-Stanković, M. (2014). *Odnosi s javnošću*. Beograd: Fakultet organizacionih nauka.

Gregory, A. (2009). Ethics and professionalism in public relations. In Tench, R. & Yeomans, L. (eds.) *Exploring public relations*, pp. 273-292. Harlow: Prentice Hall.

Hunt, T. & Grunig, J. E. (1995). *Tehnike odnosov z javnostmi*. Ljubljana: Državna založbe Slovenije.

Katlip, S. M., Senter, A. H. i Brum, G. M. (2006). *Uspešni odnosi s javnošću* (deveto izdanje). Beograd: Službeni glasnik.

Krstić, A. (2009). Etika i profesionalizam u odnosima s javnošću. *Marketing*, 40(3): 165-184.

Laban, V. (2005). Utjecaj službi za odnose s javnošću na (ne)transparentnost izvora informacija u televizijskim novinarskim tekstovima. *Medijska istraživanja*, 11(1), 113-130.

Milas, D. (2012). Etički konflikti u odnosima s javnošću. *MEDIANALI*, 6(11): 51-66.

Meiden, D. V. A. (1990). *Public Relations*. Muiderberg.

Necić, N. (2021). Ethics in public relations: Ethical theories, codes and conflicts. *Media Studies and Applied Ethics*, 2(2): 87-100. https://doi.org/10.46630/msae.2.2021.07

Terzić, D. (2013). Prilog razjašnjenju odnosa na relaciji novinar - PR: Sa druge strane barikade. *Kultura*, 139, 285-298. https://doi.org/10.5937/kultura1339285T

Verčič, D., Zavrl, F., Rijavec, P., Ognjanov, G. i Brbaklić, A. (2004) Odnosi s medijima. Beograd: Pristop.

Vilkoks, D. L., Kameron, G. T., Olt, F. H. i Ejdži, V.K. (2006). *Odnosi s javnošću: Strategije i taktike*. Beograd: COD-Ekonomski fakultet UB.

Voza, D., Vuković, M. i Riznić, D. (2009). Etički aspekti u odnosima s javnošću. *Marketing*, 40(4): 233-240.

Vuković, M., Dašić, D. i Vuković, A. (2023) Ethical and Legal Aspects of Public Relations, *Pravo – teorija i praksa*, 40(4), 93-111. https://doi.org/10.5937/ptp2304093V

Wood, E. and Somerville, I. (2008) Business ethics, public relations and corporate Social responsibility. In Theaker, A. (ed.) *The public relations handbook*, pp. 143-160. New York: Routledge.

Šćekić, P. (2013) Politički PR, mediji i spin doktoring. *Kultura*, 139, 245-252. https://doi.org/10.5937/kultura1339245S

ETHICAL ISSUES IN PUBLIC RELATIONS PRACTICE

Milovan Vuković[1], Danijela Voza[1], Aleksandra Vuković[2]

[1] *University of Belgrade, Technical faculty in Bor, Serbia*
[2] *Academy of Technical and Art Applied Studies, Belgrade, Serbia*

Abstract: Public relations (PR), a significant part of the media industry, is a management function that helps establish and reflect beneficial relationships between the organization and its stakeholders. The development of public relations as a profession is usually seen as a departure from unethical practices, which dominated for decades after the 1920s, towards strategically and ethically driven campaigns in modern business. Nevertheless, when looking at the PR practice in the first decades of the 21st century, numerous doubts arise regarding ethical dilemmas, problems, and, consequently, the process of making ethically based decisions. The main goal of this paper is to consider the role of ethics in the development of PR. In this sense, the paper discusses basic ethical principles based on utilitarianism, deontology, situational, and virtue ethics. The authors also analyse the ethical problems that often arise in the modern practice of PR.

Keywords: Public Relations, Ethics, Ethical codex

Volume XX, Issue (2) (2024) 155-162

International May Conference on Strategic Management

Review Article

ACCELERATED DEVELPEMENT OF DIGITAL AND SUSTAINABLE ECONOMY USING CRYPTOCURRENCIES

Bojan Kocić[1*], Marija Marčetić[1], Nikola Vasić[2], Aleksandra Algheth[2]

[1] *Toplica Academy of Applied Studies, Prokuplje, Serbia*
[2] *Belgrade Bussines and Arts Academy of applied Studies, Serbia*

Abstract: Globalization and the changes that have affected the world economy conditioned the development of new models of thinking, investing, trading and payment methods in the world economy. End of XX and beginning of the XXI century was marked by rapid technological progress, which has not bypassed any economic sector, and all households have experienced the change. Cryptocurrencies represents a new model of trade and payments, but also a way for making some form of earnings. It is a form of property that is used as a digital asset exchange using cryptographic algorithms for "mining" new values, but also as a way of ensuring the security of transactions in a given syste. It's still early for assessments. The future might show what kind of impact would this kind of payment have, however, we believe that no cryptocurrencies will be recognized as a legitimate competitor in sovereign currencies.

Keywords: economic development, finances, cryptocurrencies, informatics development, investing

1. INTRODUCTION

A world economy without borders is undoubtedly the dream of almost all developed countries in the world. Here we are talking about the desire and the possibility that the world's largest global powers will manage global financial and global processes (Kocić, 2010, pp.146).

The cyclical movement of the economy has been processed and explained in detail. Cyclical capital movement leads to periodic ups and downs of the economy in individual countries which in turn leads to financial disturbances locally. Due to globalization shocks are not local and cause far more complex global consequences (World Economic Crisis 1929-33, 1970-1971, 2001, etc.). These phenomena are related to the cyclical movement of capital which led to changes in our social lives. We are ready to accept any explanation of the present crisis in our civilization except the one that the present state of the world may be the result of our own mistake (Hajek, 1944, pp.13), which is the desire for rapid wealth.

[*] *Corresponding author: bojankocic@yahoo.com*

Bojan Kocić, ORCID: 0000-0002-0069-2516
Marija Marčetić, ORCID: 0000-0001-8499-7116
Nikola Vasić, ORCID: 0000-0002-4358-3301
Aleksandra Algheth, ORCID: 0009-0000-4994-0085

The desire of all imperial countries of the world is to influence and control world trade, current events, goods and services with their monetary instruments and currency. The influence of the United States on financial flows in the 20th and 21st centuries was dominant and historically, instability was reflected in the fact that money, prices and production were most affected, where the most dramatic periods were between wars (1920-1921, 1929-1933, 1937-1938) (Fridman, 2002, pp. 56).

Economic crises that occur periodically but frequently undoubtedly lead to large macroeconomic shocks which are widespread globally. In order to explain the topic at hand, it is necessary to point out the fact that when the biggest economic crisis begun it was called The Great depression 1929-1933.

Due to the dramatic character, the crash of the stock market in October 1929 is often considered the beginning of the financial crisis. However, this is not true, the collapse was caused primarily by the individual's willingness to spend, which led to the subsequent collapse of the stock market. This triggered numerous measures that were reflected in the harsh economic conditions aimed at curbing "speculation" (Fridman, 2002).

The economic crises that have shaken the world economy periodically every 10 years will undoubtedly continue with the authors predicting the next one which will be according to economic indicators as well as large oscillations in the stock market and global economy most likely in the next two years. The next crisis will not lead to distortions in the goods and services market but in the financial sector, i.e. the banking sector which is currently experiencing shocks due to speculation especially in cryptocurrency trading.

1.1. The technology of Cryptocurrency

Over the past years, a faster integration of information and communication technologies has influenced many aspects of our lives.When it comes to cryptocurrency, it's impossible not to talk about Bitcoin. Bitcoin (Nakamoto, 2008) represents the first, and at the same time the most popular, cryptocurrency. It was created in 2008 and 2009 in the form of open source software – cryptographic digital monetary and payment systems that exist online. They are based on decentralized, distributed networks, which include a common data transfer technology called block chain. The network data transfer relies on security data encryption (Hayes, 2017). With the cryptocurrency, the public key is used as an identity in transactions. Identities in transactions are addresses where a certain amount of cryptocurrency can be found.

By confirming the transaction by consensus, the security and accuracy of each transaction in the system are guaranteed. The disadvantage of this kind of work consists in waiting for transaction processing. The amount of time required to process depends on the number and strength of the diggers in the network, as well as the total number of pending transactions.

Hence, data mining calculates the function, processing transactions, which are placed in blocks. More blocks form a block chain of data, thus creating the history of transactions since the creation of the currency to date.

Since there is no centralized control system, transaction data is shared by all diggers in such a P2P network. By this publication and alignment of all block chain data, in fact, it achieves complete consistency and avoids possible fraud in the transfer of currencies, as well as the possibility of double consumption of the same unit of currency (double-spending attack). The weight of the puzzles to be counted is calibrated so that the new block is found once every 10 minutes. For this system to be sustainable, the weight is adjusted once in 2016 blocks, approximately every two weeks, using the deterministic timestamp function in the previous 2016 blocks (Bahack, 2013).

1.2. Award system and the technology of Cryptocurrency

In order for the system to be sustainable, it is essential that participants in the network receive a certain prize. In this case, the award consists of a cryptocurrencies wave assigned to a miner who initiates the creation of a new block. Which participant will be selected to create a new block depends on the amount of computer power with which it participates in the system. At Bitcoin, the amount of currency to which the diggers are rewarded is fixed at 50 BTC in the first 4 years of operation, 25 BTC over the next 4 years, 12.5 during the third period of 4 years, etc. The maximum number of currency units is programmed to 21 million. In addition to this award, diggers additionally charge transaction costs, which currently amount to 0.0007 BTC per transaction. In order to keep the system viable, the authors believe that the transaction costs will constantly increase, as in time the amount of units excavated decreases.

In addition to Bitcoin, there are hundreds of other currencies that have come out of this or similar technologies. These currencies are called Altcoin. They differ from each other according to the protocols they use, the amount of currency that is found and can be found in the circulation, and the speed of transactions being processed. Some of the most famous Altcoin currencies are Ehereum, Litecoin, Bitcoin Cash, Dash, Monero…

There are currencies that operate within certain systems, such as Ripple, which is designed as an exchange currency and a payment system. Such a currency is not released into the mining circulation, since it is a transactional network that allows the exchange of any currency between the two participants.

By implementing some various security algorithms and models, a problem of energy consumption arises (Popović, 2016) As the volume of stored data grows, so will the share of energy consumption grow, as well as the security of data being stored. These security models cannot be designed independently, so when designing a system, a significant part should be dedicated to security components that need to be energy efficient (Popović et al., 2016).

1.3. Economic aspect of the financial market – cryptocurrency trading

Some of the authors note the following fact. Bauk circles the world's financial markets-the bubble of cryptocurrencies. All the forces of bankrupt neoliberal capitalism closed their eyes and tacitly allow them to evolve on all sides of the hidden currency. Today there are over two thousands of them and new ones are opening each day. The question arises, what is this about? What are the cryptocurrencies? Is this another in a series of neoliberal scams, or is it really a revolutionary invention that will change the finances of the world? (Dragaš, 2018)

2017. represents the most important trading period for virtual currencies. Many of them experienced real expansion and tremendous growth at 1000% per year. The end of 2017 was the hight of cryptocurrency, especially bitcoins, and represented a great opportunity for citizens to make a quick return. The value of bitcoin was at an time high of $19,099 at the beginning of 2018 and now it's worth under $ 10,000. It is, however, necessary to point out that its value only a year ago was only $ 1,000, which means that bitcoin rose 1909% in one year. Because profit rates in real economy are 10-15% per annum (for example: Real US growth of 2.8% and Real India growth of 7.2% in 2017 (IMF, 2017), the abnormal yield on one of the cryptocurrencies can only serve to mislead the citizens of the world who do not know how to either save their money, receive very low interest rates from the commercial banks or, in some instances, banks are paid to hold their money.

This sections of the paper dealt with the technique of creating, buying and selling cryptocurrencies but also the very essence of the cryptocurrencies and the historical conditions in which they appeared. Are cryptocurrencies a scam or not? It is necessary for these

conclusions to suggest the facts that the authors plan to arrive at valid conclusions. Hence, we must have at least basic knowledge of the history of money, which, unfortunately, has never been fundamentally studied. Is that a coincidence?

No coincidence in the history of money development. Money and money transactions were always covered by a veil of mystery and secrets. Bankers hide to show which money from alchemy creates new money. The English National Bank was founded in 1694, but its founders were private individuals. The FED is the US Central Bank whose founders on 24.12.1913 were the richest individuals. They were from the families of the founders of the ENB (English National Bank). Individuals had been given a monopoly to print money and lend money to the states. Amchel Meyer Rothschild openly and frankly stated: "Let me print and control the flow of money in one nation, and I do not care who rules the law and who has the strongest army (Hern, 2018).

In the history of the United States, all the presidents have been killed, from Lincoln to Kennedy, who have tried to take the printing of the dollars from the privileged rich people and put them under the control of a legally elected government, parliament and citizens. Wars have begun and millions of innocent and naive people lost their live in order to keep the monopoly of printing the dollar.

In 1971, during the rule of Nixon, the decision was made that it did not need any cover for printing dollars, gold was a cover for printed paper, then we entered an era of the world's biggest fraud and falsification of cash without cover, which has led us today a complete collapse of neoliberal capitalism. According to calculations and listed in the world's leading newspapers, the US debt is not $ 20 trillion, as it is officially shown, but approximately $ 400 trillion (Hern, 2018). Today, over 2 quadrillion worth of worthless securities are circulating on the world markets. The financial bubble is so overcrowded, as already stated in the author's opinion, that it is ready to burst and completely sink the world's finances.

A large number of authors spoke and wrote about it, but until the last economic crisis on August 19, 2007, which broke out after the collapse of overdue and false mortgage loans, there was confidence in the regulation of market mechanisms (Kocić, 2010). In addition to state interethnicism, neoliberal capitalism can be saved from total collapse by the following: (1) World War, which will not be conducted in US territory. (2) new technology or new goods, which will pervade the whole world (3) the discovery of new energy from the universe, (4) hyperinflation that needs to erase all accumulated debts and to restart the financial system with the new currency and (5) the end of neoliberalism and the building of a new national capitalism.

What happened in the years behind us? The attempt by Wall Street to challenge the world by war has failed. The tension and the stabilization of the situation in Europe have led to a calming down of the situation. Then next thing that is started is the launch - cryptocurrencies!

By controlling the world's financial flows, where they are not allowed to enter bond trading, they have enslaved the world’s central banks under the false banner of the independence of central banks. Central banks of most countries responded only to the IMF; therefore, they were allowed to encrypt, trade on stock exchanges, enter into payment transactions and experience such growth that it appears extremely suspicious.

What happened to permit the decentralization of monetary transactions and allow the occurrence of crypto currencies? The logical explanation is that in fact the owners of these crypto currencies are the most powerful countries in the world. Everything is well thought out and done to find a new world game that brings big profits and which will, at least temporarily, buy precious time for neoliberal capitalism to weaken the pressure from central banks which print full-blown coins in cash.

When bitcoin grows 1.909% in one year, while the developed world's economy develops at a rate of barely 3%, this therefore is proof that crypto currency waves are a new

way to new bait citizens, in way that does not raise concerns around the endangered totalitarian system, but enticing people to higher than usual returns (Dragaš, 2018). Where does such an annual profit come from? You can find the answer to this question in the previous section.

1.4. What is behind this cryptocurrency?

A mathematical algorithm, that allows you to dig bitcoin with special computing devices. Those devices have huge electricity consumption. Mining is more popular in countries where there are low electricity prices. In developed countries, electricity is too expensive and not profitable for computers to last 24 hours without stopping. Due to the nature of algorithm, mining is getting harder with time, thus less and less bitcoins are being dug.

1.5. How is the price of a cryptocurrency determined?

Based on supply and demand. The supply is small, while the demand is high, which is why the price is constantly growing. On the offer page we have the information that 16.742.575 BTC has been mined. A total of 21 million bitcoins have been determined by mathematical algorithm and this will be mined by the year 2040. Therefore, the creator of the bitcoin planned to keep the cryptocurrency.

1.6. Why is the big demand for cryptocurrency?

The demand is risen by three characteristics of cryptocurrencies: anonymity, low cost and fast transfers. In the electronic age, the transmission speed is very important and the cryptocurrencies are transmitted within a few seconds. The money transfer price of the cryptocurrency is very low, it is only a few cents, which significantly increases the interest of companies and citizens to use cryptocurrency. The annual commission of all world transfers is about 22 trillion dollars. That is the annual GDP of America itself. Transferable income allows banks and companies like the Western Union to make significant financial gains, but this kind of transfer is outdated to financial lobbyists whose main goal is to ban banks from the financial services market. What brought enormous popularity to the cryptocurrency was anonymity and freedom in the process of transfers.

The problem of anonymity and the checking of all payments is very complicated in banks, no matter the amount. Abuse talk (when you take advantage of something or someone) and the so-called money laundering used to finance terrorism is to a great extent just an excuse to subdue ordinary people. All major transactions as well as so-called money laundering go through the FED and several of the world's largest banks. In this way, the business environment is becoming increasingly difficult for genuine businesspersons, while on the other hand giving the opportunity to all those so-called merchant brokers to wash money and to use the cryptocurrency to transfer their "dirty" money from illegal activities all over the world. Since there is so much money, therefore there has been a huge demand for cryptocurrency, which has led to an abnormal jump in the prices of certain of those currencies, especially bitcoin.

1.7. Is it possible to track the cryptocurrencies?

The propaganda story that the cryptocurrencies are decentralized and no one controls them is a complete lie. The use of blockchain technology can be openly monitored by the transaction data, which cannot be falsified, and any change is permanently recorded and can be

verified on computers around the world. Therefore, each transaction is recorded and permanently stays on a digital network.

What does this mean? The freedom given to cryptocurrencies is controlled. Who will know when someone can come to mind to start reviewing long-term transactions? At the same time, the blockchain allows control and monitoring.

The current freedom of cryptocurrencies is tendentiously allowed for humanity to ignite and incur large profits, which do not exist in the real economy. Fun for indebted and unemployed citizens, who listen to stories of great earnings. The advantages of cryptocurrency are constantly emphasized, which does not deny work, but when you look at currency promoters, they always emphasize that there are no guarantees for cryptocurrencies and that you do everything on your own responsibility. It is criticized for printing money without cover, but there is also no answer for what is exactly behind the cryptocurrencies. The answer is known and hidden - there is nothing behind the cryptocurrencies. The platform at which transfers are made are based on the supply and demand in theory, while there is no foothold in the real economy on the ground in reality as there are no pillars that carry it.

1.8. The best example is the next one we will propose?

What is capital? Paper money? Digital Bitcoin? When it comes to war, earthquake or major catastrophes, what is your capital? Capital is just what you have in your head and what you have in your pockets. What you have in your head is the knowledge and skills that belong to you only, for which you are only responsible, which allow you not only to survive, but also to re-create wealth. What you have in your pockets must be something that is concrete and tangible and has a lasting value. It's certainly not paper money. Investment in gold in terms of several grams is a safe item that you can change for all goods, especially food. There are countless testimonies from the past.

The cryptocurrency is a bait for the complete introduction of cashless money. We are also aware of the need to pay for cash payments, although the subjective opinion is that some form of savings is good because of the freedom to dispose of it. However, today there are so many demands from the most advanced countries to abolish cash. All transactions will be on the digital network and they will be able, through blockchain, to control everything. The story of speed, efficiency and modernization of cash flows is inaccurate at the time of the technological revolution, and big profits are just a bait for naïve eager quick returns.

Today, with the cryptocurrency trade, high yields are made, but from the point of view of the economy, such profits cannot be realized in the long run. We can still conclude that the transfer of money around the world has to be digitized and accelerated, it is not controversial, and the cryptocurrencies show that all this is possible, but first we have to see - what is the real money? The cryptocurrencies is not.

The question is at the very end of the work, what to do? We are all wondering whether machines should make money for us? Do we gamble? If you love the risks and you like to gamble, enter with a small portion of your free resources into cryptocurrencies. All you make is then turned into real goods: investment gold and silver, houses and apartments, agricultural land, water sources, forests, production or ore fields with rich finds.

The second wave of the crisis, the financial tsunami, arrives, and it will wipe out all the fake currencies. Work on yourself, acquire knowledge, and work habits. Nobody can take it away from you. Everything in your hands and pocket belongs only to you. You do not give it to anyone. None that is not in your hands and your pocket is yours. The rebellion of indebted slaves is only possible after all this is understood.

2. CONCLUSION

Perhaps in the future it will make sense for some investors to incorporate digital currencies into their portfolios via hedge; however, we believe that no cryptocurrencies will be recognized as a legitimate competitor in sovereign currencies. From the point of view of banks, the cryptocurrencies does not meet the criteria of cash, and they should continue to take a great path to become a national currency.

Bankers think that the only area on which cryptocurrencies with national currencies can compete is the black market. We have seen that the development, broadcasting and trading of cryptocurrency so far only at the level of trade in individual markets, and that supply and demand significantly influence their value. On the other hand, there are proposals to form a cyber-crypto-initiative. The Russian Federation has proposed a cyber-initiative to form a new currency that would connect developing countries to markets in Asia, Eastern Europe, Africa and South America, through block chain and smart technology, which would be collectively adopted by the BRIC countries and members of the Eurasian Economic Union.

If this proposal is adopted and implemented, the first multinational cryptocurrencies could be used by more than 40 percent of the world's population. This could improve trade efficiency among member states and create a trade bloc that could transform global trade and the economy through a block chain of intelligent technology.

However, in order for this initiative to succeed, the transnational legislation of the Member States to which it refers should be updated, as there are currently significant differences between Member States' legislation regarding cryptocurrencies. Activities such as mining and trade in cryptocurrencies are not yet regulated in the legislation of most countries in the world although its being worked. Developing countries (China, India, Russia,) are working to regulate the cryptocurrencies markets to be under control. However, it is not yet certain whether Member States will follow an EU-like approach when it comes to formulating an appropriate transnational tax policy for new multinational crypto-transactions.

We can also conclude that today the currency market is very unstable. Today, the most famous and definitely most traded cryptocurrency is under great oscillations. As we have already noted in the work itself, due to market failure, inadequate institutional protection, underpinning of speculative changes, cryptocurrencies and cryptocurrency markets today are a bad choice for individual investors. In the opinion of the author and the monitoring of the current financial trends, as well as various initiatives of the most important countries in the world on the prohibition of trading, we can say that the new financial crisis will be a crisis caused by investment in cryptocurrencies, and losses can even be measured in the billions of dollars.

We believe that the economic collapse will be very fast, as people try to enrich themselves from the fictive increase in price. The speculators buy and sell their own investments in order to manipulate the market in this way, Rubini claims. According to his estimates, many will stick to bitcoin until it collapses, and when it comes to that, then the value of bitcoin will be zero, because that is in fact the real value of cryptocurrency (Krugman, 2013).

REFERENCES

Bahack., B., (2013). Theoretical Bitcoin Attacks with less than half of the Computational Power (draft). Technical Report, abs/1312.7013, CoRR.

Dragaš, B., (2018). Kriptovalute, Retrieved from http://www.dragas.biz/kriptovalute/ [12 February 2018]

Fridman, M. (2002). Capitalism and freedom. (40th anniversary ed.)

Hajek, F., (1944). The road to slavery. (Translated from Serbian), JP Službeni glasnik, 2012.
Hayes, A. S., (2017). Cryptocurrency value formation: An empirical study leading to a cost of production model for valuing bitcoin. *Telematics and Informatics*, 34(7) 1308-1321.
Hern, A. (2018). Bitcoin and cryptocurrencies – what digital money really means for our future. Retrieved from https://www.theguardian.com/technology/2018/jan/29/cryptocurrencies-bitcoin-blockchain-what-they-really-mean-for-our-future [13 February 2018]
IMF, (2017) Retrieved from www.imf.org [12 February 2018]
Kocić, B., (2010). Foreign capital in the function of the economic development of Serbia, (Doctoral dissertation). Faculty of Economics Priština- Kosovska Mitrovica.
Krugman, P., (2013), The return of economics of depression and the crises of 2008. - (International edition). Paperback.
Nakamoto, S., (2008). Bitcoin: a peer-to-peer electronic cash system. Whitepaper.
Popović, O., (2016), Energy-efficient mobile learning platform solution in cloud computing environment (Doctoral dissertation). University Singidinum, Belgrade.
Popović, O., Marković, D. S., Popović, R. (2016). mTester—Mobile learning system. *Computer Applications in Engineering Education*, 24(3).

Volume XX, Issue (2) (2024) 163-171

International May Conference on Strategic Management

DOI: *10.5937/IMCSM24067J* *Original Research*

NOVE TENDENCIJE U RADU NADZORNIH ODBORA U EVROPI

Milan Jeličić*

Univerzitet u Beogradu, Ekonomski fakultet, Republika Srbija

Abstrakt: Korporativno upravljanje se odnosi na način organizovanja korporacije i sadrži zakone, pravila, principe i kodekse na kojima se organizacija bazira i vodi. Razlikujemo primarno dva osnovna sistema korporativnog upravljanja u svetu: jednomodalni koji je nastao i praktikuje se u Ujedinjenom Kraljevstvu, SAD-u i Kanadi i dualni sistem ili kontinentalni koji se najviše primenjuje u zemljama Zapadne Evrope, a u poslednje vreme sve više i u evropskim zemljama u tranziciji. Ovaj rad će se baviti dvostepenim sistemom korporativnog upravljanja odnosno njegovim sličnostima i razlikama u primeni u Evropi u uslovima izazovnog i nestabilnog poslovanja. Nadzorni odbor kao organ upravljanja je kontrolno telo koje nadzire, usmerava i kontroliše rad izvršnog odbora. Pojedini faktori koji se smatraju bitnim sa aspekta uspešnog ostvarivanja uloge nadzornog odbora su veličina odbora, nezavisnost, komponzicija i raznolikost. Savremeni način poslovanja uslovljava stalnu potrebu preispitivanja i redefinisanja uloge nadzornih odbora i traženja adekvatnih odgovora koji treba da doprinesu efikasnom upravljanju korporacija.

Ključne reči: dvostepeni sistem korporativnog upravljanja, nadzorni odbor, Evropa

1. UVOD

Najšire korišćena definicija korporativnog upravljanja je: „sistem kojim se kompanije usmeravaju i kontrolišu" (Cadbury Committee Report, 1992). Tačnije, to je okvir po kome različiti interesi zainteresovanih strana su izbalansirani i predstavlja „odnose između uprave, odbora direktora, kontrolnih akcionara, manjinskih akcionara i drugih stejkholdera".

Velentzas i Broni (2010) ističu da je korporativno upravljanje dugoročni odnos koji se mora baviti kontrolama i ravnotežama, podsticajima za menadžera i komunikacijom između menadžmenta i investitora. Ovo implicira kontradiktorni odnos između menadžmenta i investitora i stav obostrane sumnje. Hart (1995) ističe da se korporativno upravljanje sastoji od pet elemenata koje odbor mora uzeti u obzir a to su: dugoročni strateški ciljevi, zaposleni: prošli, sadašnji i budući, okruženje / zajednica, kupci / dobavljači i usklađenost zakona i regulative.

Kallionitis (2019) ističe da neke zemlje kontinentalne Evrope, uključujući Nemačku i Holandiju, zahtevaju dvostepeni sistem korporativnog upravljanja kao sredstvo za njegovo

* *Corresponding author: milan.jelicic@yahoo.com*

Milan Jeličić, ORCID: 0009-0005-3880-3524

unapređenje. Dvostepeni sistem čine: izvršni odbor, sastavljen od rukovodilaca kompanije, koji uglavnom vodi svakodnevne operacije, dok je nadzorni odbor u potpunosti sastavljen od neizvršnih direktora koji predstavljaju akcionare i koji zapošljava i otpušta članove izvršnog odbora, utvrđuje njihovu naknadu i vrši reviziju glavnih poslovnih odluka.

Dvostepeni sistem korporativnog upravljanja prvo je usvojen u nemačkim preduzećima. Ovaj model se može pratiti u Nemačkoj od 19. veka. Istu strukturu koristi i Italija. Prema Dubajiću (2018) članove nadzornog odbora u Nemačkoj bira skupština, što znači – većinski akcionari, pa je nadzorni odbor predstavnik interesa većinskih akcionara i u toj ulozi nadzire rad menadžmenta kompanije. U Nemačkoj je i preporučeno da predstavnik akcionara u nadzornom odboru treba da ima što više odgovarajućih nezavisnih članova. Vredi napomenuti da ne postoji formalni uslov nezavisnosti za člana nadzornog odbora. Slično kao i u Nemačkoj i u Italiji članovi nadzornog odbora obično moraju ispunjavati posebne zahteve po pitanju profesionalnosti i nezavisnosti. Članovi nadzornog odbora ne mogu biti članovi izvršnog odbora u isto vreme i ne mogu imati radni odnos ili kontinuirano plaćeno konsultantski odnos sa preduzećem ili subjektima koje kontrolišu preduzeće. Koliko će taj nadzorni odbor zaista doprineti efikasnom funkcionisanju i uspešnom poslovanju korporacije, u većini slučajeva određuje stvarna nezavisnost koja članovima odbora omogućava objektivnu procenu poslovanja korporacije, postupanja njenih članova uprave u svetlu krajnjeg kriterijuma - dobrobiti korporacije kao celine i njenih deoničara. Osim prethodno navedenog, u uslovima izazovnog poslovanja objektivna procena zahteva niz drugih pretpostavki, kao štu su: pristup pravovremenim informacijama, pristup tačnim informacijama, pristup potpunim informacijama i pristup pouzdanim informacijama. Prema OECD-u (2004) ne postoji jedinstven model dobrog korporativnog upravljanja.

Novija funkcija nadzornog odbora u Nemačkoj prema Corporate Governance Code (2002) jeste da on ima savetodavnu funkciju i podršku upravi preduzeća. U Holandiji postoji i Komitet za korporativno upravljanje na čijem se čelu nalazi predsedavajući. Osnovna mana kontinentalnog modela se vidi u postojanju ograničenih finansijskih sredstava kojima kompanija može da raspolaže. U tom modelu je i prisutna velika koncentracija vlasništva, tako da nam to govori da je kontrola u vlasti velikih akcionara, koji su u mogućnosti stoga da utiču na donošenje odluka koje povećavaju profitabilnost, i to je nedvosmislena prednost ovoga modela. Bezemer i dr. (2017) ističu da globalna finansijska kriza i poznati međunarodni skandali kao što su Ahold, Enron, Parmalat i WorldCom da čak i renomirani odbori mogu da se bore da efikasno nadgledaju izvršne direktore.

Sa druge strane, korporativno upravljanje u Republici Srbiji razvija se poslednjih dvadesetak godina. Zakon o privrednim društvima Republike Srbije predstavlja osnovni regulatorni zakon što se tiče kompanijskog prava i korporativnog upravljanja i predstavlja primer modernog zakona. Osim Zakona o privrednim društvima Republike Srbije regulatorni okvir predstavlja Kodeks korporativnog upravljanja koji je Privredna komora Srbije donela u cilju formiranja dobrih poslovnih običaja i popunjavanja pravnih praznina.

U samom radu postoji istraživanje čija je svrha da omogući uvid u značaj dualnog sistema korporativnog upravljanja u Republici Srbiji sa aspekta efikasnosti poslovanja u različitim svojinskim oblicima.

Cilj samog rada je da prepozna značaj dualnog modela korporativnog upravljanja u Evropi na osnovu dosadašnjeg iskustva kako bi se nadzorni odbor fokusirao na efikasniji način delovanja u uslovima promenjene regulative i savremenog načina poslovanja.

2. PODACI I METODOLOGIJA

Tabela 1. Kompanije koje su u vlasništvu države

Naziv kompanije	Ebitda	Broj zaposlenih	Šifra delatnosti
Air Serbia a.d. Beograd	2 712 653 000.00	1 077	5 110
EPS a.d. Beograd	-74 593 679.00	20 008	3 511
Telekom Srbija a.d. Beograd	15 752 584.00	7 980	6 110
Serbia Zijin Copper d.o.o.	38 107 873 000.00	5 945	5 945
Tigar a.d. Pirot	806 494 000.00	851	6 420
Infrastruktura Železnice Srbije a.d.	-5 703 512 000.00	5 704	5 221
Banka Poštanska Štedionica	1 194 362 000	2 591	6 419
Dunav osiguranje a.d.o.	1 317 416 000.00	3 053	6 512
SP Lasta a.d. Beograd	-911 544 000.00	4 939	4 939

Tabela 2. Kompanije koje su u privatnom vlasništvu

Naziv kompanije	Ebitda	Broj zaposlenih	Šifra delatnosti
A1 Srbija d.o.o. Beograd	8 178 144 000.00	1 628	6 110
Wiener Stadtsiche osiguranje a.d.o. Beograd	1 187 415 000.00	1 124	6 512
Ddor Novi Sad a.d.o. Novi Sad	24 764 276 000.00	1 333	6 512
Banca Intesa a.d. Beograd	9 670 145 000.00	3 074	6 419
Knjaz Miloš a.d. Aranđelovac	1 332 055 000.00	534	1 107
Tigar Tyres d.o.o. Pirot	8 944 182 000.00	3 595	2 211
Swarovski d.o.o. Subotica	59 615 000.00	429	2 319
Valjaonica Bankra Sevojno a.d. Sevojno	1 791 657 000.00	1 032	2 444
Imlek d.o.o. Beograd	2 812 004 000.00	864	1 051
Hemofarm a.d. Vršac	4 941 975 000.00	3 095	2 120

Kriterijum kao mera efikasnosti delovanja nadzornog odbora u samom istraživanju je EBITDA (Earnings Before Interest, Taxes, Depreciation and Amortization) po zaposlenom.

Da bi se ispitalo da li neki faktor deluje, u našem slučaju svojina, u firmama koji imaju nadzorni odbor formirana su dva uzorka. Prvi uzorak čine 9 velikih kompanija (N=9) koje su u delimičnom ili u potpunom vlasništvu države, koji su organizovane kao akcionarska društva ili društva sa ograničenom odgovornošću i čiji su finansijski rezultati objavljeni za 2022. godinu. Drugi uzorak čine 10 kompanija (N=10) koje su u privatnom vlasništvu i čiji su finansijski rezultati objavljeni za 2022. godinu. U samom istraživanju faktor svojina ima dva varijabiliteta (državna i privatna).

Nulta hipoteza:

Kompanije koje su u delimičnom ili u potpunom vlasništvu države imaju isti EBITDA po zaposlenom u odnosu na kompanije koje su u privatnom vlasništvu u Republici Srbiji.

$$H_o: \mu_1 = \mu_2$$

$$\square_1: \square_1 \neq \square_2$$

Alternativna hipoteza:

Kompanije koje su u delimičnom ili u potpunom vlasništvu države imaju značajno različiti EBITDA po zaposlenom u odnosu na kompanije koje su u privatnom vlasništvu u Republici Srbiji.

2.1 Metodologija

Korišćena je faktorska analiza kao procedura testiranja H_o o jednakosti aritmetičkih sredina dva osnovna skupa. Promenljiva koja je testirana je EBITDA, a faktor koji posmatramo je tip svojine.

Primenom F testa P Value ≈0,011 što potvrđuje da prihvatamo H_1 odnosno alternativnu hipotezu.

F test zasnovan na analizi varijansi (ANOVA) je metod za testiranje hipoteze da ne postoje razlike između dve ili više populacionih sredina. ANOVA metod nam omogućava da izvršimo istovremeno testiranje sa većim brojem populacionih aritmetičkih sredina. Ona se bazira na dva tipa varijacija a to su varijacije unutar uzoraka i varijacije između uzoraka. F statistika kao rezultat tog testiranja je količnik ove dve varijanse:

$$F = \frac{v_A}{v_R} \tag{1}$$

Va - Varijansa između uzoraka, Vr – Varijansa unutar uzoraka

3. REZULTATI I DISKUSIJA

U novije vreme prioritete u radu nadzornog odbora nameću načini modernog poslovanja koji zahtevaju stalno preispitavanje uloge nadzornog odbora.

Uspešan odbor bi trebalo da stremi shareholder vrednosnoj orijentaciji, da uspostavi balans preduzetničke i kontrolne aktivnosti, kratkoročnih ciljeva i dugoročne stabilnosti, kao i da preventivno deluje prilikom ostvarivanja strateške funkcije i monitoringa. Kako bi ostvario svoju ulogu koja nije bazirana kao i u prethodnom periodu samo na regulativi pred njim se postavljuju izazovi pre svega u vidu kapaciteta odbora da odgovori na postavljene zadatke sa aspekta njihovog vremena angažovanja i uključivanje u davanje preporuka i smernica koje imaju za cilj da doprinesu efikasnijem poslovanju kompanija. Prema Sonnenfeldu (2002) najaktivniji, marljivi odbori koji dodaju vrednost mogu, ali i ne moraju da poštuju svaku preporuku iz priručnika za dobro upravljanje. i dr. (2018) ističu i da bi odbori radili profesionalno, potrebno je primeniti odgovarajući sistem nagrađivanja članova NO koji će biti motivišući i privlačan za visokokvalitetne kandidate. Motivisanost članova nadzornih odbora povećava se formulisanjem i doslednim sprovođenjem politike njihovog nagrađivanja u skladu sa performansama.

Pidun i dr. (2021) su statistički analizirali podatke iz ankete od 120 nemačkih i austrijskih nadzornih odbora. U praksi, nadzorni odbor je jedan sistem upravljanja koji može da bira između ostalih aktivnosti i aktivnosti koji će mu biti u fokusu: poput HR, strateške, monitoring i podržavajuća.

Rad nadzornog odbora čini 12 aktivnosti u oblasti monitoringa, oblikovanja i savetovanje. Gotovo svi nadzorni odbori koji su anketirani fokusiraju svoje napore izvan zakonskih zahteva koji su prevenstveno vezani za monitoring.

Više od 90% se snažno koncentriše na strategije praćenja i rizika kao i procenu napretku ka finansijskim ciljevima. S obzirom da ovo naknadno praćenje nije dovoljno, nadzorni odbori takođe igraju i jaku ulogu u oblikovanju kompanije u formi strateškog pravca i posebno su

uključeni u transakcije koje zahtevaju odobrenje.

U vremenima nestabilnog poslovanja i velikih promena, nije iznenađujuće što strateški zadaci postaju sve više važni. 35% nadzornih odbora želi da stavi veći naglasak na uključenost u strateškom pravcu, 28% na savetovanje u ključnim poslovnim odlukama i 25% na strategiju praćenja. Oni takođe žele da se više fokusiraju na imenovanje izvršnih odbora (26%) i monitoring rizik (27%).

Pored ovih opštih zapažanja i trendova, istraživanje je jasno pokazalo i sistematske razlike između nadzornih odbora. Istraživanje je pokazalo da su upravo svi predsednici nadzornih odbora smatrali da je njihov način rada optimalan. Četiri uloge se značajno razlikuju po svojim oblastima fokusa. Od svih anketiranih članova nadzornog odbora, oko četvrtine ima akcenat na izboru, imenovanju i razrešenju članova izvršnog odbora, trećina igra stratešku ulogu, 40% stavlja fokus na aktivnosti praćenja, a jednom od desetorice je dodeljena sporedna uloga.

HR-centrični nadzorni odbori. Ovi nadzorni odbori se fokusiraju na sledeće aktivnosti:

imenovanje izvršnih direktora, postavljajući svoje ciljeve i ocenjujući ih u skladu sa tim. HR-centrični odbori su 15% više uključeni u ove oblasti od proseka. Imamo primer nemačkih blue chip kompanija gde je njihova osnovna uloga da bira upravljački tim. Nadzorni odbori koji su fokusirani na HR ulogu takođe pridaju veliku važnost dobrim informacijama o ljudskim resursima. Nadzorni odbor ima tendenciju da sebe posmatraju kao da su rukovodilac uprave. Ovo se odražava u načinu rada: fokus je na formalnim, zakonski potrebnim aktivnosti, dok njihova stručnost u industriji je ispod proseka.

Strateški nadzorni odbori. Njihov fokus je da pomognu u oblikovanju pravca delovanja kompanije tako što su aktivno uključeni u preduzetničke odluke. Ovi odbori daju prioritet takvim strateškim aktivnostima 8% više od proseka. Međutim oni su uzdržaniji po kadrovskim aktivnostima. Uspešni strateški nadzorni odbori imaju 6% veće ocene kompetencija i 10% bolje informacije o strateškim relevantnim temama u odnosu na prosek. Ovakav način rada omogućava bavljenje složenim temama i aktivno učestvovanje u radu izvršnih odbora. Posebne teme su često na dnevnom redu. Nadzorni odbor se doživljava kao primarni sparing partner za menadžment obezbeđujući da konstruktivna saradnja bude na visokom nivou. Obično, postoji i praksa da kompletan menadžment uzima učešće na svim sastancima nadzornog odbora. U više od 90% slučajeva, nadzorni odbori određuju dnevni red sednica zajedno sa menadžmentom.

Nadzorni odbori koji imaju fokus na monitoringu. Predstavnici se obično bave pitanjima

praćenja rizika i pokazuju natprosečnu uključenost u praćenje finansijskih ciljeva. Smatraju da je udaljenost od menadžmenta od suštinskog značaja za efikasnu kontrolu. Ovakvim načinom rada ne doprinosi se diskusijama u radu i postavlja se pitanje otvorenog poverenja i konstruktivnog načina rada pa se samim tim i predsednik nadzornog odbora doživljava kao kontrolor menadžmenta. Nadzorni odbori se smatraju uspešnima ukoliko koriste nezavisne izvore informacija, kao što su razgovori sa kupcima, revizorima i konsultujući se sa zaposlenima u firmi. Oni se bavi procenom rizika i pitanjem usklađenosti 22% češće u odnosu na preostale u srazmerno formalnim formatima kroz redovne izveštaje i protokole. Strateški zadaci su prepušteni menadžmentu.

Podrška izvršnim odborima. Ovakav način funkcionisanja se može predstaviti odnosom vozača i trenera. Pružanje tehničke ekspertize, nudeći podršku po osnovu svojih poslovnih kontakata su očigledno iznad proseka i od velike važnosti. Podržavajući nadzorni odbori su posebno česti u porodičnim kompanijama i startapovima. Kontrola je obavezujuća, ali ključna dodata vrednost nadzornih odbora leži u koučingu. Smatra se da za ovakav način funkcionisanja je neophodna stalna profesionalizacija i sklonost ka višim ambicijama rukovodećeg kadra.

Da bi ovakvi nadzorni odbori funkcionisali neophodno je da njihovi članovi posebno imaju i širok spektar stručnosti—posebno o aktuelnim temama kao što su tržišni trendovi,

digitalizacija i održivost. Na osnovu anketiranih kompanija nivo kompetencija ovih članova nadzornog odbora je skoro 10% iznad proseka. Oni aktivno dobijaju informacije iz spoljnih izvora, razmenjuju znanja među sobom i ostavljaju više vremena za intenzivne razgovore na dnevnom redu. Važan element ovog modela je da postoji poverenje u radnu kulturu u saradnji sa menadžmentom.

Savremeni način poslovanja zahteva i različite pristupe u rešavanju svakodnevnih operativnih problema koje se nameću pred nadzornim odborima. Oni bi trebalo da proaktivno razgovaraju o njihovoj ulozi u takvim okolnostima. Jasna definicija uloge nadzora statistički ima najveći značaj kao faktor uspešnosti poslovanja. Uspešni nadzorni odbori mogu preuzimati različite uloge. Nadzorni odbori treba da podstiču unutrašnji dijalog kako bi svesno birali svoju ulogu. Tada bi i njihov posao trebalo da bude strukturiran u skladu s tim—npr. treba doneti odluke u vezi sa potrebnim nadležnosti odbora, učestalosti njihovih sastanaka, brojem nezavisnih komiteta itd. Nadzorni odbor može da kreira vrednost samo ako se uloga odbora uklapa u samu kompaniju. Lične preferencije članova nadzornog odbora i iskustvo u drugim kompanijama trebaju da bude kritični argument prillikom izbora njihove prave uloge. Velike promene u kompaniji mogu učiniti neophodnim prilagođavajuće uloge nadzornog odbora. Stoga, redovna revizija same uloge preporučuje se kao i njena komponzicija.

U dosadašnjoj praksi nije prepoznata koja uloga nadzornog odbora se smatra potpuno efikasnom. U principu, sve četiri uloge mogu biti, što pokazuje i prethodno istraživanje sprovedeno u Nemačkoj i Austriji.

Ipak, određene uloge su više uspešne u odnosu na preostale. Oko dve trećine HR-centričnih nadzornih odbora su uspešni; dok kod onih od koji imaju prevenstveno podržavajuću ulogu, oko polovine njih se smatraju uspešnim. U slučaju strateškog pristupa samo 38% se smatra uspešnim dok samo 25% se smatraju uspešnim kada je njihova uloga prevenstveno kontrolišuća.

To ne znači da je HR-centrični model predstavlja i najbolji model u svakoj kompaniji. Analiza pokazuje da različite situacije u kompaniji zahtevaju i različite uloge i pristupe nadzornih odbora. Glavne determinante za njihovu optimalnu ulogu su veličina kompanije, situacija u preduzeću (finansijska situacija i poremećaj tržišta) i iskustvo u upravljanju.

Optimalna uloga nadzornog odbora za kreiranje vrednosti zavisi od veličine kompanije. U velikim kompanijama sa godišnjom prodajom većom od 10 milijardi evra HR centrični nadzorni odbori su posebno uspešni, što je takođe slučaj i u srednjim preduzećima sa prodajom od milijardu do 10 milijardi €. Nakon toga po kriterijumu uspešnosti sledi monitoring uloga nadzornog odbora. Međutim, nadzorni odbori koji imaju podržavajuću funkciju efikasni su samo u manjim preduzećima sa prometom manjim od 5 milijardi evra. Jedan od razloga može biti da su u većim organizacijama sve relevantne kompetencije dostupne unutar samog preduzeća i stoga nadzorni odbor može da se povuče u manje aktivnu ulogu – dok se u manjim preduzećima kompetencije i iskustvo nadzornog odbora smatraju posebno korisnim.

Takođe, finansijska situacija kompanije opredeljuje i fokus usmerenih aktivnosti nadzornih odbora. Kada je finansijska situacija kompanije izložena većem riziku i kada su tamo uočeni problemi sa performansama, nadzorni odbori koji su posebno usmereni na monitoring su uspešni. Međutim ako je kompanija izložena velikim rizicima, sama kontrola često nije dovoljna. U tim slučajevima nadzorni odbori koji su fokusirani na strategiju mogu da pomognu u određivanju pravog kursa. Uloga fokusirana na strategiju takođe je odgovarajuća kada je u pitanju pomoć u oblikovanju odgovora kompanije na kratkoročni poremećaj na zahteve tržišta i rešavanje problema u saradnji sa menadžmentom. Ako su poremećaji dugoročne prirode, važnije je izabrati odgovarajući menadžment tim sa relevantnim iskustvom i postaviti odgovarajuće ciljeve. Zato u takvim situacijama, HR-centrični nadzorni odbori su uspešniji od

proseka. U slučaju pozitivnih poslovnih kretanja, nadzorni odbor može dati i menadžmentu veću slobodu.

Dužina mandata direktora na poziciji i samim tim iskustvo generalnog direktora takođe ima veliki uticaj na uspeh određene uloge nadzornog odbora. Za nove direktore sa mandatom kraćim od dve godine, podrška HR-centričnog nadzornog odbora je od pomoći.

Nadzorni odbor bira generalnog direktora, postavlja jasne ciljeve, a zatim uspostavlja i standard po pitanju poverenja u novoimenovanog izvršnog direktora. Nadzorni odbori koji novom generalnom direktoru omogućavaju visok stepen slobode verovatnije je da će doprineti kreiranju vrednosti. U tom slučaju strateški i podržavajući odbori manje su efikasni. Direktori sa dužim periodom rada na postojećoj funkciji generalno dobro poznaju kompaniju, a saradnja sa nadzornim odborom je usklađena. Sa druge strane podržavajući odbori naročito dolaze do izražaja za startapove sa manje iskusnim menadžmentom ukoliko imaju široku mrežu kontakata kao i relevantnu ekspertizu.

4. ZAKLJUČAK

U pravu Evropske Unije korporativno upravljanje je predmet regulisanja nekoliko izvora komunitarnog prava. To su ne samo tzv. obavezujući izvori prava, poput direktiva, nego i izvori „mekog prava", od kojih su najznačajniji kodeksi korporativnog upravljanja. U svih 28 država članica Evropske Unije donet je ili je revidiran kodeks korporativnog upravljanja u prethodnih petnaestak godina. U ovoj oblasti smernice u pogledu korporativnog upravljanja najčešće su davane preporukama. Postoji i različit pristup u pogledu organizacije i funkcionisanja ovog organa upravljanja u državama koje su usvojile isti model korporativnog upravljanja. Savremeni način poslovanja zahteva novu i fleksibilnu ulogu nadzornog odbora koji predstavlja i ključan faktor za uspešno poslovanje kompanija. U skladu sa tim treba istaći i sledeće uloge koje se nameću: preventivni monitoring-praćenje rizika, donošenje odluka o transakcijama koje zahtevaju odobrenje, savetovanje, koučing i aktivno pružanje podrške razvoju poslovanja sa svojom profesionalnom mrežom kontakata koji su ostvarili tokom karijere.

Sam nadzorni odbor potrebno je da preispituje sopstvenu ulogu u uslovima trenutnih poslovnih okolnosti u kojima se kompanija nalazi jer on može stvarati vrednost samo ako uloga odbora odgovara situaciji kompanije. Stvaranje adekvatne organizacione klime među članovima nadzornog odbora, može se smatrati ključnim preduslovom koji će doprineti razvoju međusobnog poverenja i poštovanja i koje može dovesti do lakše razmene bitnih informacija i zajedničkom savladavanju izazova. Neophodno je uvesti i praksu godišnje evaluacije rada svih članova nadzornog odbora.

Postoji i niz preporuka koje ću izdvojiti i koje mogu biti od pomoći u radu nadzornih odbora. Radi konkretizacije i proširenja poslova unutrašnjeg nadzora za društva je korisno da sagledaju i praksu drugih zemalja. Poželjno je i da istražuju slučajeve korišćenja insajderskih informacija, proveravaju blagovremenost plaćanja finansijskih obaveza i da proveravaju blagovremenost akumuliranja i plaćanja dividendi. Neophodno je da i pregledaju finansijsko stanje društva, konkretno njegovu solventnost, likvidnost njegovih sredstava i kreditnu sposobnost.

Kada posmatramo regulativu u Evropskoj Uniji i Republici Srbiji postoje određene neusklađenosti. Dosadašnja praksa je pokazala da postoji manji broj članova nadzornog odbora u Srbiji i ne poštuju se u potpunosti zakonska obaveza neparnog broja članova u odboru. U Srbiji imamo situaciju da se nezavisnom članu odbora ne objavljuje identitet, kao i da postoji i manji broj žena među članovima nadzornih odbora. Treba istaći i veći značaj preventivnog

monitoringa koji je prisutan u Evropskoj uniji kao i veći značaj savetodavne i koučing uloge u EU. Svakako treba težiti razvoju sistema korporativnog upravljanja u Republici Srbiji koji treba i da rezultira i promenom tipa svojine kod kompanija koja su organizovana kao akcionarska društva i društva sa ograničenom odgovornošću kako bi efikasnije poslovala.

LITERATURA

Bezemer, P. J., Peij, S., Krujis, D. L., & Maassen, G. (2014). How two-tier boards can be more effective. *Corporate Governance*, 14(1), 15-31. https://doi.org/10.1108/cg-02-2013-0018

Dubajic, D. (2018). Corporate Governance in Japan – board systems and independence of members with reference to the function of the supervisory board in Serbian companies. *Foreign legal life*, 1, 121-136. https://doi.org./10.5937/spz18011210 (in Serbian)

Hart, O. (1995). Corporate Governance: some theory and implications. *Economic Journal*, 105, 678-698. http://dx.doi.org/10.2307/2235027

ICAEW. (1992). Financial Aspects of Corporate Governance Committee. https://www.icaew.com/-/media/corporate/files/library/subjects/corporate-governance/financial-aspects-of-corporate-governance.ashx?la=en

Janicijevic, N., Todorovic, M. & Aleksic M. A., (2018). Corporate Governance in Public Enteprises in Serbia: How to Improve Quality, Efficiency and Performance of Supervisory Board. *Economic Annals*, 62(216), 63-84. (in Serbian)

Kallionitis, J. N. (2019). Foreign Exchange Rates and International Finance. Nova Science Publishers, Incorporated. http://pi.lib.uchicago.edu/1001/cat/bib/12354536

Li, S. (2021). Comparative analysis of development paths within the framework of the two-tier corporate governance model in Germany, Italy, and China. *Corporate Law & Governance Review*, 3(1), 17–28. https://doi.org/10.22495/clgrv3i1p2

OECD. (2004). Principles of Corporate Governance. https://www.oecd.org/corporate/ca/corporategovernanceprinciples/31557724.pdf

Pidun, U., Roos, A. Stange, & S., (2021). What is the right role for your supervisory board? Boston Consulting Group. https://web-assets.bcg.com/f9/1e/c9497fa14f469d156a7b45d52f26/bcg-what-is-the-right-role-for-your-supervisory-board-jan-2021.pdf

Sonnenfeld, J. A. (2002). What makes great boards great? *Harvard business review*, *80*(9), 106–126.

The Committee on the Financial Aspects of Corporate Governance and Gee and Co. Ltd. (1992). The financial aspects of Corporate Governance. https://www.icaew.com/-/media/corporate/files/library/subjects/corporate-governance/financial-aspects-of-corporate-governance.ashx?la=en

Velentzas, J. & Broni G. (2012). Corporate Governance, Control and Individualism as Definition of Business Success. The idea of a „Post – Heroic“ leadership. *Procedia Economics and Finance*, 1, 61-70. https://doi.org/10.1016/S2212-5671(12)00009-3

NEW CORPORATE GOVERNANCE TENDENCIES OF SUPERVISORY BOARDS IN EUROPE

Milan Jeličić

University of Belgrade, Faculty of Economics, Republic of Serbia

Abstract: Corporate governance refers to the way in which a company is being organized, and contains laws, regulations, principles and codes which the organization is based on and guided by. Two primary systems of corporate management can be differentiated: the monistic model (one-tiered) which originates from and is used in the United Kingdom, USA and Canada, and the dual model (two-tiered) that is mostly implemented in the countries of Western Europe, and more recently in European countries in transition. This study will be dealing with the two-tier system of corporate governance, as well as the differences and similarities in its application in Europe through the course of challenging and unstable business conditions. The supervisory board as a management body is a control body that supervises, directs and controls the work of the executive board. Certain factors such as the size of the board, independence, composition and diversity of the supervisory board are considered crucial for successfully fulfilling its role. The contemporary approach to business encourages the constant need to review and redefine the role of supervisory boards and search for solutions that would contribute to efficient corporate governance.

Keywords: two-tier system of corporate governance, supervisory board, Europe

Volume XX, Issue (2) (2024) 172-179

International May Conference on Strategic Management

DOI: *10.5937/IMCSM24068Z* *Review article*

THEORETICAL ASPECTS OF ENTREPRENEURIAL ACTIVITY

Gulshan Zeynalova*

Azerbaijan State Economic University, Economical and technological sciences, Azerbaijan

Abstract: A relevant dynamic process that can have a significant impact on the entrepreneur's well-being and includes opportunities for innovation along with earning income is known as entrepreneurship. Entrepreneurship involves the use of existing resources for the purpose of creating something new, and creativity and risk-taking are required in this activity. This topic has always been relevant as entrepreneurship makes important contributions to the economy, such as increasing employment and creating new products and services. Theoretical aspects of entrepreneurial activity were reviewed in the article. In the article, the researches of various authors were analyzed and the aspects of globalization and internationalization were comparatively analyzed.

Keywords: Entrepreneurs, entrepreneurial activity, entrepreneurship concept.

1. INTRODUCTION

Entrepreneurial activity is defined by modern standards that place a strong emphasis on the ability to recognize and seize new business possibilities. The entrepreneur's vision, inventiveness, and willingness to question the established quo frequently drive this process. The digital age has broadened the range of entrepreneurship, with technology being a key factor in allowing business owners to access new markets and accelerate innovation. A more recent subset of entrepreneurship called "social entrepreneurship" shows how the definition of entrepreneurship is expanding to include addressing social issues and producing social benefit (Drucker, 1986).

Today, being an entrepreneur involves more than simply launching a company; it also involves seeing and seizing opportunities, regardless of the resources at hand. The idea of value creation is crucial, since entrepreneurs work to provide value for their clients, which adds value to the company as a whole. Globalization has also had an impact on entrepreneurship; in today's increasingly linked world, knowing the global market is essential for entrepreneurs. Therefore, contemporary entrepreneurship is more than simply a commercial venture—rather, it's an all-encompassing process including creativity, taking calculated risks, and an unwavering quest of expansion and advancement in a world that is ever evolving. Because entrepreneurship is

* *Corresponding author: gulshanzeynalova2000@gmail.com*

Gulshan Zeynalova, ORCID: 0009-0008-9876-299X

adaptable, it need constant learning and development to be successful in the cutthroat market (Joseph, 2007).

Table 1: Key aspects of modern entrepreneurial activity (the table has been compiled by the author according to Murphy et al., 2006)

Aspect	Description
Innovation and creativity	When it comes to developing new goods, services, or solutions, entrepreneurs are frequently at the forefront of innovation. They are renowned for their capacity to question and reinvent the existing quo as well as for their inventive approach to problem-solving.
Opportunity recognition and exploitation	Entrepreneurs are skilled at seeing gaps or unmet market demands and are quick to seize these chances, frequently before others do.
Risk management and tolerance	The desire to assume measured risks—financial, emotional, or social—and the ability to manage them well are essential traits of entrepreneurship.
Value creation	Entrepreneurs concentrate on adding value that goes beyond their own interests, seeking to help clients, staff members, and the community at large. This value may take on social, cultural, or economic dimensions.
Resourcefulness and adaptability	Entrepreneurs exhibit amazing flexibility and resourcefulness in the face of limited resources and shifting market conditions, which is crucial in today's fast-paced business climate.

The dynamic growth of markets and industries is heavily reliant on the creative and innovative aspects of entrepreneurship. Innovation is the engine that propels economic growth and societal progression because entrepreneurs possessing these attributes frequently bring forth notable breakthroughs and disruptions in their respective professions. Their innovative ideas frequently redefine or open up new markets, having a positive knock-on effect on the overall economy. Recognizing and seizing opportunities is essential because it shows that an entrepreneur has the capacity to recognize possibilities where others do not. They have a competitive advantage because of their ability to act quickly and decisively due to their foresight. The ability to take full advantage of these opportunities might result in the emergence of new industries or the transformation of already-existing ones, which will promote employment growth and economic development.

Tolerance and risk management are essential components of entrepreneurship. Since market conditions may change quickly and entrepreneurs frequently deal with uncertainty, risk management is an essential skill. The success or failure of their endeavors may depend on their capacity to accept and wisely manage risk. Furthermore, taking a chance often results in ground-breaking inventions and commercial successes.

The generation of value is another crucial element. The goal of entrepreneurs is to provide goods and services that are truly valuable to their clients, which leads to economic expansion. Beyond their financial worth, they frequently seek to enhance culture and society, illustrating the wider influence of entrepreneurship on the advancement and well-being of society.

Being creative and flexible is crucial in the dynamic world of business. Entrepreneurs sometimes have limited resources at their disposal, so being able to make the most of and use them well is essential. Sustainability and long-term profitability are largely dependent on their capacity to adjust to shifting consumer demands, new technology, and market shifts.

Together, these features draw attention to how diverse entrepreneurship is. Not only do entrepreneurs start businesses, but they also innovate, take risks, create value, and are quick to adjust to change. Their effects on economies and society as a whole go beyond the scope of

individual firms. Thus, establishing and maintaining a firm is no longer the exclusive focus of the modern entrepreneurial environment; other goals include enacting change, spurring innovation, and producing enduring value in a world that is always changing.

2. LITERATURE REVIEW

The theories of J. Schumpeter played a pivotal role in highlighting the initial trajectory of events. His theoretical framework was one of the initial to incorporate the notion of the entrepreneur, an economic individual whose responsibilities differentiate him from the laborer and the capitalist. Entrepreneurs, according to Schumpeter (2008), are characterized by their propensity for calculated risk-taking, leadership abilities, and initiative, despite their initial lack of capital and refusal to sell their labor. It is capable of mobilizing production resources and, once at its disposition, engaging in innovative endeavors with the assistance of an institution such as credit, thereby capitalizing on technological progress and uncovering untapped markets, demands, and labor organization frameworks.

The functional approach in capitalism is predicated upon the entrepreneur as a pivotal role, as posited by scholars, and encompasses the nuanced interpretations of capital, profit, interest, and money. The concept referred to as the "entrepreneurial model of economic development" is commonly discussed in scientific literature. This concept aligns with contemporary perspectives on the significance of small businesses in societal sustainability, as their agility enables them to swiftly adjust and respond to evolving societal circumstances. The majority of scientists that align with the theory of entrepreneurship tend to subscribe to the contextual approach. This is because they view entrepreneurship as a reaction to specific external circumstances inside a certain country. According to Covin and Slevin (1991), the notion under consideration is delineated in terms of power and has several parts that cannot be effectively consolidated into a singular model.

The primary consensus reached by scientists engaged in this field of study may be succinctly articulated as follows: The phenomenon of economic growth fosters an environment conducive to the emergence and development of entrepreneurship. Conversely, economic stagnation hampers market incentives and diminishes the extent of capital accumulation. Simultaneously, the phenomenon of economic globalization serves to diminish national boundaries and exerts a beneficial influence on the worldwide flow of capital.

The model proposed by Minguzzi and Passaro (2001) posits that the external environment is a critical factor in enhancing the competitiveness of small enterprises. The achievement of entrepreneurial success is predominantly influenced by the capacity to promptly recognize and capitalize on diverse chances inside the established business's market. The individual must possess the capacity to leverage the interconnectedness of the organization and the market in order to derive advantages. The notable proclivity of an entrepreneur to engage in continuous learning is expected to facilitate their prompt response and adaptability to potential shifts in the external environment.

A company is deemed competitive when it is capable of increasing its surplus value, profitability, and market share, all of which contribute to its long-term position maintenance. Consequently, proprietors of businesses ought to prioritize enhancing the long-term competitiveness of their organizations while acknowledging that this constitutes a dynamic, controlled, and relative process.

According to the framework proposed by Man et al., (2002), it is imperative for an entrepreneur to undertake three specific actions in order to enhance the competitiveness of their firm. The primary responsibility of an entrepreneur entails identifying competitive possibilities, necessitating the effective utilization of skills such as opportunity recognition, communication,

and fostering a shared vision. The second objective is establishing a cohesive team inside the organization, comprising personnel who possess the ability to collaborate effectively, foster creativity, and cultivate a favorable organizational image. The entrepreneur's capacity to develop relationships, effectively arrange resources, and foster a common vision is expected to facilitate the achievement of their goals. The third objective is to assure the operational efficiency of the firm.

3. RESULTS AND DISCUSSION

Therefore, the establishment of well-defined objectives and implementation of corresponding actions are crucial in attaining sustained competitiveness in the long run. The attainment of a robust market position necessitates the adoption and execution of strategic planning. Nevertheless, the strategic planning process is inconceivable without the crucial entrepreneurial capacity to engage in strategic thinking. The primary internal motivator for action in entrepreneurship is derived from the internal and external commitments that entrepreneurs face.

The model's authors take into account the relationship between small enterprises' competitiveness and their capacity for entrepreneurship. They believe that it is the responsibility of an entrepreneur to keep an eye out for, recognize, and seize chances. Personally, I would also like to add that managing competitiveness gets harder as a company gets bigger. The competitiveness policy of the firm may also vary depending on where it is in its life cycle. Accordingly, this method emphasizes the importance of the outside world on the growth of small enterprises. Considering the variety of environmental influences, it is possible for them to have an individual or combined effect. Only businesses that are competitive can thrive in the market and in the inherent environment of entrepreneurship under these circumstances.

Various conceptual frameworks foster the development of theory, which serves as the basis for the production of practical models. Here, we draw attention to the fact that, within the confines of the previously described approach, a significant body of scientific research played a pivotal role in influencing the emergence of many small business development models.

In the field of small business growth, there are several models that are employed. Models of the business environment, the recession, and income growth were developed taking into account the ways in which external environmental factors influenced the establishment and spread of private enterprise. Developed, emergent, and transitional economies all have different socioeconomic environments. Based on these factors and the main tenets of the state's economic strategy, different nations have different small business development patterns and degrees. The business climate model, which credits favorable municipal taxes, low production costs, flexible employment rules, and government backing for the growth of small firms, lends credence to this position.

Entrepreneurship in a market economy fulfills a variety of obvious and covert roles. The explicit functions encompass:

- the process of manufacturing novel physical commodities;
- the sector has witnessed the introduction and use of novel manufacturing processes that were previously unutilized;
- the expansion of markets through the creation of new markets or the increased use of existing ones;
- the development of novel sources and the diversification of raw resources;
- the establishment of a novel manufacturing and sales entity.

Hidden functions include:

- the optimal combination of production variables refers to the most efficient use of resources in order to maximize output.
- facilitating the generation of a societal output and fostering the equitable allocation of domestic revenue;
- the objective is to ensure the efficient and comprehensive fulfillment of the population's effective demand for products and services.
- The execution of several forms of pioneering projects.

All fields of economic activity, including commercial operations, are subject to regulation by the state. The primary responsibilities associated with the state's regulation of business operations may be identified as follows:

- enhancing the circumstances conducive to the unrestricted practice of entrepreneurial endeavors and optimizing the efficiency of the market mechanism.
- the establishment of a legal framework to facilitate entrepreneurship and the subsequent monitoring of adherence to legal rules.

The primary objective is to guarantee the economic and social advancement of the nation and its many areas, therefore enhancing the overall welfare of the population and stimulating their purchasing power.

The external environment of entrepreneurship is shaped by several elements, including national policies and actions, as well as changes in regional and local authorities.

It is essential to acknowledge that entrepreneurship primarily centers around addressing local and regional issues and challenges. The aforementioned aspect is responsible for the heightened attention of local authorities towards this issue. The regulation of the entrepreneurship system involves the manipulation of the external environment of business activity, with the aim of changing or removing variables that are detrimental to its functioning, while simultaneously generating favorable conditions to facilitate the achievement of its objectives. The operational framework of the company regulatory system ought to operate in the subsequent manner:

- establish an objective for the operational efficacy of the entrepreneurial system.
- this study aims to conduct an analysis of the current situation of the external environment.
- formulate strategies to establish conducive circumstances for attaining the objective.

The specific objectives of government regulation can be categorized and organized based on the following criteria:

- Impact on the social orientation of a commercial economy;
- the prioritization and significance of controlling market fundamentals in the field of economics.
- the influence on the advancement of macroeconomic processes.
- ensuring the preservation and promotion of the social and economic interests of the nation and its many areas.

The primary theoretical facets of entrepreneurial activity in the current era cover a range of characteristics that mirror the intricacies and difficulties of the contemporary corporate environment. These elements can be generally divided into a number of important categories:

1. Innovation and disruption. The function of innovation as a catalyst is becoming more and more prominent in entrepreneurial theories. This covers process and business model innovation in addition to product and service innovation. It's common to see entrepreneurs as change agents who upend established markets and establish new ones.

2. Opportunity identification and exploitation. The idea of opportunity identification is fundamental to entrepreneurial philosophy. This entails identifying gaps in the market or unmet

demands and creating plans to take advantage of these possibilities. The capacity to recognize and seize these chances is regarded as a vital entrepreneurial quality.

*3. Risk and uncertainty management***.** Being an entrepreneur carries a certain amount of risk. The significance of managing risk and uncertainty, including operational, strategic, and financial hazards, is emphasized by modern theories. To thrive, entrepreneurs need to strike a balance between taking calculated risks and careful risk management.

4. Resource mobilization and management. The capacity to obtain and efficiently manage resources is another essential component. This encompasses social networks, intellectual property, human capital, and financial resources as well. Effective resource management is essential to the survival and expansion of ventures.

5. Value development and capture. The development and capture of value is a key component of entrepreneurial philosophies. This reflects the increased emphasis on sustainable and socially responsible business and extends beyond economic value to encompass social and environmental value.

*6. Market dynamics and adaptability***.** A key component of entrepreneurship is the ability to comprehend and adjust to market dynamics. This entails adapting to shifting customer tastes, technical developments, and market conditions. Adaptability and flexibility are essential characteristics of prosperous businesspeople.

7. Entrepreneurial ecosystems and networks. Modern theories frequently stress the significance of the larger entrepreneurial ecosystem, which includes the function of cultural elements, government regulations, financing sources, and support systems. The success of entrepreneurs may be greatly impacted by these environments.

*8. Entrepreneurial mindset and behavior***.** It is becoming more widely acknowledged that psychological elements of entrepreneurship, including as resilience, drive, risk tolerance, and leadership, are essential. The capacity to learn from mistakes, perseverance, and a proactive attitude are traits of the entrepreneurial mentality.

9. Globalization and internationalization. As markets become more interconnected, theories of entrepreneurship also take into account the benefits and difficulties of conducting company internationally. This covers tactics for breaking into untapped markets and navigating cultural barriers.

10. Digital transformation and technological advancements. Lastly, a major topic of interest is how digital technology affects entrepreneurship. This entails making use of digital channels, comprehending the effects of big data, and keeping up with the quick advancement of technology.

I think that in this day and age, innovation and disruption are very important. The revolutionary effect that creative entrepreneurs may have on economies and industries is the reason for this emphasis. They create new market dynamics and development prospects by challenging established business paradigms in addition to introducing new goods and services. Successful entrepreneurs are typically set apart from the others by their ability to innovate and challenge established paradigms in a world where technology and economics are changing at a rapid pace.

Table 2: Innovation and disruption aspects in entrepreneurship (The table has been compiled according to "Mellor R. 2019" by the author.)

Aspect	Description
Market impact	Entrepreneurs create ground-breaking goods or services that have the power to alter consumer expectations.
Economic growth	Through the creation of new markets or the revitalization of current ones, their inventions can promote economic growth.
Industry dynamics	New business models result from their frequent challenges to and modifications of the conventional industry dynamics.
Consumer behavior	Novel goods and services have the power to change customer expectations and behavior.
Technological advancements	Innovation is often propelled by entrepreneurs who either pioneer or exploit technology developments.
Competitive landscape	They have the power to upset the equilibrium of competition, frequently spawning fresh industry leaders.

Regarding innovation and disruption in entrepreneurship, the main emphasis is on the revolutionary effect that entrepreneurial endeavors may have on many aspects of the corporate realm. Entrepreneurs that provide novel goods or services to the market frequently establish new benchmarks, forcing competitors to adjust or develop in reaction. This dynamic has the power to completely transform an industry, changing how companies function and compete.

Table 3: Globalization and internationalization aspects in entrepreneurship (The table has been compiled according to "Mellor R. 2019" by the author)

Aspect	Description
Market expansion	In order to increase the reach of their businesses, entrepreneurs investigate and join new foreign marketplaces.
Cultural sensitivity	Recognizing and adjusting to various customer habits and cultural norms in a variety of marketplaces.
Global Supply Chains	Overseeing and incorporating into international supply networks to ensure smooth operations.
Regulatory compliance	Navigating multiple national and international legal standards and laws.
Competitive Strategies	Formulating tactics to contend with domestic and foreign rivals in the worldwide market.
Technological leverage	Using technology to help in market expansion, communication, and international operations.

Globalization and internationalization constitute key areas of concentration within the sphere of entrepreneurship, particularly in the contemporary, interconnected corporate world. When it comes to expanding their enterprises beyond the limits of their own country, entrepreneurs confront a one-of-a-kind set of problems as well as possibilities.

The fulfillment of all regulatory requirements is another top priority. Legal and regulatory structures might differ significantly from one nation to the next. Business owners have a responsibility to ensure that their foreign activities are in accordance with the laws of the countries in which they operate. These laws may include restrictions pertaining to commerce, labor, the environment, and taxation. It is essential to develop competitive tactics in order to distinguish oneself in the global market. It is essential for entrepreneurs to have a comprehensive awareness of the global market dynamics and competitive landscapes in order to compete successfully with both domestic and foreign enterprises.

4. CONCLUSION

In conclusion, the contribution that technology makes to the processes of globalization and internationalization cannot be overstated. It facilitates effective communication, makes market entrance less difficult, and bolsters enterprises that span international boundaries. For the purpose of expanding their global presence and business activities, entrepreneurs are increasingly turning to online marketplaces, electronic commerce, and other kinds of modern technology.

REFERENCES

Covin J. G., & Slevin D. P. (1991). A conceptual model of entrepreneurship as firm behavior. *Entrepreneurship theory and practice*, 16(1), 7-26.

Drucker P. (1986). Innovation and entrepreneurship: practice and principles. Perfect Bound, Toronto.

Joseph H. (2007). Introduction to entrepreneurship, part a: theorising entrepreneurship. University of Piraeus, Tbilisi.

Man T. W., Lau T., & Chan K. F. (2002). The competitiveness of small and medium enterprises: A conceptualization with focus on entrepreneurial competencies. *Journal of business venturing*, 17(2), 123-142.

Mellor R. (2019). Entrepreneurship for everyone: A student textbook. SAGE, New Delhi.

Minguzzi A., & Passaro R. (2001). The network of relationships between the economic environment and the entrepreneurial culture in small firms. *Journal of Business Venturing*, 16(2), 181-207.

Murphy P. J., Liao J., & Welsch H. P. (2006). A conceptual history of entrepreneurial thought. *Journal of management history*, 12(1), 12-35.

Schumpeter J. A., (2008). The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest and the Business Cycle. *Journal of comparative research in anthropology and sociology*, 3(2), 137-149.

Volume XX, Issue (2) (2024) 180-190

International May Conference on Strategic Management

DOI: *10.5937/IMCSM24069N*

Original research

ANALYSIS OF INNOVATION IN EU COUNTRIES

Ivica Nikolić*, Anđelka Stojanović, Aleksandra Radić, Predrag Đorđević

University of Belgrade, Technical Faculty in Bor, Serbia

Abstract: This paper explores the level of innovativeness among European Union (EU) countries through the application of the Global Innovation Index (GII) and cluster analysis methodology. The research aims to identify the key factors contributing to innovation in various EU countries and to group these countries into homogeneous cluster groups to understand their innovation performance better. Cluster analysis is employed to identify similarities among countries based on their innovation characteristics. The research results provide insight into the relative position of EU countries in the domain of innovation, identifying innovation leaders as well as those lagging behind. Cluster analysis enables the grouping of countries into cluster groups based on similarities in their innovation profiles, facilitating the identification of common challenges and opportunities for collaboration.

Keywords: Global Innovation Index, Innovation, European Union, Cluster analysis

1. INTRODUCTION

Understanding the concept of innovation represents an extremely important prerequisite for further comprehension of this research. The term "innovation" is notoriously difficult to define. It represents a highly complex concept and can be defined through various aspects. The word "innovation" is used in numerous spheres today, and depending on the context, it can have various meanings. For this reason, numerous definitions exist that delineate this term. Since this research focuses on studying innovation in European Union countries, we will adopt the definition found on the European Commission website. "Innovation can be defined as the development or adoption of new concepts or ideas, and/or the new or adopted ideas themselves, as well as the successful exploitation of new ideas. Creativity has the ideas, and innovation is its application. Creativity only emerges when the innovator takes the idea and does something with it. Successful exploitation of new ideas can lead to increased organizational or social benefit." (European Commission, 2014)

Innovation is a pivotal factor influencing economic growth, competitiveness, and societal sustainability in the contemporary world (Schumpeter, 1934; Porter, 1990). The

* *Corresponding author: inikolic@tfbor.bg.ac.rs*

Ivica Nikolić, ORCID: 0000-0003-1986-4653
Anđelka Stojanović, ORCID: 0000-0001-7254-4646
Aleksandra Radić, ORCID: 0000-0003-4253-8004
Predrag Đorđević, ORCID: 0000-0002-8210-174X

process of globalization necessitates that national innovation systems continually adapt to the demands of the global market (Petkovski, 2023). Contemporary literature has already identified a positive coherence between globalization's economic, political, and social effects and technological innovation performance (Feng et al., 2019; Zheng et al., 2019). Accordingly, analyzing the level of innovativeness in European Union (EU) countries becomes crucial for understanding its economic and social development. The Global Innovation Index (GII) provides a comprehensive methodology for measuring innovation on a global scale, encompassing a wide range of indicators reflecting countries' innovation capacities (WIPO, 2023). Additionally, cluster analysis is a powerful tool enabling the grouping of countries into homogeneous clusters based on the similarity of their innovation characteristics (Everitt et al., 2011). The combination of GII and cluster analysis offers deeper insights into the innovative performance of EU countries and identifies key factors contributing to their innovativeness. This paper aims to explore the application of GII and cluster analysis in analyzing innovation in EU countries. Cluster analysis is expected to reveal which EU countries excel in innovation and which lag behind, thus grouping them according to similarities in their innovation profiles, which aids in addressing common problems and opportunities for mutual collaboration. Firstly, we will provide an overview of relevant literature on innovation and methods of measurement. Then, we will examine EU countries and their positioning based on GII. Subsequently, we will present the methodology to be used in the research, including a description of GII and cluster analysis. Following that, we will analyze the research results, identifying key innovation factors in EU countries and grouping them into homogeneous cluster groups. We will discuss the implications of the obtained results and opportunities for policies aimed at enhancing innovation in the region. Finally, we will present conclusions and recommendations for further research and actions in the field of innovation in EU countries. This study contributes to the theoretical and practical understanding of innovation in the EU and provides a basis for developing effective policies and strategies for enhancing innovation and economic development.

2. LITERATURE REVIEW

Innovation is considered a primary driver of economic development and competitive advantage. Hence, governments worldwide are responsible for implementing appropriate measures to enhance national innovative performance (Wonglimpiyara, 2010). Subsequent research studies provide valuable contributions to explaining the developmental trajectory of innovation performance in EU countries. In a study conducted by Skare et al., (2023), the authors quantified the relationships between innovation activities and e-commerce outcomes in the European Union, with the Global Innovation Index (GII) included as one of the parameters. Dachs et al., (2019) investigated the impact of mixed innovation policies on national systems' performance, utilizing European Union countries' data. Although there are studies that have considered the influence and significance of GII, they have not specifically focused on European Union countries. Petkovski (2023) attempted to construct a structural model of the innovative environment based on GII. Similarly, in a study by Ćosić et al. (2023), GII was analyzed in Serbia and Bosnia and Herzegovina. Additionally, in the research conducted by Stojanović et al. (2023), GII was used as a parameter to examine the impact of environmental taxation on ecological innovations in European Union countries as well as other European countries. It is noteworthy that there is currently no research in the academic literature analyzing the impact of innovativeness using the Global Innovation Index in European Union countries.

There is currently a lack of studies utilizing the Global Innovation Index (GII) within the EU and cluster analysis for exploring innovativeness. This highlights a deficiency in an

integrated approach combining these two methodologies for assessing innovation within the EU. Cluster analysis could provide deeper insights into regional patterns of innovation within the EU, while the GII could offer a global perspective and facilitate comparative analyses between EU countries and other parts of the world. Integrating these approaches could be beneficial for the development of targeted innovation policies at the EU and its member state levels. However, future research in this area would be crucial for a deeper understanding of the factors influencing innovation in the EU and the identification of the most effective innovation support strategies.

3. GLOBAL INNOVATION INDEX IN EU COUNTRIES

The Global Innovation Index (GII) represents a pivotal tool for measuring innovation at a global scale (WIPO, 2023). Within the European Union (EU) context, the GII provides valuable insights into the innovative capacities of its member states (European Commission, 2024). Analysis of GII results enables the identification of key factors influencing innovation in EU countries (Fagerberg et al., 2009). Studies have indicated that EU countries with higher rankings on the GII often exhibit greater economic growth and competitiveness rates. Consequently, innovation management in EU countries is increasingly focused on enhancing outcomes measurable through the GII. Additionally, the GII can be useful for assessing the effectiveness of innovation policies and fostering political dialogue among EU countries (Lopez-Claros & Mata, 2005; Bjørnåli & Mathisen, 2015).

3.1. The European Union

The European Union consists of 27 countries located in Europe. These nations united with the goal of improving the quality of life, streamlining convenience, and guaranteeing the safety of their citizens. To achieve these objectives, they pledged to work together collaboratively and provide mutual support. Member states of the European Union are depicted in Figure 1 (European Commission, 2024).

Figure 1. Member States of the European Union (European Commission, 2024).

The European Union (EU) emerged from the aspiration of nations to collaborate, driven by the aftermath of two major wars that ravaged Europe. Recognizing the negative consequences of conflict, European countries concluded that fostering cooperation outweighed fostering discord. Thus, the genesis of the European Union is deeply embedded in the pursuit of a more tranquil and prosperous future, wherein collective endeavours take precedence over division. Initially, a coalition of six European countries embarked on collaborative efforts (Belgium, France, Germany, Italy, Luxembourg, and the Netherlands). Subsequently, other European nations joined, culminating in the establishment of the European Union. Presently, the European Union encompasses 27 countries: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, and Sweden. In June 2016, the United Kingdom decided to withdraw from the European Union. Consequently, as of January 31, 2020, the United Kingdom ceased to be a member of the European Union (European Commission, 2024).

The European Union (EU) stands as a prominent global player in the realm of innovation, persistently endeavouring to bolster competitiveness and economic growth through innovative practices. Innovation has evolved into a pivotal facet of European policy geared towards cultivating a dynamic, sustainable, and inclusive economic framework. EU innovation policy is centred around fostering research and development, nurturing entrepreneurship, and fostering an environment conducive to innovation. Despite concerted efforts, the EU grapples with several challenges in the innovation sphere. Among these challenges are inadequate investments in research and development, market fragmentation, a dearth of entrepreneurial zeal, and sluggishness in the transference of innovations from academic circles to industry.

3.2. The Global Innovation Index (GII)

The Global Innovation Index (GII) was established by the World Intellectual Property Organization (WIPO) with the objective of systematically reporting on the most significant trends in global innovation and ranking each considered country based on its innovative performance on a global ranking list. The GII report is published annually by INSEAD Cornell University in collaboration with WIPO since 2007. The graphical representation of the GII conceptual framework provided in Figure 2 is utilized to provide insight into the relationship established between dimensions. Calculating the GII score is a complex procedure as it takes into account various dimensions and components. Each of the GII components represents an index measured by the World Bank, UNESCO, or other relevant institutions, presented in the form of quantitative data, qualitative data, or composite indicators data (determined as the weighted average of each component). Components are then normalized on a scale from 0 to 100 using the min-max method to enable the ranking procedure. Ranking lists are available for the overall GII and for each dimension and component.

In a world of increasing competition, many countries compete to enhance their innovative capabilities with the aim of achieving growth and economic performance. Competition and innovation are crucial for countries to strengthen their innovative abilities, as they provide potential avenues for accelerating the process of technological catch-up and maintaining productivity and competitive growth. These facts are also valid for European Union countries. Displaying the innovation index can assist the economies of European Union countries in the catch-up process, as it provides overall innovation performances of countries. The innovation index could also aid in assessing what a country should do to stimulate innovation, resulting in economic growth and employment. Furthermore, the innovation index highlights policy challenges—national policies for the development of new national innovation

strategies. The Global Innovation Index (GII) is an evolving project that builds upon its previous editions, incorporating newly available data and inspired by the latest research on innovation measurement. The research we are conducting is based on data from 2023, and the GII model encompasses 132 countries/economies, relying on two sub-indices: Innovation Input and Innovation Output. Each is constructed around pillars.

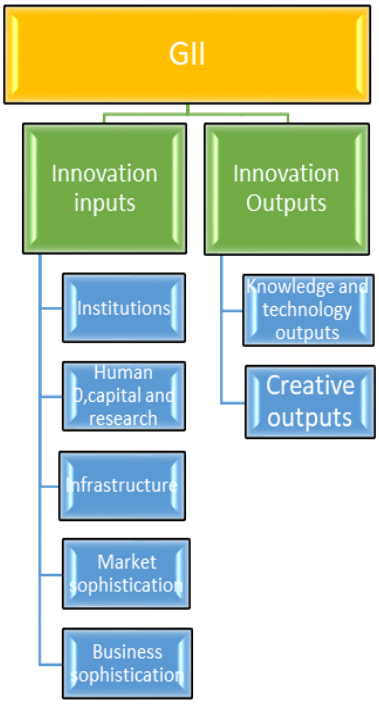


Figure 2. GII Dimensions

The description of dimensions in the structure of the Global Innovation Index (GII) for 2023 is outlined below, derived from the official GII report:

Institution Dimension: This dimension encompasses the political, regulatory, and business environment within a country.

Human Capital and Research Dimension: This dimension focuses on the educational perspective, incorporating education expenditures, the number of students, and education duration into its measurement.

Infrastructure Dimension: This dimension comprises three components, including information and communication technology (ICT) access and use, general infrastructure, and ecological sustainability. General infrastructure includes electricity output, logistic performances, and gross capital formation.

Market Sophistication Dimension: This dimension encompasses aspects such as credits, investments, trade, and competition scale.

Business Sophistication Dimension: This dimension emphasizes the knowledge perspective of innovation. It includes factors such as knowledge workers, innovation linkages, and knowledge absorption. This dimension considers the number of knowledge workers, employee access to formal training, collaboration between universities and industry in innovation, and technology imports.

Knowledge and Technology Outputs Dimension: This dimension comprises measurements related to knowledge creation, knowledge impact, and knowledge diffusion. Knowledge creation is reflected in the number of patents and research articles. Knowledge

impact considers factors such as GDP growth rate per engaged person, firm density, and computer software spending. Knowledge diffusion assesses financial resources for license fees for intangible assets, technology exports, and investments abroad.

Creative Outputs Dimension: This dimension consists of three components: intangible assets, creative goods and services, and online creativity. Intangible assets are measured by the number of issued trademarks and the influence of ICT on business and organizational model creation. Creative goods and services measure the cultural environment reflected in expenses for recreation and culture, produced films and newspapers, and exported creative goods and services. Online creativity is evaluated through country code domains, Wikipedia editors, and mobile app creation.

4. DATA AND METHODOLOGY

The introduction of cluster analysis as a methodology in investigating innovation in European Union countries represents a significant step towards a deeper understanding of the complex interactions within innovation systems. Cluster analysis offers the possibility of grouping similar entities based on their characteristics, enabling the identification of key patterns and trends in innovative activities. This methodology has proven useful in studying regional differences in innovation, identifying key sectors with high potential for development, and formulating targeted innovation support policies at the local level. The application of cluster analysis in EU countries provides an opportunity for a better understanding the specificities of innovation systems within different member states, as well as identifying common challenges and opportunities for enhancing innovation at the Union level. This introductory text highlights the importance of cluster analysis as a methodology that contributes to the more efficient development of innovation policies and strengthens the competitiveness of EU countries in the global context.

Grouping is performed based on the results (scores) calculated based on the values of attributes across all variables for each observation unit separately. The method used for classification must be entirely numerical, and the number of classes is usually not known in advance. There are many reasons for using cluster analysis. In our research, the values of seven dimensions of the Global Innovation Index for the year 2023 in European Union countries were taken as variables. This study aimed to identify key patterns and groupings of countries based on their innovation characteristics in order to understand better the structure and dynamics of innovation systems in the EU. Through the analysis of seven dimensions of the GII, such as human capital, research and development, infrastructure, market, business environment, knowledge creation, and technology outputs, a comprehensive insight into the innovation performance of EU countries was sought. The results of this research should provide a basis for formulating targeted innovation policies at the Union level, as well as identifying areas where capacity strengthening is needed to enhance competitiveness and sustainable economic growth in Europe. Data for analysis are presented in Table 1.

The countries of the European Union listed in Table 1 are ranked according to the GII for 2023. It is evident that the top three ranked countries are Sweden, Finland, and the Netherlands, while the bottom three ranked countries are Croatia, Slovakia, and Romania. This ranking comes as no surprise. The top three ranked countries, according to the Global Innovation Index (GII), Sweden, Finland, and the Netherlands, are often recognized as leaders in innovation and the development of high-tech sectors. Sweden, with its strong focus on research and development, along with its advanced educational system, serves as an example of exceptional innovation and technological advancement. Finland, known for its ability to foster innovative startups and support entrepreneurship, also stands out as a leader in

innovation. Similarly, the Netherlands, with its open and dynamic economy, along with high levels of investment in research and development, also positions itself highly on the GII list. On the other hand, the three lowest-ranked countries, Croatia, Slovakia, and Romania, face challenges in developing innovative capacity and technological competitiveness. This ranking is unsurprising, given insufficient investments in research and development, lack of innovation-supporting infrastructure, and business environment obstacles hindering innovative enterprises' development. The three worst-ranked countries, Croatia, Slovakia, and Romania share a common historical point of being former communist countries. Although these countries have since undergone transformation, leaving behind the communist regime, they still face challenges in developing innovative capacity and technological competitiveness.

Table 1. Data for analysis (WIPO, 2023)

No.	Country	Overall GII	Institutions	Human capital and research	Infrastructure	Market sophistication	Business sophistication	Knowledge and technology outputs	Creative outputs
1	Sweden	2	18	3	2	10	1	3	8
2	Finland	6	3	5	1	12	4	4	16
3	Netherlands	7	6	13	14	15	8	8	9
4	Germany	8	22	4	23	14	16	9	7
5	Denmark	9	5	9	3	21	12	12	10
6	France	11	27	17	22	9	17	16	6
7	Estonia	16	11	34	5	5	25	20	15
8	Austria	18	13	11	12	39	19	17	13
9	Luxembourg	21	7	31	31	35	7	38	11
10	Ireland	22	15	28	18	51	14	14	26
11	Belgium	23	30	14	44	26	10	15	30
12	Malta	25	34	39	17	43	21	36	4
13	Italy	26	52	33	21	40	33	18	21
14	Republic of Cyprus	28	41	38	32	38	31	23	17
15	Spain	29	46	27	16	33	32	24	29
16	Portugal	30	35	23	45	42	34	32	19
17	Czech Republic	31	36	30	24	82	27	21	32
18	Slovenia	33	38	25	20	68	26	27	48
19	Lithuania	34	19	42	43	34	35	29	41
20	Hungary	35	47	36	42	64	30	26	38
21	Latvia	37	39	43	33	61	37	49	31
22	Bulgaria	38	66	66	28	60	42	34	34
23	Poland	41	76	40	47	67	41	40	35
24	Greece	42	63	29	38	66	62	43	39
25	Croatia	44	72	44	26	48	53	33	52
26	Slovakia	45	65	53	41	72	47	31	56
27	Romania	47	74	75	34	75	51	35	58

During the communist era, the focus was on a centralized economy and limited market access, which hindered innovation and entrepreneurship development. Although things have changed since then, the transition to a market economy and open society requires time and effort. These countries are challenged with adapting to new economic models and establishing a conducive environment for innovation while simultaneously grappling with inherited structural and institutional barriers.

The number of groups or clusters to expect based on the formed sample is often not known in advance. To determine the optimal number of clusters, a two-step analysis is typically conducted:

In the first step, hierarchical cluster analysis is conducted using Ward's method. This determines the optimal number of clusters for further investigation.

In the second step, hierarchical cluster analysis, with the selected number of clusters, is conducted again, allowing each respondent (observation) to be assigned to a cluster.

This clustering methodology is implemented using the SPSS software package.

5. RESULTS AND DISCUSSION

The results commence with Table 2, which illustrates solutions for each possible number of clusters from 1 to 27 (the total number of EU countries).

Table 2. Agglomeration Schedule

Stage	Cluster Combined		Coefficients	Stage Cluster First Appears		Next Stage
	Cluster 1	Cluster 2		Cluster 1	Cluster 2	
1	3	5	103.500	0	0	7
2	13	15	227.000	0	0	5
3	4	6	362.500	0	0	17
4	1	2	516.500	0	0	7
5	13	14	771.667	2	0	22
6	17	18	1 038.667	0	0	16
7	1	3	1 315.417	4	1	20
8	26	27	1 644.917	0	0	15
9	8	10	1 982.917	0	0	19
10	20	21	2 397.917	0	0	16
11	23	24	2 816.917	0	0	21
12	22	25	3 373.917	0	0	15
13	16	19	3 963.417	0	0	18
14	9	12	4 614.417	0	0	19
15	22	26	5 384.667	12	8	21
16	17	20	6 222.667	6	10	24
17	4	7	7 078.500	3	0	20
18	11	16	7 969.000	0	13	22
19	8	9	8 981.000	9	14	23
20	1	4	10 121.702	7	17	25
21	22	23	11 435.452	15	11	26
22	11	13	12 831.286	18	5	23
23	8	11	15 235.286	19	22	24
24	8	17	19 301.286	23	16	25
25	1	8	32 858.262	20	24	26
26	1	22	57 714.444	25	21	0

In Table 2, the crucial column is the Coefficients column, which presents the calculated agglomeration coefficients for specific cluster numbers. Thus, proceeding from the end towards the beginning of the column, we observe that for one cluster, the coefficient is 57,714.444; for two clusters, it is 32,858.262; for three clusters, it is 19,301.286, and so forth. A sharp decrease in the coefficient of agglomeration change (4th column) is noted between solutions with 3 and 4 clusters (decreasing from 32,858.262 to 19,301.286). The last column, with the values of coefficient change, allows us to determine the optimal number of clusters. In this case, it is 3 clusters. The dendrogram in Figure 3 can also aid in determining the number of clusters.

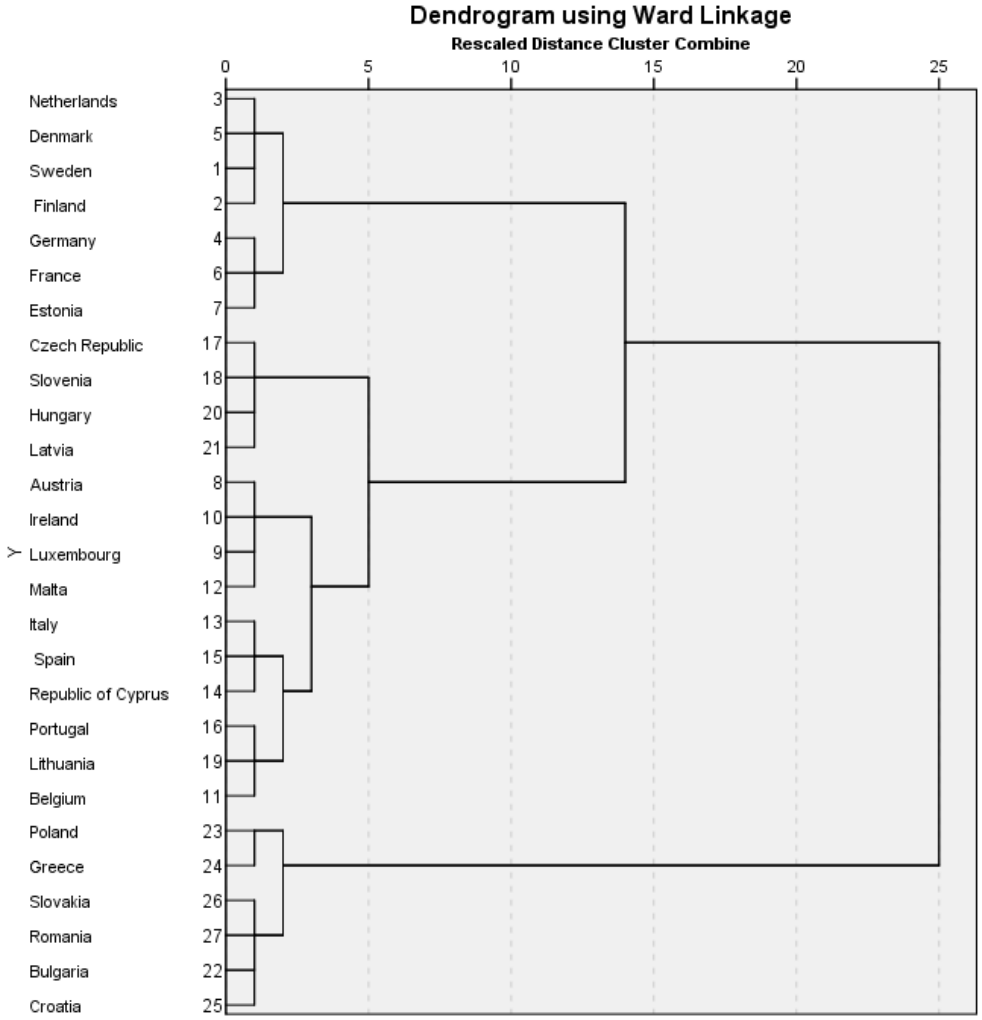


Figure 3. Dendrogram for determining the number of clusters

From the obtained dendrogram, the existence of two major clusters and one minor cluster can be discerned, confirming that the optimal number of clusters is 3.

Now, we can proceed to repeat the hierarchical cluster analysis, specifying the program to assign each observation to one of the three chosen clusters. Consequently, it becomes apparent that seven countries (Netherlands, Denmark, Sweden, Finland, Germany, France, Estonia) are classified into cluster 1, fourteen countries (Czech Republic, Slovenia, Hungary, Latvia, Austria, Ireland, Luxembourg, Malta, Italy, Spain, Republic of Cyprus, Portugal, Lithuania, Belgium) into cluster 2, and six countries (Poland, Greece, Slovakia, Romania, Bulgaria, Croatia) into cluster 3. The grouping of Poland into cluster three alongside countries of former communist regimes is surprising.

6. CONCLUSION

Innovation represents a crucial driver of progress for every nation. The level of competitiveness among nations regarding innovation is precisely expressed through the Global Innovation Index (GII). GII reports encompass over 130 countries worldwide and, based on numerous parameters, indicate how innovatively competitive a country is. Among the most competitive nations globally, we find the European Union member states. However, even among them, there are certain disparities concerning innovation. Based on these differences, through the application of cluster analysis, it has been determined that they can be grouped into three clusters. The first cluster comprises Western European countries, the founding members of the European Union, while the second, the largest group, consists of later entrants to the European Union. The third cluster comprises Balkan countries that joined the European Union later, constituting the class of least innovative-capable nations. These countries should identify common challenges and opportunities for collaboration to enhance innovative performances. This entails increasing investments in research and development, building infrastructure to support innovation, reducing bureaucratic barriers and corruption, improving the educational system, and promoting entrepreneurship and innovation.

ACKNOWLEDGMENT

The research presented in this paper was done with the financial support of the Ministry of Science, Technological development and Innovation of the Republic of Serbia, within the funding of the scientific research work at the University of Belgrade, Technical Faculty in Bor, according to the contract with registration number 451-03-65/2024-03/200131.

REFERENCES

Bjørnåli, E. S., & Mathisen, T. A. (2015). Innovation Performance: State of the Art. Nova Science Publishers.

Ćosić, M., Tomić, L., & Mesarević, A. (2023). The analysis of the Global Index of Innovation of Serbia and Bosnia and Herzegovina. *Trendovi u poslovanju*, XI(21), 84–90. https://doi.org/10.5937/trendpos2301084C (In Serbian)

Dachs, B., Ebersberger, B., & Borowiecki, M. (2019). The Impact of Innovation Policy Mixes on the Performance of the National Innovation System. *Research Policy*, 48(7), 103708. https://doi.org/10.1016/j.technovation.2012.06.002

European Commission. (2014). European Commission. Retrieved from https://ec.europa.eu/enrd/enrd-static/leader/leader/leader-tool-kit/the-strategy-design-and-implementation/the-strategy-design/en/what-is-innovation_en.html

European Commission. (2024). European Commission. Retrieved from https://commission.europa.eu/index_en

Everitt, B., Landau, S., & Leese, M. (2011). Cluster Analysis. John Wiley & Sons.

Fagerberg, J., Mowery, D. C., & Verspagen, B. (2009). Innovation Systems: Analyzing the Dynamics of Technology. Oxford University Press.

Feng, G. F., Zheng, M., Wen, J., Chang, C. P., & Chen, Y. E. (2019). The assessment of globalization on innovation in Chinese manufacturing firms. *Structural Change and Economic Dynamics*, 50, 190–202. https://doi.org/10.1016/j.strueco.2019.06.012

Lopez-Claros, A., & Mata, F. (2005). Global Competitiveness Report 2005-2006. World Economic Forum. Retrieved from https://www3.weforum.org/docs/WEF_GlobalCompetitivenessReport_2006-07.pdf

Petkovski, I. (2023). Structural PCA-MLR model of the innovation environment in BRICS countries. *Serbian Journal of Management*, 18(1), 1–26. https://doi.org/10.5937/sjm18-32136

Porter, M. E. (1990). The Competitive Advantage of Nations. Harvard Business Review Press.

Schumpeter, J. A. (1934). The Theory of Economic Development. Harvard University Press.

Skare, M., Gavurova, B., & Rigelsky, M. (2023). Innovation activity and the outcomes of B2C, B2B, and B2G E-Commerce in EU countries. *Journal of Business Research*, 163, 113874. https://doi.org/10.1016/j.jbusres.2023.113874

Stojanović, M., Gligorijević, J., Stojanović, G., & Becić, S. (2023). Analysis of the impact of environmental taxation on environmental innovations. *Ekonomija teorija i praksa*, XVI(1), 101–119. https://doi.org/10.5937/etp2301101S (in Serbian)

WIPO. (2023). Global Innovation Index 2023. Retrieved from https://www.wipo.int/global_innovation_index/en/2023/

Wonglimpiyarat, J. (2010). Innovation index and the innovative capacity of nations. Futures, 42(3), 247–253. https://doi.org/10.1016/j.futures.2009.11.010

Zheng, M., Feng, G. F., Feng, S., & Yuan, X. (2019). The road to innovation vs. the role of globalization: A dynamic quantile investigation. Economic Modelling, 83, 65–83. https://doi.org/10.1016/j.econmod.2019.09.019

Volume XX, Issue (2) (2024) 191-199

International May Conference on Strategic Management

DOI: *10.5937/IMCSM24070M* *Original research*

THE USE OF RISK MAPPING FOR SUSTAINABLE MANAGEMENT OF HARMFUL EFFECTS IN BUSINESS: CASE STUDY

Taleb Mounia[1] *, Chaib Rachid[2], Belhour Samira [2], Nettour Djamel[3]

[1] Echahid Cheikh Larbi Tebessi University, Mining Institute, Environmental Laboratory Tebessa Algeria
[2] Laboratory of Transport Engineering and Environment, Mentouri University-Constantine, Algeria
[3] National Higher School of Technology and Engineering, Mining, Metallurgy and Materials Engineering Department, Laboratory of Mineral Resources Valorisation and Environment LAVAMINE Annaba 23005, Algeria

Abstract: Today, risk analysis methods are used to support decisions made regarding risk management and the development of action plans. In practice, the company is looking for a decision support tool. In other words, the method chosen must make it possible to act without the exact extent of the risk concerned necessarily being known. It is then appropriate to set up a sort of sieve funnel which allows all the risks to be understood and only the most significant to be retained. Among these tools, we find cartography. Its objective is to have an overall inventory of vulnerabilities for all fields of activity. This approach is essential because it prompts the general inventory of risks and their evaluation. It gives an overview to decision-makers to guide their choices. The maps are then used to monitor the effectiveness of the strategies implemented and form a very relevant communication tool on the state of affairs, the objective of our work. Thus, to be able to describe a method of global analysis of risks that companies encounter either of their own doing, or due their environment, called risk mapping. As a case study, we used the Hamma Bouziane cement factory, located in Constantine, Algeria...

Keywords: Risk mapping, decision support tool, action plan, priority, communication**.**

1. INTRODUCTION

The industrial hygiene and safety specialty is a professional branch which aims to anticipate, identify and reduce the risks linked to industrial activities. It refers to the standards

* *Corresponding author: mounia.taleb@univ-tebessa.dz*

Taleb Mounia, ORCID: 0000-0003-2564-2141
Chaib Rachid, ORCID: 0000-0001-8680-1906,
Belhour Samira, ORCID: 0000-0001-9719-4646
Netour Djamel, ORCID: 0000-0003-0056-5389

and obligations of the employer in order to guarantee a decent, respectable and secure working environment. This involves assessing, anticipating and limiting all risks that could harm the health of employees in any work environment. It involves the implementation of prevention, protection and safety measures to guarantee the health and safety of workers, the protection of the environment and the preservation of industrial installations (AIB et al., 2024). As a result, the employer is required to respect specific rules of hygiene, safety and improvement of working conditions for employees (Blagoycheva et al., 2019; Kharzi et al., 2019). As such, it must provide them with all the necessary means to protect and promote their health and well-being and preserve the environment as a whole through preventive actions in the workplace in order to guarantee their safety. From now on, the health of employees is an indisputable source of efficiency in work, and therefore of individual and collective performance (Skład, 2019; ABDI et al., 2020). Therefore, and for sustainable management with a view to preventing work accidents, it appears necessary to pose the problem as it actually presents itself and above all to propose practical and objective solutions, the objectives of our research work. . Now with the constant evolution of working conditions and the emergence of new risks, ensuring the physical and moral safety of all employees working for the company is essential and becomes a permanent requirement. Therefore, security managers in different companies must become aware of the importance of prevention in different tasks.

2. PROBLEMATIC

Occupational safety and health have become a public health priority in industrial countries (KHARZI et al., 2020). Developing a strong safety culture (CS) would be a way to reduce the number of adverse events linked to various activities in the company (Salmi & Chaib, 2017). This is why occupational health and safety policy is not just a question of laws and regulations. These are essential and must be applied at the level of each company, even in each workplace and for each activity. Additionally, employers should ensure that prevention is an integral part of all activities. Unfortunately, with the intensity of human activity, its ever-increasing pace and the permanent intervention of man, the risk is constantly present. Furthermore, as not all workplace accidents can be avoided, it appears necessary to pose the problem as it actually presents itself and, above all, to propose practical and objective solutions. Therefore, with reference to industry and, more particularly, to the operation of processes, safety can be defined as the ability of a system to operate while controlling, to an acceptable level, the risks for people, property and the environment (Chaib & Benidir, 2016). Through this research work, we are trying to map the risks in a cement factory. This mapping facilitates the understanding and representation of risks visually to facilitate the understanding, approach and transmission of information between all stakeholders for effective risk management, the objective of our study. It is a steering management tool allowing you to represent all the risks inherent to the project and to define their impacts (Smith et al., 2014; Borghesi et al., 2012). It is an opportunity to initiate a prevention approach whose purpose is to preserve the health and improve the safety at work of employees. It is an opportunity to initiate a prevention approach whose purpose is to preserve health and improve safety to the work of employees.

3. RESULTS AND DISCUSSION

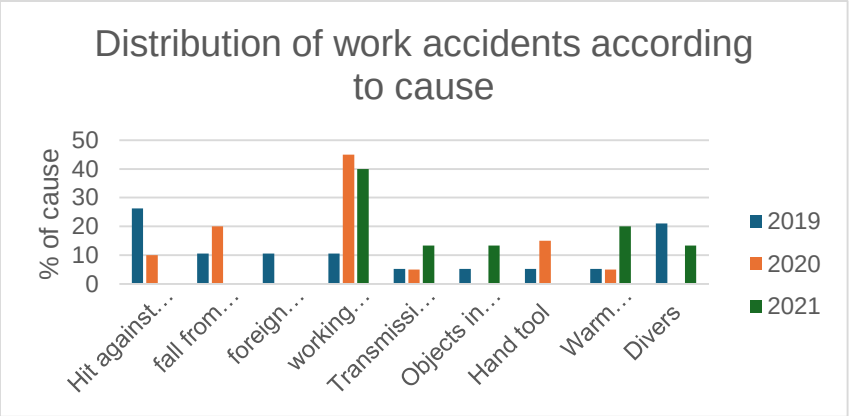
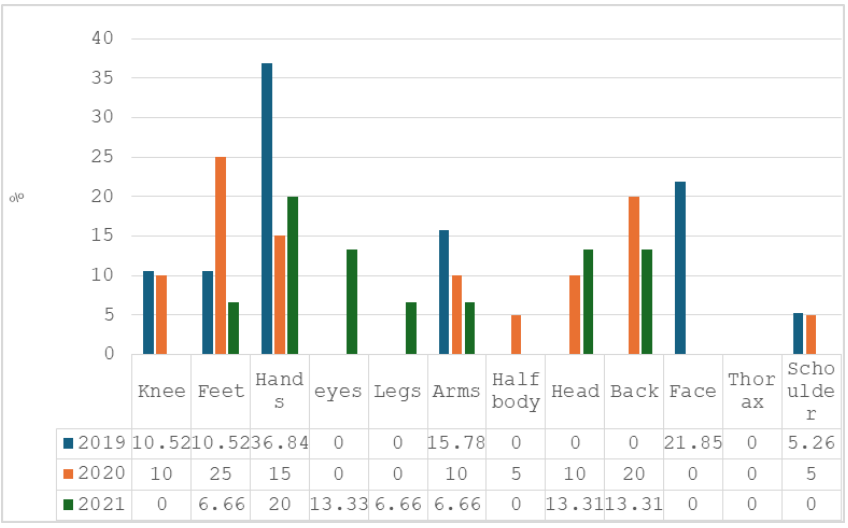


Figure 1. Distribution of work accidents according to cause

Observation

According to the statistics, the distribution of causes of work accidents in the material element is very variable and all sectors are concerned. Controlling the consequences of the elements taken into consideration informs us about the position of the various risks encountered at the Hamma Bouziane cement production unit. In addition, we notice that posture is a crucial problem and that the floor is cluttered, otherwise the majority of accidents are due to these two phenomena.



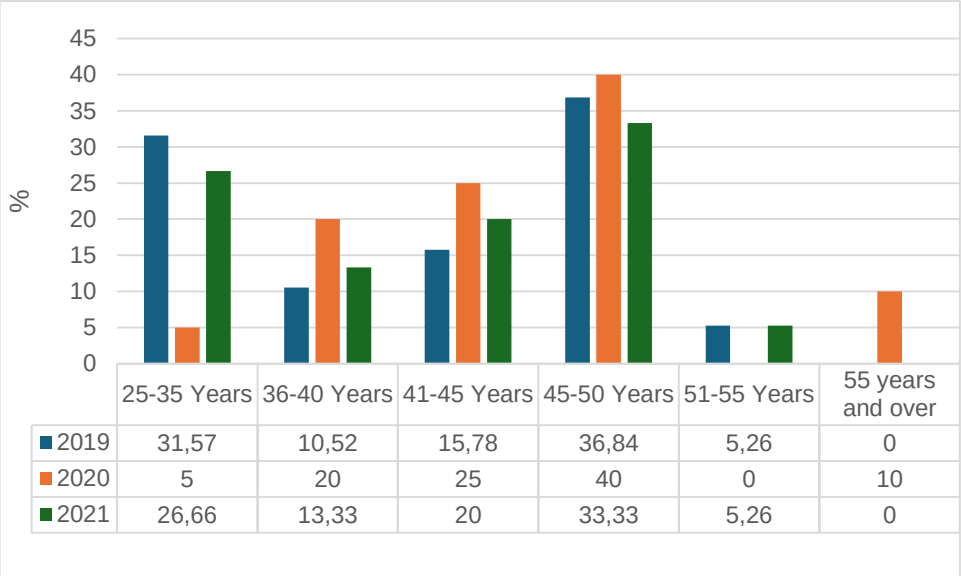
	Knee	Feet	Hands	eyes	Legs	Arms	Half body	Head	Back	Face	Thorax	Schoulder
2019	10.52	10.52	36.84	0	0	15.78	0	0	0	21.85	0	5.26
2020	10	25	15	0	0	10	5	10	20	0	0	5
2021	0	6.66	20	13.33	6.66	6.66	0	13.31	13.31	0	0	0

Figure 2. Distribution of work accidents according to the sites of injury

Comment

The results in Figure 2 tell us about the most dominant risks to the body, respectively the eyes and the hands. This is due to non-compliance with the use of individual equipment, masks and gloves. Through the drawing of the legend of the figure below we note a non-

compliance with the basic measures of hygiene and safety rules which preserve the body. Therefore, preventive measures must be taken to preserve human capital.

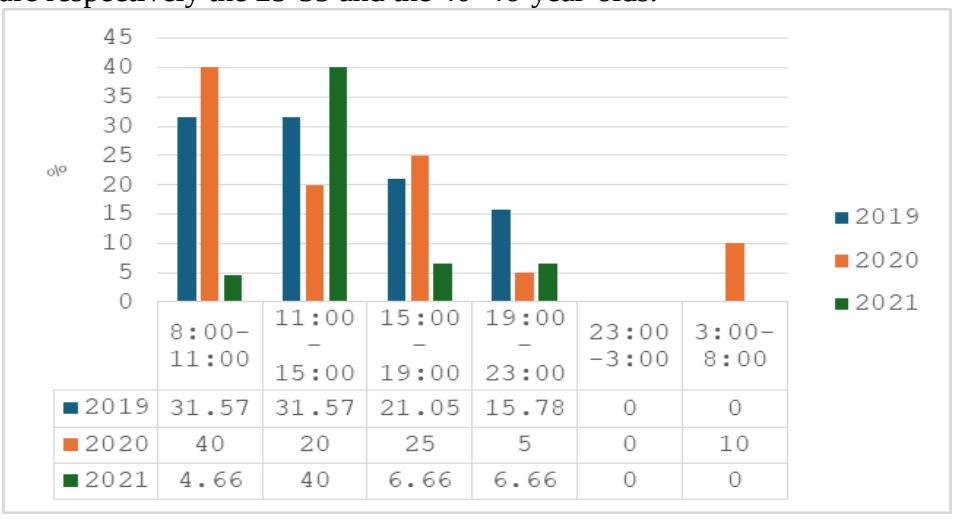


	25-35 Years	36-40 Years	41-45 Years	45-50 Years	51-55 Years	55 years and over
2019	31,57	10,52	15,78	36,84	5,26	0
2020	5	20	25	40	0	10
2021	26,66	13,33	20	33,33	5,26	0

Figure 3. Distribution of work accidents according to age group

Comment

The historical distribution of work accidents according to age group provides us with information on the seriousness of work accidents encountered at the production unit level. through the statistics collected we note a fluctuation in risks depending on the different age categories. This probably reflects the arduous nature of the various work positions occupied by this category of worker. However, it should be noted that the age groups most affected by work accidents are respectively the 25-35 and the 40–46-year-olds.



	8:00–11:00	11:00–15:00	15:00–19:00	19:00–23:00	23:00–3:00	3:00–8:00
2019	31.57	31.57	21.05	15.78	0	0
2020	40	20	25	5	0	10
2021	4.66	40	6.66	6.66	0	0

Figure 4. Distribution of work accidents according to working hours.

Comment

We note through the distribution of work accidents according to working hours depends on the arduousness of the workstations occupied by the different machine operators, this results

from the strategic pace of cement production. The greatest number of work accidents occur between 8 a.m. and 11 a.m. This is the period of productive time, or even peak load.

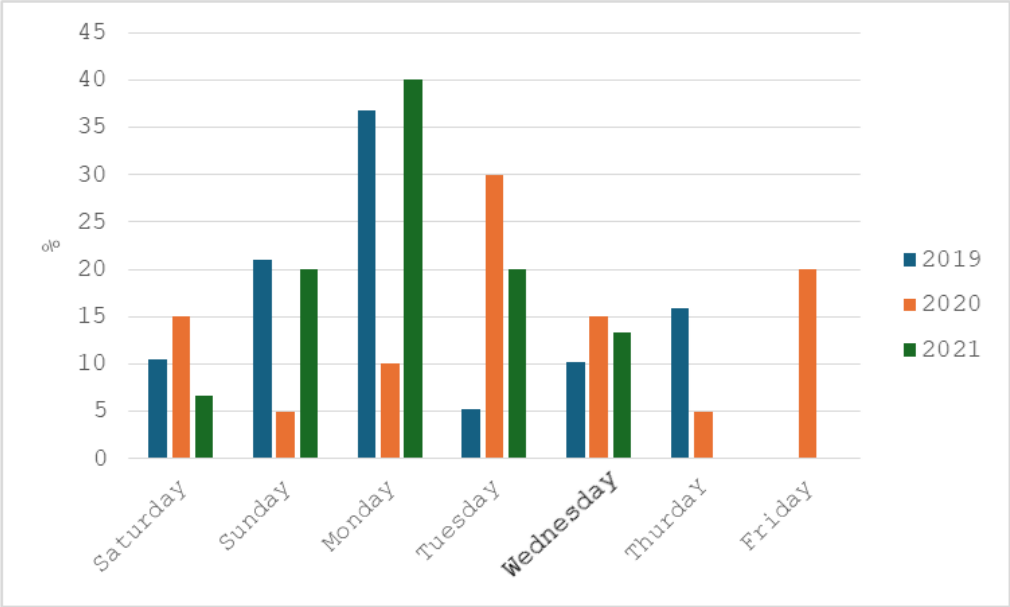


Figure 5. Distribution of work accidents according to the days of the week.

Comment

We note that the distribution of work accidents according to the days of the week, year 2021, is random. A very close study is necessary to study the frequency of these accidents during the week, the rotation of the different teams can contract this type of accident. However, the greatest number of accidents occur during the day on Monday! A study is necessary.

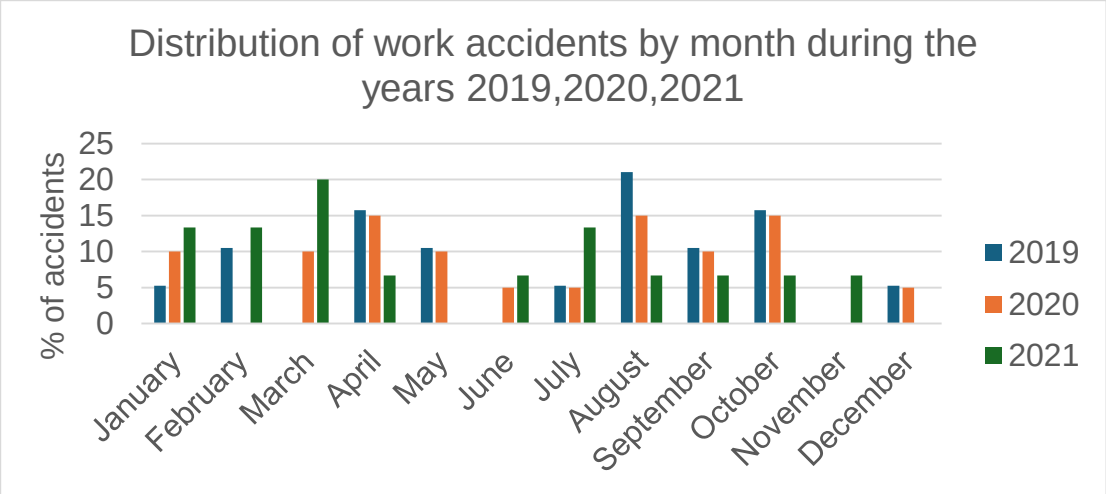


Figure 6. Distribution of work accidents by month during the years 2019,2020,2021

Observation

The highest rate of number of accidents is in January, February and March. This probably results from the arduousness and wear and tear of human resources. A study is necessary to verify the social conditions of rest of the worker which places him in a particular ease of work.

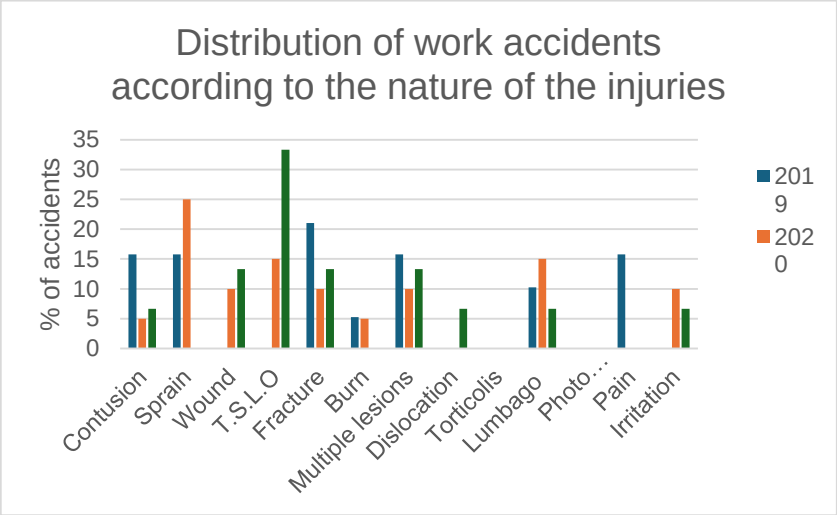


Figure 7. Distribution of work accidents according to the nature of the injuries.

Comment

The histogram of the distribution of work accidents according to the nature of the injuries, year 2021 provides us with information on the position of the different operators in the cement production chain. The intervention of the latter at the level of the machines favors the nature of the lesions. Thus, a quantitative and qualitative study is necessary to verify this approach to the nature of the lesions. However, it should be noted that CTMS (musculoskeletal disorders) are the most common. We must therefore review the quality of life at work.

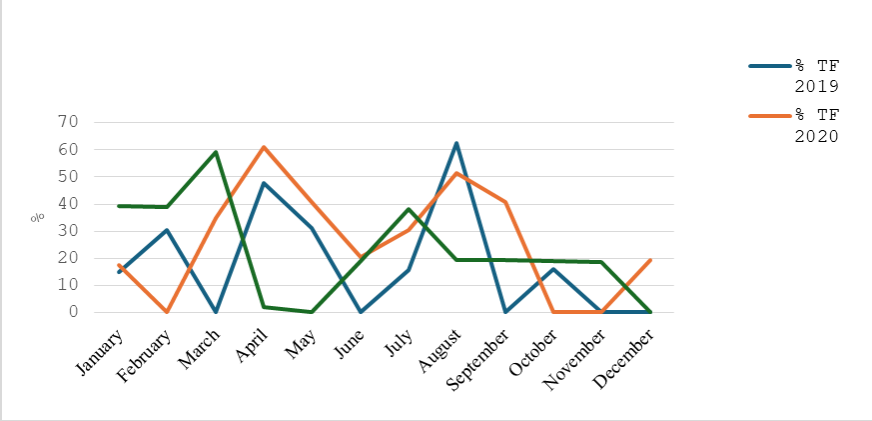


Figure 8. Distribution of the frequency rate during the years 2019,2020,2021

Note

We note through the sawtooth distribution plot that the frequency rate is changing compared to the year 2019 (taken as a reference) which proves that the company is suffering from a shortfall and that the planned occupational health and safety policy is failing and commitment to a process of continuous improvement is necessary.

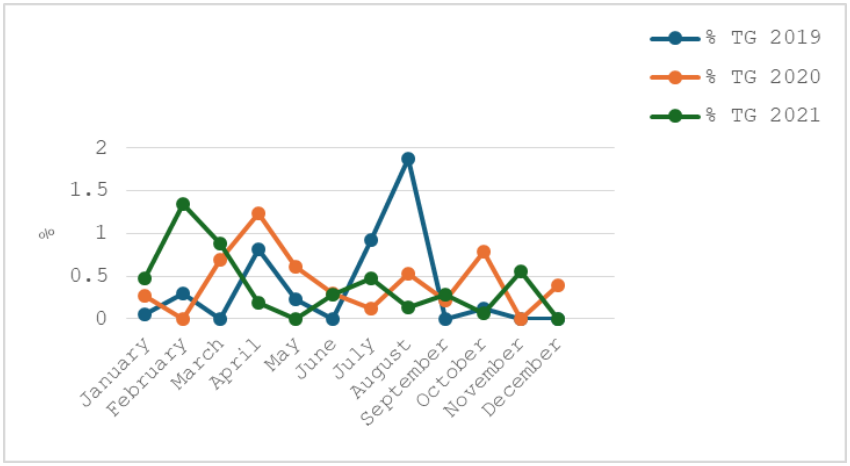


Figure 9. Distribution of severity rates during the years 2019,2020,2021

Comment

The outline of the curve of the distribution of severity rates over the three years is slightly variable, which confirms that there is no improvement over the three years.

According to these results obtained, we can say the cement plant requires a review of the management of health and safety at work, or even review the management of quality of life at work.

4. SOLUTIONS PROPOSED FOR CONTINUOUS IMPROVEMENT

Among the most effective tools for finding the causes of a problem is the Ishikawa diagram (Chaib et al., 2014; Abdi et al., 2020). The Ishikawa diagram, or cause and effect diagram, is a structured representation of all the causes that lead to a situation. Its interest is to allow members of a group to have a shared and precise vision of the possible causes of a situation. The diagram includes the causal factors identified and categorized according to the '5M' rule. Indeed, it has been noted that the causal factors generally fall into these seven categories, Figure 10.

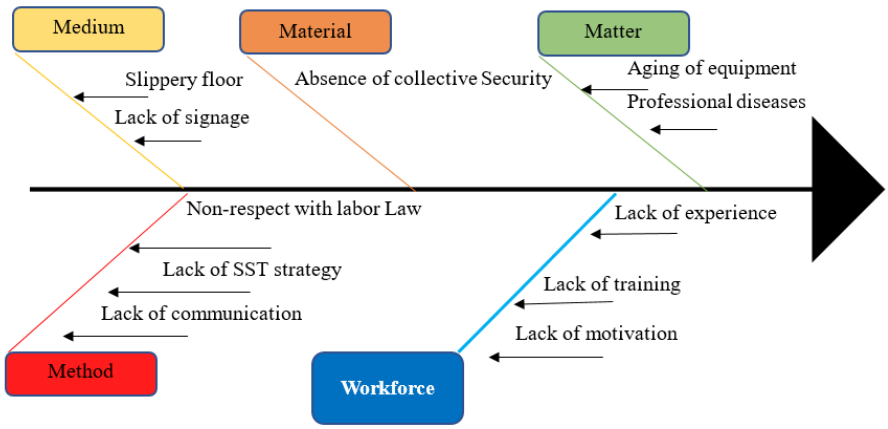


Figure 10. Diagram of (5M) causes of a work accident at the Hamma Bouziane cement factory

The proposed solutions are summarized in Table 1.

Table1. Suggested solutions

Workforce	Lack of experience Lack of training Lack of motivation Lack of coordination and communication Professional diseases
Environment	Slippery floor Lack of signage Lack of safety barrier in dangerous areas Defective ladders
Mater	Lack of coordination between different specialties Aging of equipment Use of non-compliant tools Professional diseases
Method	Non-compliance with labor laws (permit, work authorization, etc.) Lack of hierarchical communication Neglect of hygiene and safety Lack of occupational health and safety strategy
Material	The age of the equipment Lack of collective security Lack of safety in the dangerous area Personal protective equipment not in compliance with regulations

CONCLUSION

It would not be a good method to research the ways and means of better prevention of industrial and technological risks, apart from a reflection on the real data which today characterize the direct confrontation between society and risk. The growing consideration of risks of multiple origins requires, on the part of today's society, a new approach in terms of organization and in terms of decision-making practice. Therefore, any employer must take appropriate organizational measures and acquire good protection and prevention habits, as well as use the necessary adequate means, and in particular mechanical equipment, in order to avoid the use of manual communication of loads cannot be avoided, in particular due to the configuration of the premises where this handling is carried out. Finally, the employer must take appropriate organizational measures or make adequate means available to workers, if necessary by combining their effects, so as to limit physical effort and reduce the risk incurred during this operation. Now, to build a culture of health and safety at work and obtain a measurable improvement in working conditions and a reduction in work accidents and occupational illnesses, it is necessary to combine them with a range of other instruments such as information, awareness, training, social dialogue, good practices, corporate social responsibility, economic incentives and integration into a process of continuous improvement in OHS.

REFERENCES

Abdelatif, A., Nettour, D., Chaib, R., Verzea, I., & Bensehamdi, S. (2023). Improvement of enterprise risk visualization: risk mapping. *Technology Audit and Production Reserves*, 6 (2 (74)), 00–00. doi: https://doi.org/10.15587/2706-5448.2023.291959

Blagoycheva, H., Andreeva, A., & Yolova, Galina. (2019). Obligation and responsibility of employers to provide health and safety at work-principles, current regulation and prospects. *Economic Studies*, 28 (2).

Kharzi, R., Chaib, R., Verzea, Ion, & al. (2020). Safe and Sustainable Development in a hygiene and healthy company using decision matrix risk assessment technique: a case study. *Journal of Mining and Environment*, 11 (2), 63-373.

Skład, A. (2019). Assessing the impact of processes on the Occupational Safety and Health Management System's effectiveness using the fuzzy cognitive maps approach. *Safety science*, 117, 71-80.

Meriem, A., Chaib,R., & Verzea, I (2020). contribution to the occupational risk assessment forsustainable management in health and safety at work: case study; acta technica napocensis Series: *Applied Mathematics, Mechanics, and Engineering* 63 (IV), November,. https://atna-mam.utcluj.ro/index.php/Acta/article/view/1423

Kharzi, R., Chaib, R., & Akni, A. (2020). Prioritizing the Actions to be Undertaken in Health and Safety at Work: Case Study Region of Tiaret. *Int'l JL & Mgm*t. 62, 267.

Salmi, S., & Chaib, R. (2017). Feedback a learning tool for future organizations. *World Journal of Engineering*, 14 (6), 545-549.

Chaib, R., & Benidir M., (2016). For a sustainable development in occupational safety and health. *Occupational Medicine and Health Affairs*, 2016.

Smith, N. J., Merna, T., & Jobling, P. (2014) Managing risk in construction projects. John Wiley & Sons.

Borghesi, A., & Gaudenzi, B. (2012). Risk management: How to assess, transfer and communicate critical risks. *Springer Science & Business Media*, 2012.

Abdi, M., Chaib, R., & Verzea, I. (2020). Contribution to the occupational risk assessment for sustainable management in health and safety at work: case study. *Acta technica napocensis-series: applied mathematics, mechanics, and engineering*, 63 (4).

Chaïb, R., Taleb, M., Benidir, M., et al. (2014). promoting in companies a successful culture of health and safety. 2014.