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Obsah Contents

PRACTICAL EXPERIENCES WITH THE USE OF AI IN THE YOUNG GENERATION

Dana JAŠKOVÁ, Jana SOCHUĽÁKOVÁ

Abstract

With the rapid development of digital technologies and their implementation in everyday life, the topic of artificial intelligence (AI) is increasingly being discussed. This new to many technologies is constantly surprising with its capabilities, for example in the field of creation. Generative models, which are already capable of creating quite original visual, textual or musical content, are rapidly gaining attention and finding applications in a few sectors. The use of generative AI is also expanding significantly among students, for whom it promotes learning and creativity. However, this may pose a global problem in terms of ethics and copyright protection.
The aim of this paper is to assess whether there is sufficient awareness of this topic at different school levels and what the practical experience of using AI among the younger generation is, based on an analysis of students' perceptions of AI.

Key words:
artificial intelligence (AI), generative artificial intelligence, copyright, generative models, technology

JEL Classification D89, I21,C40 https://doi.org/10.52665/ser20240101

INTRODUCTION

In today's world of digital technologies, we are witnessing rapid growth that constantly brings new opportunities and challenges. Nowadays, it is almost impossible to avoid mentioning the rapidly developing technology, artificial intelligence, which has been attracting huge interest in recent years. This complex technology increasingly intervenes in our daily lives, often so subtly that most people do not notice its presence. It opens new possibilities, and many see a great benefit in it, especially in the form of generative artificial intelligence. In 2023, generative artificial intelligence has become a significant phenomenon in everyday life, especially in the field of education, but also in other sectors thanks to the ability to generate text, images, music and other content. However, new technologies often bring a wave of criticism and sceptical opinions, and for many artificial intelligences is still an unexplored mystery. Artificial intelligence is based on the idea that computers and machines can be designed to think and learn like humans. This idea dates to the 1950s, when the first AI programs began to be created. Nowadays, AI is already an integral part of our daily lives. AI tools have become an effective aid in information retrieval, complex problem solving, planning, data analysis, and other important activities (Honavar, 2016).

Artificial intelligence is the ability of a device to exhibit human-like abilities such as reasoning, learning, planning and creativity. Thanks to artificial intelligence, technical systems are able to distinguish the environment they are in and solve what they recognise as a problem, acting to achieve a specific goal. The computer receives data prepared or collected by its sensors (e.g. cameras), processes it and reacts. AI systems are able to operate autonomously and adapt their behaviour to some extent based on the analysis of previous actions. As AI continues to develop, it will be able to handle increasingly complex tasks, opening new possibilities for its application in a variety of fields. However, with these advances come many challenges and the need for regulation, which require appropriate attention. The field of AI is constantly demonstrating high potential for development and application in various sectors. Discoveries and innovations in this field make many people excited about progress, but, as with any change, technological advances evoke a variety of emotions and opinions (Bartošová, 2020).
However, the rise of AI-generated content also raises concerns about the need to distinguish

between human-generated and AI-generated content. The ability to detect AI-generated content has become a critical issue in a variety of fields, including journalism, social media, the arts and education. For example, in journalism, the spread of fake news generated by AI systems can cause significant damage to society, while in the arts, AI-generated artworks can raise questions about the authenticity and authorship of artworks. In the field of education, the use of AI-generated content by students can lead to issues of academic integrity and plagiarism (Cotton et al., 2023). As the use of AI-generated content continues to grow, it is essential to develop and improve tools to detect such content. This will ensure that the authenticity and credibility of the content is maintained, and that issues of plagiarism and academic integrity are addressed (Uzun, 2023).

LITERATURE OVERVIEW

Intelligence is a trait acquired by some living organisms in evolutionary development. We also talk about intelligence in the context of machines (artificial intelligence). What is intelligence? Intelligence is the mental capacity of higher organisms and their cognitive abilities that enable them to creatively solve complex and difficult tasks, to remember and use the knowledge they have gained to find and create new and better solutions (learning). Closely related to intelligence is the ability to think abstractly, logical reasoning, consciousness and self-awareness (Gregor, Gregor, 2014). Artificial intelligence as a scientific discipline relies mainly on the vast field of information sciences (Myška, Zibner, 2019).

Within AI, different approaches are emerging from authors. Some show interest and curiosity towards this technology and consider it as a tool for innovation and the development of art. They perceive the wide range of possibilities that experimentation with AI can offer. Other authors, however, prefer traditional approaches and often criticize AI because of concerns about the erosion of their authenticity. There are also authors with pragmatic views who seek a balance between the use of AI in creation and the maintenance of ethical values (Roose, 2022). AI models can serve a variety of purposes in the design field. Its application can be found at various stages of the production of films, music, literature and other forms of art. Their primary benefit is the automation of routine activities such as image editing, sound optimization, or video post-production. The ability to analyse data and identify trends in the industry is also an advantage, allowing authors to better tailor their works to current audience preferences. In addition, thanks to generative AI, authors can discover new forms of inspiration and expand their horizons (Bordas Vives, 2023). There are a number of threats and challenges associated with the use of AI, which have raised concerns among authors. One of these is the aforementioned issue of ownership and copyright, which has arisen in relation to AI's ability to mimic the artistic styles and techniques of existing authors. In addition, there is discussion of the problems associated with technological development, such as unemployment and the replacement of humans in production by machines, the loss of authorial authenticity and personal experience, or the risk of mass manipulation through fake content (Démuth, 2020).

In the context of artificial intelligence, we are already talking about a rapidly developing and innovative technology from the world of IT. (Richter, 2023).

We can clarify this broad and rather vague concept from at least the following three perspectives:

- artificial intelligence as an activity,
- artificial intelligence as a scientific discipline,
- artificial intelligence as software (Myška, Zibner, 2019).

The perception of AI as an activity can be understood as the ability of a machine to be "intelligent". This definition compares the cognitive characteristics of AI with those of humans, i.e. how a machine can "think and react" compared to a human (Myška, Zibner, 2019). Artificial intelligence as a scientific discipline relies mainly on the vast field of information sciences. It deals with systems and machines that use methods and procedures considered to be a manifestation of intelligence in the case of humans to solve tasks. The third approach is artificial intelligence as software. This approach treats artificial intelligence as an element of the machine and characterises it as part of the software. (Myška, Zibner, 2019).

Artificial Intelligence works on the principle of a set of algorithms or computer formulas by which a computer system is programmed. An AI algorithm is a set of well-defined steps, instructions, or rules that enable AI to efficiently solve problems, identify patterns, and adapt to new situations (Štalmachová, Strenitzerová, 2020). Artificial intelligence has become a common topic of discussion in many scientific fields, including legislation, especially in the context of copyright law. The ability to create and perceive art has long been regarded as a uniquely human characteristic, distinguishing us from other living beings or technologies (Démuth, 2020). Today, AI algorithms already excel in image recognition, text analysis, and the processing of large volumes of structured and unstructured data, suggesting the wide possibilities of AI applications in a variety of spheres. In particular, the use of generative AI for content creation, especially in the form of text or visual material, has become a big trend recently (Trenkler, 2019). Generative AI is gaining popularity due to its innovative capabilities. On the one hand, it provides a number of benefits that enrich different areas of our lives. But on the other hand, it also creates potential threats and raises ethical questions. The field of AI is continuously demonstrating high potential for development and application in various sectors. Discoveries and innovations in this field have many people excited about progress, but as with any change, technological advances evoke a variety of emotions and opinions (Bartošová, 2020). Some people fear and criticise the rapid development of AI, and various conspiracy theories arise, mainly due to a lack of awareness.

GOAL AND METHODOLOGY

The aim of this paper is to assess the level of influence, context and diversity of perceptions of AI among respondents based on the results obtained from the questionnaire survey. We analyse the perception of AI by students who are learning in an era of emerging technologies where AI is gaining importance. We evaluate whether there is sufficient awareness of the topic at different school levels and what are the practical experiences of using AI among the younger generation.

Based on the results from a questionnaire survey and using statistical methods, we will evaluate two research questions:

RQ1: We hypothesize that age has an impact on some of the students' attitudes regarding the perception of AI.

RQ2: We hypothesize that there is a difference in the perception of AI between elementary school, high school, and college age.

The questionnaire survey focused on a target group of students at three levels of education: primary, secondary and tertiary. The selected group of respondents was chosen on the basis of specific criteria, which means that the findings are relevant for this sample but may not be representative of the whole population. The sample consisted of 243 respondents aged between 11 and 38 years, 135 females, 103 males and 5 respondents who did not indicate their gender.

The formulation of the individual items of the questionnaire was partly based on the research on the topic of the Influence of Generative Artificial Intelligence on the Perception of Content by the Czech author Martin Richter (2023) and was based on a detailed theoretical study of the analysed topic. Statistical methods used in the evaluation are Spearman's correlation coefficient, Bonferroni's Post hoc test, one-factor ANOVA. Statistical significance (significance) was assessed at 0.05 level of significance.

FINDINGS AND DISCUSSION

Respondents were classified according to gender, age, type of school attended, and area of their expected future employment. We classified students by age into three groups:

- primary school age: 15 years and below - 14% of respondents,
- secondary school age: 16-19 years - 53% of respondents,
- college age: 20 years and over - 33% of respondents.

We also looked in more detail at what school respondents attend. Most respondents attend gymnasium (40% of respondents) and college (35% of respondents). These two categories are approximately equal in terms of numbers. Percentagewise, they differ by about 5%. The least numerous categories appear to be Primary

School. So, the issue of artificial intelligence is being addressed more by students already at a higher level of education.

Students were then asked how often they use AI tools. 45% indicated that they use the tools only occasionally and 7% indicated that they do not use the tools at all. The responses indicate that a relatively large group of students are unaware of the implementation of AI features in various common online tools and applications that are in most cases part of their daily lives.

In the following question, respondents wrote to us about what activities AI capabilities help them the most. Most often, respondents mentioned help with school assignments, term papers, information retrieval, or programming.

One question focused on whether students thought AI could generate original artistic content. The largest proportion of respondents (34%) placed themselves in the neutral position, and another 31% indicated moderate agreement with the statement.

In the questionnaire, we asked students for the 3 words that first come to mind when they hear the word "artificial intelligence". Words like "robot", "uncertainty", "help", "ChatGPT" or "future" came up most often. These labels represent students who see potential in AI, but also those who see it as a threat. Many associate AI with the science fiction genre or robots, indicating this group's lack of awareness of the use of AI in everyday life.

We followed up on the previous questions by asking respondents how they perceived their level of awareness. 44% of respondents indicated that their awareness was average, and only 4% indicated that they understood the topic of AI very well. It is clear from the results that with the growing importance of AI, there is a growing need for increased education on the topic.

Evaluation of research question 1: We hypothesize that age has an impact on some of the students' attitudes regarding the perception of AI.

In evaluating the results obtained by the questionnaire survey, we are further interested in the association between the variables, between the factors, which variables influence each other, and whether there is a statistically significant difference in the perception of AI between the categories under consideration.

The association between variables was evaluated based on a correlation matrix. The degree of intensity of the relationship was assessed by the value of Spearman's correlation coefficient. Interpretation of the observed associations was carried out according to Vaus' suggestion.

Tab. 1: Interpretation of Spearman's correlation coefficient

Correlation value	Interpretation of the context
0.01 - 0.09	trivial, none
0.10 - 0.29	low to medium
0.30 - 0.49	medium to substantial
0.50 - 0.69	substantial to very strong
0.70 - 0.89	very strong
0.90 - 0.99	almost perfect

Source: Own elaboration by the author David de Vaus (2014)

From the correlation matrix we selected pairs of items. between which a high degree of correlation was identified. The results are in the table 2.

In the first case, we were interested in whether and how strong the relationship between student interest in AI and the frequency of use of AI tools. In the second case, we were interested in the relationship between the ability to understand the topic of AI and the frequency of use of AI tools.

We tested the null hypothesis H0: The correlation between the items is insignificant. In both cases, the p-value is already significant at the 0.01 level. hence, we can conclude. that we reject the null hypothesis. In the case of the association between the items student's interest in AI and the frequency of using AI tools, the strength of association is 0.526. According to Vaus, this association is significant to very strong.

Tab. 2: Level of correlation between selected survey items

		How often I use AI tools:
On the scale, indicate how interested you are in AI:	Correlation Coefficient	**,526****
	Sig. (2-tailed)	,000
Estimate how well you understand the topic of AI:	Correlation Coefficient	**,321****
	Sig. (2-tailed)	,000

** Significant at the p<0.01 significance level.

Source: own elaboration from the results IBM SPSS Statistics

The conclusions are:
- the higher the interest, the higher the use of AI tools and vice versa,
- the higher the awareness, the higher the use of AI tools.

In Table 3 below, we evaluate whether age influences some of the students' attitudes regarding their perceptions of AI.

Tab. 3: Level of correlation between selected survey items

		Age categories
AI is sufficiently taught in school:	Correlation Coefficient	**,238****
	Sig. (2-tailed)	,000
AI is relevant to my future career:	Correlation Coefficient	**,315****
	Sig. (2-tailed)	,000

** Significant at the p<0.01 significance level.

Source: own elaboration from the results IBM SPSS Statistics

From the correlation matrix, we identified two statistically significant relationships. Both items represent the factor Awareness of AI. In them, the respondent expressed the level of agreement with the statement. According to the calculated value of Spearman's correlation coefficient, we can interpret the strength of the relationship between the respondent's age and the opinion on the sufficiency of teaching about AI in school as low to medium. This implies: the lower the age, the more the respondent agrees with the sufficiency of teaching about AI in school.

We also rejected the null hypothesis for the relationship between age and students' attitudes towards the relevance of AI for their future employment. The value shows a moderate to significant dependence of opinion on age.

Evaluation of research question 2: We hypothesize that there is a difference in the perception of AI between elementary school, high school, and college age.

One of the other objectives of the analysis was to determine whether the perception of AI across all factors considered was the same in terms of age, reflecting the formulation of the VO2 research question. We hypothesized that there is a difference in the perception of AI between primary, secondary and university age. We used a one-factor ANOVA method, with the classification factor being the three age categories. The dependent variables are our factors, and age is the independent variable.

We tested the null hypothesis H0: All means across the age categories of AI Awareness, AI Skills Awareness, and AI-generated content discrimination are the same. The results from the SPSS output are shown in Table 4.

Tab. 4: Results of one-factor ANOVA

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Awareness average	Between Groups	8,660	2	4,330	14,160	**,000**
	Within Groups	73,393	240	,306		
	Total	82,054	242			
Abilities average	Between Groups	2,790	2	1,395	2,366	,096
	Within Groups	141,507	240	,590		
	Total	144,296	242			
Distinction average	Between Groups	,480	2	,240	,894	,410
	Within Groups	64,366	240	,268		
	Total	64,846	242			

Source: own elaboration from the results IBM SPSS Statistics

We found out. that there is no significant difference between the values of the factor Discrimination of AI-generated content by students and the awareness of the abilities of AI in context by the students. However, the AI Awareness factor is significantly different from the other two. Furthermore, we performed an analysis in which we identified statistically significant differences in the perception of AI in individual factors between age categories. Bonferroni's Post hoc test for multiple comparisons was used. The results can be found in the following table.

Tab.5: Results of the Bonferroni Post hoc test

Dependent Variable			**Mean Difference**	**Sig.**
Awareness average	primary school age	secondary school age	**-.33995***	**.005**
		college age	**-.59065***	**.000**
	secondary school age	college age	**-.25071***	**.005**
Abilities average	primary school age	secondary school age	-.04343	1.000
		college age	-.26029	.297
	secondary school age	college age	-.21686	.145
Distinction average	primary school age	secondary school age	-.03025	1.000
		college age	.06814	1.000
	secondary school age	college age	.09839	.549

* Significant at the p<0.05 significance level.

Source: own elaboration from the results IBM SPSS Statistics

The null hypothesis of equality of means was rejected only in the AI Awareness factor. We found a significant difference between all pairs of age categories. We can see the biggest

difference between Primary and High school age. It follows that the lower the level of education, the less the student thinks he is informed about AI. Elementary level students rated their awareness on average by 0.34 points lower than secondary level students and 0.59 points lower than university students. University students rated their awareness by an average of 0.25 points more than students at secondary school age.

CONCLUSION

Technological advancements, especially in the field of AI, are leading to increasing automation in various industries. This trend may have a significant impact on employees in the future. This raises a bit of a concern, especially because of the potential savings in labour costs that automation brings to companies. However, with the development of AI, there are also views about the creation of new jobs. For example, such an AI specialist could be in high demand as a result of the widespread implementation of AI and could become an essential part of many firms.

Although AI may be perceived as a threat by employees, AI represents a significant opportunity for business management. Introducing it into business processes can contribute to significant modernisation and enhance competitiveness in the marketplace.

The use of generative AI in education poses a challenge that requires attention in the area of legislative protection of authors. With the increasing trend of students incorporating generative AI tools into the creation of texts, the potential for copyright infringement opens up. AI-generated content can sometimes be misidentified as plagiarism, raising questions regarding compliance with citation and copyright rules. In order to prevent such abuse, it is imperative that schools and legislatures actively respond to the ever-evolving technological trends and protect authors even in the digital environment.

AI can be a truly fascinating topic that brings enormous potential for progress, particularly in the field of business, but perhaps in the future also in the quality of people's everyday lives. However, it is essential to raise awareness of its aspects, so that the public gains a basic understanding and people have a better understanding of its nature.

In this paper, we explored and analysed the practical experience of using AI with the young generation. An interesting finding was that respondents' attitudes towards AI are significantly influenced by factors such as age and school type. We found different levels of understanding of AI between different ages and levels of education. It showed that as the education of the respondents increases, the level of understanding of AI and its capabilities increases. In this paper, we have tried to contribute to a deeper understanding of the topic of AI and its generative abilities. We point out the importance of classifying AI-generated content and emphasize the need to raise awareness on this topic. At the same time, we open the door for further discussion and research on the awareness, classification, ethics and regulation of AI, which is essential for the responsible incorporation of this technology and its tools into our lives

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REFERENCES

Bartošová, M. (2020) Prognóza vývoja umelej inteligencie. [cit. 30.8.2024] Available on: https://dspace.cvut.cz/handle/10467/88294

Bordás Vives, A. (2023) Artificial Intelligence and the Creative Industries. Available at: https://repositori.uji.es/xmlui/handle/10234/202994

Cotton. D. R., Cotton. P. A. & Shipway. J. R. (2023). Chatting andCheating: Ensuring academic integrity in the era of ChatGPT. Innovations in Education and Teaching International.

Czichon, R. (2020) Umělá inteligence a autorské právo. [cit. 30.8.2024] Available on: https://dspace.cuni.cz/handle/20.500.11956/126517

De Vaus, D. (2014) Surveys In Social Research. 2. vyd. London: Routledg.

Demuth, A. (2020) Art and Artificial Intelligence - Challenges and Dangers. In: ESPES. The Slovak Journal of Aesthetics. roč. 9. č. 1. DOI: 10.5281/zenodo.6331060

Gregor. M., Gregor, M. (2014) Umelá inteligencia. explózia inteligencie a technologický pokrok. In: Produktivita a inovácie..

Honavar, V (2016) Artificial Intelligence: An Overview. [cit. 30.8.2024] Available on: https://faculty.ist.psu.edu/vhonavar/Courses/ai/handout1.pdf

Myška, M.. Zibner, J. (2019) Umělá inteligence: výzva autorství. In: Iurium Scriptum . č. 1. Available on: https://is.muni.cz/publication/1534880/cs/Umela-inteligence-vyzva-autorstvi/Myska-Zibner

Richter, M. (2023) Vliv umělé inteligence na vnímání kvality a důvěryhodnosti obsahu v digitální komunikaci. [cit. 30.8.2024] Available on: https://dspace.cuni.cz/handle/20.500.11956/182953

Roose, K. (2022) An A.I.-Generated Picture Won an Art Prize. Artists Aren't Happy. In: The New York Times. [cit. 30.8.2024] Available on: http://golancourses.net/2022f/wp-content/uploads/2022/09/ai-art-prize.pdf

Štalmachová, K., Strenitzerová. M. (2020) Umelá inteligencia. strojové učenie a trh práce. In: Pošta. Telekomunikácie a Elektronický obchod. DOI: 10.26552/pte.C.2020.2.

Uzun, L. (2023) ChatGPT and Academic Integrity Concerns: Detecting Artificial Intelligence Generated Content. In: Language Education and Technology. roč. 3. č. 1. ISSN 2791-7010. [cit. 30.8.2024] Available on: http://www.langedutech.com/letjournal/index.php/let/article/view/49

Trenkler, Š. (2019) Umelá inteligencia v medicine. [cit. 30.8.2024] Available on: https://www.lf.upjs.sk/ceea/prezentacie5.html

What is artificial intelligence and how is it used? In: Topics | European Parliament. Available on: https://www.europarl.europa.eu/topics/en/article/20200827STO85804/what-is-artificial-intelligence-and-how-is-it-used

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SLOVAK SMES FACING NEW CHALLENGES (WITH AN EMPHASIS ON THE IMPLEMENTATION OF ARTIFICIAL INTELLIGENCE)

Jozef KLUČKA, Lukrécia HUNKOVÁ

Abstract

Today's small and medium-sized enterprises (SMEs) face many challenges associated with the implementation of artificial intelligence (AI), which offers a wide range of opportunities to improve efficiency, competitiveness and sustainability. Currently, there are a number of diverse factors affecting the operations of SMEs in Slovakia, and these factors can be divided into general ones, which affect SMEs regardless of the sector in which they operate, and specific ones, which take into account sector specificities. In the context of AI implementation, these factors are determined by the state of knowledge, the sector of AI implementation and the relationships of AI implementation to other environmental factors that determine the consequences. The aim of this paper is to explore the opportunities and challenges of AI implementation in Slovak SMEs, and based on the obtained information, to propose a framework for AI implementation in these enterprises. The conclusion of the article is that proper implementation of AI can help SMEs gain strategic advantage, but as it brings benefits it also brings risks that need to be faced.

Key words:
artificial intelligence, Slovak SMEs, new challenges, benefits, risks

JEL Classification O33, O39 https://doi.org/10.52665/ser20240102

INTRODUCTION

The Slovak economy shows signs of low GDP growth. The decisive sector is automotive, which, with Volvo's entry into eastern Slovakia, will further emphasize the leading position of the sector. In the past, foreign investments were mainly focused on car production/manufacturing. There is an effort, expressed through investment, to develop scientific research capacities alongside regular production, as is the case with the large company Schäffler in Kysucké Nové Mesto.

The development of Slovak companies and the Slovak economy has been based primarily on foreign investments, which were considered as a source of economic growth. Currently, it is stated that this strategy of foreign investments is being exhausted due to increasing labor costs and rising energy prices. In the automotive sector is assumed an increased robotization (a decrease in demand for labor) and a reduction in the number of executive workers are expected in connection with the transition to electric vehicles. A significant decline in the number of executive employees is anticipated in this sector in the future.

From a macroeconomic perspective, an important view on the further development of post-socialist economies is presented in an interview where B. Schmögner (former Minister of Finance of the Slovak Republic) states: "The model based on low labor costs, on a low or medium level of innovation development, on an undiversified structure, and on excessive dependence on foreign investments, which the state continues to subsidize with substantial investment incentives even after 30 years, no longer ensures convergence with the 'old' EU member states and doesn't provide guarantees for the observance of adequate social rights" (Šelestiaková, 2023). This strategic view on the macroeconomic development model doesn't explicitly mention automation (AI) as a driving factor, but AI, together with the development of education and the services sector, creates the prerequisites for economic development and the observance of social rights.

The aim of this paper is to explore the opportunities and challenges of AI implementation in Slovak SMEs, and based on

the obtained information, to propose a framework for AI implementation in these enterprises. The first part of the article focuses on a review of the existing literature regarding AI implementation. The second part describes the article's objective and the methods used for data collection and analysis. The third part presents the authors' findings, and the final part is devoted to discussion and conclusions.

LITERATURE OVERVIEW

The rapid development of technologies and the digital revolution have fundamentally transformed the way businesses operate in international trade, which leading to higher efficiency, process optimization, and improved global connectivity. However, these changes also bring new challenges, such as cybersecurity risks, concerns about data protection, and compliance issues. There is a growing need for strategic investments in digital technologies to maximize the potential of global trade and customs operations (Jaloliddin, 2023). While larger companies often incorporate digitalization initiatives into their core business strategies, SMEs frequently face challenges in implementing Industry 4.0 concepts. SMEs encounter limitations in both human and financial resources, making it difficult for them to systematically assess the possibilities of implementing Industry 4.0, which focuses primarily on the digitalization and automation of processes (Havierniková, 2023). The widespread use of artificial intelligence (AI) technologies pushes the boundaries of moral, sociological, and political questions related to human rights in new ways. AI reproduces long-standing structural problems that go beyond the regulation of individual aspects; it integrates into economic structures with cumulative negative effects and presents further challenges that require a reevaluation of the relationship between human rights, science, and technology. Issues associated with AI often stem from technical complexities, which human rights experts should be more sensitive to and engaged with (Bakiner, 2023). AI is fundamentally changing the way we think, act, and learn. It can quickly identify inefficiencies and reveal opportunities for improving productivity and sustainability across various sectors. Proper use of AI can lead to better performance, streamlined workflows, and the elimination of inefficiencies, what allow employees to focus on critical tasks. AI has the potential to achieve sustainability goals when is implemented correctly and with an emphasis on sustainability (Haleem et al., 2023). Szumil and Wiegelmann (2024) examined the impact of AI and large language models (LLMs), such as GPT-4, on the real estate sector. Their goal was to provide a comprehensive analysis of how these technologies are transforming various aspects of the industry, including the real estate market, valuation, and customer interactions. They concluded that AI and LLMs offer several advantages, including data-driven decision-making, predictive analytics, and enhanced operational efficiency. However, they also highlighted critical challenges, such as potential algorithmic biases and the risk of depersonalizing customer service.

In the study by Chen (2024), was examined, how AI implementation and capability of big data analysis influence the operational performance in technology firms. Employees' intention to adopt AI applications is positively related to integration capabilities and team collaboration, with both integration capability and team collaboration improving operational performance. The authors concluded that employees' intention to adopt AI applications and the ability to analyze big data can effectively contribute to achieving goals associated with high operational performance. Ali Mohamad et al. (2023) explored the influence of AI on competitive advantage in healthcare organizations. In the study, they conducted nine semi-structured interviews with members of the robotic surgery team at CMC Dubai and found that the introduction of AI impacted three key areas: clinical, financial, and technological. Their research provides new insights into the use of AI in healthcare, specifically in robotic surgeries, highlighting how AI can contribute to gaining a competitive edge. Customers' willingness to co-create value is favorably facilitated by the anthropomorphism of service-oriented AI. The anthropomorphism of such AI can enhance customers' perception of the AI's cuteness and capabilities, evoke a sense of novelty, and motivate them to engage more with the AI in value co-creation (Tian et al., 2024).

The authors Liu et al. (2024) analyzed data from six major Chinese construction companies in their study. Their findings showed that current dynamic capabilities play a crucial role in the adoption and adaptation of AI for business model innovations. The authors argue that companies, professionals, and other stakeholders can begin AI implementation by leveraging their existing capabilities. In academia, increasing AI literacy is important to prepare future healthcare professionals for AI-driven environments (Esmaeilzadeh, 2024). Kovič et al. (2024) examined the adoption of AI software in manufacturing companies in Slovenia, Slovakia, and Croatia across six manufacturing sectors. Their results indicate that company size, role in the supply chain, or technological intensity do not have a statistically significant impact on AI utilization. On the contrary, Industry 4.0 readiness has a significant positive influence on AI adoption, suggesting that companies with advanced digital infrastructure and integrated cyber-physical systems are more likely to adopt AI. The authors concluded that while company characteristics such as size or role in the supply chain are not statistically linked to AI usage, the level of digital readiness is crucial.

Papagiannidis et al. (2023) examined the negative aspects of AI in a Norwegian energy trading company. The authors' study results indicate that the negative consequences of AI can be divided into three main categories: (1) the nature of work, (2) conflicts and their consequences, and (3) responsibility. Watch et al. (2023) also addressed the negative aspects of AI, identifying seven main threats related to generative AI: (1) lack of AI market regulation and the urgent need for regulation, (2) low quality, lack of quality control, misinformation, deepfake content, algorithmic bias, (3) automation-induced job loss, (4) violation of personal data, social surveillance, and privacy infringement, (5) social manipulation, erosion of ethics and goodwill, (6) deepening socio-economic inequalities, and (7) AI technostress. The authors suggest that it is crucial to regulate the AI market to ensure a level playing field and protect rights. They also emphasize the need for continuous education and retraining of workers due to the changing labor market and the importance of AI training. Developers should prioritize ethical aspects when creating AI systems to protect user privacy and security, and they should implement responsible practices and ethical guidelines to prevent harmful and misleading information. While the negative aspects of AI and its impact on the work environment are becoming more frequently researched, it is equally important to pay attention to information security management, especially in the SMEs segment. In this context, Ključnikov et al. (2019) focused on identifying the success factors of information security management in Slovak SMEs. Based on literary research, they defined four key factors: alignment of information security management with business activities, top management support, implementation of security controls, and raising organizational awareness. The authors found that security controls and top management support are key elements of success and suggest that SMEs should prioritize employee training and awareness along with the implementation of robust security controls.

The utilization of AI will bring changes in many areas, including human resource management (HR). Svatiuk et al. (2022) argue that the use of AI in HR will lead to fundamental changes in performing specific functions within this field. In their study, Varma et al. (2023) indicate that there is significant potential for increasing company profitability through the use of AI in workplaces worldwide. Despite AI has many positive aspects, its application in HR raises several ethical concerns. The authors emphasize that HR managers must be responsible and sensitive to ethical issues. Their role is to closely monitor AI programs to ensure these systems perform their intended functions and protect the dignity of employees by being transparent and respecting privacy regarding the data they collect and use. Gînguță et al. (2023) also address AI has ethical challenges, highlighting that ethical concerns are closely linked to the negative consequences of AI. These include high implementation costs, the risk of job losses, or a lack of human interaction and creativity. The authors further note that AI use in business consulting negatively impacts ethical aspects such as discrimination, privacy infringement, denial of individual autonomy, unjustifiable outcomes, and the breakdown of social bonds. Quinonez and Meij (2024) explored the impact of AI on journalism and editorial processes.

Their work analyzes how AI is changing news practices, focusing on tasks like headline generation, text management, graph summarization, and creating frameworks for data. The authors point out that while AI can significantly influence journalism, it requires careful consideration and ethical approaches.

GOAL AND METHODOLOGY

The aim of this paper is to explore the opportunities and challenges of AI implementation in Slovak SMEs, and based on the obtained information, to propose a framework for AI implementation in these enterprises. To gain an overview and identify key aspects of AI implementation, we analyzed existing literary sources, professional publications, and relevant research studies. For a more detailed understanding, we examined internal documents such as company strategies, reports, and AI-related project plans. This analysis provided valuable insights into the approaches, which enterprises use in implementation of AI technologies and into their organizational practices. To complement our findings, we focused on analyzing online sources, including professional blogs, websites, and articles focused on AI implementation in enterprises. All the collected information was synthesized and interpreted to create a comprehensive view of AI implementation in Slovak SMEs. This synthesis enabled a deeper understanding of the factors influencing the success of AI implementation, its benefits, and risks.

FINDINGS

1. AI and its opportunities and risks

AI represents not only a significant source of increased efficiency but also sustainability and the development of competitiveness for Slovak SMEs. AI involves systems that exhibit intelligent behavior by analyzing their environment and performing tasks— with a certain level of autonomy—to achieve goals.

The benefits of using AI are as follows (with those known to date, and their scope expanding):

- Automation – AI can automate repetitive and rule-based tasks (Hassan, 2024). This frees humans from routine activities and allows them to focus on creative and complex tasks.
- Data analysis – AI is useful for processing and analyzing large volumes of data. It can identify trends and patterns (Skrypka, 2023).
- Personalization – AI can define content, recommendations, and marketing strategies for individual customers based on their preferences, which are derived from the analysis of previous behaviors (Šimová, 2023).
- Predictive analytics – AI can predict future developments, enabling managers to make data-driven decisions while minimizing risks (Hamilton, 2023).
- Natural Language Processing (NLP) – NLP allows chatbots and virtual assistants to communicate with people/customers, enhancing customer support and experiences. NLP-based solutions have a wide range of applications across various companies, including SMEs, and can lead to many changes (Bourdin et al., 2024).
- Image analysis – AI can analyze images to identify objects, faces, and anomalies (api4ai, 2024).
- Process optimization – AI can optimize the supply chain in SMEs, reduce costs, increase efficiency, and improve product quality (Uduma, et al., 2023).
- Theft detection – Small businesses can use AI and machine learning to enhance security. AI can detect anomalies and patterns associated with activities that lead to negative consequences for the business, helping protect against financial losses (Harrisová, 2024).
- Customer understanding – AI can provide insights into customer behavior and preferences, helping businesses create or modify products and services that are in demand (Peekage, 2024).

AI is limited as follows (its scope is also shifting, and definitive conclusions are based on the current state):

- Common sense and creativity – AI lacks the ability to think creatively. Its operations are based on patterns and data rather than intuition or imagination. The use of AI allows people time and space to focus on creativity (Business Insider, 2024).

- Ethical Decision-Making – AI lacks an ethical dimension in decision-making. It doesn‘t perform complex moral judgments, evaluate the social implications of proposed actions, or prioritize ethical considerations. For small and medium-sized enterprises (SMEs) entering the field of AI, understanding the ethical aspects of this technology is essential. AI ethics are based on moral principles that govern its development and use, with an emphasis on protecting personal data, addressing bias, ensuring transparency, and accountability. A key challenge is aligning AI systems with human values and societal norms (Agrawal, 2024).
- Empathy – AI doesn’t understand or handle human emotions (Adib-Moghaddam, 2021).
- Contextual Understanding – AI doesn‘t differentiate or understand language nuances (HINZ consulting, 2023).
- Learning Beyond Data – AI builds its learning from data; the models it creates are trained on data; anything not present in the data cannot be incorporated into its models.
- Complete Autonomy – AI systems cannot yet operate without human intervention (in situations where the system or subject cannot be specifically identified) in changing, unpredictable real-world conditions. Ünver (n.d.) emphasizes the ethical implications of high autonomy in AI and points to the need for human oversight to ensure moral responsibility and prevent the dehumanization of decision-making processes, which is particularly important for SMEs.
- Originality – AI generates recommendations based on existing data and patterns; it doesn‘t create entirely original ideas or innovations like a human.
- Manipulation of unstructured data: AI can effectively process structured data; unstructured data (such as unformatted text or handwritten text) can be problematic.

Currently, Chat GPT and similar technologies are used for generating artistic images, e-books, or short stories, and for selling them online. These examples demonstrate the rapid development of AI and its application in areas that were not previously anticipated. Another specific application is the use of AI in retail food sales. The involvement of AI in retail means that such a store can operate 24/7, with no need for sales staff or personnel during nighttime hours.

Fig. 1 Classification of products into defined areas

Area	Content
Communication and Learning	Q&A, sentence correction to standard English, translation between English and other languages (Spanish, Japanese), creating tables from long texts, classifying items into categories, extracting keywords from text, creating tables from various data, chatbot, extracting airport codes from text, extracting contact information from text, friendly communication, creating analogies, summarizing meeting notes, essay writing, question creation - interviews, providing basic information for a given area/problem, media broadcasting; Interactive teaching, teaching considering individual prerequisites and preferences
IT	Converting text to program commands, converting language to SQL commands, converting Python language to another, converting from one programming language to another, explaining complex parts of a program, creating SQL commands
Marketing	product description, creating a product name from a verbal description, commenting on services/food based on a restaurant description
Healthcare	disease diagnosis, radiology – image recognition
Finance	processing materials for financial decision - making
Art	creating images based on a brief, generating music compositions, writing shor stories, poetry
Services	self driving cars, waste sorting services, delivery of goods
Trade	selling goods and payment
Human Resources	selecting employees for a given position based on submitted CV

Source: own processing

2. Roadmap for AI implementation in SMEs

The above examples document the current state of AI application in various spheres, part of which is/can be implemented in enterprises. If we assume that the implementation of AI in SMEs can increase their efficiency and competitiveness, then it is logical to ask about the implementation process and the different steps to be taken in the enterprise.

The issue of implementation includes the following key areas:

1. Understanding the AI issue and defining the area that will be addressed by AI tools
2. Preparing a pilot AI project, processing data, and training the model
3. Education of employees in the field od AI and the use of the outputs of the pilot project in the enterprise's activities
4. Evaluating results, measuring progress and the learning process.

Understanding the AI issue and defininf the are that will be addressed by AI tools

The content of this phase is the generation of proposals that are consistent with AI capabilities and with the company's strategy. The output from AI should support business goals and be align with the company's strategy.

Preparing a pilot AI project, processing data, and training the model

The solution for the pilot project can involve either internal or external resources. Qualified external resources provide greater assurance of achieving business goals (assuming limited internal resources). It is essential to address the need for sufficient relevant data when working on the pilot project. The created model, which is trained on the data, should generate outputs that are subject to analysis in terms of their relevance to the expected results or decision-making processes within the business.

Education of employees in the field od AI and the use of the outputs of the pilot project in the enterprise's activities

A significant component of the entire process is education on AI issue as well as the project outputs and their significance for the enterprise. This education begins at the start of the AI implementation project in the company. External trainers may also be involved in the education process and will later work on the model and its implementation within the enterprise. The education aims to enhance employees' know-how and simultaneously minimize distrust and concerns about the project. The outputs of the pilot project should be aligned with the enterprise's strategy and increase the efficiency of identified activities/processes.

Evaluating results, measuring progress and the learning process

Evaluating results is crucial and should be aligned with the desired KPIs when formulating the project. The results should confirm the achievement of the project's performance goals. Records are created from the evaluation of the entire process and the identification of issues related to the development and implementation of AI, which will be considered for further development in the area of AI implementation within the business. At this stage, it is recommended to establish communities that exchange national and international knowledge on AI implementation in businesses. This phase involves connecting the academic environment with the business sector. Meetings generate opportunities for further development in sectors and processes from both AI and managerial perspectives.

3. Benefits and risks of AI implemented in SMEs

AI implemented in SMEs is linked with the following benefits and risks:

- complexity and diversity of AI models,
- AI applications don't only present benefits – some professions and sectors feel threatened (e.g., the begginings of legal disputes),
- AI applications are not limited only to simple repetitive problems/tasks; their applications extend to specific solutons, that integrate data and knowledge in the giver field (corresponding with the concept of machine learning),
- AI applications are based on data and applied methods, so it is important to confront provided sulotions with reality,

- AI applications represent a significant element in enhancing the competitiveness of enterprise and country; AI is becoming part of enterprise development strategies, also in connection with security; there is a widespread view of expected positive effects of AI implementation, which will show in the economy: through increased productivity, market power and employment; on the contrary, it is expected that the AI implementation in routine/repetitive fields and activities (such as industry or agriculture), where it is relatively easy to collect data and derive products from it, will lead to increased unemployment,
- altough there are conclusions about the assumptions of the impact of AI on the workforce; it is noted that, in the long term, it is problematic to claim that the implementation of AI in a company will lead to a reduction in the number of employees. It is also suggested that AI will create additional jobs and professions. Overall, however, there is a consensus that the impact of AI will primarily affect repetitive, routine, and monotonous activities (Manyika and Sneader, 2018).

DISCUSSION AND CONCLUSION

AI technologies are currently advancing and gaining greater recognition. SMEs now have access to technologies that were once available only to large corporations (Borah, et al., 2022). Perceived factors such as employee capabilities, availability of financial support, top management support, costs, complexity, and relative challenges. advantages are positively linked to the intention of SMEs to implement AI-based chatbots (Sharma, et al., 2024). Nevertheless, the adoption of AI technologies in SMEs faces significant obstacles, particularly in terms of costs, lack of technical skills, and employee willingness to embrace these technologies (Hussain and Rizwan, 2024). Agrawal, et al. (2024) also argue that the process of AI utilization and adoption in SMEs is influenced by numerous factors, including technological, organizational, and environmental aspects. AI in enterprise is a new phenomenon, which in the context of business strategy, brings both benefits and risks during it's implementation. The technologies and implementation of AI are rapidly evolving, in areas such as global trade, healthcare, real estate, and other sectors; however, this also presents new challenges in cybersecurity, data protection, and ethics. AI has the potential to fundamentally change the functioning of SMEs and improve the efficiency of their operations, but this always involves the need for careful management, regulation, and education to minimize the risk of negative consequences.

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References

Adib-Moghaddam, Arshin. 2021. 'Artificial intelligence must not be allowed to replace the imperfection of human empathy'. *The Conversation*. Retrieved 5 September 2024 (http://theconversation.com/artificial-intelligence-must-not-be-allowed-to-replace-the-imperfection-of-human-empathy-151636).

Agrawal, Ankita. 2024. 'Ethical considerations for SMEs using AI technology'. *SME Magazine*. Retrieved 5 September 2024 (https://www.smeweb.com/ethical-considerations-for-smes-using-ai-technology/).

Agrawal, Parul, Kamal Ahmad, Ajay Kumar, and Anoop Pandey. 2024. 'Adoption Of Artificial Intelligent Technologies In SMEs Sector'. *Journal of Mountain Research* 19(1). doi: 10.51220/jmr.v19-i1.40.

Ali Mohamad, Talal, Anna Bastone, Fabian Bernhard, and Francesco Schiavone. 2023. 'How Artificial Intelligence Impacts the Competitive Position of Healthcare Organizations'. *Journal of Organizational Change Management* 36(8):49–70.

doi: 10.1108/JOCM-03-2023-0057.

Anon. 2023. 'Navigating Nuances: The Challenge of AI in Proposal Understanding'. *HINZ Consulting*. Retrieved 5 September 2024 (https://hinzconsulting.com/navigating-nuances-the-challenge-of-ai-in-proposal-understanding/).

Anon. 2024a. 'AI for Customer Insights: Unlocking the Power of Data'. *Peekage*. Retrieved 5 September 2024 (https://peekage.com/blog/ai-for-customer-insights).

Anon. 2024b. 'How responsible AI can help spark new levels of creativity'. *Business Insider*. Retrieved 5 September 2024 (https://www.businessinsider.com/sc/how-responsible-ai-can-help-spark-new-levels-of-creativity).

Anon. 2024c. 'Object Detection for Images: Technologies, Applications, and Best Solutions'. *api4ai*. Retrieved 5 September 2024 (https://api4.ai/blog/object-detection-for-images-technologies-applications-and-best-solutions).

Bakiner, Onur. 2023. 'The Promises and Challenges of Addressing Artificial Intelligence with Human Rights'. *Big Data & Society* 10(2):20539517231205476. doi: 10.1177/20539517231205476.

Borah, Samarjeet, Chukwuma Kama, Sandip Rakshit, and Narasimha Rao Vajjhala. 2022. 'Applications of Artificial Intelligence in Small- and Medium-Sized Enterprises (SMEs)'. Pp. 717–26 in *Cognitive Informatics and Soft Computing*. Vol. 375, *Lecture Notes in Networks and Systems*, edited by P. K. Mallick, A. K. Bhoi, P. Barsocchi, and V. H. C. De Albuquerque. Singapore: Springer Nature Singapore.

Bourdin, Mathieu, Thomas Paviot, Robert Pellerin, and Samir Lamouri. 2024. 'NLP in SMEs for Industry 4.0: Opportunities and Challenges'. *Procedia Computer Science* 239:396–403. doi: 10.1016/j.procs.2024.06.186.

Chen, Chi-hsiang. 2024. 'Influence of Employees' Intention to Adopt AI Applications and Big Data Analytical Capability on Operational Performance in the High-Tech Firms'. *Journal of the Knowledge Economy* 15(1):3946–74. doi: 10.1007/s13132-023-01293-x.

Esmaeilzadeh, Pouyan. 2024. 'Challenges and Strategies for Wide-Scale Artificial Intelligence (AI) Deployment in Healthcare Practices: A Perspective for Healthcare Organizations'. *Artificial Intelligence in Medicine* 151:102861. doi: 10.1016/j.artmed.2024.102861.

Gînguță, Andrea, Petru Ștefea, Grațiela Georgiana Noja, and Valentin Partenie Munteanu. 2023. 'Ethical Impacts, Risks and Challenges of Artificial Intelligence Technologies in Business Consulting: A New Modelling Approach Based on Structural Equations'. *Electronics* 12(6):1462. doi: 10.3390/electronics12061462.

Haleem, Abid, Mohd Javaid, Ibrahim Haleem Khan, and Sanjay Mohan. 2023. 'Significant Applications of Artificial Intelligence Towards Attaining Sustainability'. *Journal of Industrial Integration and Management* 08(04):489–520. doi: 10.1142/S2424862223500331.

Hamilton, Sarah. 2023. 'Understanding the Perks of Predictive Analytics in Risk Management Insights'. *360factors*. Retrieved 5 September 2024 (https://www.360factors.com/blog/understanding-perks-predictive-analytics-risk-management-insights/).

Harrisová, Sarah. 2024. 'How Small Businesses Can Utilize Artificial Intelligence and Machine Learning for Enhanced Security | Blog | Workast'. Retrieved 5 September 2024 (https://www.workast.com/blog/how-small-businesses-can-utilize-artificial-intelligence-and-machine/).

Hassan, Aiman O. 2024. 'The Power of AI: Automating Repetitive Tasks in Businesses'. Retrieved 5 September 2024 (https://www.linkedin.com/pulse/power-ai-automating-repetitive-tasks-businesses-aiman-o-hassan-rggjf/).

Havierniková, Katarína. 2023. *Industry 4.0 for Small and Medium-Sized Enterprises within the Agricultural Sector: Human Resources Focus: Scientific Monograph*. First edition. Szczecin: Centre of Sociological Research.

Hussain, Atif, and Rana Rizwan. 2024. *Strategic AI Adoption in SMEs: A Prescriptive Framework*.

Jaloliddin, Rahmonov. 2023. 'Digitalization in Global Trade: Opportunities and Challenges for Investment'. *Global Trade and Customs Journal* 18(Issue 10):391–95. doi: 10.54648/GTCJ2023043.

Ključnikov, Aleksandr, Ladislav Mura, and David Sklenár. 2019. 'Information Security Management in SMEs: Factors of Success'. *Entrepreneurship and Sustainability Issues* 6(4):2081–94. doi: 10.9770/jesi.2019.6.4(37).

Kovič, Klemen, Polona Tominc, Jasna Prester, and Iztok Palčič. 2024. 'Artificial Intelligence Software Adoption in Manufacturing Companies'. *Applied Sciences* 14(16):6959. doi: 10.3390/app14166959.

Liu, Yulong (David), Jishuo Sun, Zuopeng (Justin) Zhang, Mian Wu, Herbert Sima, and Yat Ming Ooi. 2024. 'How AI Impacts Companies' Dynamic Capabilities: Lessons from Six Chinese Construction Firms'. *Research-Technology Management* 67(3):64–76. doi: 10.1080/08956308.2024.2324407.

Lviv Polytechnic National University, Oksana Svatiuk, A. Zaharets, Lviv Polytechnic National University, Y. Sytnyk, and Lviv Polytechnic National University. 2022. 'Digitization of Managerial Work of HR-Manager'. *Management*

and Entrepreneurship in Ukraine: The Stages of Formation and Problems of Development 2022(2):210–22. doi: 10.23939/smeu2022.02.210.

Manyika, James, and Kevin Sneader. 2018. 'AI, Automation, and the Future of Work: Ten Things to Solve For'. *McKinsey Global Institute*. Retrieved 6 September 2024 (https://www.mckinsey.com/featured-insights/future-of-work/ai-automation-and-the-future-of-work-ten-things-to-solve-for).

Papagiannidis, Emmanouil, Patrick Mikalef, Kieran Conboy, and Rogier Van De Wetering. 2023. 'Uncovering the Dark Side of AI-Based Decision-Making: A Case Study in a B2B Context'. *Industrial Marketing Management* 115:253–65. doi: 10.1016/j.indmarman.2023.10.003.

Quinonez, Claudia, and Edgar Meij. 2024. 'A New Era of AI-assisted Journalism at Bloomberg'. *AI Magazine* 45(2):187–99. doi: 10.1002/aaai.12181.

Sharma, Shavneet, Gurmeet Singh, Nazrul Islam, and Amandeep Dhir. 2024. 'Why Do SMEs Adopt Artificial Intelligence-Based Chatbots?' *IEEE Transactions on Engineering Management* 71:1773–86. doi: 10.1109/TEM.2022.3203469.

Šelestiaková, K. (2023). Brigita Schmögner for HN. Retrieved from https://hnonline.sk/slovensko/96060137-brigita-schmoegnerova-pre-hn-robert-fico-socialnu-demokraciu-do-znacnej-miery-zdiskreditoval

Šimová, Stanislava. 2023. 'What is AI marketing?' *Vivantina*. Retrieved 5 September 2024 (https://www.vivantina.com/blog/co-je-ai-marketing/).

Skrypka, Illya. 2023. 'Unleashing the Potential of Artificial Intelligence in PR: How Artificial Intelligence is Changing the Public Relations Environment'. Retrieved 5 September 2024 (https://prnews.io/sk/blog/ako-umela-inteligencia-zmeni-polieverejnych-vztahov.html).

Szumilo, Nikodem, and Thomas Wiegelmann. 2024. 'Real Estate Insights AI: Real Estate's New Roommate – the Good, the Bad and the Algorithmic'. *Journal of Property Investment & Finance* 42(2):211–17. doi: 10.1108/JPIF-01-2024-0001.

Tian, Ming, Jiarui Yan, and Xiaotong Li. 2024. 'Anthropomorphism of Service-Oriented AI and Customers' Propensity for Value Co-Creation'. *Marketing Intelligence & Planning*. doi: 10.1108/MIP-08-2023-0388.

Uduma, Igwe, Humble Otamiri, and Imah Andrew. 2023. *Impact of artificial intelligence (ai) applicability in the optimization of manufacturing processes in SMEs within Ebonyi state, Nigeria*.

Ünver, H. Akin. n.d. 'Artificial Intelligence (AI) and Human Rights: Using AI as a Weapon of Repression and Its Impact on Human Rights'.

Varma, Arup, Cedric Dawkins, and Kaushik Chaudhuri. 2023. 'Artificial Intelligence and People Management: A Critical Assessment through the Ethical Lens'. *Human Resource Management Review* 33(1):100923. doi: 10.1016/j.hrmr.2022.100923.

Wach, Krzysztof, Cong Doanh Duong, Joanna Ejdys, Rūta Kazlauskaitė, Pawel Korzynski, Grzegorz Mazurek, Joanna Paliszkiewicz, and Ewa Ziemba. 2023. 'The Dark Side of Generative Artificial Intelligence: A Critical Analysis of Controversies and Risks of ChatGPT'. *Entrepreneurial Business and Economics Review* 11(2):7–30. doi: 10.15678/EBER.2023.110201.

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KEY DETERMINANTS OF JOB SATISFACTION IN HIGHER EDUCATION

Eva SMETANOVÁ

Abstract

Job satisfaction is an extremely useful measurement for management and an employee's level of job satisfaction is one of the most important indicators that may help a manager solve specific employment issues. Recognizing the employee´s level or extent of job satisfaction gives employers a chance to predict and eliminate such difficulties as low productivity, work inefficiency, an employee's high rate of absenteeism, decision to resign or to retire early, or employee´s mental and physical exhaustion (burnout syndrome). The aim of the study is to highlight the significance of job satisfaction in general, and subsequently to focus on university teachers and researchers taking into account the fact that identifying job satisfaction in an academic environment is supposed to consider the unique aspects of academic work. The findings are expected to help higher education institutions to foster more positive and productive academic environment.

Key words:
academic environment, employee, employer, job satisfaction, productivity, research, researcher, teacher, university, work performance

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INTRODUCTION

A pleasant or wishful atmosphere at the workplace, well-set conditions for the employee's work, regular feedback from the employer, support of the employee's growth, or the possibility to participate in the company policy creation seem to be vital elements that contribute to the employee's performance and thus to company development. The so called job satisfaction issue touches every type of organization, including higher education institutions. Faculty members´ level of job satisfaction has a significant impact on their individual performance as well as on institutional goals that are to be achieved. Based on professional opinions and experiences of experts and knowledge drawn from professional literature in the field of career development, the study aims to identify the key factors that play a role in improving the job satisfaction of teachers and researchers in an academic environment and thereby support better institutional results. The research methodology has been chosen to penetrate deeper into the essence of the issue: common data on employee satisfaction, which are already known, are applied to an academic environment. Nowadays, when the quality of education in general, and tertiary education included, is the subject of a wide debate in the professional and lay public, it may be considered relevant to discuss the quality of the working environment for faculty staff members. The contemporary period also brings the need to establish, adjust or modify working conditions for academics so that they correspond to current employment conditions and needs. It is obvious that the conditions and needs are changing significantly and dynamically – especially with the arrival of a new generation in the employment process who sets new requirements and implements changes to the employment environment. The conditions and needs are influenced also with the arrival of new technologies, moreover with artificial intelligence, and with the appearance of considerations about new forms of work, life-work balance preferences and other aspects that in the past were not so prominent. Current trends show the necessity to change the academic environment, which is now often regarded as a

traditional, "old-fashioned" and rigorous place, to a modern, flexible and innovative scene where science, research and critical discussions are met. The study opens the platform for further research in this area.

LITERATURE OVERVIEW

Phenomena such as job satisfaction or work atmosphere have been in the centre of researchers´ interests since the beginning of the 20th century. In 1938, Robert Hoppock and Samuel Spiegler introduced their book "Job Satisfaction", publishing the results of their research. They investigated the impact of job satisfaction on the performance and personality of employees. Their research was carried out between 1935 and 1937, with eleven of the twenty-four studies dealing primarily with job dissatisfaction among different groups of employees and six studies dealing with the relationship between dissatisfaction and other variables. As for the variables, the authors mention the following ones: the employees´ personality traits, the management policy of the organization, membership in trade unions, nativity, age, gender, and the use of the employer's consulting services. Job satisfaction was then defined as any combination of psychological, physiological and environmental circumstances that cause a person´s satisfaction with his/her job. This was a rather unusual, comprehensive approach recognizing that satisfaction is not just about the job itself but is put into a broader context, which a person works in. R. Hoppock and K. Spiegler (1938) identified several factors contributing to job satisfaction, such as:

a) work environment: when supportive and helpful, it may significantly strengthen and improve job satisfaction;
b) employee perception: the impact on a level of satisfaction is determined by the way employees perceive their roles in a company, their responsibilities, as well as the significance of their work;
c) interpersonal relationships: the more positive relationships with co-workers, associates, and supervisors, the higher level of job satisfaction was found;
d) compensation and rewards: surprisingly, research showed that these factors were not the sole determinants of job satisfaction even though fair compensation and adequate rewards were noted as important.

Hoppock and Spiegler´s research introduced one of the earliest tools for measuring job satisfaction. They helped in quantifying the subjective feeling of (job) satisfaction and made it easier to study and analyse it. Many researchers have been influenced by their research and the tool itself since then. A link between job satisfaction and employee productivity was noted in their research suggesting that satisfied employees are more likely to be (more) productive. These findings laid the groundwork for further studies and research. They highlighted that rather than on external factors such as financial rewards and benefits, job satisfaction is determined by employees´ feelings and perceptions. Emphasizing the importance of a complex approach to understanding job satisfaction was a crucial part of the findings. Robert Hoppock is considered a pioneer in the field of vocational guidance.

In the 1950s, the topic of job satisfaction came to the fore again, but this time from the perspective of factors that motivate employees to perform better. An example could be the study named "The Motivation to Work" (Herzberg, Mausner, Bloch Snyderman, 1959). Research conducted by Frederick Herzberg's together with his colleagues Bernard Mausner and Barbara Bloch Snyderman looked at employee satisfaction in relation to two factors: hygiene and motivation. However, under the word "hygiene" it is necessary to imagine issues such as salary, supervision, and all other elements that can reduce employee dissatisfaction from the point of view of the working environment. The researchers call those factors that motivate employees "motivators" or "satisfiers", this group includes for example achievement, recognition, the work itself, responsibility, advancement, career or personality growth. These are intrinsic factors and lead to job satisfaction when present as they fulfil higher-level psychological needs. On the other hand, extrinsic factors related to "hygiene" were

named “dissatisfiers” because they can cause dissatisfaction when absent or inadequate. However, when improved or added, they do not necessarily lead to satisfaction. In this group, the researchers included for example working conditions, or salary. One of the interesting finding is that while enhancing hygiene factors might prevent dissatisfaction, it may not automatically create satisfaction (or motivation). That may suggest that to motivate employees, companies and organizations should focus on enriching work by improving motivators/satisfiers rather than approaching the hygiene factors. It is, therefore, practical and effective for companies and organizations to search for strategies that would make work more engaging or meaningful for employees - as this increases employee motivation - rather than to focus merely on improving salaries or working environment, which might only have a temporary effect. Employee recognition and achievement makes employees more productive, creative and committed as well as increased responsibility and variety of jobs. Frederic Herzberg´s work has had a continuing effect on management and organizational behaviour by suggesting how to understand employee motivation and job satisfaction and he is considered to be one of the most influential people in business management.

The 1990s were a period of rapid technological changes and subsequent restructuring of businesses, factories, manufacturing companies and services. Companies needed employees who were flexible, adaptable, resistant to stressful situations and upcoming changes, cooperative and efficient, and wanted to keep such employees at any cost. Interest in the topic of employee satisfaction at the workplace has grown again. The reaction to this situation was the extensive and important publication of the team of authors C.J. Crany, Patricia Cain Smith and Eugene F. Stone, who in 1992 published the research results of top academic researchers in the field in the collection of studies called "Job Satisfaction: How People Feel About Their Jobs And How it Affects Their Performance". The authors of the publication offer up-to-date information on how to create job satisfaction and what benefits it may bring, and they also describe the negative side of having too many employees in a company who are dissatisfied with their jobs. This book represents a key resource for understanding the dynamics of job satisfaction and its practical implications in the workplace as it offers a compilation of research divided into various dimensions of job satisfaction and its impact on employee performance. In their research, the authors emphasize that job satisfaction is a complex, multidimensional construct related to various factors that can influence the quality of employee performance. It is very closely related to attitudes and emotions. The authors also introduce and analyse various approaches and methods for measuring job satisfaction (such as surveys, interviews, observational techniques) and highlight the necessity to use reliable and valid measurement tools in order to asses job satisfaction accurately. According to the results and findings published in the book, satisfied employees are generally more likely to be loyal to the company or organization and remain with it, or they have shorter (or no) absence for work.

These findings demonstrate that many organizational researchers, applied psychologists and management scholars already in the past recognized the possible benefits of employee well-being and understood and presented the concept of a satisfied and productive employee (Wright, 2005).

GOAL AND METHODOLOGY

These days, the topic of job (dis)satisfaction is the centre of scholars´ attention again. Due to the huge technological boom and the implementation of artificial intelligence (AI), some job positions are disappearing. However, on the other hand, new technologies promote new possibilities and create new job positions, which (similarly to the 90s described above) requires having employees who are prepared, stress-resistant, loyal, and willing to adapt to the contemporary conditions. However, unlike the previous period, there is now a different generation of employees in the employment process. While the so-called Generation X – the people economically active in the 1990s – was relatively resourceful and eager to adapt to new working conditions, the present generations, such as Generation Y (Millennials) and

subsequent Generation Z enter the workplace with different expectations (Dimock, 2019). While Generation X was interested in significant job positions usually associated with responsibility and hard work, career success is not a goal or an ambition for the following generations. While in the 90s, people often "sacrificed" their personal lives for career growth, or work as such, their children today want to live and work in a different way. Young generations nowadays consider work only as a source of income needed; furthermore, they highlight such attributes as freedom, independence, autonomy. Some general differences between generations X a Z can be mentioned here as they not only influence their attitude to work, organizational behaviour and overall performance in a company but also have a great impact on their perceiving of job satisfaction. Members of Generation X were born between 1965 and 1980; they precede the Generation Y (the Millennials) born between 1981 and 1996, followed by Generation Z members born during the late 1990s and early 2000s. Following the ideas of K. White (2021), the very first contrast is technological adoption and different way of communication associated with it. Generation X has gradually adapted to new technology; they use it when they see a clear purpose or importance for work productivity and try to avoid being overwhelmed by it. Generation Z, on the contrary, is highly comfortable with modern technologies, applications, digital platforms; it is not hesitant to approach new tools in order to promote work efficiency. This may be closely connected to communication preferences: while the "older" generation prefers more traditional forms of communication, and perhaps more formal communication channels, such as emails, phone calls, and face-to-face meetings, the "younger" ones opt for quick, brief, less formal or even informal way of communication via social media, or instant messaging (chatting) often even simplified to emoticons. Generational differences have also been noted in the workplace. They are related to such features as work ethic, attitudes, beliefs, organizational behaviour, etc. While employees of Generation X often appreciate independence, self-reliance, and have rather rational approach to work, Generation Z values innovative approach, creativity, collaboration. Generation X employees seek for autonomy to manage their work in their own way, in contrast to Generation Z, who prefers generating ideas within a team. Career expectations also vary. Generation X is more focussed on achieving job security and financial stability: staying in one job for a longer period and climbing the career ladder. They emphasize a clear separation between work and personal life, preferring having traditional working hours. Generation Z employees often blur the boundaries between work and life. They grow up with technologies that allow people to be constantly connected. "Workation" (Paulise, 2023) is a trend that may symbolize it: a model that combines leisure with work. It represents a remote or hybrid working style that enables the employees to have more control over when and from where they work. Certainly, this type of work is not suitable for every job position, however, it could serve as a good example of Generation Z work attitudes. Generation Z favours flexible work arrangements where work is just an extension of their personal lives. Work for them should be meaningful, it should contribute to the "good life" which they constantly look for, and should offer personal growth. If they do not feel that way, they have no qualms about changing jobs quickly. For Generation Z, environment, surrounding, the place where they are just now is crucial. They often choose workplace according to the company culture, policy, and values that the company supports (Twenge, 2010). They stay where they are popular and appreciated, where or with whom they are fond of. If they are not attracted by or interested in the place or colleagues, they simply quit, in other words, they "leave the platform".

The above stated variations highlight the diverse influences, technological progress, and cultural changes that have shaped each generation. Recognizing these differences can assist employers in developing better strategies for managing and engaging a workforce that spans

multiple generations. It would not be wise, however, to look at Generation Z only. Although they do change and influence the employment setting, in an academic environment there are employees who belong to the previous generations and are now at the age of about fifty and more. This is a rather specific type of employees, called by Dorothy Miller (1981) a "sandwich generation". These employees are vital enough and experienced enough to bring new ideas, to raise a critical voice or to warn against wrong decisions. At the same time, however, they care for both: their elderly parents and their dependent children. This life situation often hinders their development, and although they do have a great interest and potential to adapt to new working conditions and requirements, they are not always able to achieve this goal. Therefore, speaking about job satisfaction, those employees often complain about being "forgotten" or overlooked. In this study, however, their experience will be reflected.

The aim of research is to analyse what elements can influence the perception of job satisfaction of researchers and teachers in an academic environment and how this perception may affect the quality of their research, interaction with students, colleagues and management in order to meet the institutional goals. In the beginning, terminology specification is important so that there is no misunderstanding or no underestimating of the issue. As Porvazník (1997) states, work is a purposeful, systematic and intentional action on nature. It is a basic social activity that transforms natural objects into useful objects. This ensures the material existence of human society. In the process of social work, a person creates social values. At the same time, active work develops not only a person's psyche, but also personality. Therefore, it can be said that work is a specific activity by which a person is distinguished from the animal world (Živčicová, 2019). Pauknerová (2012) divides work according to the load on systems and psychological functions as follows:

- predominantly muscular work, when mainly muscle groups are active;
- predominantly sensory work, which is tied to the activity of individual senses and neuro-psychic processes;
- predominantly mental work, in which psychological processes such as thinking, decision-making, attention, willpower are most represented;
- work performed predominantly in contact with people, which includes the demands of both sensory and higher psychological processes and places on the personal/personality level of the worker.

The presented study will focus primarily on mental work and work performed in contact with people. Workplaces where these types of work are most often represented include for example, the department of human resources, marketing, and public relations (PR). It includes the banking sector as well, and also the public administration field, which is divided into several sectors. One of them is the sector of human development and social welfare, which includes education, healthcare, culture, social services and physical education. Job satisfaction is defined by Vojtovič et al. (2013) as a positive emotional state of an individual resulting from the evaluation of work performed, work experience and work relationships. Furthermore, he characterizes job satisfaction as a general work attitude that leads to better employee´s performance, which positively affects the employee job satisfaction. In this way, job satisfaction affects the reduction of absenteeism and employee turnover. Vojtovič et al. (2013) also mention a situation where a highly productive employee may not find satisfaction in work because the work does not fulfil him/her intrinsically. The authors emphasize that a satisfied employee is able to concentrate better on the work duties, such work is of higher quality, there are fewer accidents at work or fewer mistakes made. A satisfied employee has quality relationships with colleagues, superiors or subordinates. Last but not least, job satisfaction has a positive effect on the employee's personal life and helps maintain life-work balance or general quality of life, the so-called well-being (Štikar et al., 2003). It also strengthens work altruism, in other words, selfless service to colleagues, co-workers, tolerance of some shortcomings (for example, not always pleasant behaviour of a colleague,

frequent requests for work beyond the scope of their duties, etc.), dedication and loyalty of the employee to the employer, it also reduces turnover. It is, therefore, obvious that job satisfaction or satisfaction at the workplace are important aspects which the employer currently (perhaps more often than ever) focuses attention on.

Job satisfaction changes in dependence on other factors – variables - therefore it can be understood as a dependent variable. Following Vojtovič et al. (2013), it is possible to mention some variables (factors) that play a significant role in the issue of job satisfaction and its experiencing at the workplace. These variables (factors) are going to be mentioned further on in this study. As already mentioned, the study tackles the issue of job satisfaction of employees working in the environment of education and human development, therefore, the factors will be presented from the this perspective. At the beginning, however, it is important to introduce the concept of education. As formulated by Jakubčinová (2021), a state can be considered developed if it emphasizes the qualitative development and growth of its citizens. By highlighting the values and importance of upbringing and education, respecting the human nature, basic human rights and needs, preserving, supporting and protecting the cultural identity of the nation and cultivating movement and aesthetic expression, the state demonstrates its maturity and interest in achieving high creditworthiness of citizens. Education, as Jakubčinová (2021) continues, is a general term meaning targeted action and learning focused on training and upbringing. Since the right to education is one of the basic human rights, the sector of education is included among those ones with a significant position. Quality education leads to the economic prosperity of the country, supports the growth of the standard of living and contributes to the improvement of the ordinary life of the individual. Therefore, it is understood that education is one of the important sectors, and it is crucial to focus on the working environment of teaching or non-teaching personnel. Within this study, it would not be possible to map the working environment and job satisfaction at all grades and types of schools. The study thus deals with working conditions or the atmosphere at the workplace and the subsequent job satisfaction of teachers and researchers in an academic environment.

An academic environment is mostly related to colleges and universities, and rather than gaining practical skills, it is connected to studying, analysing, and thinking (Cambridge Dictionary). This place combines teaching and knowledge sharing with research either done or just being conducted, with academic and administrative responsibilities, such as project implementation, publishing activities, and so on (Brady, 2010). Lane (2010) proposes that a good academic environment should promote faculty members´ job satisfaction, tackling primarily such factors as pay and benefits, work hours, faculty members autonomy, organizational structure, and communication between employees and management. Based on Brady´s research results (2010), when faculty members feel valued by the university management, their level of job satisfaction rapidly increases. They also show increased commitment and a strong sense of ownership of the institution (Raziq & Maulabakhsh, 2015). As Stephen W. A. (2024) comments on the previously mentioned results, it is sad to know this is rarely the case of most tertiary institutions. It is also a common event in Slovak universities when – based on the hunt for economic efficiency, job satisfaction of faculty members is often out of the centre of attention. However, measuring the economic efficiency of an educational institution cannot be done in the same way as it is with enterprises, for example, whose mission is to produce products and offer services with the only aim: to sell them. In the case public universities, profit cannot be considered as the main objective (Krajčo, K. et al., 2024).

In recent years, Slovak universities and higher education institutions have invested considerable funds in the development of infrastructure, in new technologies, modern laboratories, technical devices, etc. They have devoted their effort to the improvement of buildings and facilities, the surroundings, and the green economy. It is a huge leap and commendable development compared to the past twenty or more years back. However, they forget one thing: and that is the investment in human capital. Scientific and academic employees, university teachers and

researchers are significantly affected by these changes but their working conditions within the system do not change. Contrasted with modern buildings and superbly equipped classrooms, they mostly remain part of the unfashionable and outdated machinery of customs and face the remnants of old requirements - as if times have not changed at all. This is an academic sore spot that deserves expert attention and academic debate at the level it is worthy of. Also for this reason, job satisfaction in an academic environment is a hot but not very researched topic.

Going back to the variables (factors) that influence the degree of employment pleasure or happiness felt by an individual or, in other words, work fulfilment, which is closely related to career contentment, following Vojtovič et al. (2013), a group of them can be introduced. The factors are to be specified and analysed within the academic environment:

- Variety of work. This is one of the main factors influencing job satisfaction. There are such workplaces that are dominated by monotonous and routine work; and there are such employees comfortable with this type of work who feel performance satisfaction. However, since the presented study focuses on mental work and work with people, there is no assumption of monotony and routine in this type of work. Working with people and mental work as such involves various complexities and nuances that arise from individual differences and organizational policies. Such work often comprises unpredictable activities or people´s reactions, understanding of different personality traits, different cultural backgrounds that people have, or adoption of various communication styles. The work that requires interaction with people and the use of cognitive competences allows the employee to use broad potential, previous life and work experience, emotional intelligence, social skills, etc. In an academic environment, among other features, it is crucial to let the academic employees be creative. Creativity is one of the possibilities to avoid monotony and routine. The way a teacher achieves the set goals may not be identical to the ways of other colleagues. It is, nevertheless, rather debatable whether it is desirable for all academics to have the same style of interaction. It can be hard for many to try to follow or adapt to the "uniform" rules. Each teacher approaches students diversely: he or she motivates, explains, presents with the use of various methods and strategies, very often in reflection to the current atmosphere in the classroom. If these individual characteristics are not respected and higher education institutions strictly strive for a uniform style, creativity is suppressed and it may promote academics´ dissatisfaction, frustration, and burnout. As mentioned above, it is a key aspect to give the academic employee opportunity to make full use of his or her experience, knowledge, skills and to allow them to involve their personality potential.
- Freedom and autonomy. A certain degree of freedom and autonomy given to employees contributes to their job satisfaction. That requires the employer to provide the employee with some extent of responsibility and show trust in his/her decisions. This applies to academic employees as well. Being constantly under the pressure of control where every decision must first be explained and justified, this hardly indicates any degree of trust in their competence. Moreover, it gives them little or none of freedom and autonomy in their performance. The requirement of the superior to be included in every electronic conversation may be frustrating and painful. Although it is legitimate for a superior to demand to be informed about work matters, he or she does not always need to witness the decision and solving processes. In an academic environment, this means for example respecting the teacher´s communication with students, or the way of solving a conflict or problem or some

internal agreements as long as they are in accordance with the institution policy and do not violate human rights, and are agreed by both parties. In this context, it is also important to stress that the freedom of research and publication should be a matter of course in the academic environment. This also includes active participation in conferences and other scientific events, where the purpose is not only to present one´s scientific results but also to meet other researchers, to exchange information, connect (network) experts with common research interests and look for breakthroughs in other areas of research, etc. If the superior opposes these conditions to academics, dissatisfaction, mistrust, and frustration arise. The same is the case if the superior does not value the approach of an academic employee to support and spread the good name of the higher education institution where he or she works.

- Communication. The way of interaction between the superior and employees is another factor affecting job satisfaction. An authoritative, directive-persuasive style of communication can relatively easily create a barrier between communicating parties. By listening to the superior who does not give an employee the opportunity to be involved in a conversation, the employee can resign, surrender, or rebel but none of these reactions are desirable. Although there may be certain situations where a directive style of communication could be effective, it is important to be aware of the fact that its frequent or the only use leads to employee dissatisfaction. Even in an academic environment, it is crucial that the superior is able to formulate requirements and main ideas clearly and concisely, that he or she can listen to subordinates actively, overcome communication barriers, and professionally manage manifestations of ineffective communication. It is vital to be aware of the fact that communication styles may significantly affect one´s motivation and may either encourage him or her to perform better or "take away" one´s energy and enthusiasm. It is necessary to realize that academic employees are people with higher and highest education, people who know why they are at that place, what they want to achieve and what strategy could be used to be successful. There is no need, therefore, to speak in a superior, arrogant and imperative tone or give orders without any explanation, instead, to demand as much input information as possible when solving any problem is appreciated.

Other researchers (e. g. M. A. Ahmad & A. S. Jameel, 2018; O. Ch. Hee et al., 2020) mention more variables affecting job satisfaction among academic staff members, such as workload, work environment, pay and benefits, top management leadership, job security, and empowerment.

- Workload can be characterized as a number of lessons taught and tasks given to an academic employee within a specified period of time. In Slovakia, workload is usually set per week or per academic semester, rarely also per academic year. The findings (Hee et al, 2020) show that increasing the workload of academic staff result in low efficiency, poor performance and job dissatisfaction.
- Work environment does not need to be understood only as a place where a teacher or researcher works (classrooms, libraries, laboratories, offices, canteens, etc.) but it also touches the issue of possibilities offered to academic employees to develop, such as further education, career growth encompassing different roles and responsibilities. Employee appreciation in the form of regular appraisal, rewards, positive assessment also belong to quality and pleasant work environment.
- Pay and benefits are often considered one of the strongest motivational elements that increases employee performance and productivity. Pay in Slovak academic environment is included in the tables or schemes, i. e. a fixed amount of compensation (salary) is awarded to an academic employee based on the education achieved, scientific growth, and the number

of years of service. Except for luncheon vouchers, academic employees do not usually receive any other financial or non-financial benefits. In European or world universities and higher education institutions, sabbatical as a form of non-financial benefit is often offered to university teachers and researchers, however, this very rarely, if ever, happens in Slovakia. Many institutions attempt to create room for personal and professional growth and development by allowing their faculty staff members to work flexibly and implement home office whenever possible. Again, this is not the case of all Slovak universities and thus the working conditions related to benefits cannot be comparable. Depending on the type and nature of the research being conducted, the researcher may spend time in the laboratory or in the field. It is therefore counterproductive to demand that the researcher only carry out his or her activities during working hours and also that he or she only publishes scientific papers during working hours. Collecting data and formulating research conclusions is not related to established working hours. Even writing is not possible on command, it is a creative process that requires time, place, will and determination, and current mood of the author. Therefore, insisting on the observance of 8-hour working hours five days a week for university teachers and researchers, and especially in the present era of rapidly changing working habits, is outdated and undignified.

- Top management leadership can be associated with a strong motivational accent, leaders often significantly influence the achievement of institutional goals through innovations, engaging activities and developing the team spirit. Top management leadership style can affect academic staff members´ job satisfaction by providing fair feedback and support. If a team activity is organized and all members (staff and/or students) are invited, then the education process should be stopped and the usual timetable should be modified so that everyone has the opportunity to go and join the event. Otherwise, the activity cannot be called collective.
- Job security is another important element contributing to job satisfaction of academic staff members. Fixed-term employment contracts are a common part of Slovak university education. Such contracts do not give employees much security, the turnover of academic staff is relatively high, which is reflected in the quality of research, project outputs or publication activities, when quality is often hidden behind quantity. Science and research in Slovakia should certainly be evaluated from the aspect of the researcher's job security.
- Employee empowerment is a term borrowed from the authors Ahmad and Jameel (2018), however, it is widely known also as employee enrichment or employee engagement. In general it could be described as a management philosophy that enables employees take part in organizational strategic decisions and policy making. For faculty staff members it is common to be invited to participate in designing and preparing new curricula, modifying information sheets, suggesting and organizing educational events, such as guest lectures, workshops, conferences, project activities, and so on. By contributing in the previously mentioned activities, the loyalty of employees may grow and their need for appreciation ma be fulfilled. This also strengthens one´s identity to belong to the groups of scholars that share the same interests and increases the level of job satisfaction.

FINDINGS AND DISCUSSIONS

The study indicates that job satisfaction in an academic environment is miscellaneous, influenced by a combination of several features, such as academic autonomy, variety of tasks, communication styles, workload, and organizational support. The importance of autonomy and the ability to use diverse skills highlight the need for academic institutions to

create environments that permit not only personal but also professional expression. Over-regulation and uniformity in academic roles can stifle creativity and lead to negative outcomes, such as frustration and burnout.

Furthermore, the study suggests that a supportive work environment, including fair compensation, job security, and recognition, is essential for academic staff satisfaction. The lack of benefits and rigid structures in some Slovak academic institutions reveal gaps that could be addressed to improve job satisfaction.

Leadership plays a crucial role in shaping job satisfaction, as supportive and inclusive leaders can foster a positive work culture, while authoritative leadership can hinder staff morale and engagement. Therefore, leadership training and development should be a priority for academic institutions aiming to enhance job satisfaction among their staff.

Lastly, the empowerment of academic employees through involvement in decision-making and strategic planning fosters a sense of ownership and connection to the institution, further enhancing job satisfaction. Institutions should strive to create inclusive environments where academic staff can contribute meaningfully to organizational goals and feel valued for their expertise and input.

Overall, these findings suggest that academic institutions need to prioritize a flexible, supportive, and empowering work environment to maximize job satisfaction and productivity among their staff.

Conclusion

Academic environment is specific, it does not generate financial profit but it produces research results, spreads knowledge and prepares young people for working life. It is a vital part of the country´s economy and needs to be given due attention. If Slovak universities want to keep up with the times and create a modern place for science, research and education, it is necessary that investments go equally into technical equipment, building reconstruction but also into the development of human resources. Emphasizing the issue of job satisfaction should be one of the main goals of academic institutions management. Job satisfaction is not only a vague topic, it plays a key role in motivation for better performance and quality work outputs. Before managers can improve job satisfaction, they need to understand what it consists of. Various types of research show that an employee's job satisfaction depends not only on current and past experiences but also on their expectations for the future. Anticipating future opportunities for career advancement, job security, involvement in decision-making, or networking can significantly boost job satisfaction. In order to maximize job satisfaction and productivity among academic staff, academic institutions should focus on building a flexible, supportive, and empowering environment that values autonomy, recognizes contributions, and encourages active participation. A change in approach to academic employees is typical for a modern and stimulating academic environment as well as the decision to take a holistic approach to job satisfaction that addresses the diverse elements that job satisfaction is influenced by. It is above all freedom of research, trust in faculty staff abilities, the possibility of flexible working time and appreciation of work results.

References

Ahmad, M. A., Jameel, A. S. (2018): Factors Affecting on Job Satisfaction among Academic Staff. Polytechnic Journal: Vol.8 No. 2 (May 2018): pp:119-128. Available at: http://epu.edu.krd/ojs/index.php/Journal. [Accessed August 20 2024].

Brady, M. (2010). Healthy Nursing Academic Work Environments. OJIN: The Online Journal of Issues in Nursing, 5. Available at: https://doi.org/10.3912/ojin.vol15no01man06. [Accessed August 26 2024].

Cambridge Dictionary. Available at https://dictionary.cambridge.org/dictionary/english/academic

Cranny, C. J., Smith, P. C., & Stone, E. F. (1992). Job Satisfaction: How People Feel About Their Jobs and How It Affects Their Performance. Lexington Books.

Dimock, M. (2019). Defining Generations: Where Millennials End and Generation Z Begins. Pew Research Center.

Hee, O. Ch. et al (2020): Factors influencing job satisfaction among academic staff. International Journal of Evaluation and Research in Education (IJERE) 9(2) June 2020. DOI:10.11591/ijere.v9i2.20509 [Accessed September 2 2024].

Herzberg, F., Mausner, B., & Snyderman, B. B. (1959). The Motivation to Work. John Wiley & Sons.

Hoppock, R. and Spiegler, S. (1938), "Job satisfaction: researches of 1935-1937", Occupations; The Vocational Guidance Journal Vol. 16, No. 7, pp. 636-43.

Jakubčinová, M. (2021): Verejný sektor v zmiešanej ekonomike. Trenčín: Trenčianska univerzita A. Dubčeka v Trenčíne. ISBN 978-80.8075-957-5.

Krajčo, K., Habánik, J., Grenčíková, A. (2024): DEA models as a tool for evaluating and measuring the efficiency of public universities. Available from: https://www.researchgate.net/publication/379715812_DEA_models_as_a_tool_for_evaluating_and_measuring_the_efficiency_of_public_universities [Accessed Sep 02 2024].

Lane, K. A. et al (2010). A Study of Nurse Faculty Job Satisfaction in Community Colleges in Florida. Teaching and Learning in Nursing, 5, 16-26. Available at: ttps://doi.org/10.1016/j.teln.2009.05.001. [Accessed August 26 2024].

Miller, Dorothy A. "The 'sandwich' Generation: Adult Children of the Aging." Social Work, vol. 26, no. 5, 1981, pp. 419–23. JSTOR, http://www.jstor.org/stable/23712207. [Accessed September 2 2024].

Pauknerová, D. (2012): Psychologie pro ekonomy a manažery. Praha: Grada. ISBN 978-80-247-7655-2.

Paulise, L. (2023): Workation: Balancing Work and Vacation for Optimal Career Performance. Forbes. Available from: https://www.forbes.com/sites/lucianapaulise/2023/06/20/workation-balancing-work-and-vacation-for-optimal-career-performance/. [Accessed August 26 2024]

Porvazník, J. a kol. (1997): Celostný manažment. Bratislava: Iris. ISBN 978-80-88931-73-7.

Raziq, A., & Maulabakhsha, R. (2015). Impact of Work Environment on Job Satisfaction. Procedia Economics and Finance, 23, 717-725. doi.org/10.1016/S2212-5671(15)00524-9. [Accessed August 20 2024].

Stephen, V. (2024) Key Factors Influencing Job Satisfaction among Academic Staff in the University. Journal of Human Resource and Sustainability Studies, 12, 399-414. doi: 10.4236/jhrss.2024.123022. [Accessed August 26 2024].

Štikar, J. a kol. (2003): Psychologie ve světe práce. Praha: Karolinum. ISBN 80-246-044-85.

Twenge, J. M. (2010). Generation Me: Why Today's Young Americans Are More Confident, Assertive, Entitled—and More Miserable Than Ever Before. Atria Books.

Vojtovič, S. a kol. (2013): Personálny manažment v organizácii. Plzeň: Aleš Čeněk, s. r. o. ISBN 978-80-7380-483-1.

White, K. (2021). Generation Z vs. Generation X: Bridging the Gap. Business News Daily.

Wright, T. A. (2005). "The Role of ´Happiness´ in Organizational Research: Past, Present and Future Directions" in Perrewe, P. L. and Ganster, D. C. (Eds.) Research in Occupational Stress and Well-Being, JAI Press, Amsterdam, Vol. 4, pp. 225-68.

Živčičová, E. (2019): Psychológia práce. Trenčín: Trenčianska univerzita A. Dubčeka v Trenčíne. ISBN 978-80-8075-844-8.

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LEGAL REGULATION IN FAMILY BUSINESS IN SLOVAKIA
Case study- Implementation of ESG Criteria

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Abstract

Family business is distinguished from the traditional business model by the specificity of relationships, family ties, a sense of stability, continuity, responsibility and mutual trust of family members. Although the aim of family business is undoubtedly to carry out business activities in accordance with the Commercial Code, the family business also aims, among other things, to strengthen family values and to implement the principles of sustainable family business. In a broader context, the scientific study analyses the conditions for the implementation of the family business model, highlighting the implementation of the principles of sustainability in specific family businesses in Slovakia. The contribution of the scientific study to the theory and practice of management is to highlight the implementation of the principles of sustainable family business, which creates a unique organizational culture, and commitment to the local community and the introduction of modern technologies in the framework of innovation in family businesses, especially with regard to environmental protection.

Key words:
family businesses, family enterprise, social development, sustainability, generational change

JEL Classification K36, L26,M21 https://doi.org/10.52665/ser20240104

INTRODUCTION

Family businesses play a key role from the point of view of the national economy and social and regional development. Their hallmarks are high integrity and values that guide their company´s activities in the area of corporate social responsibility relating to their employees and the environment, as well as sustainable business. A universal feature of a family business is the common goal of family members and shared values. Family businesses are a good example of creating a balance between work and private life. Based on their own tradition, long-term activity, family businesses are linked to the place where they operate and create and maintain jobs, they are flexible and can adapt to changes in the economic and social environment. Family businesses create a unique organisational culture based on values promoted by interested actors from the family circle, such as great trust in the business, sustainability and high quality of services or products provided. The family business model is associated with the aspect of generational change and handing over the business to the next generation. Family businesses, which in most cases are owned and managed by direct family members, in addition to strengthening competitiveness within the business, also respect the principles of sustainability. In Slovakia, the number of family businesses is constantly growing (43.957 in 2018) by an average of 4% per year (Ministry of Economy SR ,2018). Family business has a long tradition in Slovakia. They flourished mainly in the textile, clothing and footwear, engineering, food, glass and confectionery sectors.

LITERATURE OVERVIEW

The issue of family business is the subject of various scientific and professional discussions. There are several scientific studies and opinions on the subject, which largely agree that the basic feature is family ties and tradition in doing business. Family businesses are private organisations providing goods and services

either to their members or to the wider community. Within the family business, the influence or dominance of the family in the management of the company can be seen in issues involving strategic decisions.

Churchill and Hatten (1997) are of the opinion that: „*viewed a family business as a business through succession*.".

Slovak expert Mura (2021) *claims that*„ *family businesses are specific forms of business entities that are owned by the family and family members are present in the business itself. Family businesses are very flexible, innovative and they ensure employment*."

Jourová at al. (2016) claims that „*A family business is a business owned or managed by a family/families or selected members of a family/families, with the assumption that the business will be passed on to the next generation in the family*."

Shanker and Astrachan (1996) described „a *family business as a company meeting strict criteria to be categorised as a family business*."

Naďová Krošláková (2018) is of the opinion that „*family business" can then simply be specified as a business activity carried out by spouses, other first degree relatives (parents, children, siblings) or other family members, as long as at least 50 % of the share in the company is owned by members of one family, either on the basis of blood relationship or other family ties, for example, such as marriage*."

Meanwhile, Chua, Chrisman and Sharma (1999) define a "*family business as one that is managed on the basis of handing down the firm from generation to generation in order to obtain a formal or implicit vision of the business as the property of a single family or a small number of families."*

Ministry of Economy of the Slovak Republic (2021) in its Scheme to support the Family Businesses for the years 2020-2021 (de minimis aid scheme) defined the group of enterprises to which support can be provided. According to the wording of this scheme a family business is defined as *„a group of natural persons who are connected with blood ties or ties recognised by a court decision or by law with the same effect (adoption, marriage) or have personal, mutual ties between them and are interested in creating a mutual dependency, interdependence and dependency (partner, co-habitant) (hereinafter referred to as "family") and meet at least one of the following conditions in relation to the company:*

1. one or more members own more than 50 % shares or voting rights in the company;

2. one or more members owns such a share or voting rights in the company that they are able to enforce their will against other co-owners;

3. one or more members exercise control or management functions in the company and have influence in the company." (Ministry of Economy of the Slovak Republic, 2021).

It is evident from the above, that the family business is based on generational change in the company, while family members have control over the management and financing of the company. Majority of family businesses belong to the category of small and medium sized enterprises, however, there are concrete examples of family transnational corporations that have a long history and they have been active in international markets for a long time.

GOAL AND METHODOLOGY

The aim of the scientific study is to analyse the current legal status and conditions of family business in Slovakia based on available facts and collected data. Using legal analysis and legal logic, we clarify the basic institutes of family business and, based on our own experience, we clarify both the positive and negative side of family business in Slovakia. The secondary objective is to identify family businesses in Slovakia, which as part of their business strategy implement ESG principles. When analysing and processing the topic, we mainly applied the relevant Slovak legislation, as well as the relevant legal acts of the European

Union. When clarifying the basic terms, we also pointed out the opinions of several authors. As part of processing data on family businesses, we used data from FINSTAT.sk database and from reports on the achieved economic results of identified family businesses.

Legal regulation of family businesses in the Slovak

Slovak legislation does not contain separate law on family businesses, nonetheless, in practice the terms „family business", „family enterprise", „family company" are used quite often. Legal base for family business represents the definition of the term „business" within the meaning of article 2 of the Act No.513/1993 Coll. the Commercial Code. In this context we could also point out the definition of the term „family" within the meaning of article 2 of the Act No. 36/2005 Coll. on Family and amending certain acts, nonetheless the definition of the term „family" as stipulated by this Act is too narrow for the purposes of the family business. In connection with family business, the term often used is the „close person", which is defined in articles 116 and §117 of the Act No. 40/1964 Coll. the Civil Code.
In 2022 the amendment of the Act No. 112/2018 Coll. on Social Economy and Social Enterprises**,** that includes inter alia provisions related to family businesses, was adopted. In principle, a legal framework for family businesses was established, including the category of so called „family businesses".

In the Czech Republic, the family businesses are regulated by articles 700 to 707 of the Act No.89/2012 Coll. the Civil Code. According to provision of article 700 of the Act No.89/2012 Coll. the Civil Code: „*family business is considered an enterprise, in which spouses or at least one of the spouses and their relatives up to the third degree or persons related with spouses as brothers or sisters-in-law up to the second degree, work together and which is owned by one of these persons, is considered a family business. Those of them who work permanently for the family or for family business are regarded as members of the family involved in the operation of the family business.*"

The Slovak legislation (National Authority) was inspired when drafting the legislation also by the Common European definition of a family business (European Commission 2009).

1. Most decision-making rights are in the possession of the natural person(s) who established the firm, or in the possession of the natural person(s) who has/have acquired the share capital of the firm, or in the possession of their spouses, parents, child, or children's direct heirs.
2. Most decision-making rights are indirect or direct.
3. At least one representative of the family or kin is formally involved in the governance of the firm.
4. Listed companies meet the definition of family enterprise if the person who established or acquired the firm (share capital) or their families or descendants possess 25 per cent of the decision-making rights mandated by their share capital (European Commission ,2009).

In our opinion, this definition of the family business is general and relatively extensive, nonetheless it shows systemic signs of compliance with the Slovak definition of family business. The decisive criterion is 25 per cent of the decision-making rights mandated by their share capital.

Under paragraph 15a of the Act No. 112/2018 Coll. on Social Economy and Social Enterprises the family business has to comply following definition characteristics, while the family business has to be entrepreneur under paragraph 2 (2) of the Commercial Code, i.e.:
a) person registered in the Commercial Register,

b) person doing business on the basis of authorisation as self-employed person,(trading licence)
c) person doing business on the basis of other authorisation as self-employed person according to special legislation, (trading licence)
d) natural person who carries out agricultural production and is registered in accordance with a special regulation.

Another important definition feature of the family business is the existence of family ties:

a) employment of at least family member
b) participation of family members in the enterprise
c) at least 51 % enterprise is owned by the family member (§ 15a Act No. 112/2018).

Spouses, relatives in the direct line, siblings and other persons related to each other up to the fourth degree and the spouses of these persons are considered members of a joint family. In practice, the family businesses of spouses, or siblings or parents with children, can be established. The family businesses, either existing or newly established, can operate as:

a) company, i.e. a limited company, joint stock company, limited partnership with share capital, limited partnership or partnership
b) cooperative,
c) European company.

New Slovak legislation distinguishes two types of family businesses. In Table 1 defining features of businesses are illustrated.

Tab. 1: Types of Family Businesses

Non-incorporated family business		**Registered family business**
For inclusion in the list of the family businesses, it is sufficient if the entrepreneur meets the statutory defining characteristics of the family business. The family business which is included in the list of family businesses is entitled to use the designation „family business" or the abbreviation „r. p.".		In addition, in order to register (obtain the status of a registered family business), the family business is required to meet other legal requirements (not only the defining characteristics of a family business, but also, for example, that it actually carries out an economic activity, has an established family council, etc.). The aim of the registered family business, in parallel with the achievement of economic goals, is above all the cultivation of its internal environment by developing family ties and strengthening family values and the quality of family life.

Source: Own compilation. Act No. 112/2018 Coll. on Social Economy and Social Enterprises.

The registration of a family business requires the establishment of a family business council with at least three members and a majority of the members. The board of the

family business is made up of members of the joint family. In this context, we can also speak of a collective body. The competence of the family business council includes determining the development of the business, the promotion of family policy with regard to the objectives of the business and the objectives of the family, the succession of the next generation or the generational exchange or transfer of ownership or voting rights. The Ministry of Labour, Social Affairs and Family of the Slovak Republic manages the implementation of the Act No. 112/2018 Coll. on Social Economy and Social Enterprises, *inter alia*, by granting and repealing the status of registered business. In the case of the acquisition of the status of a registered family business, the legislation provides for situations in which it will cease to exist and be dissolved by:

a) dissolution of the legal person,
b) death of the natural person - entrepreneur or his/her pronouncement of death, if there is no continuation of the trade,
c) the date on which the status of the registered family business is returned to the Ministry Ministry of Labour, Social Affairs and Family of the Slovak Republic.

The Ministry of Labour, Social Affairs and Family of the Slovak Republic has the authority to dissolute the family business in cases when:

a) the registered family business has breached its obligation to comply with the statutory conditions for obtaining its status,
b) the registered family business has breached the obligation to use at least 12 % of its after-tax profits to strengthen its internal and external relations,
c) the registered family business has been fined for violating the prohibition on illegal employment.

Based on the above, the characteristic features of the family business can be identified:

a) carrying out economic activity in the presence of family ties,
b) strengthening and developing family culture and the family environment,
c) setting a percentage of after-tax profits (min. 12%) to be used to achieve the objectives of the enterprise,
d) the participatory way in which members of the joint family are involved in reconciling the objectives of the family business and those of the family through the family business council.

Sustainable family business „

The sustainable business model has its origins in documents of the United Nations and the European Union, among which we can include the European Green Deal (European Union 2019) Com/2019/640 final) as a key document as well as the secondary legal acts of the European Union. In this way, the European Union seeks to implement coherent measures to build a fair and prosperous society with a modern, competitive and resource-efficient economy. Transformation processes also affect family businesses, which are facing new challenges as well as strong competitive pressures. Sustainability has become an important criterion for assessing the reputation of businesses and a tool for shaping a sustainable economy based on circular economy, eco-innovations, sustainable development and others. Currently, the concept of sustainability includes the following categories of aspects: „Environmental, Social, Governance“ (ESG). In the interest of correct interpretation and correct application in practice, the EU Regulation no. 2019/2088 Art. 2 (24) introduces the term „sustainability factors“. It defines as the sustainability factors: environmental, social and employee matters, respect for human rights, anti-corruption and anti-bribery matters (Regulation (EU) 2019/2088). Digital

technologies are key factors enabling to achieve sustainable objectives. In terms of sustainability for family businesses, another element is financial resources and increasing competitiveness. According to available studies, only 30% of family businesses survive beyond the 2nd generation, 10-15% survive beyond the 3rd generation, and only 3-5% survive beyond the 4th generation. (Ministry of Economy SR,2021). The Slovak Republic regularly provides state aid in the form of de minimis aid to small and medium-sized enterprises and family-type enterprises to strengthen their competitiveness.

Regarding the identification of the Union sustainability factors, sustainable family business can be characterised as:

a) the economic activity that contributes to the environmental objective, measured for example, through key indicators on energy efficiency, renewable energy, raw materials, water and soil, waste production and greenhouse gas emissions,
b) economic activity which contributes to a social objective, to tackling inequalities, to promoting social cohesion, in particular for disadvantaged citizens, to social inclusion, as well as to fair remuneration for employees,
c) economic activity that contributes to the long-term development of the family business, respecting environmental and social requirements based on the European Union legislation. At the same time the ethical management of the family business, how it treats its employees or how it deals with human rights issues and the governance of the family business are not affected.

On the basis of the data available in the FINSTAT database and data from the Commercial Register of the Slovak Republic, we have identified significant family businesses that have been operating on the market for a long time and are also among the larger employers in the regions of Slovakia. Table 2 shows the family ties, the established of the company as well as economic results (revenue and profit achieved in 2022).

Tab. 2: Identification of family businesses in Slovakia

Family business	**Name of Family**	**Established in**	**Revenue 2022**	**Profit 2022**
Labaš,Košice	Labaš	1998	353 847 704 €	8 267 444 €
Raven,Považská Bystrica	Havránekovci	1993	364 195 392 €	25 330 617 €
AGRO TAMI, Nitra	Bobákovci	2000	94 679 669 €	161 513 €
Matador Holding,Púchov	Rosina	1997	6 508 801 €	224 607 €
Hossa Family,Poprad	Hossa	2008	57 510 075 €	552 987 €

Source:

FINSTAT (2023). Labaš. [on-line] [cit.: 2024-15-05]. Retrieved from: https://www.finstat.sk/36183181.
FINSTAT (2023) Raven. [on-line] [cit.: 2024-15-05]. Retrieved from: https://www.finstat.sk/31595804.
FINSTAT (2023) AGRO TAMI. [on-line] [cit.: 2024-15-05]. Retrieved from: https://www.finstat.sk/36467430.
FINSTAT (2023). MATADOR Holding, a. s. [on-line] [cit.: 2024-15-05]. Retrieved from: https://www.finstat.sk/31632301.
FINSTAT (2023) Hossa Family. [on-line] [cit.: 2024-15-05]. Retrieved from: https://www.finstat.sk/44360991.

Based on credible facts, it can be concluded that family businesses are thriving. Their economic performance shows that they are also competitive and have been in the market for a long time. Interestingly, we can divide the enterprises we have studied into two groups:

a) enterprises which have already been in operation and have a history and have been transformed into complex enterprises (Matador, OFZ 1952)
b) enterprises which were established after 1990 and have started to carry out economic activities after that date.

With regard to the objective of our scientific study, from the annual reports of the selected companies, we investigated what measures are implemented by the companies in question for the purpose of sustainable business.

In the following table, based on economic activity, we have identified universal ESG principles, represented by certain environmental (E), social (S) and governance standards (G), which are applied by family businesses in their day-to-day management.

Tab. 3: Sustainability in Family Businesses

Family business	**Sector**	**Environmental standards**	**Social standards**	**Governance standards**
Labaš	Non-specialised wholesale of food, beverages and tobacco	yes	yes	yes
Raven	Wholesale with ironmongery and plumbing goods and heating equipment	yes	yes	yes
AGRO TAMI	Operation of dairies and cheese production	yes	yes	yes
Matador Holding	Consultancy in the area of business and management	yes	yes	yes
Hossa Family	Manufacture of mill products	yes	yes	yes

Source: own compilation. 2024.

Based on the data we collected from the family businesses' operations, we showed that they adhere to environmental standards. In relation to their own employees, the family businesses surveyed have appropriate, fair and non-discriminatory working conditions, ensuring gender equality, diversity and inclusion in a society, and respecting safety and health protection at work. An important part of the social standards towards employees is their fair and equitable remuneration, work life balance and consideration of their family life.

The application of management standards focuses on ethical approaches in management, accountability and integrity in business. These standards include the independence and diversity of governing bodies and their accountability, the company's internal control systems, and risk management.

The family business Labaš has been minimizing energy consumption for a long time in its activities aimed mainly at increasing the energy efficiency of buildings (insulation of buildings, installation of several photovoltaic power plants and renewal of technologies for cooling, heating and lighting). From the beginning of 2022, Labaš and all its FRESH Plus stores have joined the project to launch a nationwide system of returnable packaging backup. The company holds a number of certificates confirming the compliance of distributed goods with applicable European standards in the field of food safety, organic

agricultural production and good manufacturing practice. LABAŠ company is a holder of quality management system certificates according to international ISO standards 9001:2016 and ISO 22 000:2019. Employment policy and the protection of social rights are also part of the social determinants of sustainability. As of 31.12.2022, the company employed 1,759 employees. The company's human resources priorities also include training and personnel development. That is why the company regularly engages in various projects in the field of employee training and skills development. The main area is the company's involvement in philanthropic activities (Annual report 2022).

The family business RAVEN, JSCo was founded in 1993. It has established several subsidiaries. Within its business strategy it considers as a key priority an integrated quality, environmental and occupational safety management system policy based on continuous improvement in the field of quality, environment and occupational safety, which influences not only the activities of the management, but also all employees to meet the needs of customers. (Raven, 2023) The company RAVEN, JSCo. is also certified for welding processes according to STN EN ISO 3834:2 for welding of steel assemblies and welding of concrete reinforcement. (Raven, 2023)It means that it adheres to ISO standards in the production process, which is a guarantee of quality and safety. As part of its human resources management policy, the company provides employees with opportunities for career development, development of their skills, various benefits in the form of bonuses (remuneration for time at work, birthday leave and support for various cultural and sporting activities). The employee care programme includes supportive regeneration activities. Considering that the company has been in the market for a long time, in addition to its contribution to the national economy, its sustainable and stable growth, it is a source of social security for its employees.

AGRO TAMI, JSCo. is a nature-friendly enterprise. It makes the efforts to use green energy, which means that it tries to produce energy and heat using renewable energy sources. They have built a biogas plant where they produce heat and electricity. The station and heat production also uses waste from food production and production of local farmers to meet the energy needs of the dairy. The biogas plant is a stabilising element for farmers in the region. Other benefits include reducing production costs and energy dependency, increasing security of energy supply and addressing waste management. (AGRO TAMI,2023) The employment policy is of a very high level, which is matched by a social welfare programme. The trading company also provides employee discounts on product purchases and many other benefits. The company also implements a dual education program.

The family business HOSSA FAMILY has been operating on the Slovak market for a long time and is financed by Slovak capital and managed by Slovak management. According to the data published in its 2022 Annual Report, the business company promotes teamwork, culture, discipline, has good technical modern facilities and also strives to create a pleasant working environment (Annual Report, 2022). The company strengthens its competitiveness and within the Smart Innovation Project in HO&PE FAMILY, Ltd. has invested in the acquisition of a complex information system and a production line for semi-finished flour products[1] (HOSSA

[1] HOSSA FAMILY, s.r.o. (2023) Project Intelligent Innovations in the Company HO&PE FAMILY, Ltd. [on-line] [cit.: 2024-15-05]. Retrieved from: https://www.hossafamily.sk/wp-content/themes/hope/ resources/assets/ dist/images/Publicita_WEB_po-účinnosti-zmluvy.pdf

FAMILLY, Project Intelligent Innovations in the Company,2022). The activity in question is in line with the planned activities of the green economy, with regard to social innovation, eco-innovation and the promotion of technological and applied research. The company places an emphasis on transparency in the recruitment process and uses recruitment agencies to find employees. As part of the job posting, it also informs about employee benefits and perks, which include: social programme - allowances for leisure activities, tickets to events, free meals and drinks, Christmas allowance, company breakfast, company parties, skiing, flexible working hours, occasional home office, work in a strong and stable Slovak company managed by Slovak management, with a strong emphasis on good technical background, working environment, and education (Profesia.sk,2023). Hossa family company Ltd. clearly belongs to the group of thriving companies that pursue ESG criteria in their corporate strategy and culture, within the framework of economic activity. Responsible management of areas at a professional level contributes to the protection of environment, social responsibility and the creation of appropriate working conditions for employees and the protection of their social rights.

MATADOR HOLDING, JSCo. was incorporated as a management holding company by the Board of Directors of MATADOR JSCo. on March 10, 1997 (Commercial Register of the Slovak Republic,2024). The company ranks among the most important enterprises in Slovakia as regards achievement of good economic results and employment. According to data published in its annual report for 2022 it devotes its systemic attention to environmental policy and protection of health at work. As part of its business strategy, it contributes to the management of the social impact of activities on the environment (Annual Report, 2022). As an example, in 2019 the MATADOR Group defended the control audits of quality systems according to EN ISO 9001:2015, EN ISO 14001:2015 and finally obtained the Certificate for the management system according to VDA 6, part 4 QM.

CONCLUSION

An important aspect of family business is the shared motivation of family members to carry out business activities. The main benefit of family businesses is their significant social dimension, as they create jobs even in rural and disadvantaged areas. In the scientific study we focused on several thematic areas:

a) we have analysed the conditions of family business in Slovakia based on the current legislation, using the institute of legal logic,
b) we pointed out the importance of sustainability in entrepreneurship and business, and on the basis of economic and other data we evaluated the implementation of ESG principles of the family businesses identified by us in economic practice.

On the basis of the facts, it can be concluded that family business in Slovakia, according to our findings, is in line with the objectives set out in the European Green Deal. The activities of family businesses in this area are also influenced by the EU legislation, which facilitates their access to markets in the Member States of the European Union. In this context, we must bear in mind, that companies are major employers and support regional development.

References:

Act No. 112/2018 Coll. on Social Economy and Social Enterprises.

Act No.513/1993 Coll. the Commercial Code

Act No.89/2012 Coll. the Civil Code

Act No. 36/2005 Coll. *on* Family and amending certain acts

Act No. 40/1964 Coll. the Civil Code

AGRO TAMI (2023). About company. [on-line] [acc.: 2024-15-11]. Retrieved from http//www./ tami.sk/ pobocky/agro-tami-a-s/

Bednárová, V. (2021). Factors slowing down and accelerating the growth of companies based on new technologies. In: *Economy, finance, and business management*. Bratislava, ISBN 978-80-225-4858-8, p. 19

Commercial Register of the Slovak Republic. Extract from the Commercial Register. [on-line] [cit.: 2024-15-05]. Retrieved from: https//www..orsr.sk/ vypis.asp? ID=427252&SID=2&P=0

European Commission (2009) Family business. [on-line] [cit.: 2024-18-03]. Retrieved from: http://www. supporting-entrepreneurship/family-business.sk

European Union (2019) Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions the European Green Deal.Com/2019/640 final

FINSTAT (2023). Labaš. [on-line] [cit.: 2024-15-05]. Retrieved from: https://www. finstat.sk/ 36183181

FINSTAT (2023) Raven. [on-line] [cit.: 2024-15-05]. Retrieved from: https:/www.finstat.sk/ 31595804.

FINSTAT (2023) AGRO TAMI. [on-line] [cit.: 2024-15-05]. Retrieved from: https// www. finstat.sk/ 36467430

FINSTAT (2023). MATADOR Holding, a. s. [on-line] [cit.: 2024-15-05]. Retrieved from: https//www. finstat.sk/31632301

FINSTAT (2023) Hossa Family. [on-line] [cit.: 2024-15-05]. Retrieved from: https//www. finstat.sk/ 44360991.

Chua, J., Chrisman, J., & Sharma, P. (1999). Defining the Family Business by Behavior. Entrepreneurship Theory and Practice, vol. 23(4) 19-40. DOI: 10.1177/104225879902300402

HOSSA FAMILY, s.r.o. (2023) Annual Report 2022. [on-line] [cit.: 2024-18-03]. Retrieved from: http//www. Downloads/Výročná%20správa%20(2).PDF

HOSSA FAMILY, s.r.o. (2023) Project Intelligent Innovations in the Company HO&PE FAMILY, Ltd. [on-line] [cit.: 2024-18-03]. Retrieved from https://www.hossafamily.sk/wp-content/themes/hope/ resources/assets/ dist/images/Publicita_WEB_po-účinnosti-zmluvy.pdf

HOSSA FAMILY, s.r.o. (2023) Profesia.sk. Tender procedure for employee. [on-line] [cit.: 2024-18-03]. Retrieved from https// www.profesia.sk/praca/hossa-family/O4687927?search_id=026ab0cf-d9e2-4a50-99ce-fec5189af09c

Churchill, Neil C., and Kenneth J. Hatten. 1997. Non-Market-Based Transfers of Wealth and Power: A Research Framework for Family Business. Family Business Review 10: 53–67. [Google Scholar] [CrossRef]

Jurová, M. et al. 2016. Production and logistics processes in business. 1. Ed. Prague: Grada publishing, a.s., 264 s. ISBN 987-80-247-5717- 9.

Labaš, M. (2022) Annual report. [on-line] [cit.: 2024-18-03]. Retrieved from https //www.Users/ Daniela/Downloads/ Výročná%20správa%20(8).PDF.

MATADOR, a.s. (2022) Annual Report 2022. [on-line] [cit.: 2024-18-03]. Retrieved from https //www.users/ daniela/downloads/výročná%20správa%20(12).pdf

Ministry of Economy SR (2018). Action plan for the development of family businesses in Slovakia. [on-line] [cit.: 2024-18-03]. Retrieved from https //www.slov-lex.sk/legislativne-procesy/-/SK/LP/2021/566.

Ministry of Economy SR (2021) Family business support scheme (de minimis aid scheme) (DM-20/2021). Bratislava. [on-line] [cit.: 2024-18-03]. Retrieved from https//www.obchodnyvestnik.justice.gov.sk/Handlers/StiahnutPrilohu.ashx?IdPriloha=38424

Ministry of Economy SR (2021) Family business support scheme (de minimis aid scheme. (DM-20/2021). [on-line] [cit.: 2024-18-03]. Retrieved from https //www. obchodnyvestnik.

justice.gov.sk /Handlers/ StiahnutPrilohu.ashx? IdPriloha=384247. Cit.5.11.2023

Mura, L., Mazák, M. (2018) Innovative activities of family SMEs: case study of the Slovak regions. On-line Journal Modelling the New Europe, Issue 27, pp. 132 – 147. ISSN 2247-0514

Mura, L. (2021) Internationalization of Slovak family enterprises - territorial approach. International Journal of Entrepreneurial Knowledge, 9(2), 109-118. doi: 10.37335/ijek.v9i2.147

Naďová Krošláková, M. (2018) Family business as an important component of economic activities in the economy of Slovakia / Monika Naďová Krošláková. 1. edition. Zlín: Radim Bačuvčík - VeRBuM, 2020.

National Council of the Slovak Republic. (2018). Draft law. [on-line] [cit.: 2024-18-03]. Retrieved from http://www.nrsr.sk/web/ Dynamic/ DocumentPreview.aspx?DocID=518338. Cit.27.11.2023

Raven (2023) Integrated management policy Raven, a.s. [on-line] [cit.: 2024-18-03]. Retrieved from https // www.raven.sk /clanek /217/politika-kvality.

Raven (2023) About our company. [on-line] [cit.: 2024-18-03]. Retrieved from https//www.raven.sk/clanek/58/o-nasej-spolocnosti

Regulation (EU) 2019/2088 of the European Parliament and of the Council of 27 November 2019 on sustainability-related disclosures in the financial services sector OJ L 317, 9.12.2019,

Shanker, M. C., Astrachan, J. H. (1996). Myths and Realities: Family Businesses' Contribution to the US Economy—A Framework for Assessing Family Business Statistics. Family Business Review 9: 107–23. [Google Scholar] [CrossRef]

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INNOVATION POTENTIAL OF SMEs AND ITS IMPACT ON ECONOMIC PERFORMANCE IN THE V4 COUNTRIES

Veronika ŽÁRSKÁ

Abstract

SMEs are crucial in most economies. Although they have fewer resources than large enterprises, they strive to be at least as competitive. Innovation, among other things, is now seen as a key factor contributing to competitiveness and economic prosperity at both micro and macro levels. In this context, the innovation performance of SMEs and its impact on national economies is very often monitored. While in some countries the number of innovative SMEs is relatively high, in others it remains low for various reasons. These are mostly countries where economic growth is also lower. The article aims to identify the relationship between GDP per capita and the share of SMEs introducing product/business process innovations in the V4 countries, as well as to identify the dynamics of the evolution of the share of innovative SMEs in the total number of SMEs in these countries. The main sources of data for us were Eurostat databases and the European innovation scoreboard. The obtained data were evaluated using correlation analysis and single-factor analysis of variance.

Key words:
GDP, innovation, SMEs, V4 countries

JEL Classification D22, L26, O30 https://doi.org/10.52665/ser20240105

INTRODUCTION

Micro, small and medium-sized enterprises play an important role in most economies. Althoughtheir resources are more limited compared to large enterprises, they are looking for ways to become competitive. Today, innovation is considered to be one of the key factors leading to economic prosperity and maintaining competitiveness. Innovation in the 21st century is becoming a driver of growth at both micro and macro levels. This is why, also in the context of SMEs, the focus is very often on their innovation performance. However, despite the fact that the introduction of innovation has undoubted benefits for all economic actors, it is still possible to encounter cases where not enough attention is paid to these activities by companies or national governments. Businesses are not sufficiently interested in innovation, particularly as it is very often associated with increased investment, which is often under-resourced, especially for SMEs. However, the situation varies considerably between countries. While in some countries the number of innovative SMEs is relatively high, in others it is low and does not change significantly. These differences in the innovative activity of SMEs may be due to various factors, such as the economic situation in a given country, the legal and regulatory environment in that country, or the support of governments for SMEs.

Based on the above, our main objective was to identify the dependence between GDP and the share of SMEs introducing product/business process innovations in the V4 countries and consequently the dynamics of the share of innovative SMEs in the total number of SMEs in these countries. In order to fulfil the first part of the objective, we used the method of correlation analysis, which allowed us to find out to what extent GDP in individual V4 countries depends on the share of innovative SMEs.

For the second part of the objective, we used the sigle-factor analysis of variance method to analyse the differences in the shares of innovative SMEs between the V4 countries over the period 2016-2023.

LITERATURE OVERVIEW

SMEs are very important for the regional economy and the economic performance of European countries, as their innovative capabilities can influence the position of individual economies in global markets (Batrancea, 2022). In both developed and developing or transition economies, these size categories of enterprises have an important place. According to UNECE (2022), especially in transition economies, the number of SMEs is increasing quite significantly, which only testifies to their importance for economic development. Compared to large enterprises, SMEs are significantly more flexible, showing better adaptability to technological change, higher support for income distribution, and are also able to adapt more easily to market fluctuations and respond more flexibly to changed customer demands (Perez-Gomez et al., 2018). As stated by Mirza, & Baharudin (2024) SMEs influence individual economies by employing a significant portion of the workforce, are largely export oriented and thus contribute a significant portion of export or tax revenues. Of course, SMEs not only have advantages compared to large enterprises, but also some disadvantages that affect their functioning. The fact that SMEs have more limited access to resources than large enterprises is very often seen as the most significant disadvantage (Spithoven et al., 2013), but this barrier is not insurmountable and there are now many initiatives at national and international level to support SMEs. The EU is aware of this fact and has long sought to strengthen and support the innovation capacity of SMEs. A significant part of European resources in the field of research, development and innovation is dedicated to supporting SMEs, e.g. by supporting the purchase of technologies necessary for the deployment of innovations or supporting other related activities (Ministerstvo dopravy a výstavby SR, 2024).

Gruzina et al. (2021) state that in modern society, economic growth and prosperity are dependent on innovation. Also in the context of SMEs, a frequently monitored indicator is precisely their innovation performance, which has played a significant role in the survival of these enterprises not only during the Covid-19 pandemic, but is also an important prerequisite for ensuring their future prosperity (Rakib et al., 2024). Most SMEs are aware that innovation adoption especially in the 21st century is becoming a necessity, yet they mostly approach it in a non-systematic way based on the current market needs and especially with regard to the

innovation to be created and maintained at an adequate level, a high level of human capital must be ensured in companies, as only this is capable of generating innovations through creative thinking and the ability to learn. Investing in the development of human capital thus becomes a decisive factor for enterprises not only for the development of their innovative capabilities, but also, in a broader context, the basis of their competitive advantage or the maintenance of long-term prosperity in a constantly changing dynamic market environment. Moreover, knowledge-oriented innovative SMEs appear to be more resilient to crises as they are able to absorb new knowledge faster, seek innovative opportunities and focus on more technologically demanding activities, which increases their flexibility and adaptability not only in turbulent periods of potential crises (Hrivnák et al., 2021). However, what is important is not only the resilience of enterprises to crises, but also their ability to take advantage of the opportunities that a crisis can create. Caballero-Morales (2021) reports that the Covid-19 pandemic that broke out in 2020 significantly affected the innovation activity of enterprises and it was the development of innovation that became a key aspect of their recovery during this period.

The most advanced countries tend to have a higher share of innovative SMEs, and these tend to be more efficient. Istipliler et al. (2023), however, point out that even SMEs that have to deal with many institutional constraints in transition economies may be able to outperform due to their innovative capabilities. Saridakis et al. (2019) suggest that innovative SMEs are more likely to export than non-innovative SMEs, with product innovation more clearly associated with a propensity to export than service or process innovation. Since product innovation is associated with a propensity to export and exporting is one of the factors that contributes to economic growth, it can be hypothesized that a higher share of innovating firms will be

associated with higher GDP across countries. However, not all SMEs have the same enthusiasm for innovation. The innovation performance of SMEs depends to a large extent on access to international and domestic finance (Ullah et al., 2021), as well as on economic developments in individual countries. In line with Gyamfi et al. (2024), high levels of financial support encourage micro, small and medium enterprises to cooperate with each other, which can also indirectly lead to the promotion of innovative activities. According to Sun et al. (2022), however, in times of crises, SMEs' access to government support can be significantly affected, as when there is a reduction in GDP due to a recession, very often investment directed towards supporting different areas also decreases. Therefore, crises can be a time when SMEs innovate less. However, increasing investment and the amount of government support are not the only ways of increasing innovation activity in enterprises. According to Teslenko et al. (2021), in addition to financial support, it appears that an increase in the level of human capital can also contribute to an increase in innovation activity. However, in addition to access to international and domestic finance and the level of human capital, there are other determinants that can influence the innovation performance of SMEs to a greater or lesser extent. The results of Marinho & Costa Melo (2022), for example, suggest that SMEs' openness to innovation tends to be influenced by factors such as the age and gender of the SME's managers, the length of time the SME has been on the market, as well as the nature of the SME or, in particular, whether or not it is a family-owned business.

GOAL AND METHODOLOGY

The aim of this article was to identify the dependence between GDP and the share of SMEs introducing product / business process innovations in the V4 countries (Czech Republic, Poland, Hungary, Slovakia) and consequently the dynamics of the share of innovative SMEs in the total number of SMEs in these countries. The analysis was carried out for the period 2016-2023, with Eurostat and the European innovation scoreboard as the main sources of data for our research.

We first carried out a correlation analysis. For the calculation we used Pearson's correlation coefficient:

$$r_{xy} = \frac{n\sum_{i=1}^{n} x_i y_i - \sum_{i=1}^{n} x_i \sum_{i=1}^{n} y_i}{\sqrt{\left[n\sum_{i=1}^{n} x_i^2 - \left(\sum_{i=1}^{n} x_i\right)^2\right]\left[n\sum_{i=1}^{n} y_i^2 - \left(\sum_{i=1}^{n} y_i\right)^2\right]}}$$

The Pearson correlation coefficient takes values from -1 to 1. If the result is a positive number, the variables change in the same direction, i.e. both increase or decrease. If the result is a negative number, the variables change in the opposite direction, i.e. one increases and the other decreases. According to the value of the correlation coefficient obtained, we can determine the tightness of the dependence from very small (r = 0 - 0.1) to almost perfect (r = 0.9 - 1). In addition to the Pearson correlation coefficient, we also calculated the coefficient of determination r^2, which verifies the goodness of fit of the chosen model, or the significance test of the correlation coefficient, which tells whether the observed dependence is not or is statistically significant:

$$t = \frac{r\sqrt{n-2}}{\sqrt{1-r^2}}$$

To assess the development of the share of SMEs introducing product innovations or business process innovations in the V4 countries, we used a single-factor analysis of variance (ANOVA). We examined whether there are statistically significant changes in the share of innovating SMEs in the total number of SMEs in the V4 countries in the period under review. We tested the null hypothesis against the alternative hypothesis:

H0: There is no statistically significant change in the evolution of the share of SMEs introducing product innovations in the total number of SMEs in the V4 countries in the period 2016-2023.

H1: There is a statistically significant change in the evolution of the share of SMEs introducing product innovations in the total number of SMEs in the V4 countries in the period 2016-2023.

The same procedure was applied to assess the evolution of the share of SMEs introducing business process innovations. As in the previous case, we tested the null hypothesis against the alternative hypothesis:

H0: There is no statistically significant change in the evolution of the share of SMEs introducing business process innovations in the total number of SMEs in the V4 countries in the period 2016-2023.

H1: There is a statistically significant change in the evolution of the share of SMEs introducing business process innovations in the total number of SMEs in the V4 countries in the period 2016-2023.

FINDINGS

In conducting the correlation analysis, we set the dependent variable Y as the value of GDP per capita in € in 2016-2023.We included GDP in the analysis because it is an important indicator of the economic performance and prosperity of any country, and we also assumed that the evolution of this indicator of economic performance could depend on indicators such as indicators of innovation performance, as it is generally accepted that countries that are more efficient innovators also have higher GDP per capita (European Commission, 2023). As independent (explanatory) variable X, we determined the share of SMEs introducing product innovations in the total number of SMEs and the share of SMEs introducing business process innovations in the total number of SMEs in 2016-2023, respectively. We hypothesized that the correlation coefficient should exhibit a relatively high tightness of dependence between the selected indicators, as a higher share of innovative SMEs in the market should predict a higher potential for economic growth of the countries under study.

Tab. 1: Correlation analysis - Czech Republic

α= 0.05	**GDP per capita in €**	**Share of SMEs introducing product innovations in the total number of SMEs (%)**	**Share of SMEs introducing business process innovations in the total number of SMEs (%)**
2016	16 790	23.38	26.92
2017	18 330	23.38	26.92
2018	19 850	23.38	26.92
2019	21 150	24.09	35.19
2020	20 170	24.09	35.19
2021	22 270	25.22	38.90
2022	25 850	25.22	38.90
2023	28 540	35.15	52.23
Pearson correlation	-	0.823	0.926
Correlation coefficient	-	0.012	0.001
Determination coefficient	-	0.677	0.857

Source: Eurostat, EISB, own processing

In the Czech Republic, the correlation analysis between the share of SMEs introducing product innovations in the total number of SMEs and GDP per capita showed a very strong positive tightness of the relationship between the variables with a value of r = 0.823, i.e. the situation in the Czech Republic was similar to the situation in the rest of the V4 countries, where we also found a very strong to almost perfect tightness of the relationship between the variables mentioned above. The significance test of the correlation coefficient with a value of 0.012, i.e. lower than the chosen significance level α = 0.05, confirmed that the result is statistically significant, which was also confirmed by the coefficient of determination r2 = 0.677, which can still be considered a sufficient value. There was an even higher correlation coefficient between the proportion of SMEs adopting business process innovations in

the total number of SMEs and GDP per capita with a value of r = 0.926. The result was statistically significant as evidenced by the very low significance test value of the correlation coefficient of 0.001, which is well below the selected significance level of α = 0.05. In this case, more than 85% of the total variability was explained by the model. The results of the correlation analysis show that SMEs introducing innovations have an impact on the economic performance of the Czech Republic, as GDP growth has followed the increasing share of innovative SMEs in the country quite well.

Tab. 2: Correlation analysis - Hungary

α= 0.05	GDP per	Share of SMEs	Share of SMEs
2016	11 850	11.10	15.94
2017	12 980	11.10	15.94
2018	13 920	11.10	15.94
2019	15 000	13.45	17.53
2020	14 150	13.45	17.53
2021	15 860	19.54	19.00
2022	17 410	19.54	19.00
2023	20 480	19.93	23.50
Pearson correlation	-	0.871	0.958
Correlation coefficient	-	0.005	0.000
Determination coefficient	-	0.759	0.918

Source: Eurostat, EISB, own processing

The correlation analysis in Hungary showed a very strong positive tightness of the relationship (r = 0.871) between GDP per capita and the share of SMEs introducing product innovations in the total number of SMEs. This means that when the share of SMEs introducing product innovations increased in Hungary, GDP also increased. A significance test of the correlation coefficient with a value of 0.005, which is less than the chosen significance level of α = 0.05, indicates that the correlation is statistically significant. This is confirmed by the coefficient of determination r2 = 0.759, which shows that 75.9% of the total variability was explained by the chosen model. Between the proportion of SMEs adopting business process innovations in the total number of SMEs and GDP, the correlation coefficient r = 0.958 revealed an almost perfect positive tightness of the relationship. Its statistical significance was confirmed by the significance test of the correlation coefficient with a value of 0.000, as well as by the high value of the coefficient of determination, according to which 91.8% of the total variability was explained by the chosen model. Based on the above, we can therefore conclude that innovative SMEs have an impact on the economic performance of Hungary, since when the share of innovating SMEs increased, GDP also increased. Of course, this effect can be reciprocal and as a result of the increase in the economic level of the country, SMEs may be more motivated or able to invest in promoting innovation.

Tab. 3: Correlation analysis - Poland

α= 0.05	GDP per	Share of SMEs	Share of SMEs
2016	11 050	8.37	14.89
2017	12 120	8.37	14.89
2018	12 990	8.37	14.89
2019	13 870	8.73	15.86
2020	13 720	8.73	15.86
2021	15 100	12.18	17.26
2022	17 350	12.18	17.26
2023	19 920	14.23	25.47
Pearson correlation	-	0.930	0.889
Correlation coefficient	-	0.001	0.003
Determination	-	0.865	0.790

Source: Eurostat, EISB, own processing

In Poland, the correlation analysis revealed an almost perfect tightness of the relationship between the share of SMEs introducing product innovations in the total number of SMEs and GDP per capita with r = 0.930. This strong tightness of dependence reflects the increase in the share of SMEs adopting product innovation is proportional to the growth in GDP. A significance test of the correlation coefficient with a value of 0.001, which is below the chosen significance level of α = 0.05, tells us that the correlation is statistically significant. The high value of the coefficient of determination r2 = 0.865 indicates that the model has been correctly fitted and explains 86.5% of the total variability. Between the share of SMEs adopting business process innovation in the total number of SMEs and GDP, the correlation coefficient took the value of 0.889, i.e. it is a very strong positive tightness of the relationship. which is statistically significant. The coefficient of determination took the value of 0.790, i.e. 79% of the total variability was explained by the model. As in the case of Hungary and the Czech Republic, in the case of Poland it can be stated that innovative SMEs have been confirmed to have a significant impact on the economic performance of the country, as an increase in the share of innovating SMEs leads to an increase in GDP.

Tab. 4: Correlation analysis – Slovak Republic

α= 0.05	GDP per	Share of SMEs	Share of SMEs
2016	14 960	11.25	23.43
2017	15 570	11.25	23.43
2018	16 500	11.25	23.43
2019	17 320	12.48	20.49
2020	17 110	12.48	20.49
2021	18 430	14.00	21.07
2022	19 980	14.00	21.07
2023	22 090	14.10	26.06
Pearson correlation	-	0.896	0.234
Correlation coefficient	-	0.003	0.576
Determination	-	0.803	0.055

Source: Eurostat, EISB, own processing

In the Slovak Republic, the correlation coefficient expressing the dependence between the share of SMEs introducing product innovations in the total number of SMEs and the GDP per capita in € has acquired the value of 0.896, which expresses a very high positive tightness of dependence between the variables under study, or indicates the proportionality of development. This can indeed be confirmed, as the evolution of the share of SMEs introducing

product innovations has either stagnated or increased year on year, while GDP per capita has also increased year on year, with the exception of 2020, when there was a slight decrease due to the effects of the pandemic. Based on the low p-value of the significance test for the correlation coefficient of 0.003 < α (0.05), it can be argued that this is a statistically significant relationship. The coefficient of determination value of 0.803 obtained indicates that more than 80% of the total variability was explained by the model. However, in the case of examining the dependence between the share of SMEs introducing business process innovations in the total number of SMEs and the level of GDP per capita in €, the results in the Slovak Republic were diametrically opposed to the rest of the V4 countries. The correlation coefficient took the value of 0.234, which indicates the existence of only a small tightness of dependence between the variables under study. This result is due to the fact that while GDP increased year-on-year in most of the years under study, with the exception of 2020, the share of SMEs introducing business process innovations alternately decreased and increased or stagnated. Also the significance test of the correlation coefficient with a p-value of 0.576, which is above the chosen significance level, showed that this is a statistically insignificant relationship.

After conducting the correlation analysis and assessing the situation in each country, we proceeded to identify statistically significant changes in the evolution of the share of innovating SMEs in the total number of SMEs in the countries under study by means of a single-factor analysis of variance. First, we examined whether there is a statistically significant change in the share of SMEs introducing product innovations in the total number of SMEs in the V4 countries in the period 2016-2023 (Tab. 5).

Tab. 5: Single-factor analysis of variance (ANOVA) - Share of SMEs introducing product innovations in the total number of SMEs

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	203.9811	7	29.14016	0.59867	0.750806	2.422629
Within Groups	1168.196	24	48.67483			
Total	1372.177	31				

Source: own processing

The calculations performed (see Table 1) show that the F-value (0.598) is lower than the observed critical value (2.422), implying that the differences between the V4 countries are not significant enough to be considered statistically significant. The p-value (0.750) is higher than the chosen significance level (0.05), thus we do not have enough evidence to reject the null hypothesis with 95% confidence. Thus, based on the results, we can conclude that there is no statistically significant change in the share of SMEs introducing product innovations in the total number of SMEs in the V4 countries, i.e. the share of SMEs introducing product innovations did not change significantly over the period in the countries studied.

Subsequently, we examined whether there is a statistically significant change in the share of SMEs introducing product innovations in the total number of SMEs in the V4 countries in the period 2016-2023 (see Table 6).

Tab. 6: Single-factor analysis of variance (ANOVA) - Share of SMEs introducing business process innovations in the total number of SMEs

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	411.0689	7	58.72413	0.728513	0.649669	2.422629
Within Groups	1934.598	24	80.60826			
Total	2345.667	31				

Source: own processing

Again, the F-value (0.728) is lower than the observed critical value (2.422), indicating that the differences between the V4 countries are not large enough to be considered statistically significant. The p-value (0.649) is higher than the established significance level (0.05), so even in this case we do not have enough evidence to reject the null hypothesis. Therefore, we can conclude that there is no statistically significant change in the share of SMEs adopting business process innovations in the total number of SMEs in the V4 countries.

CONCLUSION AND DISCISSION

The aim of the paper was to identify the dependence between GDP and the share of SMEs introducing product/business process innovations in the countries and consequently the dynamics of the share of innovative SMEs in the total number of SMEs in the countries. We set this objective based on the observation that SMEs can influence the economic performance of countries (Batrancea, 2022). The set objective has been met. The correlation analysis showed that in all V4 countries, an increasing share of SMEs introducing product innovations has a significant positive impact on economic performance as measured by GDP per capita. In the case of the Czech Republic, Poland and Hungary, an increasing share of SMEs introducing business process innovations also has a significant positive impact on economic performance. In the case of Slovakia, however, this dependence is small and statistically insignificant, which means that the positive development of GDP is not the result of an increasing share of SMEs introducing business process innovations in the total number of SMEs in the economy, but is rather dependent on other factors. It could be beneficial to identify these factors, which could therefore be the subject of further research. Through a single-factor analysis of variance, we identified that there are no statistically significant differences between the V4 countries (Czech Republic, Poland, Hungary, Slovakia) in the evolution of the share of SMEs introducing product innovations, nor in the evolution of the share of SMEs introducing business process innovations in the total number of SMEs. As the share of innovating SMEs did not show significant changes among the V4 countries, we can conclude that the innovative activities of SMEs in the surveyed countries took place without significant fluctuations or differences that would disturb the stability of development. Thus, based on the above findings, we can conclude that innovations introduced by micro, small and medium-sized enterprises are one of the key factors influencing the economic performance of the V4 countries, and the rate of introduction of these innovations by SMEs is similar across the studied region, as no statistically significant differences were observed in the period 2016-2023.

Although we have managed to meet the stated objective, it should be noted that the conducted research also has its limitations. The analyzed period of 2016-2023 may not have been long enough to capture changes in the share of innovative SMEs in the total number of SMEs among the countries studied. Furthermore, although we can identify relationships between variables through correlation analysis, we are unable to establish causality through correlation analysis, and so a higher share of innovative SMEs may increase GDP (Batrancea, 2022), as we hypothesized, but equally, higher GDP may

positively affect the adoption of innovation in SMEs (Ullah et al., 2021), or other factors not examined by us may enter into the correlation between these variables.

References

Batrancea, L. M., Balcı, M. A., Chermezan, L., Akgüller, O., Masca, E. S., & Gaban, L. (2022). Sources of SMEs Financing and Their Impact on Economic Growth across the European Union: Insights from a Panel Data Study Spanning Sixteen Years. *Sustainability (Switzerland)*, *14*(22). https://doi.org/10.3390/su142215318

Breckova, P. (2017). Smes' Innovation Approach in the Czech Republic. MARKETING AND MANAGEMENT OF INNOVATIONS, 3, 304–313. https://doi.org/10.21272/mmi.2017.3-28

Caballero-Morales, S.-O. (2021). Innovation as recovery strategy for SMEs in emerging economies during the COVID-19 pandemic. *RESEARCH IN INTERNATIONAL BUSINESS AND FINANCE*, *57*, 101396. https://doi.org/10.1016/j.ribaf.2021.101396

Gruzina, Y., Firsova, I., & Strielkowski, W. (2021). Dynamics of human capital development in economic development cycles. *Economies*, *9*(2). Scopus. https://doi.org/10.3390/economies9020067

Gyamfi, S., Gerstlberger, W., Prokop, V., & Stejskal, J. (2024). A new perspective for European SMEs' innovative support analysis: Does non-financial support matter? *Heliyon*, *10*(1), e23796. https://doi.org/10.1016/j.heliyon.2023.e23796

Hrivnak, M., Moritz, P., & Chrenekova, M. (2021). What Kept the Boat Afloat? Sustainability of Employment in Knowledge-Intensive Sectors Due to Government Measures during COVID-19 Pandemic. *SUSTAINABILITY*, *13*(15), 8441. https://doi.org/10.3390/su13158441

Indrawati, A. D., Armanu, Troena, E. A., & Yuniarinto, A. (2024). Utilizing innovation and collective organizational engagement into SMEs' sustainable competitive advantage. *Uncertain Supply Chain Management*, *12*(3), 1589–1602. https://doi.org/10.5267/j.uscm.2024.3.021

Istipliler, B., Bort, S., & Woywode, M. (2023). Flowers of adversity: Institutional constraints and innovative SMEs in transition economies. *Journal of Business Research*, *154*, 113306. https://doi.org/10.1016/j.jbusres.2022.113306

Marinho, B. F. D., & Costa Melo, I. (2022). Fostering Innovative SMEs in a Developing Country: The ALI Program Experience. Sustainability (Switzerland), 14(20). https://doi.org/10.3390/su142013344

Ministerstvo dopravy a výstavby SR. (2024). Výskum a inovácie.

https://www.opii.gov.sk/informacie/vyskum-inovacie

Mirza, A., & Baharudin, S. A. (2024). Innovation Barrier to Smes Development: Evidence from Afghanistan. INTERNATIONAL JOURNAL OF BUSINESS AND SOCIETY, 25(1), 388–406. https://doi.org/10.33736/ijbs.6922.2024

Perez-Gomez, P., Arbelo-Perez, M., Arbelo, A. (2018). Profit efficiency and its determinants in small and mediumsized enterprises in Spain. *BRQ Business Research Quarterly, 21 (4)*, 238–250. https://doi.org/10.1016/j.brq.2018.08.003

Rakib, M., Azis, M., Najib, M., & Isma, A. (2024). Impact of Digital Literacy, Business Innovation, Competitive Advantage on the Existence of SMEs: a quantitative study in Makassar City, Indonesia. *QUALITY-ACCESS TO SUCCESS*, *25*(198), 277–283. https://doi.org/10.47750/QAS/25.198.30

Saridakis, G., Idris, B., Hansen, J. M., & Dana, L. P. (2019). SMEs' internationalisation: When does innovation matter? *Journal of Business Research*, *96*, 250–263. https://doi.org/10.1016/j.jbusres.2018.11.001

Spithoven, A., Vanhaverbeke, W., & Roijakkers, N. (2013). Open innovation practices in SMEs and large enterprises. Small Business Economics, 41(3), 537–562. https://doi.org/10.1007/s11187-012-9453-9

Sun, J., Alebo, K.C., & Shen, H. (2022). Pandemics and Human Capital: Panel Data Evidence From 122 Countries. Frontiers in public health, 10. https://www.frontiersin.org/articles/10.3389/fpubh.2022.885957/full

Teslenko, V., Melnikov, R., & Bazin, D. (2021). Evaluation of the impact of human capital oninnovation activity in Russian regions. *Regional Studies, Regional Science. 8 (1)*, 109-126. https://doi.org/10.1080/21681376.2021.1900744

Ullah, F., Degong, M., Anwar, M., Hussain, S., & Ullah, R. (2021). Supportive tactics for innovative and sustainability performance in emerging SMEs. Financial Innovation, 7(1). https://doi.org/10.1186/s40854-021-00284-8

UNECE. (2022). Small and Medium Sized Enterprises in Economies in Transition: Challenges, Opportunities, and UNECE Tools. *Informal Policy Brief*. https://unece.org/sites/default/files/2022-05/SMEs%20Paper-forwebsite.pdf

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REVIEW OF SCIENTIFIC MONOGRAPH: „GLOBAL BUSINESS LITERACY“

Renáta MACHOVÁ

BOBENIČ HINTOŠOVÁ, Aneta – BROUTHOVÁ, Michalea: GLOBAL BUSINESS LITERACY. First Edition. -- Brno: Key Publishing s.r.o., 2024. -- 85 pages. -- (Monograph). ISBN 978-80-7418-406-2 (paperback)

The scientific monograph "Global Business Literacy" by Aneta Bobenič Hintošová and Michaela Bruothová addresses a topic that is frequently discussed in academic circles in the 21st century but often raises various unanswered questions in the context of higher education. The overall aim of this monograph is essentially to provide theoretical reflections on the definition and approaches to the conceptualization and assessment of global business literacy among university students on a broader international scale, as well as to identify the differences and determinants of global business literacy among students of business studies in Central Europe. In this field, particularly high demand is placed on young people, especially students of Economics, whose career aspirations are linked to global business. Key tasks also emerge for universities, which play a role in preparing graduates with the necessary knowledge, skills, and understanding of the complex global environment. In this context, the scientific literature offers many partially overlapping concepts, such as global competence, global literacy, or global thinking. Despite numerous approaches to defining and conceptualizing these concepts, empirical findings related to the assessment of related competencies are not as extensive. The authors have tackled this challenge brilliantly, not only at a theoretical level but also by providing research data in this area.

The reviewed work consists of a set of four main chapters that systematically connect selected aspects of business literacy from various perspectives.

In the first chapter, the authors provide a clear orientation in the various specific contexts, concepts and approaches within the definition of global business literacy and other related terms, presenting potential determinants of global business literacy and the conceptual frameworks developed for its assessment.

The second chapter focuses on examining the current trends in the labor market, particularly from the perspective of digitization and internationalization, and reflects on the internationalization of universities.

The third chapter presents the methodology and results of the authors' own research comparing the level of global business literacy among university students in four Central European countries, specifically in the Czech Republic, Hungary, Poland, and Slovakia. In the research, the authors used quantitative methods but also presented precisely elaborated qualitative work, which opens the door for further analysis in the future.

The monograph concludes with the fourth and final chapter, which provides an overview of tools supporting the development of global literacy through internationalization at the domestic level.

The recommendations formulated at theoretical level, methodology, and practice stem from the research findings and are based on real conditions.

According to the analysis of existing approaches and methodologies applied for assessment not only the global business literacy but also the global competence (taking into account, for example, the global competence methodology applied by the OECD in the PISA assessments), the authors selected a methodology suitable for application in the Slovak higher education environment, which they slightly modified. They then conducted extensive testing of the level of global business literacy among students of Economics and Management on a broader international basis (covering all four Central European countries),

and compared the results both among these countries and with those achieved in the United States. This international comparison provided a more objective view of the gaps in the level of global business literacy among Slovak students, and led to the subsequent proposal of measures to mitigate these gaps.

The project's results highlight differences in the level of global business literacy among Slovak students of Economics and Management compared to other Central European countries. Slovak students lag the most in the area of self-efficacy, which reflects confidence in one's ability to cope with life challenges, the expectation of positive outcomes, and the ability to control one's actions, particularly in unfamiliar environments. Relatively poorer results were also achieved in the areas of relationship development and willingness to learn. The research team subsequently identified factors that could contribute to the development of global business literacy among Slovak students, primarily the development of language competencies, study/internship abroad, the implementation of courses with an international element, and increased interaction with foreigners. Based on these insights, they formulated specific pedagogical interventions that could be implemented into specific courses to enhance global business literacy among Slovak students.

Implementing the proposed measures into the educational process not only within the project team's workplace but also in other faculties focused on Economics and Management across Slovakia and further supporting the internationalization of universities could lead to an improvement in the quality of graduates and their better employability in the international labor market, which I consider to be the most important societal contribution of the monograph.

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Mcheill, A. (2002). Correlation and dependence. Dempster, M.A.H. (ed.): *Risk Management: Value at Risk.* Cambridge: Cambridge University Press, 176–223. (kapitola v knihe)

Dluhošová, D. (2003). Performance analysis. *Business Economics, Management and Marketing.* Ostrava: EF, VŠB, s. 205–213. (článok v zborníku z konferencie)

Bartman, S. M. (2007). Corporate cash flow. *Journal of Corporate Finance*, 10 (2), 101–111. (článok v časopise)

Woolman, N. (2011). *Investment in creative industries is not high risk.* [acc.: 2012-15-11]. Available at: http://www.thestage.co.uk/news/not-high. (internetový zdroj)

Štatistický úrad SR. (2010). *Trendy v nezamestnanosti.* [on-line] [cit.: 2012-15-03]. Retrieved from: http://www.slovakia.culturalprofiles.net/?id=-13602.

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