



# CER Comparative European Research 2022

## Proceedings | Research Track

of the 18th Biannual  
CER Comparative European Research  
Conference

International Scientific Conference for Ph.D. students of EU countries

November 28-30, 2022 | London



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# Introduction

The conference Proceedings you are holding is a collection of selected peer-reviewed texts presented at the international scientific conference Comparative European Research - CER 2022 (November 28-30, 2022).

The biannual international scientific conference is organized under the auspices of the SCIEEMCEE scientific platform every March and October (or November) and follows up on activities aimed at providing greater support for the scientific activities of Ph.D. students and beginning researchers. The various biannual CER conferences represent a space for the international assessment of the qualitative standard of scientists and the results achieved by the various academic institutes. The CER conference is an ideal place for comparing the standard of scientific work, particularly on a European scale.

The Proceedings from the CER 2022 conference contains several dozen academic texts whose main purpose is the presentation and sharing of knowledge always in one of nine conference sections. The conference Proceedings prioritize only those articles which are good enough to offer readers new insights into the issues analyzed, or which extend the known boundaries of science. The guarantor of the CER 2022 conference is a signatory of the Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities, and therefore all papers are made available to professionals and the general public via OpenAccess.

The conference committee, comprising experts from several university departments, believes that the CER international scientific conference will attract an ever wider base of participants to join in the discussions and will stimulate further scientific work and interdisciplinary development.

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## CORPORATE SOCIAL RESPONSIBILITY AND ITS LINK TO BRAND VALUE

Zuzana Schlosserová

### Constantine the Philosopher University in Nitra

Tr. A. Hlinku, 949 01 Nitra, Slovakia

+421904 517 337

zuzkasschlosserova@gmail.com

**Abstract:** *In this article, we will provide a brief overview of the history of corporate social responsibility, defining this area of marketing and a look at the current state of corporate social responsibility. We will focus on the activities of companies in this area, as well as its types. We define the motives that lead companies to focus on social responsibility and we will not forget to mention the benefits that companies can gain in the market by including social responsibility and we will show in a brief overview how corporate social responsibility can be related to brand value. The present article offers theoretical background on the subject.*

**Keywords:** *CSR, socially responsible marketing, corporate social responsibility, brand value,*

### 1. Introduction

As we have already mentioned in the abstract, the topic of the presented article is socially responsible marketing together with its connection to brand value. We chose this topic mainly because socially responsible marketing has been on the rise in recent years and is slowly becoming a kind of fashionable marketing trend, especially in today's pandemic-ridden era.

#### 1.1 Corporate social responsibility

##### 1.1.1 History of corporate social responsibility

The beginnings of corporate social responsibility (hereafter referred to as CSR) were written in 1917, when Henry Ford faced a lawsuit by two of his company's shareholders. Ford planned to invest the organization's profit and suspend most of the dividends paid because he wanted to increase the production of Ford cars, lower their price to allow as many people as possible to buy and enjoy their new cars. He assumed that companies should do as much as possible for their interested people (stakeholders), and that they should try to make money from such activity and use it. These ideas were very innovative for the time and the shareholders did not agree. They sued Ford and the court ordered it to cancel most expansion plans and pay dividends. The general conclusion was that the purpose of society should not be to do as much good as possible, but to be profit oriented [1].

##### 1.1.2 The present day of corporate social responsibility

In recent decades, the idea of an organization doing positive things for society is starting to have a significant impact in business and marketing. Nowadays, society expects organizations to have social responsibility. Almost every modern organization participates in some way in corporate social responsibility. It has integrated social issues as well as environmental issues in fulfilling their tasks and decisions. Companies take great care to inform their stakeholders about their CSR activities [2].

Investments by multinational companies in socially responsible marketing have increased in recent years. In

most cases, CSR initiatives are shared by multinational companies through sustainability reports, websites, corporate communications, advertising campaigns, logos and trademarks, with the ultimate goal of building global "social brands". Indeed, recent studies such as Flammer & Kacperczyk, 2019, Kaul & Luo, 2018 have pointed out that CSR investments can improve the final perception of a firm by consumers [3].

The CSR policy works as a built-in self-regulatory mechanism, with the help of which the company monitors and ensures its activity in accordance with the spirit of the law, ethical standards and international standards of social responsibility in the sense of society towards society and society towards the environment (ecological and social) in which the company operates [4].

The European Commission defines corporate social responsibility as the responsibility of businesses for their impact on society and outlines what a business should do to fulfill this responsibility. CSR is generally understood as a way through which a company achieves a balance between the economic, environmental and social pillars of business [5].

Socially responsible corporate marketing focuses on long-term business sustainability, environmental development and distribution of well-being through stakeholder participation, prioritization and recognition of debt to communities. Corporate social responsibility is a more qualitative approach than the business practices of traditional corporate philanthropy and ethical business. Corporate CSR reflects strong relationships with its internal and external environment, which means being a good corporate citizen [6].

In CSR activities, we can distinguish two functions of activity: activities for the partial or full benefit of society and/or general interests, and activities that are not required by law [7].

CSR activities can range from charitable programs and community service to environmental awareness. The goal of CSR is to ensure that companies maintain and promote high levels of ethical standards, as they simultaneously make profits with these activities. CSR activities can be found in various fields. In general, however, CSR has three basic pillars: economic, social and environmental, where we could include activities such as: environmental friendliness, community support, promotion of local products and a fair working environment for employees and others. Many types of stakeholders may be represented in these activities: employees, investors, suppliers, customers, communities, the environment and regulatory authorities.

## 1.2 Types of CSR

There are actually two different types of corporate social responsibility. The first type of these are corporations that provide funds and resources for worthwhile social purposes and causes, such as donating money or employee time to charitable organizations. The second type of CSR involves building a realistic plan to produce products or provide services that are in line with the best interests of the company [8].

CSR policy and activities can also take many forms. Three specific forms of corporate social responsibility that are often considered as separate entities are the cause of marketing: marketing programs (which explicitly seek to combine sales goals and help achieve them), sponsorship (linking actions explicitly with the name of a brand or organization in exchange for money ) and corporate philanthropy (charitable donations that may or may not lead to tax deductions) [9].

It follows from the above that organizations can also benefit significantly from their activities in the field of CSR and often use it.

Organizations can also have three basic types of motives for engaging in CSR activities:

- *The first is intrinsic motivation* (also referred to as intentional, altruistic, value-based or public opinion): the organization engages in CSR because it wants to help and contribute socially. Within our own motives, we can still distinguish between ethical and altruistic motives. Ethical motives refer to a sense of moral duty, while altruistic motives point to a desire to help others.
- *The second motive is extreme* (also referred to as self-sufficient, strategic or self-serving) organization is concerned with corporate social responsibility because it expects financial or other benefits from its socially responsible behavior. Many studies have focused on the effects of CSR activities on organizational outcomes, many of which have positive findings regarding CSR and corporate profit.
- *The third motive* includes the fulfillment of social expectations and pressure from stakeholders (also

referred to as an interested entity). According to Morsing and Schultz's survey conducted in 2006 "What is expected of an organization by participating in CSR": only 4% of respondents in their study thought that companies are only responsible for generating profit for themselves and their shareholders; 49% of respondents thought that companies are responsible only to shareholders, employees and consumers; another 45% even think that companies have a wider social responsibility. Further research by Becker-Olsen et. al. it also states from 2006 that: 80% of respondents were of the opinion that organizations should be involved in a social initiative; 72% of them think that organizations could benefit from such involvement [10].

## 1.3 Economic - contractual aspects of CSR

According to the instrumental stakeholder theory, companies are involved in both implicit and explicit contractual relationships with various internal and external stakeholders in CSR activities and must fulfill these contractual conditions out of obligation to their stakeholders.

Explicit contracts are formal and governed by law. For example, companies must comply with labor laws enacted by the government when dealing with employees.

On the contrary, implicit contracts have an informal nature and are seen as an "invisible handshake" between firms and their stakeholders. Altruistic activities, such as charitable activities in the local community, CSR, fall into this implicit informal category.

The instrumental theory of stakeholders claims that an implicit contract has no legal basis, so firms may show a tendency to violate these contractual obligations. Companies that have a high share of equity and brand perception are likely to honor their implicit contracts more often. Also, even in a situation where the present value of the future benefits obtained by fulfilling such contracts is greater than the loss that will result from their violation, companies will try to comply with these contracts [11].

The economic processes of globalization have a huge impact on society's ethics, behavior and social responsibility for some problems. Global companies operating in a highly competitive and changing market face complex domestic environments, social and environmental issues, and in order for companies to cope under the pressure of public scrutiny, they require a strong corporate culture to maintain ethical business conduct and social responsibility. The duty of companies within the scope of corporate social responsibility is to make decisions and take measures that contribute to the solid interests and well-being of society [5, 6].

Many companies that have integrated social and environmental aspects into their business plans have found that they can improve relations with legal and political

entities, more effectively address the concerns of external stakeholders, discover strategic areas, and use and improve their management systems. Integrating these aspects into the system can ultimately help companies align their business goals with societal expectations [12].

#### 1.4 Benefits of CSR

Corporate social responsibility is very beneficial for both the organization and the society. Below are some of the benefits of CSR:

- *Improved financial performance:* A recent study found that stakeholder and balanced companies showed four times the growth rate and eight times the employment compared to companies that focused only on shareholders and profit maximization.
- *Improved brand image and reputation:* a company considered socially responsible can benefit from both an enhanced reputation with the public and an improved reputation within the company itself.
- *Increased sales and customer loyalty:* Several studies have indicated a large and growing market for social responsibility products and services. Which can lead to increased sales and customer loyalty.
- *Increased ability to attract and retain employees:* companies perceived to have strong CSR commitments are often considered more amenable to hiring new employees.
- *Easier access to capital:* It is clear that ethically, socially and environmentally responsible companies have rapidly increasing access to capital that may not be available otherwise.
- *Reduction of risks and costs:* on equity through CSR activities. Other possible benefits include tax benefits, free publicity and promotion of the business, as well as increased attractiveness as an employer.
- *Driving force:* CSR activities and opportunities can lead the company to penetrate new markets over time. It also helps the company to constantly improve and support innovation.
- *Responsibility:* CSR promotes greater social and environmental responsibility of the corporate sector at a time when consumer confidence and the level of trust in business are becoming increasingly important.
- *Media interest:* CSR activities often create positive publicity and media opportunities due to media interest in ethical business activities.
- *Competitive advantage:* as the last point, we present perhaps the most important point, for which many companies include in their corporate policies and marketing plans also activities and activities connected with social responsibility and the fact that with their help they can gain such a valued competitive advantage on the market and thereby differentiate themselves from competition [5, 13].

As we can see, socially responsible marketing / corporate social responsibility has evolved over the decades of its existence to its current form, which includes several types of activities in different areas and brings several

advantages to companies that have included it in their business, which helps to better the consumer's view to the given organization.

#### 2. Socially responsible marketing and brand value

Firms spend significant resources and efforts to build strong corporate brands, and this investment is based on the fact that corporate brands with strong equity will help them achieve a competitive advantage in the market, positively affecting its performance [14].

In recent decades, practitioners and researchers alike who study the concept of CSR emphasize the importance of connecting CSR and brand value. Brand value expresses how a specific brand can influence customers' purchasing decisions, i.e. their subjective perception of the prestige, features and quality of a specific product or service. Valuable brands have a great influence on purchasing decisions and motivate people to buy. They describe this connection as critical, as both influence the attitudes of brand stakeholders. Both of these levels can be used by the brand to positively influence its surroundings and thereby increase its competitive advantage and the overall performance of the company [15].

In a survey conducted by the Financial Times in 2014, up to 37% of company CEOs do not see a connection between CSR actions and brand value. They also stated that ten years ago in 2008, this percentage was twice as high. The conclusion of the survey was that companies should better understand and identify the effects of CSR [16].

It is obvious that CSR initiatives carried out by companies that have a higher position in the market will receive more attention from different types of stakeholders for the simple reason that they already have a higher awareness in the market. It follows from this that companies with larger assets can benefit from social responsibility activities better and more than smaller companies. Likewise, such companies can more easily achieve a positive reaction, which can even lead to customers switching from one brand to another. In such a situation, the phenomenon may also arise that customers will be more willing to buy products of such brands and thus also pay a higher price for the given product, since it would be a product of a more prestigious brand [17].

Consumers also tend to form positive attitudes toward the advertisement, company, brand, and product involved in a CSR campaign. In addition, consumers are willing to buy products from companies that are committed to CSR activities. A certain part of consumers even prefers to buy such products. Message content and communication channels used to communicate CSR activities to stakeholders play an important role in influencing consumer opinions, attitudes, and behaviors [18].

Thanks to the activities that companies spend in the field of social responsibility, they are able to help each other build strong and stable brands on the market, as well as

build strong relationships with all interested parties. It should not be forgotten that all interested parties can either positively or negatively influence the perception of the brand and the relationship to it in response to CSR activities [14].

Based on this data and the literature review we have completed, everything points to the fact that there is a positive correlation between social responsibility, brand equity and firm performance.

### 3. Conclusions

In the article presented by us, we approached the issue of socially responsible marketing and corporate social responsibility and their history within the framework of theoretical starting points. We also pointed out the advantages of using this type of marketing, as well as the motives that drive companies to use it. We also listed different forms of activities that could be considered as activities falling under corporate social responsibility and its three basic pillars. In the last part, we linked corporate social responsibility with brand value and pointed out that these two areas of marketing are related.

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## REGIONAL CLUSTER RESEARCH FOR BUSINESS NETWORKING - SELECTED PROBLEMS AND METHODOLOGY

Ivan Kubek – Andrzej Lucjan Pycz – Simona Novotná – Róbert Kati – Peter Mencer – Rudolf Pollák sen.

### Ipeľský energetický environmentálny klaster IPEEK

Nemocničná 757/3  
Veľký Krtíš, 99 001, Slovak Republic  
00421 903 403 706  
office@ipeek.eco

**Abstract:** The paper briefly and systematically describes the starting points and the current state of the selected enterprises within the authors' cluster structure and their potential networking opportunities. It presents the main specifics of current events in SMEs in the Banská Bystrica region and describes selected common problems and proposes a practical methodology for targeted research and the search for solutions within the IPEEK cluster's activities. The basic theoretical contribution consists in the expansion of applied management theory with new principles and knowledge. The practical benefit is the creation of a framework guide for the proposal of a methodology for evaluating innovation projects by SME management within the IPEEK cluster network being built.

**Keywords:** clusters, business networking, innovation, process management, regional specifics, networking methodology

### 1. Introduction

The modern management of contemporary small and medium-sized enterprises and cluster organizations is characterized by a fundamental change in the approach to management, organization and creation of modern business programs on the market. Current trends can be named as a transition from a production company to an innovation company [9]. Yesterday was characterized by long periods of prosperity and short periods of chaos and crisis, while today it is about long periods of crisis and stagnation, and only short flashes of prosperity and growth [12]. It can be argued that even if most managers recognize modern approaches to company management such as innovativeness and total production quality management, they are always internally dissatisfied with the management method itself and the degree of achieving success and profit. This knowledge becomes particularly important in the conditions of local European areas of activity for companies, such as the Banská Bystrica region of the Slovak Republic, which is characterized by only a medium level of investment, innovation, industrial and personnel background and needs a special approach to start new growth trends, especially in this turbulent period.

### 2. Innovations and the current position of enterprises in the region

The founder of the innovation theory J. A. Schumpeter said that: "Innovation is the practical transfer of ideas into new products, processes, systems and social relations" [16]. "Innovation is a process (not an action, event, or phenomenon) and as such must be managed [9]. The factors that determine this process can be influenced and the result can be influenced as well. The cluster organization itself as a set/grouping and at the same time as a producer and at the same time a successful innovator has the ability to explore the unknown and can continuously, quickly, and easily operate on the innovation market with a price advantage from competitors" [8] It is

therefore a system of functioning of a cluster or company, which strives to be sustainably successful [14].

A logical reasoning can also be expressed here, that, cit. [9]: "Every cluster, as a result of successful innovations, at some point faces the dilemma of whether to successfully further develop its specific segment of activity and business, or to become a "superstar". The following Figure 1 specifies the dimensions of cluster innovation [9] in general.

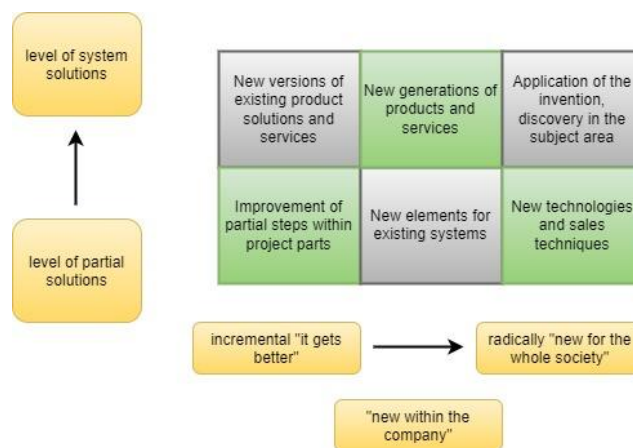


Figure 1 Dimensions and levels of cluster innovation solutions [10].

### 3. The current situation in the Banská Bystrica region - criticism of the management

Managers of business entities and other organizations generally (and this is a long-term trend) approach their managed entity as an ordinary technical thing: if something goes wrong, it will be replaced, or canceled, and maybe a miracle will happen, and a correction will occur. Above all, as quickly and as cheaply as possible. Only a simple solution is always sought and that which is at hand [9]. At the same time, managers often do not see things differently as a set of commands and stable tasks

that, when performed well, produce great results. According to the authors, this approach is particularly visible in the conditions of companies in the region. The negative is also the fact that over the past decades, countless "guaranteed successful" recipes have appeared in the knowledge and practical database of solutions, which are to a significantly predominant extent only non-systemic general examples, but in the specific conditions of a specific cluster organization or its member companies, operating with a given product on a specific market and in real time are absolutely unusable and chaotic and even only exacerbate already existing obvious or even hidden problems. It is demonstrable within the scope of the internal research and information collection by the IPEEK cluster so far, that the real value of many solutions, manuals and procedures and their interconnection and influence on which organization in the monitored member and partner structure in a risky state of threat is lost as an organic whole. So, if managers solve a problem today, they actually invest all their efforts in its outputs/consequences and not inputs/causes, and thus the entire effect of the solutions is lost, and this is often an unimaginably large problem at a given stage and time, threatening the very existence of the future business entity [13]. The most important step in strengthening the cluster in the interests of its member companies is the management's creation of a new conceptual image of its future, formulation of its structure, strategy and identification of specific principles and measures overcoming traditional wisdom and knowledge, i.e., an unusual, original solution, applying new approaches.

The cluster IPEEK is a young organization that was founded in 2020, but it gathers two dozen members and partners from the business environment with a long-term technical, technological, innovative, and financial background and experienced management. Programmatically, the cluster focuses on energy, environmental science, industrial innovations in construction, engineering and related fields and has developed and published its own long-term development strategy, available at: <https://www.ipeek.eco/>

In terms of the IPEEK cluster organization and at the same time for the potential networking of companies in it, six well-known steps to create a winning position for the future can be pointed out:

- 1) New understanding of principles – consists in re-evaluating the principles governing the cluster, its ties to the environment, internal relations, and personal factors of the people in it. A new application, a new meaning of life and functioning is being sought.
- 2) A new understanding of competition – focusing on fundamental changes that occur in the nature of advantages in new non-traditional ways in the era of globalization with the search for loopholes in the system for the cluster to take hold on the market.
- 3) A new understanding of management and complexity - it deals with what structure and what management to give to the cluster and the cluster network formed and how to create a new operating system with collective ambitions through systemic thinking, proactive action, and individuals - champions in product creation, capable of self-reflection and self-study.
- 4) A new understanding of leadership - it helps to see the new status of cluster management as an intellectual capacity decentralizing power to people and coordinating teamwork in the conditions of its management.
- 5) New understanding of the market - monitors significant changes in the character of customers and marketing correlations between customers and member companies of the cluster, takes into account demographic factors and specifics of customers in the segment of small and medium-sized businesses, while monitoring how modern advanced technologies fundamentally change product marketing methods.
- 6) New perception of the world - discusses unprecedented changes in business and society, networking of industries, markets, competition, the changing position of the state in the world and the impact of global applications of the results of scientific and technical research on managers' view of the world [4], [10].

The problem of every cluster organization and its management is that they generally do not like to decide between different alternatives - it seems dangerous and limiting - they always want to have the best, lightest, and simplest option, which is a problem in times of market changes and fluctuations. Change is a fundamental factor in the development of customer needs and expectations, a fundamental factor in the development of technologies and the development of management techniques [14]. This fully applies to the IPEEK cluster as well and is the basis for change and improvement.

According to M. E. Porter, the founder of the clustering theory, clusters are an organizational form and a tool for geographical concentration of interconnected companies, institutions, specialized suppliers, and service providers, as well as partners with the aim of prioritizing mutual cooperation over competition at a sophisticated level. According to the authors of this paper, industrial clusters can be perceived as specially targeted product groupings of subjects [6] for the creation of joint synergy of achieving product and process innovations and mutual support of efficiency and information transfer. Innovation in a tough market environment is not fun, and even if experts look at it as a powerful tool for competitive advantage and a safe way to maintain your position, it is not a guarantee of success for clusters. In the history of industrial production, there are many exemplary innovations and creative ideas that resulted in disappointment and failure [3]. In real business practice, the task for the cluster organization is to find some proven internal method that will be able to handle the answers to the questions, specifically: 1. How should the innovation process be optimally managed? 2. How to introduce effective models of behavior and find

routine procedures for innovation? 3. How to adapt/create innovations and ensure the right form of process management that will respond to different challenges of the market and practice?

The cluster organization IPEEK was also actively involved in the Recovery Plan, and in cooperation with the local regional cluster REPRIK, developed two proposals for the construction of Regional Centers of Circular Economy, in short RCOH (Regional Centers of Circular Economy) for the Banská Bystrica region, located in the Ipel' Region.

At the same time, the cluster proposed the locations of the solar parks Ipel'sko and Ponitrie, it has identified several potential access points, and negotiations are underway with suitable buyers of the produced energy, as well as with investors of these plans. Expert activities are carried out by members of the cluster and external experts within the aforementioned networking, who prepare outputs that the cluster will try to implement in the development strategies of territorial entities. Networking within the organization is important in this case, experts perform activities for the needs of the organization, while the outputs are presented as joint conclusions and results. Within the framework of the policy of protection of water resources and groundwater, we perceive some topics as urgent, namely the investment undervaluation of sewerage network construction projects in the region, mainly in the smaller villages of Ipel'sko and Ponitrie. It should be noted that in this regard we are lagging behind the fulfillment of the European Directive on the protection of water and the environment for a long time. However, since the themes of high energy prices and the diversification of risk in their production and procurement are currently more resonant, it will be very difficult to achieve any noticeable benefit in the area of water, and it must also be expected that most of the funds will go there. Despite this, our organization follows innovations in the field of environmental protection very closely and is ready to solve problems related to these topics as part of expert activities [7].

#### **4. Proposal of a methodology for the creation of business networking within the IPEEK cluster in the region**

In order to focus on the research topic, it is important to know the specification of the term clustering technology map, which the authors perceive as a kind of system organizational chart of elements and links of internal and external impacts, needs and expectations placed on cluster organizations [12], [5]. The map of technological clustering represents in a certain way (that is, on the basis of pre-defined and selected criteria) the tracing and representation of the relationship of the internal and external supply or value chain in the cluster organization, while some are more significant, and some are only supportive [11]. A well-designed and created map in the conditions of the Banská Bystrica region would thus be a good basis for the development of business and thus would simultaneously display a range of interconnected and supporting industries and activities, including a client

portfolio, sharing a common innovative, technical, technological, and organizational background. It is therefore necessary to state that the term clustering map does not fundamentally mean any representation of the position or locality of activity of the given cluster organization in geographical space (e.g., in the territory of the V4 countries, etc.) [11], [3].

The chosen approach to the research of the issue of creativity and innovation in the conditions of a cluster organization is applicable mainly as a psychometric and at the same time cognitive approach, where the focus of attention will be focusing first on the scope of creation, that is, on the performance of the cluster management and its project team in tasks containing specific aspects of creativity. At the same time, it is assumed that these are measurable and evaluable quantities (exactly or verbally), and that testing can be applied in an activity that quantifies and qualifies the intuitions and appearance and active knowledge of the investigated object - the cluster or its companies. In doing so, the size, sociographic, personality, technical and technological prerequisites, and specifics of the investigated subjects, selected from the field of SME business, as well as their possibilities of strengthening the business potential within the framework of the creation of cluster and other business groupings [2], [1], will be taken into account.

Managers of the IPEEK cluster and its companies are learning today how to understand innovation not only as a management tool, but primarily as a process that can be managed, changed and influenced effectively in the interest of the success of the given company, so that a literally organic type of cluster capable of adapting to unstable and to changing conditions and factors and capable of constantly progressively overcoming problems. The phases of the internal innovation process must now comply with this, namely:

- 1) Producing thoughts.
- 2) Collection of ideas.
- 3) Developing and implementing ideas.

The result must be creativity and innovation in economic competition on the relevant regional, national, continental, or even world market.

It can be based on the following premise:

- a) Business management of a cluster organization is always part of the business strategy and overall marketing management of the company.
- b) Business technique - sales technique is a specific manual, i.e., a summary of rules, material and immaterial inputs, procedures, and tasks for working with customers and an essential output of the business sales system (providing specific activities) within the framework of market care in the cluster's sphere of activity [5].

The defined areas of research appear as:

1. Analysis of the level of innovative capacity of the business entity.
2. Analysis of the level of knowledge of managerial concepts, methods, and tools.
3. Analysis of the level of the organization's management apparatus.
4. Analysis of the attitude of organizations towards management tools.
5. Analysis of managers' approach to the selection of management tools.

In order to objectively investigate and propose a methodology for the evaluation of innovative projects, it is necessary to formulate the following tasks and objectives, briefly summarized in this consideration, for future targeted and applied research focused specifically on the conditions of the IPEEK cluster:

The currently available knowledge base for the management of the cluster and its member companies is non-homogeneous, extensive, and disorganized, and available work procedures and methods for evaluation and management and their results and problems are used and perceived by managers only in isolation without mutual connections, and thus only partial, non-conceptual approaches are applied interventions and solutions to problems. In practice, this means that as the technical level of management tools increases, their utilization rate decreases. Technological development does not correspond to the real needs and expectations of business practice and the market in the given segment of SME companies. Well-known and mature tools for management and support of innovations in the cluster (such as various strategic analyses, statistical monitoring and evaluation of business activities and results, etc.) are either too specialized, expensive, complicated, or even lengthy and too broad-spectrum to be given to use practically and especially dynamically in SME conditions. This is the content of research and verification in practice in the further activity of the IPEEK cluster and at the same time an incentive for discussion and receiving topics from the readers of this contribution.

Long years of experience in renowned companies, according to an internal survey conducted by the IPEEK cluster among top managers, have proven theses that their companies cannot stand without innovation, but the reality is sad and often these people are the ones who hold back innovation the most. This is due to the fact that innovations are usually not the main thing that a company or cluster lives by, the focus on security prevails, the ego of people is greater than the effort of an honest solution. There is a lack of information about the market and the place of the company and the cluster in it, there is no time for systematic work and study of management, and the inability to finish even really good things and implement them on the market persists.

Another problem is that cluster organizations (and especially here) do not have a developed methodology, the management does not understand the issue of innovation in depth, and this is not organically installed as an innovation culture in the organizational culture, the emphasis is on an inappropriate innovation management model and there is a lack of responsible objective evaluation of benefits from innovations in the cluster. Therefore, the IPEEK cluster introduces and verifies in management practice the following essential rules (left column of positions) for the introduction of innovations into practice in the cluster organization and related proposed tools (middle column of positions) which, after free processing from information sources, can be clearly and relatively simply summarized through the following table 1, where the predicted and expected impacts of the proposed methodology on comprehensive professional outputs - a document for the operation and creation of networking of the cluster organization and its members - companies are also indicated as follows:

*Table 1 Overview and sequence of rules for applying innovations in the cluster*

<i>Step:</i>	<i>The essence of the rule:</i>	<i>Related suggested tools:</i>	<i>Impacts in the proposed methodology</i>
1.	The upgrade must be a key process in the cluster.	Innovations must be implemented and not just talked about, it is necessary to break out of the operational agenda and focus on strategic opportunities.	Setting the Cluster Strategy The concept of the cluster's internal product line
2.	Innovative team must be a flat project procedural and composed from different experts across activities of the cluster.	It is necessary to single out people and create the conditions for them to be a perfect innovation team, the parameters of customers and opportunities on the market must be defined in detail.	Personnel policy of the cluster membership base Motivational and educational system of the cluster
3.	The innovation process cannot be limited by bureaucracy and regulations.	Innovativeness has laws, rules and methodology, but it must not be limited by economics, directives and a meaningless agenda that inhibits ideas.	Own concept of cluster organizational culture Methodology for solving risky situations and conflict situations
4.	Imitating and applying the innovations of others.	Copying innovative outputs from other authors and companies is appropriate in the start-up, so-called learning and application phase, but after a while own original solutions for the cluster are needed	Creation of a database of information base and innovative solutions

5.	The success rate of the innovative process depends on management.	Measuring and continuously evaluating the success of innovations is very important and consists in overcoming limitations, stereotypes, and differences through new design and functionality of products/services.	Internal system for monitoring, measuring and evaluating successful solutions and product and process innovations within the networking of cluster members
6.	Application of innovative thinking.	A strategy must be chosen, either reactive or proactive, followed by a clear determination of rules, methodology and areas of knowledge in the internal cluster creative functioning.	Regular education and training of cluster members in process management aimed at innovation
7.	Determining the priority of the upgrade in the cluster	It is necessary to choose the right direction of innovation for the supporting business program of the cluster and to determine the emphasis either on process (technological, organizational) or product (products, projects, services) innovation while accepting the ecological and economical choice of its companies	Applying the methodology for monitoring the parameters and characteristics of innovations
8.	Determination of the tendency to manage innovation processes.	This is to adopt procedures in the cluster: flat organizational structure and proactive organizational culture parallel design and application of solutions in projects application of new organizational forms based on teams.	Selected techniques to support the innovative thinking of management and cluster network workers:

## 5. Conclusions

Clusters in the European area face several challenges, but the effort to shape the form of competition, take the fate of the cluster into their own hands and create tomorrow's advantages in the competitive market environment is important. This applies to a generalized and traditional quote from one of the founders of modern management theory, Porter Michael, back in the nineties of the last century: "...it is necessary for companies to look for ways to grow and build advantages instead of simply eliminating disadvantages, and it is not enough to what is done will be done better - it needs to be done differently..."

For the very creation of a future new methodology for evaluating innovative projects of selected companies within the cluster organization and building business networking in accordance with the fulfillment of set tasks

and goals, the verification of the behavior of current cluster managements is based on the assumption that a low level of knowledge of current management tools and means in the wrong access to their system application will always cause a reduction or loss of the level of the cluster and its companies and their results in production. This can be verified by analyzing the concepts and approaches of current quality and production management as well as by auditing the level of innovative management and diagnostics of the innovative dimension in each company of the SME segment. Therefore, the entire investigation and verification is based on the parameters and characteristics of a selected group of member companies from the SME environment and the conception of their cumulative model of results and its verification within the framework of individual diagnostics and audits.

The stated considerations, set tasks and goals will thus be the starting point for the implementation of a comprehensive methodology for the evaluation of innovative projects in the conditions of the management of a cluster organization.

This contribution is part of systematic applied research, carried out in the conditions of a newly built cluster organization with a special focus on the development of the Banská Bystrica region, and bases its considerations and results in direct connection to business management practice within the framework of the implementation of the research grant project NFP313012AWA2, co-financed with the support of the Ministry of Economy of the Slovak Republic from the European of the regional development fund, Integrated Infrastructure Operational Program 2014-2022, scheme DM-3/2020 to support business networking, call code: OPII-MH/DP/2020/10.3-28 under the project name: "Development of human and innovation capacities IPEEK 2021" .

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## THE POSSIBILITIES OF USING ARTIFICIAL INTELLIGENCE IN BUSINESS MANAGEMENT

Patrik Boršoř – Gabriel Koman

Faculty of Management Science and Informatics, University of Žilina

Univerzita 8215/1

Žilina, 010 26, Slovakia

+421 41 513 4025

patrik.borsos@fri.uniza.sk – gabriel.koman@fri.uniza.sk

**Abstract:** Nowadays, the trend of using modern information and communication technologies (ICT) is constantly growing in various business processes such as production processes, communication with suppliers or customers, but also various other internal processes. It is primarily about simplification and making work more efficient. One of the modern ICT is artificial intelligence (AI), which has a wide range of applicability. The creation of the article was preceded by an analysis of professional publications, which provided a theoretical basis for future research in the given issue.

**Keywords:** management, decision-making in management, information and communication technologies (ICT), artificial intelligence (AI)

### 1. Introduction

The Industrial Revolution and especially the beginning of Industry 4.0 have brought about the digitization of all business processes. Therefore, technologies such as artificial intelligence (AI), big data, or intelligent filters have started to be used in companies worldwide. The impact of modern information and communication technologies can be seen not only in the business environment. We can also see their impact on people's lives and the functioning of the state. Various technologies have started to be used in people's lives, such as smartphones, virtual assistants, or intelligent solutions for the home, such as smart heating, lighting, cameras, and so on. Most of these technologies are equipped with artificial intelligence, although many people do not even realize it. AI technologies are also involved in judging the quality or originality of images, composing music, or assessing traffic on the roads. The article deals with the definitions, classification, and use of AI in business management.

### 2. Methodology

To create a theoretical basis for the given issue, sources of secondary data of diverse natures were chosen. A lot of information was obtained from scientific databases and journals. As sources of secondary information, book publications of various authors on the given issue were also included.

Since it is a wide range of sources, it was necessary to categorize these sources and determine their relevance based on certain parameters. These parameters were keywords and full-text availability. The search keywords were management and artificial intelligence. The found results were then compared and filtered based on the title and abstract of the publication. The recurring opinions of different authors were an indicator of the completion of the search.

The methodology of processing sources of secondary information in terms of the solved problem is shown in Figure 1.

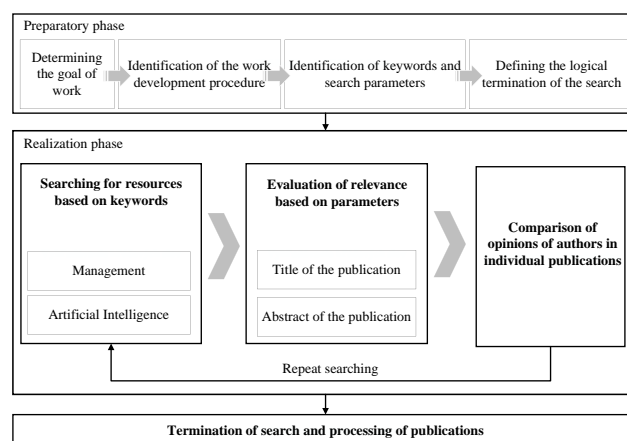


Figure 1: The methodology of processing sources of secondary information

### 3. Theoretical background

The term AI was first formulated by Alan Turing in 1950 when he pondered the hypothetical question: "Can machines think?". The question reflected the author's belief that the human brain is a "disorganized machine" at birth, which is influenced by human instincts and is developed into a "universal machine" through "training" [3].

Defining AI is based on the understanding of the concept of intelligence. Therefore, it is necessary to define intelligence first. Intelligence can be interpreted as the ability to solve more complex goals, understand emotional knowledge, or apply logical thinking [12]. Another definition speaks of intelligence as the ability to learn from experience and deal with uncertainty thanks to it [5].

Based on these definitions, AI could be defined as a set of information and communication technologies that approximate human intelligence for improvement, efficiency, and simplification of people's work [9]. However, from a technological perspective, AI machines



simulate cognitive functions commonly associated with human thought [8].

There is no official and unified definition of AI [8]. It is primarily due to two basic reasons. The first is that different authors perceive AI in different ways, with different criteria or ranges. The second is that it is a field of science that changes very quickly in an extremely short time.

To understand AI, it is necessary to focus on two basic areas. They are autonomy and adaptability. Based on these aspects, it is possible to point to AI as a set of complex information and communication technologies that require autonomy (i.e., the ability to perform tasks in complex conditions without constant human supervision) and adaptability (i.e., the ability to improve performance by learning from experience) [7].

Other characteristics of the authors on the topic of AI can be seen in Table 1.

Table 1: Characteristics of AI

Author	Characteristics
McCarthy [1]	The science of the production and use of intelligent technologies to achieve goals.
Sugumaran [11]	A set of computational methods and approaches for solving more complex problems associated with real-world technologies where traditional methods and techniques are ineffective or infeasible.
Kaplan a Haenlein [4]	A system that can correctly interpret data, learn from it and use this knowledge for predetermined goals and tasks.
Mikalef a Gupta [8]	Any form of system that is designed to autonomously evaluate data and/or act based on it to achieve goals.
Mainzer [6]	A system can be called intelligent if it works efficiently and independently of humans.

Based on these characteristics, it is possible to consider artificial intelligence as a scientific discipline, the purpose of which is the development and subsequent use of modern digital technologies for identifying, interpreting, and evaluating data to achieve predetermined goals without human intervention.

### 3.1 Categorization of artificial intelligence technologies

Some authors categorize AI technologies into three basic areas [10, 4, 5]:

- 1) artificial narrow intelligence (ANI),
- 2) artificial general intelligence (AGI).
- 3) superintelligence (ASI).

The relationship between these AI categories is illustrated using the Euler diagram in Figure 2.

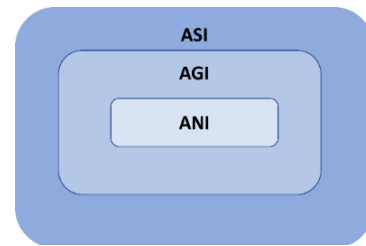


Figure 2: Euler diagram showing AI categories

ANI can perform a single task and any knowledge gained while performing that task is not automatically applied to other tasks. This type of AI aims to complete one task without human assistance. The most common applications of ANI include, for example, playing games or image recognition.

AGI, on the other hand, represents a type of artificial intelligence that can be compared to human thinking. It focuses on intelligence as a whole and simulates human intellect. AGI is capable of planning, reasoning, and autonomously solving tasks for which it was not primarily created but arrived at through learning and self-development [4].

The third type of AI is ASI, which exceeds human intelligence capacity in every aspect. She is exceptional in that she increases her intelligence rate very quickly in a short time. This AI is primarily communicated in discussions of artificial intelligence to understand some of the implications of the rapidly evolving model of intelligence in IT.

ASI can also be divided into 3 other types: 1) fast ASI, 2) collective ASI and 3) high-quality ASI. Fast ASI should be a technology that makes decisions faster than a human. Collective ASI can be compared to the decision-making abilities of a group of people. And the last type is a high-quality ASI that can make decisions that humans cannot [10].

### 3.2 Forms of artificial intelligence technologies

From the mentioned categories, follows that AI technology can be perceived in several forms. It can be, for example, a physical form, i.e., AI robots. Examples of such robots are the Pepper robot from Humanizing Technologies or Sophia from Hanson Robotics, which has even obtained citizenship in Saudi Arabia.

The second form is the virtual form. Examples include chatbots or voice assistants, such as Amazon's Alexa, Samsung's Bixby, Google's Google Assistant, Microsoft's Cortana, or Apple's Siri assistant.

The last form is holistic AI technologies, such as video-based robots. It is possible to meet this type of AI even in Slovakia. An example is Vesna - the first holographic banker of Slovenská sporiteľna.



There are many more forms of artificial intelligence. Alisy Kainth defined a total of 16 forms of AI [8]:

- deep learning,
- predictive analytics,
- text translation,
- classification and clustering,
- information extraction,
- speech-to-text conversion,
- text-to-speech conversion,
- expert system of an inference engine,
- knowledge based on expert systems,
- optimization,
- classical planning,
- probabilistic planning,
- reactive machines,
- robotics with limited memory,
- self-aware robotics,
- image recognition,
- machine vision.

#### 4. Discussion

AI is used in various fields. A recent global survey by Gartner showed the fact that over the past four years, the number of organizations that have implemented AI in business processes has increased up to 270% [2]. There are possibilities of use in all departments of companies. An example can be the marketing department, where AI technologies can be used in pricing, customer segmentation, product life cycle management, or sales support. In production, it is most often used in production automation, but also production forecasting, product quality control, and so on. AI technologies are also widely applicable in the field of supply and warehouse management. Examples can be demand forecasting, supplier analysis, and selection, or supply chain risk management. It can also be used in departments such as logistics, customer relationship management (CRM), research and development (R&D), and in dealing with the cyber security of companies.

The use of AI technologies is already widespread in Slovak companies, too. The topic of AI and its use in Slovakia was addressed in its case study by the company Anasoft, which is dedicated to the production of smart solutions for businesses. It is based on research by the analytical company Go4Insight. The main conclusions of this research are that up to 70% of Slovak companies use, or plan to use, some AI technologies within five years. Nowadays, predictive analytics, machine learning, machine vision, but also autonomous robots, and voice recognition are most often used in Slovak companies (Figure 3). [13]

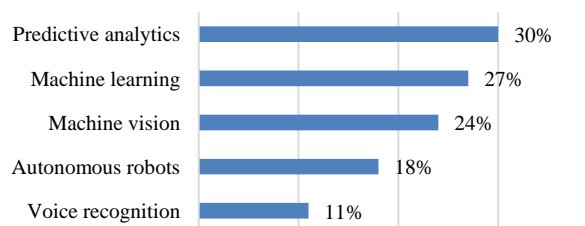


Figure 3: Forms of AI used in Slovak companies (Processed according to [13])

According to owners, managers, and directors of Slovak companies, AI technologies will be used in industry, logistics, and healthcare in the coming years. On the contrary, they will be used less in finance, education, and trade (Figure 4).[13]

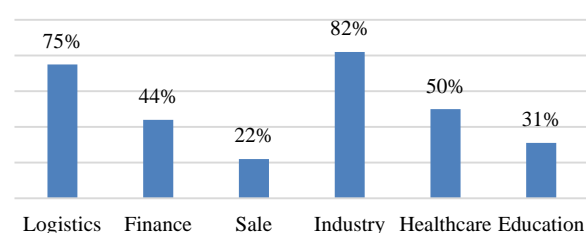


Figure 4: Application of AI in Slovak companies by industry (Processed according to [13])

The expected benefits from the deployment of AI are an increase in the efficiency and productivity of work, the automation and acceleration of decision-making, and the improvement and acceleration of innovations in companies.

#### 5. Conclusion

The analysis of the relevant publications showed that there is no precise definition of AI. Different authors have different opinions on this issue. However, they agree that AI is currently a very important topic not only for researchers but also for companies and the state. It is important to understand the fact that AI already exists in many technologies today and that it helps in solving various tasks.

These technologies represent a wide range of application possibilities for supporting business management in various managerial functions:

- planning (route planning in logistics, demand forecast in marketing),
- organizing (optimization of production processes),
- management (predictive analysis of career growth of employees),
- checking (recognizing and evaluating the quality of production processes).

The theoretical basis resulting from this work will be used in the future for concrete decision-making solutions in business management.

An example can be decision-making by managers in recruiting and selecting employees. The acquired knowledge will be used in designing a model of this process, the individual activities of which will be carried out exclusively with the help of AI technologies.

### Acknowledgements

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## TECHNOLOGY TRANSFER IN HIGHER EDUCATION

Xin Huang

Corvinus University of Budapest

Budapest, 1093, Hungary  
huangxin3333333@gmail.com

**Abstract:** *The connotation and content of technology transfer is constantly being enriched in its development. With the changing mission of higher education as one of the important sources of knowledge and technology, the transformation of knowledge and technology into a contributing force in society has become a new focus of exploration, and efficient and effective technology transfer has become an urgent research issue. This paper focuses on the literature review analysis as well as a multi-case analysis, first reviewing the technology transfer models since the last century and exploring the needs and changes in the evolution of technology transfer. Then, the performance of technology transfer is studied from different perspectives: 1) from the stakeholders' perspective, and 2) by extracting indicators from different cases.*

**Keywords:** *technology transfer, higher education, mission, models, performance*

### 1. Introduction

Technology transfer has been a hot topic for decades in multiple academic fields. It has received widespread attention from policymakers, researchers, innovation agencies and entrepreneurs in the industry. Technology transfer has different definitions in many different fields according to research purposes. Technology transfer can describe as a process of developing practical applications for the results of scientific research—usually, two or more people, groups, and organizations exchange technologies through different mechanisms. Successful technology transfer does not lie in directly completing the process of technology transfer to industry but requires the utilization of technology in new products, processes, and organizational changes [1]. In addition, the knowledge transfer concept appears in many documents [2] and is very closely related to technology transfer. Technology transfer emphasizes technology transactions from a processual point of view and therefore covers process-related concepts with the aim of utilizing technologies for economic growth in a successful manner. Knowledge transfer focuses on accumulating knowledge in the receiving organization or department. However, technology transfer is a difficult concept to define because technology transfer is a disordered phenomenon that occurs between organizations and individuals in different units. However, in the existing literature for many years, many researchers still try to define technology transfer in a multi-dimensional and multi-standard way to have a clearer understanding and connotation of technology transfer [3].

#### 1.1 University mission

Research and education have always been the two main tasks of higher education institutions. However, higher education has been given a third mission. This so-called 3rd mission is the translation of the value of education in higher educational institutes into the value of actively contribute to societies [20]. Thus, the "third mission" is defined as the society, the entrepreneurship and the innovative actions undertaken by the university beyond educational and research activities, aiming at knowledge

and technologies translation from educational institutions to societies in order to address the problems of the reality of the world. The Technology Transfer Office (TTO) therefore, acts as a 'must have an organization for universities and has the vital task of transferring academia to industry.

#### 1.2 Technology transfer models

In this context, it is necessary to study the development and evolution of technology transfer models to understand the focus of technology transfer over the decades and how it has been carried out, as shown in the table below.

Table 1 Technology transfer models

Years	Technology transfer models	Models' core
1945-1950s	The Appropriability Model	Good or quality technologies sell themselves. The model emphasizes on the importance of quality of research, and competitive market pressure in achieving TT and promoting the use of research findings.
1960-1970s	The Dissemination Model	This model suggests the importance of technology and innovation to be diffused or disseminated to the potential users by the experts. This model assumes that an expert will transfer specialized knowledge to the willing user. This model suffers from its one-way communication (unilateral) characteristic with no involvement from the users
late 1980s	The Knowledge Utilization Model	The approach taken by this model is its emphasis on 1) the important role of interpersonal communication between the technology developers/researchers and technology users, and 2) the importance of organizational barriers or facilitators of TT. The knowledge utilization approach represents an

		evolutionary step which focuses on how to organize knowledge to effective use in the technology users setting.
1990s	The Communication Model	This model perceives TT as “a communication and information flow process with communication understood to be concerned with full exchange and sharing of meanings”. This model suggests technology as “an on-going process which involves a two-way interactive process (non-linear) by continuously and simultaneously exchanging ideas among the individuals involved”
Years after 1990s	Gibson and Slimor’s Model	This model explains the various levels of technology transfer (level one -technology development, level two - technology services, and level three -technology services and integrates the activities in the traditional model. The model explains the levels of technology transfer and integrates the activities involved in the traditional model. From the first to the third level the importance of the quality of the technology, the diffusion of the innovation to the individual user and the key element of interpersonal communication between the technology developer and the user are emphasised respectively.
	Rebentisch and Ferretti’s Model	This model provides a rational explanation of the levels and factors that influence knowledge and TT by describing the four levels of knowledge and TT: Level 1 (knowledge and technology creation), Level 2 (sharing), Level 3 (implementation) and Level 4 (commercialisation).
	Other Related Theoretical Foundations of Technology Transfer	The factor proportion theory, the product life cycle theory, transaction cost theory

Source: [3].

A retrospective of the evolution and developments of previous technology transfer models can help to examine future directions for empirical research on technology transfer. It is clear that suitability, diffusion, and knowledge exploitation model still have an intrinsic deviation of linearity, and these technology transfer models have limited applicability to technology transfer across organization borders. In contrast, some investigators have suggested replacing the earlier technology transfer models with diffusion models, unlike the first three models. The Gibson and Slimor’s Model is very similar to the Rebentisch and Ferretti’s Model and was developed to compensate for the shortcomings of the traditional model

with a clearer stratification and a focus on technology innovation, sharing, application and communication.

In addition, it is also known from the literature that research is usually concentrated in one country[1,4], at one institution[5] or university[6], and rarely is there simultaneous research in multiple countries, making it difficult to have a uniform standard in TTO performance.

### 1.3 Summary

To summarise the above, firstly, technology transfer is becoming more and more advanced and sophisticated as it develops over time. And with a constant new focus, it is clear that time is a development variable. Secondly, research development becomes a visible manifestation of competitiveness and hard power. Thirdly, the ecosystem of how research institutions and industry are linked is yet to be further explored. Finally, what new roles and functions technology transfer will have in relation to today’s theme of sustainable development needs further research. This paper therefore seeks to explore the important role that technology transfer offices play in modern institutions of higher education and the role of technology transfer offices in a changing environment that requires all parts of the university to view research as more outward-looking and collaborative, and with broader economic benefits. For this exploration, it is necessary to briefly examine these changes based on a synthesis of previous testimonies and empirical studies to explore the evolution of technology transfer and the key changing movements in technology transfer to better elucidate the relationship between R&D and the ecosystem. At the same time, a growing body of literature refers to the effectiveness and efficiency of technology transfer [4,7,8], which is often associated with the performance of technology transfer offices, and how to measure the performance of technology transfer offices is the focus of this paper.

## 2. Performance of university TTOs

### 2.1 From a Stakeholder Perspective

While higher education institutions are all somewhat aware of technology transfer, however, there is still much literature that suggests that technology transfer offices are often seen as not playing much of a role, but rather as ‘idle’ organisations of universities [9,10]. This is due to a combination of many external and internal reasons and factors, with stakeholders not playing a good ‘push’ and ‘pull’ role as the main drivers [21]. In terms of internal stakeholders, consider that the development of technology transfer offices has not kept pace with the times. Policy makers and managers do not give technology transfer the appropriate attention, which relates to the organisation’s structure [1], cultures [11], and policies [12]. This relates to incentives, the appropriateness of the process of transferring intellectual output, etc, or the lack of capacity of researchers to communicate and collaborate with external stakeholders. In terms of external stakeholders, it is important to consider whether there are appropriate channels for accessing and using the required technical

results [13] and whether the results obtained meet their expectations and interests [14].

**2.2 From the perspective of metrics**

Measuring the performance of university TTOs is often based on tangible indicators that capture the conversion rate of technology transfer from 'input' to 'output', which raises highly relevant questions from a management perspective [15]. In order to further study research on technology transfer performance, there is a need to capture some valid indicators to measure it. Therefore, more empirical research papers are first needed to corroborate each other.

*Table 2 Indicators of measurement*

Articles	Samples/ Investigated groups	Metrics of performance
A Performance of technology transfer offices in Germany. [1]	73 public universities, finally gathered 29 exploitable datasets	The number of invention disclosures in 3 years (2005-2007) is most important measurable performance indicator of TTO In addition to this, there are the characteristics of TTO (Number of employees, Division of labour, PhD-Share), as well as the university, and region.
What drives the university use of technology transfer offices? Evidence from Italy. [4]	University departments in Italy engaged in research in the Engineering and Physical Sciences, received 197 completed questionnaires.	The characteristics of departments (Presence of a TTO at the university, experience of the director of the department (number of years in post), university size (number of research staff), department size (number of research staff), location of the department in a polytechnic university.), research indicators (Applicability of research carried out in the department to industry according to the director, university research rating, Director's opinion of the relevance of cognitive distance between professors and industrialists), geographical indicators (Location of the department, Number of science-based firms in the university's province) and TTO characteristics (Number of years of TTO activity, Total university governance of TTO, TTO professional non-academic management, Director's opinion on the importance of TTOs for TT).
Performance of university technology transfer offices: evidence from Europe and Japan. [16]	187 TTO stakeholders (TTO heads, TTO employees and university researchers) in 18 countries	Social embeddedness, Internal Embeddedness, Marketing capabilities, Patent portfolio management
Performance evaluations of technology transfer	Technology transfer offices (TTOs) of twenty US	The following eight key success factors: a) business strategy and marketing, b) intellectual property protection, c)

offices of major US research universities. [17]	major universities	performance benchmarking, d) revenue generation focus, e) institutional reputation, f) business stakeholder relations, g) institutional Alignment of interests, and h) institutional support, e) institutional prestige, g) alignment of institutional interests, and h) institutional support.
Performance of Spanish universities in technology transfer: An empirical analysis. [18]	Universities 'technology transfer activities for 52 universities out of 71 universities in Spain over 2001-2005.	(1) university technology transfer intermediaries, and (3) the institutional characteristics of the university.
The brokering role of technology transfer offices within entrepreneurial ecosystems: An investigation of macro-meso-micro factors. [19]	26 interviews from all eight university TTO offices in NZ	At the macro level, salient factors are related to the presence, diversity and prominence of various ecosystem actors, legislation and regional policies, geographic location, economic development and regional characteristics including nature, strength and proximity to industrial bases. At the meso level, the university's research profile, institutional policies and support, and the strategic positioning of technology transfer within the university and differences across disciplines and sectors. At the micro level, TTOs must not only spark interest in technology transfer, ideally, they must also ensure that any engagement takes place through their offices.

**3. Conclusions**

The above survey covers different countries, and the large sample of survey makes the research indicators representative. This paper finds that having type of indicators makes the conclusions drawn will be more detailed. Following the metrics, this paper concludes that 1) the strategic direction of the university has a significant impact on the technology transfer office, and having a good technology transfer direction and structure is a driving force for public innovation results; 2) the support of the university department has a positive effect on the performance of the technology transfer office; 3) having accurate information about innovation within the university is helpful for the performance of the technology transfer office, and universities with technology transfer management policies and procedures performed better at universities.

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## SUBURBANISATION IMPACT CAUSED BY PANDEMIC

*René Pawera - Livia Bott Domonkos*

**Comenius University, Faculty of Management, Department of International Management**

Odbojárov 10, 820 05

Bratislava, Slovakia

+421917 737 076

rene.pawera@fm.uniba.sk – bottlivi@gmail.com

**Abstract:** *The publication focuses on the rural areas located in the suburban zone of big agglomerations in border regions. Special attention is devoted to demographic processes and phenomena related to these facts. Besides generally acceptable statistical data represents other data collected via field research in communities representing suburban survey. It focuses on socio-economic effects of suburbanization caused by pandemic and analyses its impact on society of suburban inhabitants in Slovakia. There is a comparative crossborder survey about the suburbanized rural life standards before and after 2020 to predict current trends influenced by pandemic. Added value is the result of measuring gap in economic and demographic development in the cross-border regions mainly between Hungary and Slovakia during COVID-19.*

**Keywords:** *crossborder suburbanisation, pandemic suburbanisation, COVID-19 and permanent address, centralization of workplaces, comparative study*

### 1. Introduction

The choice of the research topic is justified since agglomeration, which is a common phenomenon of current globalization, is multifaceted and highly relevant today. As COVID developed second homes in rural areas, the rural environment has been given a more varied image through suburbanization. Such research originates back to the principal idea that a certain geographical space, a settlement or a landscape, means much more than just a simple element of space. The motivation for moving from big cities to rural suburban regions can be currently twofold, the regular suburbanisation process and the pandemic caused changes.

Different methods can be used to determine the size, nature, type, as well as the causes and degrees of suburbanization and urban sprawl in the immediate vicinity of capitals. As the suburbanization process is considered one of the most significant transformation processes of intraurban structures in the capitals, it may be accompanied by changes occurring in places where the use of space (and space itself) does not match the new social and economic conditions, especially during pandemic.

#### 1.1 Suburbanisation

Suburbanization as a process started in the late 19th century, but later it manifested itself more spectacularly after World War II. Suburbanization process first appeared in Europe, mainly in London and in the U.S. later, however with greater dynamism and had spectacular impact on the core of cities. [1]

During socialism, Slovakia struggled with the traditional “rough” urbanization that artificially induced migration pressure from the countryside to urban housing estates. Suburbanization activities were in their early stages. [2] Notable circumstances appeared only in the most recent period after the “*construction boom*” in 2008 for more than a decade. In this century there was no comparative

period to be able to observe how pandemic influences living conditions. [3]

#### 1.2 Suburbanisation in Bratislava

In general, on the outskirts and periphery of a big city as Bratislava outlines processes that take place in the so-called rural-urban fringes. Regarding functionality, there is a debate whether suburbanization (building a new suburban town) or urban sprawl is taking place. Regardless, the results are newly established residential districts around the city, called suburbia. [4] The indicators of the process are migration growth, the housing and mobility. These are both quantitative and qualitative growths. Moreover, the consequences are better in the field of technical infrastructure, higher land and real estate prices, changes in the structure of society segregation of houses. Suburban growth creates a population between the central city and the suburbs, leading to changes in the demographic and sociological indicators of the suburban population (socio-demographic approach) and the spatial structure of the suburbs. New constructions in the suburban environment can be defined as modern uniformalized residential areas that are ready for family homes or individual construction on plots offered by an investor or massed new development areas with possible individual house construction on vacant plots as part of existing installations. [5] The research of suburbanization processed around Bratislava was gradually carried out by several geographers, an architect and a sociologist. The new point of view of this article lies in the socio-economic method by comparison of data and indicators before and after 2020-2021 (pandemic period).

Primary research sources include Šveda, Šuška and Ira, and Korec, Kurta, a behavioral survey of villages in the suburbia of Bratislava in connection with [6] Martin Šveda, a scientist in the Slovak Academy of Sciences practically showed a new direction for this research subject, not just case studies prepared from suburban

towns [7] but also GPS mapping of undocumented urban sprawl with data from mobile operators locally.

Researching a particular set of problems can lead to many pitfalls, as border area overlaps are not always measurable, so the literature is also useful in exploring crossborder areas.

### 1.3 Crossborder pandemic suburbanisation

In order to characterize the Hungarian border part, there were selected serious development tools of the EU. The transformation of the structure and building stock of Rajka settlement is due to several factors the intensive nature of changes and simultaneity of each process unquestionable. The number of dwellings in 2016 was 1430, but between 1990 and 2016 it increased by 70% almost 90% of which has fallen since 2007. Between 2017 and 2020 inhabitants' number arose by 56%. Smaller villages around Bratislava belong to this agglomeration. It's a similarly exciting question in Hungary, the suburbanization of rural cities differs from that of Budapest. There is a slight difference between the suburbanisation of capital and processes of individual rural cities whether there are significant differences. In case of Győr (the second biggest city of Hungary, where we can speak about crossborder suburbanisation), it is easy to recognize a lot of similarities with the processes described around Budapest [8] Mainly the past of suburbanization (recreational suburbanization - purchase of weekend plots in the eighties), characteristics of the emigrant population and motivation. At the same time, the suburbanisation of rural cities is much smaller. Rural urban population its concentration is also lower in the urban areas in the classical examples to an extent. The suburbanization of rural cities began at a time when the domestic economy has undergone a sharp downturn, affecting a significant portion of the population led to impoverishment, and natural population decline is characterized by demographic conditions [9] Furthermore, during the 1990s, the housing and land market was transformed, almost exclusively a self-sufficient housing construction of families, a significant part of the rental housing stock was privatized, and only quite a small number of new rental dwellings were built. As a result, the housing market is quite it showed a distorted picture, and hence, it is even difficult talk about the rental housing market. The following definition and Examining Rajka, the suburbanization process is the demand for real estate, and thus at the same time it is obviously based on a change in the characteristics of supply, i.e. a weak, undercapitalised real estate market may not be significant. Suburbanization is generally a process considered to be in which cities go beyond the limits of their integration so far. The home at the present stage of suburbanization, these surrounding suburban settlements are functionally they are related to the central city, are considered to be its continuation in space, and their dependence is a it is also expressed in the conditions of their economic, social and architectural development. Definition of *Brake* according to suburbanization, the outflow of cities from the city limits, respectively the outside of the settlement. An

important driver of the process is the growing territorial demand, which are linked to the area of a city or a site there their interests, however, they cannot or do not want to satisfy in the city. The areas demand increases as the number of participants (population, plants, institutions) increases, and to this is added the ever-increasing space requirement of the units [10]. Suburbanization is thus an urban population and economy as well as an urban one involves the decentralization of central functions. With their questionnaire *Bajmóczy and Balizs* in a sample of 329 inhabitants found families in six settlements. In the sample of rural strategies in Hungary by *Jabonczay* rural inhabitants were more loyal to stay and Slovak minority living in Hungary more willing to migrate.[11]

### 1.4 Comparative pandemic suburbanisation

Thus, in the survey of current paper in Rye Island, 50% of the examined decentralizes jobs due to pandemic and 36% of the migration ring of the suburbia furthermore changed job type due to covid, 10 percent of them provided different mobility due to pandemic and moved in suburbia, 6% stayed in 2022 on home office long term.

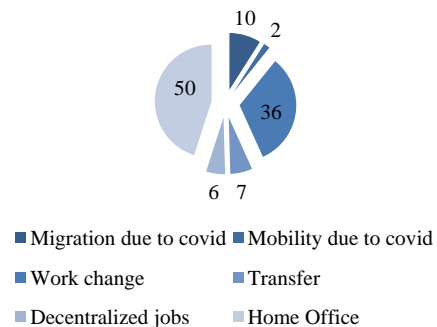


Figure 1: Description of the Frequency of permanent address change caused by pandemic

Survey on satisfaction with inter-fraud suburbanization and reducing of urban vulnerability in other perspective[12] examined satisfaction with the services and institutions provided by the municipalities, majority of the residents do not to their satisfaction. Based on previous research this predominantly complaining layer for their villages is mainly lacked by services like health care provider, post office, pharmacy as factor for regional differentiation. [13] Lack of schools in cities arose during COVID-19 as home-schooling was provided as only option. In the survey group as well, the responses of residents here are clear complaints in this area. Bratislava preference is more significant because the correlation is high. As a result of research, it was planned to achieve that by evaluating the present situation in the most "suburbanized" localities get questions and answers by the intention of meeting the current needs of the residents make recommendations to decision-makers during the survey. [14] In micro-region of Bratislava and Gyor suburbia all answers should be taken into account when defining long-term plans, it is important that the residents themselves help create a regional image for suburban



development. In the case of Microregion Rye Islands near Bratislava [15], there were found great differences between the natives and the emigrants in our opinion, if we want to compare the border residents with the Indigenous people of Rajka its dissatisfaction could be paralleled. In contrast, Austrian example is not we found a questionnaire survey following a similar identity, with local content analysis it can be argued that the residents of Bratislava living there are more distant they complained from the Austrians, but there was no shortage of services. Based on the projects, we see that the Danube connects, but the borders still separate, the however, there is no limit to suburbanization. Cross-border suburbanization is one an extremely delicate process of spatial development with poor and less bad solutions are born because of the opportunities. [16]

The prices in the housing market and the surrounding countries all offer contribute to the decision. [17]

**2. Methods**

As for research methods qualitative interviews and quantitative survey forms were distributed. We tested a hypothesis as follows:

*H1: Regional identity towards crossborder suburbanisation influenced by pandemic situation.*

*H1: Regional identity towards cross border suburbanisation is not influenced by pandemic.*

*Table 1 Dependance between regional identity from capital to suburbia before pandemic situation.*

<i>Answers in 2020 before Pandemic</i>	<i>Moved permanent address</i>	<i>Did not move permanent address</i>	<i>Total</i>
<i>Suburbans from other places as capital</i>	135	200	335
<i>Original from capital</i>	90	130	210

Pearson chi square equal 7,820 Pr = 0.000, Cramer’ V value of V = 0.25 showed in T test 7,82 defined a p value 0,051, statistically significant value, so the suburban inhabitants from the sample shifted their permanent address more frequently. 3,48 . When 2020 p value was higher as 0.05, for sample suburbians permanent address became more important for the capital both for suburbans and for original rural inhabitants equaled 0,179; by p <0,01. Pearson coefficient of 36.17 and Cramer V value was 0,25 so there was find a valuable correlation. The second table is looking to the same question of permanent address through lenses of suburban willingness to move the permanent address from capital and origin city to rural area during and after pandemic period. It can be seen that suburban citizens are more likely to move to suburbia of Bratislava then those who originally come from Bratislava. Statistics evaluate years 2010-2019 without changing

permanent address, therefore we stated another supporting hypothesis.

*H1: There is dependance between permanent address change from capital to suburbia and pandemic situation.*

*H0: There is no dependance between permanent address change from capital to suburbia and pandemic situation.*

*Table 2 Dependance between permanent address change from capital to suburbia during covid situation.*

<i>Answers between 2021-2022 during Pandemic</i>	<i>Moved permanent address</i>	<i>Did not move permanent address</i>	<i>Total</i>
<i>Suburbans from other places as capital</i>	55	20	75
<i>Originally from capital</i>	96	74	170

While asking about the missing service in suburbia s in 2019 answered health care and hobby as priority, in 2020 schools and services became the focus of the interest and in 2021 health provider and basic food shops and services as well as nature. For motivation to move into suburbia the newcomers presented the closeness to capital and rural countryside. There was no point to move into capital and travel every day in 2020-2022, this was supported by slighter shift of permanent address. In 2019 survey there were three common “mindmap” associations created abo Slovak crossborder area, there were :1) *closeness of Bratislava*, 2) *workmarket* and 3) *lower prices*. Controversy, in year 2022 these associations became more flexible in terms of home-offices and dominated *quiet place, lower prices, family houses*. There were several environmental qualities of life mentioned on rural countryside as *pure drinking water and natural treasures, but on the other hand, unfortunately, the most common answer here is just cheap housing and Bratislava’s closeness*. Inhabitants of the smaller settlements proved to be more culturally, socially and publicly active during interviews and opened questions. Another assumption is thus the relationship between Hungarian and Slovak residents examined the importance of the micro-regional economy, it can be concluded that expected accordingly, the micro-regional economic level and local companies are rather important for indigenous peoples. Meanwhile, the capital city’s presence is important for having shared centers, multinational companies are more important for those who have moved to suburbia. It also appeared several times in survey, how they nominate themselves. Before pandemic the places were called *sleeping city, satellite town, garden town, suburbia* and it turned out that their lives changed due to pandemic and they became to call it *home, small town*.

As comparative method for mobility mapping it was also found that in similar spatial study by monitoring permanent address a study of doubly constrained gravity

model was estimated using generalised linear mixed - effect models for journey-to-work flows in Montevideo, Uruguay. [18]

Study has found out the same journey used without moving permanent address. Under the mixed model by framework *Poisson* and negative binomial regression models were estimated to find a better fit for the last distribution used. The model specification improves the parameter estimation by up to 15% [19] which means for our research a comparative result, as our sample of the survey was willing to move spatially in 10% based on *Figure 1*. The results were also compared with a generalized linear model GLM [20] of the same study, where specification improved showing that consideration regions as fixed effects are insufficient to predict independence among flows. [21] We can close this comparative method deduction as slightly similar to the hypothesis findings in other territorial and time-specific level.

### 3. Research hypothesis

Defining and controlling original hypothesis on regional identity importance and loyalty measuring toward region depended on pandemic situation and partially provided answers for hypothesis.

Firstly, statistics evaluate years 2010-2019 without changing permanent address, therefore we stated another supporting hypothesis. Secondly, permanent address changes of suburban inhabitants and their willingness to move inside suburbia officially was found to be higher by 10 % as before pandemic. The study aims to reveal the relationship(s) between pandemic affected permanent address change in agglomeration with positive correlation. The survey compared attitudes of residents and suburban newcomers from regional and time-based perspectives, who became residents with moving permanent address to the region of suburbia. Comparative studies observe both objective and subjective factors based on a primary survey conducted in 2018 resulting in 545 respondents compared with 2022 results of the sample of 245 respondents. Another important interview results of the article is creating a comparative quality of life indicator in the cross-border region by *regional loyalty, address shift and socio-cultural belonging*.

### 4. Results

The topic of the impact of suburbanization is not only economic, social and demographic issue, it became also a determining factor for the future of mankind in all directions, more and more dealing with environmental influences and influencing the consistence of rural and urban areas Two important hypotheses are investigated: firstly, that suburbanization has a demonstrable and decisive influence on the economic development of rural areas in the neighborhood of agglomeration rings of border regions. In addition to the development of rural areas it analyzes its negative or positive impacts on inhabitants' well-being and life quality assumption. It also assumes that

inhabitants have rural identity and therefore they have strong regional rural values identity, and they have regional rural identity in devotion to traditional economy fields. Facts are analyzed by situational analysis of Quality-of-Life Indexes and secondary survey with macroregional and rural regional analysis. Finally, the study is comparing results of a Slovak quantitative (survey of 545 samples) with Hungarian sample and Slovak sample with mixed sample of 2022.

### 5. Comparative Research

Slovak Republic suburbanization became even more complex based on covid, there is no relevant prognosis available towards demographic grow, neither the population trends nor the covid effect is calculable. There is a different nature, there is a mountain and rural history apartments. On the other hand, the name of the other Member State shall be subject to the spring, the railway station has a special position in Bratislava and Győr. It is very important to change the quality of the research. The number of dunes in the region in the field of trade, in the field of trade and agriculture, intensive care of countries, regions and cities. This includes sustainable development, regional and management strategies strategic development and font-based documents, including local authorities, provide information and advice on how to provide information, information users are interested in one of the most important projects and suburban areas number of counters. The comparative study shall be carried out in the Hungarian and Slovak languages, in the north of Austria. This is a natural and important forecast in the framework of the Community, which is the subject of the European Union's programming, and in particular, in particular in the field of sustainable innovation, development of cities and five specials for each other.

### 6. Conclusions

In conclusion, it is recommended that local governments observe the regulatory principles of environmental economics using spatial planning tools as some of them complained about infrastructure, transportation and mobility, as well. These include thinking about the area, including its attachment to neighboring settlements. The second added value of the research article is the comparison of sociologic and geographic aspects caused by COVID-19. Epidemic trends as a new viewpoint for suburbanization and the inhabitants' perception in the field of regional development research, they identify negative traits but solutions are moving not forward in the last 10 years.

Correlation between changed permanent address and shift of the services to suburbia was higher during COVID-19. Data correlated with the year after Covid and the growth of population. The density of population is not always a positive decision point, but the concentration of relatively skilled service-based centralizes work market was centralized even more extensively.

The first added value of the research is that at least 10 % high permanent address shift was based on data caused by pandemic, demographic growth in official form at this moment are wider due to suburbanization, they are present positively for the capital city and negatively for the surrounding region. Permanent addresses of suburbans in terms of cross border region moved less for inhabitants from Hungarian origin and moved more in case of Slovak citizens.

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## THE CREATION OF REGIONAL CIRCULAR ECONOMY CENTRES OF THE QUINTUPLE HELIX APPROACH

Marian Bakita – Ján Plesník

### Regionálny priemyselný inovačný klaster Rimavská kotlina REPRİK

Ulica Mieru 283/24  
Jesenské, 980 02, Slovenská republic  
00421 902 073 260  
info@replik@gmail.com

**Abstract:** Regional industrial innovation cluster Rimavská kotlina – REPRİK, an interest association of legal entities, brought together on a partnership basis representatives of public administration, self-government, entrepreneurs, associations, non-profit and educational organizations, for the purpose of integrated development of the Gemer – Malohont region. The flagship project of the REPRİK association for the years 2022-2023 is the realization of the RCOH Gemer Malohont project intention to build an ecological, innovative and socially just and educated region that will be environmentally considerate, economically efficient and socially responsible with an impact on the inhabitants of the region. The goal of the association is to support the building of RCOH networks in cooperation with partners throughout the territory of the Slovak Republic.

**Keywords:** networking, sustainability, QUINTUPLE HELIX, region, Regional Center of Circular Economy - RCCE

### 1. Introduction

The Regional Circular Economy Centre - RCOH is an environmentally friendly, economically efficient and socially just circular economy system in the region of the QUINTUPLE HELIX model, oriented towards the inhabitants. Based on a cooperative form, it creates a collaborative economy with its own social and investment fund. The integrated solutions are evaluated and monitored on measurable social, environmental and economic indicators. The Regional Circular Economy Centre "RCOH" provides a long-term comprehensive solution for the circular economy. The Regional Circular Economy Centre is an environmentally friendly, economically efficient and socially equitable circular economy system in the region of the QUINTUPLE HELIX model oriented towards the inhabitants [1]. For the system to be functional and sustainable in the long term, it is necessary to link mutually forming environments, public and regional administration, educational institutions, business and an educated civic sector.

### 2. The Gemer-Malohont region

The REPRİK cluster organization operates and creates activities mainly in the southern part of the Gemer-Malohont region, such as the districts of Rimavská Sobota and Revúca, covering 6 towns and 143 villages. Up to 97 of them are small municipalities with a population of less than 500 inhabitants. The region is one of the least developed regions of Slovakia with the lowest employment rate. On the one hand, the low number of job opportunities is a problem. On the other hand, it is the low level of education. More than 50% of the available employable population has completed a maximum of primary education. The unfavourable situation is also closely related to the high proportion of marginalised Roma communities, which are over 35% represented. Several local action groups are active in the region. Compared to other regions of Slovakia, the business environment is poorly developed. Most of the territory has an agrarian character, which is marked by poorly

developed tourism. The preservation of the rural way of life plays an important role, which has an impact on the lowest population ageing index in the region. The advantage of the GEMER MALOHONT region is its historical link with Hungary, which creates further opportunities for cross-border cooperation. The cooperative form creates a collaborative economy with its own social and investment fund. The integrated development plans are evaluated according to the social impact on the population, the fulfilment of environmental commitments to the country and the economic sustainability for the creation of own funds and monitored on their measurable indicators [1].

### 3. Brief description of the situation

REPRİK chose the Gemer-Malohont region precisely because of the characteristics of this area. The advantage of a cluster organisation is that it is a neutral platform independent of political as well as technological interests. The importance of the circular economy is an extended model alternative to the general model of produce, use, dispose, whereby the aim is to recover raw materials in the value chain after the useful life of products into products for further use. Based on the cooperative model, RCOH creates a collaborative economy with its own social and investment fund. Integrated development plans are evaluated according to social impacts on the population, fulfilment of environmental commitments to the country and economic sustainability for the creation of own funds and monitored on their measurable indicators. A partnership with the Cerovina Local Action Group is established for cooperation in the region. One of REPRİK's main project objectives for the development of the GEMER MALOHONT region is to address energy self-sufficiency and food security. It uses all the strengths of the QUINTUPLE HELIX model - a knowledge-based economy.

The QUINTUPLE HELIX innovation model consists of the interaction of five subsystems (helixes): education -

business - public administration and self-government - public - environment in a knowledge-based economy. Figure 1 illustrates the linking of the triple helix of academia-industry-government relations (TRIPLEX) with the integration of civil society with the quadruple helix (QUADRUPLE HELIX) and the impact of investment in education on sustainable development of the quintuple helix (QUINTUPLE HELIX).

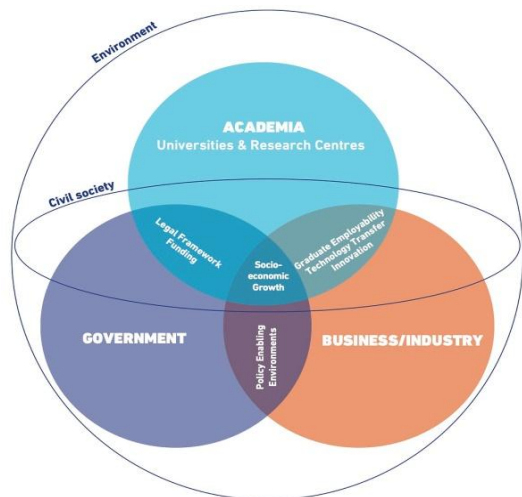


Figure 1: Model QUINTUPLE HELIX

Social ecology and environmental protection is the basis for innovation, sustainable development and economic growth. This inter- and transdisciplinary field of science for gaining knowledge of the interaction of human society with the natural environment at all relevant organizational, spatial as well as temporal scales and scales. By bringing together expertise from the social and natural sciences as well as the humanities and integrating insights from practitioners, social ecology aims to provide a knowledge base for efforts to move towards sustainability.

The development sector is closely linked to education, which is a key driver of capacity building for change, which in turn is an essential means of achieving broad goals for the betterment of society (Figure 2).

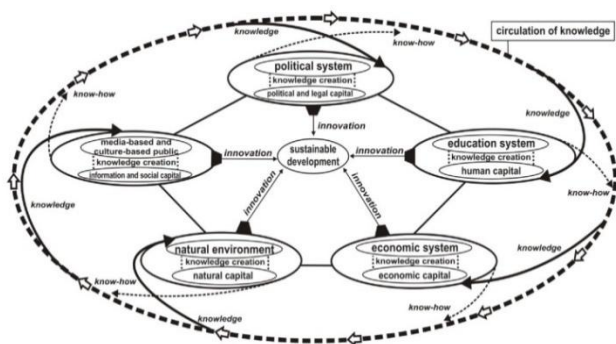


Figure 2: Education for sustainable development

Regional circular economy centres form systemic approaches for all areas of regional development. Together they form integrated solutions with an impact on the environment and the population on a collaborative basis. The collaborative circular economy creates a high quality and competitive business environment through close cooperation between regional government, academia and research and business practice, especially in the field of innovation. The basic feature of a collaborative economy is the setting of a common goal by the whole group with constant cooperation and mutual assistance, with the whole group sharing responsibility for achieving the goal. This is the only way to evaluate the collective impact of economic growth for the sustainable growth of the region's development.

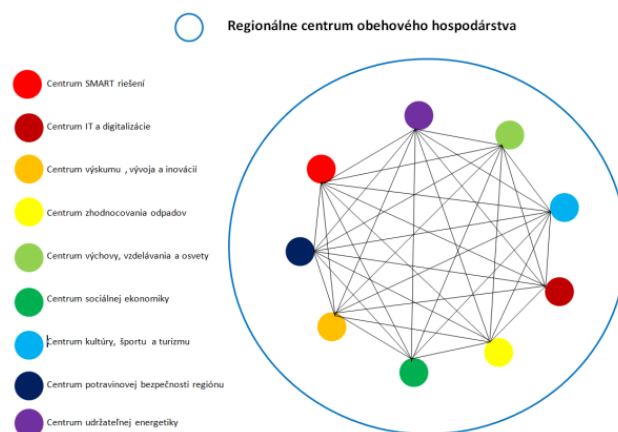


Figure 3 Regional Centre for Circular Economy - diamond

Due to the agrarian nature of most of the GEMER MALOHONT area, REPRIK has presented a prioritised strategy for the development of the region:

1. reduction of emissions and CO2 - renewable energies, redistribution of energy surpluses,
2. renewal of the material base - use of waste as a source of new raw material,
3. adaptation to climate change - water, air, climate, biodiversity, energy, value,
4. environmental sustainability - restoring biodiversity for food security.

The goal is a quality of life in the region based on the ecological stability of the area and economic sustainability that creates a socially equitable working and living environment.

The Regional Circular Economy Centre GEMER MALOHONT- RCOH GM has translated the knowledge information gained from the DanuP-2-Gas project "Innovative model for promoting energy security and diversity in the Danube region by combining bioenergy with surplus renewable energy" into a first project plan for the construction of a P2G HUB within the RCOH GM and at the same time defined integrated themes to the project plan for the development of the region (Figure 3):

- a) VIRTUAL ELECTRICITY
- b) FOOD SECURITY LINE
- c) EVVO
- d) INNOVATIVE INDUSTRIAL PARK
- e) SOCIAL SERVICES
- f) EVO SCHOOL
- g) REUSE - TEXTIL
- h) PLATFORM FOR REGIONAL ENVIRONMENTAL SERVICES



Figure 4 Gemer-Malohont Regional Centre for Circular Economy – contents

For a successful transition to a circular economy, the creation of integrated regional development plans based on the RCOH RULES is essential:

- 1) Integrated project plans for regional development
- 2) Legislative frameworks
  - National and European legislation
- 3) Evaluation criteria for investment and development plans
  - Social
  - environmental
  - economic
- 4) Implementation section
  - green and socially responsible procurement
  - Catalogue of environmental materials, products and solutions
  - Catalogue of innovative public services
- 5) Measurable indicators
  - monitoring and controlling sustainability
- 6) Collective impact
  - for the development of the region

The rules use all the tools for assessing the social impacts on the region's population, environmental commitments to the country and the economic primary return on investment. The output metrics are the basis for

monitoring sustainability and determining collective impact.

By assessing and certifying integrated investor plans, regional development actors will receive efficient funding without legislative and time delays.

The use of certification of available systems helps RCOH to decide on any further planning and development of the territory. The RCOH rules are a comprehensive tool that combines the requirements of strategic planning in the territory to take into account the environmental, energy, climate, socio-ecological and economic needs of the region, while maintaining sustainable development and economic growth to ensure the quality of life of the inhabitants in the region on the ecological stability of the territory and economic sustainability, creating socially equitable jobs and a livable environment.

The National Recycling Agency Slovakia has transferred the systemic solution of the transition to a circular economy into the building of Regional Centres of Circular Economy - RCOH. This systemic solution for the integrated development of the regions is being pushed into implementation, with the support of the National Energy Cluster NEK, in particular in the V4 countries, the Danube macro-region. The networking of cluster organisations is presented at international conferences in 2022 in the Czech Republic, Hungary and Poland (Figure 5)

#### TCC – Teamwork, Cooperation, Collaboration



Figure 5: Networking of cluster organisations in building RCOH

#### 4. Conclusion

This contribution is part of a project aimed at investing enterprises in research and innovation and creating linkages and synergies between enterprises, research and development centres and the higher education environment, in particular by supporting investments in product and service development, technology transfer, social innovation, eco-innovation, public service applications, stimulating demand especially through networking with a particular focus on the development of the Banská Bystrica region. The results are directly related to business management practice in the implementation of the research grant project NFP 313012BAW9, co-financed with the support of the Ministry of Economy of the Slovak



Republic from the European Regional Development Fund, Integrated Infrastructure Operational Programme 2014-2022, under the de minimis scheme to support the networking of enterprises, call code: OPII-MH/DP/2020/9.5-28 under the project name: "Growth of the cluster organization".

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## EVENTS IN VIRTUAL AND AUGMENTED REALITY

Martin Graca – Sláva Gracová – Andrej Brník

University of Ss. Cyril and Methodius in Trnava, Faculty of Mass Media Communication

Námestie J. Herdu 2  
Trnava, 917 01, Slovakia  
+421 948 079 091

martin.graca@ucm.sk – slava.gracova@ucm.sk – andrej.brnik@ucm.sk

**Abstract:** The standard form of organizing events changed at the moment of the arrival of the COVID-19 pandemic. This caused restrictions from the government in the form of restrictions on movement and the so-called social distance. Restrictions in their beginnings caused mass disruption of events of various kinds. Later, after the initial shock, the events moved to the digital environment on platforms that adapted to the situation. Most events began to exist on social networks through live video, which allowed interaction with the audience. Currently, events can also be organized in a virtual space, for example in the Metaverse environment. The presented study maps the current state of organizing events in a digital environment using augmented and virtual reality. In our article, we analyze different types of events in different digital environments and areas and define their limits as well as the positives they bring. In the end, we define the expected possibilities for the development of virtual and augmented reality as part of the use of event organization with this technology.

**Keywords:** events, virtual reality, augmented reality, metaverse.

### 1. Introduction

Organizing events in an online environment did not come immediately with the pandemic. New conditions across the world caused, that this area of event marketing and event organization to adapt very quickly.

„Event world is going through a big transformation. Because of pandemic situation events have to face a completely new situation. And even though virtual world has unlimited options we can't replace emotions, smell or taste.“ [1] There are many options offered by the virtual space. One of the simpler ways to move events to the online environment was to stream their proceedings via social networks or platforms that allow people to join in watching the event. Some provided the possibility of interaction through e.g. chat.

Virtual reality, augmented reality and metaverse can improve events to a completely different level.

#### 1.1 Virtual Reality

The beginnings of virtual reality are not exactly known. The year 1968 is often cited, when American computer graphics expert Ivan Sutherland and Bob Sproull built a headset capable of displaying virtual reality.

Virtual Reality (VR) has become a trendy IT topic in the past few years. When Steven Spielberg turned Ernest Cline's popular novel, Ready Player One, into a film, VR became known to an audience of millions. [2]

In general, virtual reality refers to a 3D or simulated 3D image of the world mediated by computer graphics. The image is created in special glasses or helmets, or on a computer monitor. [3]

Virtual Reality (VR) but also augmented reality (AR) offers direct virtual connection with digital media, and

seemingly without borders. Creating convincing experience in the VR is a complex and difficult challenge for its creators. If the VR done well, the results can be favorable and effective, with the potential to go beyond what we can do in the real world. But if the VR is done wrong, the user's frustrations may occur, or even worse, various nausea may occur during use of VR. [4]

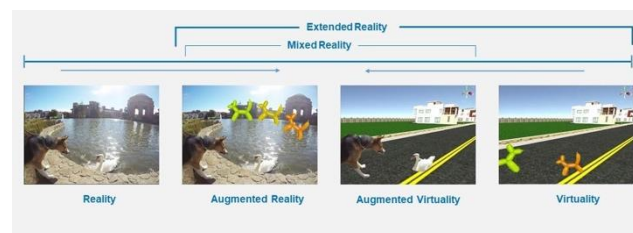


Figure 1: Virtuality Continuum

Source: [5]

#### 1.2 Augmented Reality

With augmented reality, we are talking about connecting the real world with the virtual one.

Augmented reality is the process of layering computerized information over living or non-living objects. Scientifically, it is a way of virtually rendering important information by converting 2D nonfunctional data into 3D agile content for users to know more about their surroundings. [6]

Augmented reality can be accessible to everyone. We can try it simply through our smartphones and various applications or games.

Augmented reality can be delivered in a variety of formats, including within smartphones, tablets and glasses. AR delivered through contact lenses is also being developed. The technology requires hardware components, such as a



processor, sensors, a display and input devices. Mobile devices already typically have this hardware available, with sensors including cameras, accelerometers, Global Positioning System (GPS) and solid-state compasses. This helps make AR more accessible to the everyday user. A GPS is used to pinpoint the user's location, and its compass is used to detect device orientation, for example. [7]

What is the difference between virtual and augmented reality? The biggest difference between AR and VR is that augmented reality uses the existing real-world environment and puts virtual information on top of it, whereas VR completely immerses users in a virtually rendered environment. While VR puts the user in a new, simulated environment, AR places the user in a sort of mixed reality.[8] There are many areas of human life where augmented reality is commonly used. It can be, for example, tours of cultural monuments, which, through augmented reality and our smartphones and tablets, are complemented by a representation of the period equipment of the premises, or they can show how a historical object looked in the past. It is also widely used in games and tourism.

### 1.3 Metaverse

The term Metaverse first appeared in the 1992 novel *Snow Crash* by Nea Stephenson as a three-dimensional virtual world populated by avatars of real people. [9]

The term Metaverse *“is based on the convergence of technologies that enable multisensory interactions with virtual environments, digital objects and people such as virtual reality (VR) and augmented reality (AR). Hence, the Metaverse is an interconnected web of social, networked immersive environments in persistent multiuser platforms. It enables seamless embodied user communication in real-time and dynamic interactions with digital artifacts.”* [10]

Metaverse should be a place, where people will interact with each other, work and make content. New world has potential to help people unlock new creative, social and economic opportunities. [11] Metaverse offers unimaginable possibilities in various areas of life. Regular involvement in it runs into various limits, such as the availability of technical equipment. The field of event organization may look completely different in the future than it does today. But even nowadays, innovations and ways of organizing events in the metaverse are remarkable.

## 2. Methodology

The main topic of the study is to find out the current state of organizing events in a digital environment using augmented and virtual reality. After the start of the Covid-19 pandemic, the events had to adapt to the new situation and move to the digital space, mainly due to restrictions from the government, which restricted movement and ordered social distancing. They were gradually implemented in social networks and later moved to the

virtual world. Virtual reality creates a simulated, virtual world, which nowadays often refers to the term metaverse.

The aim of the work is to create an overview of the theoretical starting points and the current state of the solved issues in the field of events organized in a digital environment within the framework of virtual and augmented reality. The study develops current knowledge in the field of virtual and augmented reality used in the field of organizing various events. We used several methods to achieve the main goal. At the beginning of the study, we use the method of induction and deduction in the classification of events, virtual and augmented reality. In the next part, we focus on the analysis of events in various ways of use in the digital space and new trends and approaches that are used or have great potential for use in the future.

The object of investigation are specific examples of organizing events in the digital space and their current state in specific areas.

## 3. Events in Virtual and Augmented Reality

Events in the digital environment have different forms. From currently standard events organized in the environment of social networks using live transmission to events organized in virtual space, for example in Metaverse. In our study, we will mainly focus on virtual and augmented reality. Therefore, we will analyze selected events that use the technology of virtual reality and augmented reality, or their intersection.

### 3.1 Concerts

Standard concerts with a live band and audience are not the only way to organize this type of event. With the help of immersive technology, we can currently simulate the entire concert. *“Immersive Technology is any technology that extends reality or creates a new reality by leveraging the 360 space. Because Immersive Technology leverages the 360 space/sphere, users can look in any direction and see content.”*[12]

The Abba Voyage in London is a virtual concert of the ABBA band, which uses virtual avatars, motion capture, blending cutting edge technology and artificial intelligence to create a musical experience like a real event. The ABBA band is completely digitized, only their avatars perform on stage, and thanks to motion capture technology, they move exactly like the real performers. The difference between a purely virtual concert is that the audience is physically present at the Abba Voyage concert, which creates a better experience and atmosphere. The advantage compared to standard concerts is the program 5 days a week in one place and even at several times.



Figure 2: The ABBA Voyage Concert  
Source: [13]

It is also possible to organize a concert in a virtual environment. The performer can create a virtual avatar according to his preferences, and after each song played, he can change his clothes, hair color, etc. We can also change the environment in which the concert takes place. In the virtual world, the creative possibilities are unlimited. An unlimited number of spectators can join the concert, because the spaces are not limited in capacity. The virtual world has infinite boundaries. As in the aforementioned The Abba Voyage concert, viewers can be connected in the virtual world as well. The difference is that in the virtual world, the audience is connected only through their avatars, so the atmosphere is somewhat less intense.

An example of a concert in virtual space is Ariana Grande, who showed a short sample of her work in the game Fortnite [14]. An avatar that was significantly larger than the avatars of other players or audience, sang and danced in a virtual space that changed after each song and was followed by a different choreography. Players or viewers were also involved in the entire event. They danced or flew in bubbles with Ariana during the song.

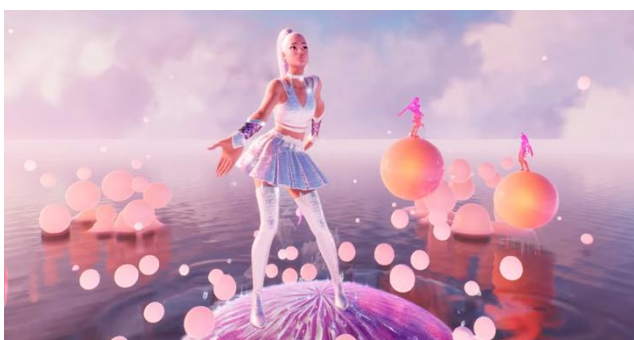


Figure 3: Ariana Grande Fotnite Concert  
Source: [15]

It is possible to organize a concert in the virtual world even without the participation of the audience in it. The performer will produce the concert into an hour-long performance, where he can sing and dance live using motion capture. His fans watch him live, but without the involvement of their avatars or physical presence. Similar

concerts were organized during the Covid-19 pandemic, when it was one of the solutions to restrictions in the form of a ban on gatherings. The benefits are similar to the analyzed Ariana Grande concert. The negative part is lower interactivity and audience involvement and thus a weaker experience and atmosphere.

### 3.2 Theme Park

Theme parks such as Disneyland have been popular for over 50 years. The first Disneyland was opened in 1955.[16] The theme park experience is changing with the availability of new technologies, and theme park visitors are no longer looking for theme parks designed in the last century. That is why they are innovating their attractions.

Disney plans to build a theme park in the metaverse in the coming years. It is currently enhancing some of its attractions with virtual reality and augmented reality technology.

Universal Studio Hollywood also follows this trend. In the next period, they will import a Mario Kart-themed ride from Japan. Using augmented reality, it will create the illusion of interaction with virtual objects and avatars. Visor-like glasses will enable theme park guests to engage in the digital world.



Figure 4: Universal Studio Hollywood VR Park  
Source: [17]

The implementation of virtual and augmented reality in theme parks is a trend that will take place in the next few years. It will probably not completely replace all attractions, and the owners of parks will look for intersections between standard parks and new technology in the form of AR, VR with the involvement of the metaverse.

### 3.3 Metaverse

A virtual world that has unlimited possibilities. A brief and romantic idea of the Metaverse. Of course, even this technology has its limits. There are quite a lot of possibilities for use in organizing events. In Metaverse, we can organize conferences, webinars, ceremonies, parties, concerts and others. The performance is important. For example, to join a work conference, you can use Metaverse within the virtual world as an avatar or a real character that appears on a monitor in the room. "For example, if an international company wants to communicate with teams in other countries, co-

*broadcasting offices in the form of an interactive webinar between them are suitable.* “[18]

Metaverse is still in development and offers wider possibilities of use. The current limits are relatively expensive hardware (headset, computer and others), insufficient mobility (short battery life, limited movement in space) and less implementation in everyday life within the Internet. Over time, these limits will be removed, and with further technological development, virtual reality can become an everyday part of our lives.

#### 4. Conclusion

The implementation of virtual and augmented reality within the organization of events is currently underway to a certain extent. It is not as widespread as standard physical events, but it forms a suitable alternative. In the future, it is possible that the limits of virtual and augmented reality will shrink until, thanks to new technologies, they will disappear and become an equal option for organizing events of various types. Currently, after the restrictions associated with the Covid-19 pandemic, events are not only organized purely virtually (which was a condition due to the mentioned social distance restrictions), but in hybrid form. This means that you can visit the events in a certain form with a mix of technologies. As in the analyzed concerts, when the performers are on the stage thanks to augmented/virtual reality, but the audience is physically present in the room. Alternatively, they are all in a virtual space but with the possibility of interactions. Everything has its positives but also limits, which we mentioned in the analysis of specific events. The future of these technologies not only in the field of events will depend on their further technological development, price, implementation in everyday activities and popularity among people. At the moment, the biggest disadvantage of VR and AR are their hardware and development requirements and the relatively low interest of users in this technology. The trend may be the shrinking of headsets and other hardware needed to connect to the virtual world, lower cost of the device, longer battery life, greater mobility, and the full “sci-fi” element would be the implementation of additional senses in VR. Virtual and augmented reality can become a trend in people's everyday life, but also a dead end in development and the fall of this technology into oblivion.

#### Acknowledgements

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## Session: Economy, Financing, Public Administration

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## ANALYSIS OF THE LIQUIDITY OF THE ENTERPRISE

Anna Jacková

University of Žilina, Faculty of Management Science and Informatics

Univerzitná 8215/1

Žilina, 010 26, Slovakia

+421 41 513 1422

Anna.Jackova@pd.uniza.sk

**Abstract:** As a result of the covid-19 pandemic, a number of businesses have found themselves in an undesirable financial situation. A financially stable enterprise is able to pay its liabilities and an enterprise with financial difficulties is struggling to do so. A reliable indication of the financial situation of an enterprise can be obtained by analyzing its ability to meet its liabilities (liquidity analysis). It is therefore important for businesses to focus on building up a database of financial indicators, such as the liquidity of the business. Monitoring and managing liquidity help a business to make many important financial decisions. Ensuring a company's liquidity is the foundation of its financial stability, so this issue must be given important attention.

**Keywords:** financial analysis, liquidity, vertical liquidity analysis, horizontal liquidity analysis, liquidity management

### 1. Introduction

Business activity has a material and financial side. The material side represents the production and marketing of products, works and services. The financial side represents the movement of money and capital. The two are inextricably linked in a market economy and influence each other. "The level of an enterprise's management, its success and prosperity are characterized by its financial situation. Liquidity, which is the ability of an enterprise to repay its liabilities in a timely manner while ensuring profitability, is one of the most important aspects of the financial health of an enterprise. It is through the financial situation that a company is perceived by its business partners and the general business environment. The company's financial situation determines the terms and conditions of the business relationship, the pricing of products, the amount of rebates or discounts. The liquidity situation of a company is a determinant that influences the public opinion of the company's surroundings, namely investors, business partners, financial institutions, suppliers, etc. With a good financial situation and good payment discipline, a company builds its corporate image and financial goodwill, but eventually, in a bad liquidity situation, badwill [1]". The assessment of the financial situation of an enterprise is dealt with in financial analysis.

### 2. Financial analysis

The subject of the financial analysis of the enterprise is the financial situation. "Financial analysis mainly assesses the following four indicators for enterprises:

- profitability, whether the enterprise is able to generate revenue and sustain its growth in the short and long term,
- solvency, whether the business is able to pay (meet) its obligations to creditors and other third parties in the long term,
- liquidity, whether the firm is able to achieve a positive cash flow in meeting its immediately payable

obligations (the ability of the firm to meet its short-term obligations),

- stability, whether the enterprise is able to remain in business in the long term without incurring significant losses in the course of its business [3]".

Information is an important part of any analysis. In the case of a financial analysis, this is its financial statements, which consist of the following parts:

- balance sheet,
- the profit and loss account,
- notes.

"The balance sheet, also called the balance sheet, is a summary accounting statement conveying information about a company's assets and the financial resources supporting them. The balance sheet characterizes the conditions under which the reproduction process has been carried out. In the balance sheet, the assets of an enterprise are its assets, its financial resources (capital) are its liabilities. The balance sheet view characterizes assets from two perspectives. On the one hand, the value of the assets and, on the other hand, the sources from which the assets are financed stand out. Therefore, the balance sheet is based on the balance sheet principle [4]".

The income statement "is a statement that conveys information about a company's revenues and expenses. The difference between them gives the result of the enterprise (profit or loss) for the (accounting) period analyzed. The income and expenses, as well as the profit or loss, are divided into two areas in the profit and loss account - the economic and the financial areas. The data in the profit and loss account are flow, i.e., cumulative [4]".

The notes contain "information that explains and supplements the balance sheet and income statement data, information that relates to the application of accounting

policies and methods, information about facts not reported in other financial statements, for example:

- information about the trading company,
- information on the number of employees,
- information on members of statutory, supervisory and other corporate bodies,
- information on the shareholders of a trading company,
- information on the accounting policies and accounting methods used,
- information on the statement of changes in equity and other information [2]”.

“The focus of financial analysis is liquidity analysis, which is the focus of management as well as external liquidity observers (suppliers, customers, banks, shareholders, company employees) [1]”.

### 3. Liquidity analysis

Liquidity is the ability to convert a firm's assets into ready funds and, unlike solvency, is understood as a longer-term ability to convert assets (assets and liabilities). Liquidity analysis consists of vertical liquidity (asset liquidity, liability liquidity) and horizontal liquidity (golden balance sheet rule, liquidity ratios, liquidity gap ratios).

#### 3.1 Vertical liquidity

Vertical liquidity analysis considers each component of assets and capital separately. It consists of the liquidity of assets and the liquidity of liabilities.

The liquidity of assets is based on the differentiation of assets according to their ability to be converted into funds. The source is the asset side of the balance sheet. “The components of assets are classified according to liquidity as follows:

1. the most liquid - current financial assets,
2. short-term financial assets - short-term receivables,
3. less liquid - inventories,
4. long-term liquid - bonds, long-term receivables, term deposits,
5. illiquid (almost illiquid) - tangible fixed assets [6]”.

The liquidity of liabilities is based on the ratio between equity (own funds - belong to the enterprise) and liabilities (external funds - do not belong to the enterprise, they represent its debt that must be repaid). In analyzing the liquidity of liabilities, it is necessary to observe the ratio between foreign and own capital and the ratio between foreign and total capital. Liabilities must be divided in terms of time into short-term and long-term. The ratio between foreign capital and equity is indicative of the indebtedness of the enterprise.

#### 3.1 Horizontal liquidity

Horizontal liquidity analyses the relationship between asset and liability items. The source on which it is based is the balance sheet. An important part of horizontal liquidity is the golden balance sheet rule. It requires that the source

of fixed assets should be long-term resources (equity and long-term foreign capital), with the amount of long-term foreign capital at least equal to the value of fixed assets.

The golden balance sheet rule is based on the relationship:

$$\text{fixed assets} \leq (\text{equity} + \text{long-term foreign equity})$$

A business should have as much capital as it needs. If assets are still less than the sum of equity and long-term foreign capital, then the enterprise is overcapitalised. This situation comes to the fore when the current assets are also covered by long-term capital. The opposite of overcapitalisation is undercapitalisation, which is a situation where the value of fixed assets exceeds the amount of external resources. This remaining part of fixed assets must be covered by short-term foreign capital. A case of undercapitalisation occurs in an enterprise at the time of expansion, when the enterprise expands its production and sales, which is associated with an increase in assets that are not covered by financial resources. These are assets such as inventories, receivables and fixed assets. In this way, the enterprise becomes indebted to its suppliers, and this causes the short-term foreign capital to be covered by long-term assets. This situation is considered unfavorable from a liquidity point of view.

Liquidity ratios interpret the immediate, current and total liquidity of a firm. They characterize the correlation between two or more absolute ratios using their ratio in the numerator and denominator of a fraction. Immediate liquidity refers to the ratio of the most liquid corporate assets (financial assets) to short-term foreign capital. Its calculated value should be in the range 0,2 - 0,8. At current liquidity it is the ratio between the most liquid business assets excluding inventories and short-term foreign capital. This should result in a value in the range 1,0 - 1,5. The role of total liquidity is to relate the current assets and short-term foreign capital of the enterprise. The result should be in the interval 1,5 - 2,5.

Liquidity gap ratios represent the difference between an asset item and a liability item. Of the liquidity gap ratios, the most commonly calculated is net working capital, which is based on the relationship:

$$\text{current assets} \geq \text{short-term foreign capital}$$

The optimal situation occurs when current assets are greater than short-term foreign capital. Conversely, if current assets are less than short-term foreign capital, the firm incurs uncovered debt. Each item of net working capital also has a critical level. For example:

- too low a level of materials inventories causes production shortfalls and low product inventories reduce the level of supplier service,
- stretching out payables leads to conflicts with suppliers and can even drive a supplier into bankruptcy,



- overly aggressive payment terms for receivables reduce the competitiveness of the business in the market.

#### 4. Liquidity management

Liquidity management is specific in nature, and it is up to the company how to deal with this problem. There are some general principles as to how a company's liquidity can be managed. They can be summarized in the following points:

- avoiding delays in the need for commitments,
- making optimal use of credit limits,
- avoid exceeding credit limits,
- avoiding losses from idle funds,
- regulate the speed of the flow of funds,
- ensure the availability of flexible short-term resources,
- build information systems to support cash management.

Liquidity requires sufficient funds, the state and development of which is conditional on the cash flows of the enterprise. These are captured by the cash flow statement, which is an important element of the financial management of the enterprise, not only in relation to the management of ongoing liquidity. It helps to identify and resolve financial problems and reduce financial risks. Past economic events are a very important element for planning the future liquidity of an enterprise and, based on a thorough analysis, can provide important information concerning the phenomena and factors that have had a positive or negative impact on the enterprise's liquidity in the past. On the basis of this information, the enterprise can thus plan its cash flow more effectively and ensure its liquidity in the future. The primary capture of information on data for monitoring liquidity is mainly in the accounting records in the balance sheet.

The cash flow ratio is used to assess the liquidity of a company, especially by creditors. It is a measure of an enterprise's ability to generate cash surpluses from its own economic activity that can be used to finance its essential needs. This is important qualitative information for assessing not only the present but also the future solvency and financial stability of the enterprise. Suitable cash flow ratios for liquidity reassessment are mainly total current gearing and short-term current gearing.

“The total flow gearing ratio is a measure of the ratio between external financing and the ability to compensate for liabilities incurred with funds from own operations. The recommended value of this indicator is in the range 0,2 - 0,3, but depends on the business sector, the size of the enterprise, etc. The greater telling power is expressed by the evolution of the degree of indebtedness over time, with a decreasing value indicating problems with covering investments from own resources and a deterioration in the financial situation of the enterprise. The calculation of total flow gearing is based on the ratio of cash flow to external resources. The short-term flow gearing focuses on short-term liabilities and expresses the time over which the

enterprise is able to repay its short-term liabilities with surplus funds from its own operations. It is calculated as the ratio of cash flow to current liabilities [5]”.

The objective of optimal liquidity is to have a volume of funds available such that the firm is able to meet its obligations and at the same time not to tie up surplus financial resources, which then represent a loss of potential opportunities. A prerequisite for achieving the objective of optimal liquidity of an enterprise is the balancing of income and expenditure in both the short and the long term. This is usually addressed by a financial plan and its control. The process of balancing income and expenditure is very specific and is marked by a certain degree of imprecision, which means that, although a balanced financial plan is a prerequisite for achieving ongoing and sustainable liquidity, it is not a guarantee. Deviation may occur when actual and projected cash flow develop differently. Although liquidity planning is not a 100% guarantee of achieving ongoing liquidity, it is important because it significantly increases the probability of achieving it and helps to avoid predictable mistakes.

#### 5. Conclusions

“Liquidity as an essential attribute of the survival of an enterprise in a market economy is conditioned by the sufficiency of cash, the state and development of which is the resultant of cash flows [1]”. Sustainable and stable liquidity is essential for any enterprise. If this condition is not fulfilled, the enterprise is likely to run into problems of insolvency in the near future, which may lead not only to a loss of competitiveness and reputation, but also to existential problems. Insolvency brings with it a loss of confidence from suppliers, banks and customers. It is therefore essential for businesses to monitor and manage liquidity on an ongoing basis. Liquidity monitoring and management helps a company to make many important financial decisions, so this issue must be given important attention.

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## REPEATED USE OF INFORMATION

*Rastislav Munk*

**University of Comenius**  
 Šafárikovo nám. 6  
 Bratislava, 810 00, Slovak Republic  
 +421 904 249 033  
 rastislav.munk@flaw.uniba.sk

**Abstract:** *This article analyses the new legislation for repeated use of information in the Slovak Republic under the amendment to the Freedom of Information Act with effect from August 1, 2022. It mainly focuses on a repeated use of information owned by the so-called public undertaking, implementation of new terminology definitions, limitation on the repeated use of information, and on the new legislation of API (application programming interface). With regard to this main aim, the article also analyses the new legislation under the amendment to the Freedom of Information Act with effect from January 1, 2023, while focusing on the new definition of one of the categories of an obliged person in the context of a new definition of the term information.*

**Keywords:** *legislation for repeated use of information, obliged persons, the term information, public undertaking*

### 1. Introduction

For a long time, under the legislation of the Slovak Republic, repeated use of information used to stand for usage of the information which was available to an obliged person, for their entrepreneurial or non-entrepreneurial purposes different from the original purposes for which the information was created as a result of the obliged person's performance of their tasks.

Legal regulations on repeated usage of information is contained in Act No. 211/2000 Coll. on free access to information and on amendments to certain Acts (the Freedom of Information Act) (hereinafter "the Freedom of Information Act"). The institute of repeated use of information has not been part of the present legal system since the adoption of the Freedom of Information Act which came into effect on January 1, 2001.

The institute of repeated use of information was implemented into the legal system of the Slovak Republic with amendments to the Freedom of Information Act (the amendment to the law by Act No. 341/2012 Coll.), with effect not until December 1, 2012.

Today, the amendment to the Freedom of Information Act, specifically made by the Act No. 251/2022 Coll., with effect not until August 1, 2022 (hereinafter "the amendment to the Freedom of Information Act"), has brought many changes into the area of repeated use of information in the legislation of the Slovak Republic.

The amendment to the Freedom of Information Act has caused transposition of the European Parliament and Council Directive (EU) 2019/1024 from June 20, 2019, on open data and repeated use of information of the public sector (recast) (hereinafter "Directive 2019/1024") into the legal system of the Slovak Republic.

Directive 2019/1024 has brought in the following most relevant changes:

1. extension of the personal scope to the so-called public undertaking,
2. extension of the material scope to "special" categories of information, such as high value information (so-called high-value datasets, i.e. datasets with high potential for repeated usage), research data as a special category of information arising from scientific research financed by the public resources (e.g. statistics, results of measurements), dynamic data (e.g. satellites, meteorological, traffic, etc.),
3. free access to information for the purposes of repeated use (with the exception of the so-called marginal costs related to e.g. personal data anonymization or protection of confidential business information),
4. extension of the ban on the so-called exclusive agreements.

Information and repeated use of information in today's modern society are constantly becoming more important. That is why, in connection with the amendment to the Freedom of Information Act, I consider it important to give proper attention to repeated use of information. I was inspired to write this article because I believe that in the Slovak Republic, not enough attention is being paid to repeated use of information and its legal regulation.

### 2. General principles

Firstly, it is necessary to define obliged persons.

Under § 2 of the Freedom of Information Act, at the time of delivery of this article, obliged persons are:

*(1) Persons obliged by this law to grant access to information (hereinafter "obliged persons") are state bodies, municipalities, higher territorial units, as well as legal entities and natural persons who have been entitled by law to decide upon rights and obligations of natural persons or legal entities in the public sector, to the extent of this decision making activity.*



(2) *Obligated persons are legal entities established by law and legal entities established by a state body, higher territorial unit or municipality according to the special law.*

(3) *Obligated persons are also legal entities established by obligated persons according to sections 1 and 2 and health insurance companies.*

(4) *Special law can provide for an obligation to grant access to information to other legal entities or natural persons.*<sup>1</sup>

Under the approved text of the Law NRSR 1173 based on the proposal made by a group of members of the National Council of the Slovak Republic to pass the law amending the Act No. 211/2000 Coll. on free access to information, and the amendment to the Freedom of Information Act, the range of obligated persons is amended according to § 2 Section 3 of the Freedom of Information Act with effect from January 1, 2023, in the following way:

(3) *Obligated persons are health insurance companies, but also legal entities, if the obligated persons within, according to sections 1 and 2, have individually or together, a controlling interest at least, and if they are at the same time,*

a) *controlled by an obligated person according to the sections 1 and 2, or*

b) *if an obligated person, according to the sections 1 and 2, directly or indirectly, proposes or assigns more than half of the members of their governing body or regulatory body.*<sup>2</sup>

This change caused a change in definition of an obligated person according to the § 2 Section 3 of the Freedom of Information Act for which is under the national legislation in force, determinant the moment of its establishment by one of the obligated persons under § 2 Section 1 or 2. Such definition of an obligated person does not affect its further existence, or any possible changes in the ownership structure.

Under the approved text of the Law NRSR 1173 based on the proposal made by a group of members of the National Council of the Slovak Republic to pass the law amending the Law No. 211/2000 Coll. on free access to information, and on amendment to certain Acts (the Freedom of Information Act) as last amended, definition of the term information is amended according to § 4 Section 3 of the Freedom of Information Act with the effect from January 1, 2023, in the following way:

*Information is any content in any form recorded on any kind of physical medium, especially content of written records in the form of documents, content of written*

<sup>1</sup> § 2 of the Act No. 211/2000 Coll. on free access to information and on amendment to certain Acts (the Freedom of Information Act)

<sup>2</sup> § 2 Section 3 of the Act No. 211/2000 Coll. on free Access to information and on amendment to certain Acts (the Freedom of Information Act) with effect from January 1, 2023

*records saved in electronic form, or content of audiovisual records, and records in audio or visual format.*<sup>3</sup>

With effect from January 1, 2023, the term information will be more specifically defined so that it is clear that material scope of law within an obligated person does not include information, which was “only thought”, or “only spoken”. With effect from January 1, 2023, based on the establishment of the term information, regulation § 4 Section 3 of the Freedom of Information Act, there is an exhaustive enumeration of formats in which information can be recorded. At the same time, defining the term information as any content in any form will prevent from situations when an obligated person requires from the claimant to precisely specify which information from the given document they are asking for.

### 3. Repeated use of information

According to § 21b Section 1 of the amendment to the Freedom of Information Act, cited:

(1) *repeated use of information is use of information, which is available to*

a) *an obligated person according to Section 3, for entrepreneurial purposes, or non-entrepreneurial purposes different from the original purpose for which the information was created as a result of the obligated person's performance of their task,*

b) *an obligated person, according to Section 5, for entrepreneurial purposes, or non-entrepreneurial purposes different from the original purpose for which the information was originally created, within the service delivery in the public interest.*<sup>4</sup>

In this way, the legal definition of repeated use of information was extended, i.e. the range of information which can be repeatedly used, to also cover information which is owned by the so-called public undertaking. Change of the legal definition of the repeated use of information caused an extension of the personal scope of the system for granting access to information for the purpose of repeated use on a new subject – public undertaking. The existing definition of repeated use of information was broadened by the use of information which is available to the public undertaking (as the new obligated person) *for entrepreneurial purposes, or non-entrepreneurial purposes different from the original purpose for which the information was created, within the service delivery in the public interest* (especially in areas of public services). Who is considered to be the public undertaking for the purpose of repeated use of information, is defined in § 21b Section 5 of the amendment to the Freedom of Information Act.<sup>5</sup>

<sup>3</sup> § 4 Section 3 of the Act No. 211/2000 Coll. on free Access to information and on amendment to certain Acts (the Freedom of Information Act) with effect from January 1, 2023

<sup>4</sup> § 21b Section 1 of the Act No. 211/2000 Coll. on free Access to information and on amendment to certain Acts (the Freedom of Information Act) with effect from August 1, 2022

<sup>5</sup> § 21b Section 5 of the amendment to the Freedom of Information Act, cited. *An obligated person, under Section 1 letter b), is a legal entity on*

At this time, the system of granting access to information for the purpose of repeated use refers to the existing obliged person defined in § 21b Section 3 of the amendment to the Freedom of Information Act, as well as to the new obliged person, as defined in § 21b Section 5 of the amendment to the Freedom of Information Act.

The amendment to the Freedom of Information Act is used, for the purposes of transposition of the Directive, to implement several definitions of terms into § 21b Section 6 of the Freedom of Information Act.

According to § 21b Section 6 of the Freedom of Information Act with effect from August 1, 2022, cited.

For the purposes of repeated use of information

- a) anonymization is a process of changing information to anonymous information which does not concern an identified or unidentified natural person, or a process of changing personal data to anonymous ones in such way that the concerned person is not identifiable.
- b) dynamic data are information in electronic form which is often updated, or updated in real time, especially because of its changeability, or obsolescence; dynamic data are information generated by sensors,
- c) research data are information in electronic form resulting from a scientific research activity, except for scientific publications which are collected or created during scientific research activities, and which are used as evidence within the research process, or are generally considered by the research community necessary for verification of the findings and results of the research,
- d) collection of high value information includes information whose repeated usage is connected with important benefits for the society, environment, and agriculture, especially because this information is adequate for creating services with added values, applications, as well as new high quality jobs, but also considering the number of people who can use the benefits of such services and applications with added values based on these collections of information,
- e) machine-processable format is the format of an electronic document in data structure, which enables technical and programme tool that process the said data, to understand their structure, identify and extract concrete piece of data and understand its meaning,

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which an obliged person exercises, according to Section 3, direct or indirect decisive influence, and that carries out activities under a special regulation <sup>27ba)</sup> in sectors of waters, energy and thermal energy, transport and postal services, or as a supplier of services in rail and road passenger transport under a special regulation <sup>27bb)</sup>, or as an air carrier in fulfilling their obligations within services under a special regulation <sup>27bc)</sup>, or as a ship owner in fulfilling their obligations within services under a special regulation <sup>27bd)</sup>. Decisive influence according to the previous sentence means that an obliged person under Section 3 directly or indirectly,

- a) owns the majority of the shares or has a majority interest,
- b) controls majority interest in the voting power, or
- c) assigns or elects more than half of the members of its statutory body, managing body or controlling body.

- f) formally open standard is standard for using files in information technologies of the public administration, <sup>27be)</sup> whose content is made public via central meta-informational system of the public administration, <sup>27bf)</sup>
- g) adequate return on investment is percentage of the total charge beyond that which is needed to compensate the authorised costs, up to the amount which does not exceed the base rate of the European Central Bank, by more than five percentage points,
- h) third party is a natural person or legal entity different from the obliged person, according to Section 3 or Section 5, that has information at their disposal.<sup>6</sup>

The amendment to the Freedom of Information Act was used to amend categories of information which are removed from the system of repeated use. According to the law in force on freedom of information, an obligation to grant access does not include information which is available to an educational institution and a research institution, such as school, university, and the person ensuring research and development, and which is available to a cultural institution, except galleries, museums, libraries, and the archives. According to the amendment to the Freedom of Information Act in effect from August 1, 2022, Directives concerning repeated use of information do not apply to information which is available to a school, in § 27 of Act No 245/2008 Coll. on education (Education Act), and in case of all the other educational institutions, these Directives should not apply to information which is not research piece of data. It means that all educational institutions that are not schools as defined in the Education Act, e.g. universities, do not publish information which is not research data (they do publish research data).

According to § 21g Section 3 to 5 of the amendment to the Freedom of Information Act effect from August 1, 2022, cited:

*(3) Obligated person is obligated to grant access to dynamic data for the purpose of their repeated use, immediately after their creation through the application programme interface, and if applicable, through their bulk download.*

*(4) Should the access to the dynamic data, according to Section 3, exceed the frame of a simple operation considering financial and technical possibilities of the obliged person, the obliged person will grant access to data for the purpose of their repeated use in a time frame, or with temporary technical limitations which don't decrease utilization of their industrial and societal potential in an unreasonable way.*

*(5) Obligated person grants access to collections of high value information in the executing legally binding Act of the European Commission laying down the list of concrete collections of high value data for the purpose of repeated use in machine-processable format, through the*

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<sup>6</sup> § 21b Section 6 of Act No. 211/2000 Coll. on free access to information and amendments to certain Acts (the Freedom of Information Acts) with the effect from August 1, 2022).

*application programme interface and, if applicable, through a bulk download.*<sup>7</sup>

This resulted in adding a new way of granting access to dynamic data and collections of high value information – through the application programme interface, (hereinafter “API”), and in relevant cases, through their bulk download, unless unreasonable effort is needed.

Regarding the collections of high value information (§ 21g Section 5 of the amendment to the Freedom of Information Act) the same way of granting access to them applies as stated above (so-called API/bulk download). When it comes to the format in which access to this information should be granted, it is given in a machine-processable format, which is defined in § 21b Section 6 letter e). Their list will be set by an implementing Act of the European Commission, while at this moment, five subject categories of collections of high value information are known:

- geolocational data: e.g. ZIP codes, interstate and local maps,
- observation of the Earth and the environment: e.g. satellite images, energy consumption,
- meteorology: e.g. climate data, weather forecast,
- statistics: statistical data with demographic/industrial indicators, e.g. GDP,
- companies and company ownership, e.g. commercial register,
- mobility: e.g. timetable, traffic signs.

List of these subject categories cannot be considered final. The European Commission is entitled to change them by making amendments to subject categories of collections of high value information for the purpose of taking the technological development and the current situation into consideration.

#### 4. Conclusion

The subject matter of this article called “Repeated use of information” was to outline the new legislation for repeated use of information in the Slovak Republic, after the transposition of the European Parliament and Council (EU) Directive 2019/1024 from June 20, 2019 on open data and repeated use of information of the public sector (recast).

The article mainly focused on repeated use of information which is owned by the public undertaking, implementation of new definitions of terms, limitations to repeated use of information, and on the new legislation of API (application programming interface).

In connection to this main aim, the article analyses the new legislation according to the amendment to the Freedom of Information Act in the effect from January 1, 2023, with emphasis on the new definition of one of the categories of

the obliged persons, with emphasis on the new definition of the term information.

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<sup>7</sup> § 21g Section 3 to 5 of the Act No. 211/2000 Coll. on free access to information and on amendment to certain Acts (the Freedom of Information Act) with effect from August 1, 2022

## PREVENTIVE RESTRUCTURING AS A TOOL FOR DEALING WITH IMPENDING BANKRUPTCY

*Matej Smalik – Filip Petrek*

**Comenius University in Bratislava, Faculty of law**

Šafárikovo námestie 6

Bratislava, 810 00, Slovenská republika

matej.smalik@uniba.sk – filip.petrek@uniba.sk

**Abstract:** *The need to introduce an effective model of preventive restructuring was finally mirrored in the new Slovak legislation that was created as the result of implementation of Eu law. On March 16, 2022, Act No. 111/2022 Coll. on the solution of imminent bankruptcy and on the amendment of certain laws which represents the transposition of Directive (EU) 2019/1023 of the European Parliament and of the Council of June 20, 2019 on preventive restructuring frameworks, on debt relief and disqualification and on measures to increase effectiveness of restructuring, bankruptcy and debt relief proceedings and on the amendment of Directive (EU) 2017/1132 (Directive on Restructuring and Insolvency) to the legal order of the Slovak Republic. The authors deal with the new tool of the preventive restructuring, which is intended to ensure the adoption of early warning tools capable of detecting circumstances that could cause the threat of bankruptcy. The authors address the newly adopted frameworks for preventive restructuring, bankruptcy and disqualification and discuss the potential effectiveness of preventive restructuring with respect to existing bankruptcy prevention tools.*

**Keywords:** *impeding bankruptcy, preventive restructuring, debt relief proceedings, bankruptcy*

### 1. Introduction

The new legislation aims to resolve situations in the case of business entities that are in imminent bankruptcy consisting of impending insolvency. According to the new regulation, they should solve their situation in the so-called "preventive action", which, according to the directive, should represent an effective tool for timely resolution of the situation so that entrepreneurs can continue their activities and maintain their viability, and especially prevent bankruptcy and subsequent bankruptcy. Preventive action shall mean public preventive restructuring or non-public preventive restructuring. Entrepreneurs should be provided with sufficient space for effective, efficient, quick and transparent preventive restructuring in the initial stage, when bankruptcy is only a threat, and the bankruptcy of the entrepreneur and the resolution of his situation by some of the insolvency proceedings, which have more serious consequences for the business, should be prevented.

To achieve this purpose, an institute called of temporary protection, which provides time for restructuring and achieving the goal pursued by public preventive restructuring. At the same time, the institute of temporary protection regulated by Act no. 421/2020 Coll. on temporary protection of entrepreneurs in financial difficulties and on amendments to certain laws. Solving imminent bankruptcy through preventive proceedings is only possible for legal entities. The law also regulates the so-called early warning tools, which are meant to alert the entrepreneur in time that the adoption of necessary and appropriate measures aimed at averting impending bankruptcy or bankruptcy is necessary.

Preventive restructuring is also accompanied by an increase in the requirements for the expertise and independence of administrators by introducing a special administrator exam for administrators who will be able to

be appointed to particularly demanding bankruptcy or restructuring proceedings. They will be selected by a special committee, which will have established procedures for the activity and selection of these administrators in such a way as to ensure the selection of only those applicants who, with their professional knowledge, skills, experience and responsible approach, were a guarantee of professional, independent and legal performance of their duties in particularly demanding bankruptcy cases. or restructuring proceedings and also in preventive proceedings.

In connection with the new legal arrangement, there is also a change in the "classic" restructuring itself according to the provisions of Act no. 7/2005 Coll. on bankruptcy and restructuring and so on, it is exempted from the processes of dealing with imminent bankruptcy. The obligation for the entrepreneur to file a bankruptcy petition due to insolvency is reinstated in the bankruptcy legislation, while the presumption of solvency is also modified and the rules for the creditor's ability to initiate bankruptcy proceedings are simplified in cases where the bankruptcy of the entrepreneur can be assumed. In accordance with the requirements of the directive, the possibility of an entrepreneur who has been relieved of debt is explicitly introduced to continue performing business activities or to acquire a business. Causal jurisdiction of courts is also introduced in cases of particularly demanding bankruptcy, restructuring and preventive proceedings [1]. According to these analyses, depending on the distribution of districts based on geographical distribution and assigning weights to the importance of the studied attributes (number of proceedings open for more than 5 years, number of judges, stability of courts, number of senior court officials, percentage of businesses in the district, distance from district cities) had the highest score District Court Košice I, District Court Žilina and District Court Nitra, which are proposed as causally relevant for these proceedings.

## 2. Impeding bankruptcy and its definition

The definition of imminent bankruptcy, as well as the imminent insolvency of an entrepreneur and the presumption of his ability to pay, including the substantive regulation of an entrepreneur's obligations in a situation of imminent bankruptcy, is the subject of Act no. 7/2005 Coll. on bankruptcy and restructuring and relevant implementing regulations [2]. In the conditions of the Slovak Republic, this is a completely new legal area, since until now, although the legal regulations sporadically mentioned the impending bankruptcy, they did not regulate its solution in any systematic way. Therefore, in accordance with the objectives of the directive, tools are being introduced to deal with imminent bankruptcy due to the impending insolvency of an entrepreneur who is a legal entity, namely public preventive restructuring and non-public preventive restructuring. This law thus regulates the procedural rules that are to be applied in the event that an entrepreneur decides to deal with his situation of impending bankruptcy, which occurred due to his impending insolvency, while these rules are applied depending on the type of preventive action.

A legal entity [3] is insolvent if it is unable to fulfil at least two monetary obligations to more than one creditor 90 days after the due date. All claims that originally belonged to only one creditor during the 90 days prior to the filing of the bankruptcy petition are considered to be one claim when assessing the entrepreneur's ability to pay.

It is assumed that a legal entity is solvent if, taking into account all the circumstances, it can be reasonably assumed that it is possible to continue the management of assets or the operation of the business and the difference between the amount of its payable monetary liabilities and monetary assets ("coverage gap") is less as a tenth of the amount of its payable monetary obligations, or in a period not longer than 60 days, the coverage gap falls below such a limit.

The entrepreneur is in imminent bankruptcy, especially if he is at risk of insolvency. An entrepreneur is at risk of insolvency if, taking into account all the circumstances, it can be reasonably assumed that his insolvency will occur within 12 calendar months. The entrepreneur is obliged to prevent bankruptcy. If an entrepreneur is at risk of bankruptcy, he is obliged to take appropriate and adequate measures to avert it without undue delay. If the entrepreneur is at risk of insolvency, he can deal with the impending bankruptcy mainly by preventive measures according to the law.

In order to support an effective resolution of imminent bankruptcy, it is important to ensure that the statutory bodies of the entrepreneur are not discouraged from exercising reasonable business judgment and can take necessary and appropriate measures in the event of financial difficulties, for example seeking professional advice, including advice in the field of restructuring and insolvency. The entrepreneur is obliged to constantly

monitor his financial situation, as well as the state of his assets and liabilities, so that he can learn in time about impending bankruptcy and without unnecessary delay take suitable and reasonable measures to avert it, and he is also obliged to refrain from actions that could endanger the viability of the entrepreneur's business. If an entrepreneur is included in the list of entrepreneurs according to special regulations (for example, Social or Health Insurance), this is a circumstance that signals that the entrepreneur may be at risk of bankruptcy and the entrepreneur is obliged to assess whether he is at risk of bankruptcy. If the statutory body of the entrepreneur does not have enough professional knowledge or experience, it is obliged to seek the help of an expert to assess whether the entrepreneur is at risk of bankruptcy and what measures need to be taken to overcome the imminent bankruptcy. The statutory body of an entrepreneur who learned or, taking into account all the circumstances, could learn that the entrepreneur is at risk of bankruptcy, is obliged, in accordance with the requirements of due care, to do everything that another reasonably careful person in a similar position would do in a similar situation to overcome it. During impending bankruptcy, the statutory body of the entrepreneur is obliged to take into account the common interests of creditors, including employees and their representatives, partners and other persons who may be affected by the impending bankruptcy of the entrepreneur.

Thus, the law specifically introduces the obligation of the entrepreneur to consider the use of an adviser in dealing with impending bankruptcy, as his participation is absolutely necessary in this situation of the entrepreneur, and to consult his choice with creditors for the purpose of ensuring proper, transparent, effective and timely preventive proceedings. When choosing an adviser, the entrepreneur is obliged to consider and determine the criteria for the selection of an adviser, which will ensure the selection of a suitable adviser capable of realistically helping to solve the entrepreneur's situation, given his professional knowledge, experience and organizational background in relation to the size of the entrepreneur and the scope of his problems, as well as taking into account other material facts affecting the choice of adviser. The entrepreneur's obligation to use a consultant is specifically regulated if he is obviously interested in solving his situation through public preventive restructuring, but has not obtained the necessary consent of creditors to provide temporary protection. The stated obligation is justified because if the entrepreneur has not obtained this consent of the creditors to provide temporary protection, it is possible to assume that the creditors either do not agree to solving the entrepreneur's situation through public preventive restructuring, or they do not have sufficient information about the entrepreneur's situation, or this information is unreliable, respectively creditors do not have confidence in the entrepreneur's honest intention to solve his situation. In such a situation, the advisor should remove creditors' doubts and ensure a transparent and effective preventive restructuring [4].

### 3. Tasks for the representatives of the company and respective protective periods

The calculation of the basic tasks that the consultant should fulfill in the framework of public preventive restructuring are demonstratively defined, while the specific tasks and duties of the consultant depend on the content of the contractual relationship that the consultant concludes with the entrepreneur.

The statutory body of the entrepreneur and its members are obliged to proceed with professional care and the necessary loyalty. If the entrepreneur is at risk of bankruptcy, the procedure with professional care needs to be emphasized to the extent that it also includes proactive actions. If the statutory body of the entrepreneur uses the provided opportunity to solve his situation through public preventive restructuring in accordance with the provisions of the law, he is obliged to provide creditors with all the necessary information, in particular information about his situation, solution options, the current state of finances and financing, the current state of the solution of imminent bankruptcy, etc., which are necessary for the adoption of their decisions within the framework of public preventive restructuring for the purpose of achieving the goal pursued by this preventive action. However, the use of public preventive restructuring is only the entrepreneur's right and not his obligation, while this preventive procedure can only be started at the proposal of an entrepreneur who is a legal entity (active procedural legitimacy) and is in imminent bankruptcy due to impending insolvency (active material legitimacy). In addition to general requisites, the proposal must also contain special requisites that prove the fulfilment of the conditions and prerequisites for the authorization of public preventive restructuring. This special requirement is the entrepreneur's declaration that all conditions for the authorization of public preventive restructuring are met. The entrepreneur is also obliged to publish the concept of the plan. The draft plan is a document that is a mandatory attachment to the proposal for the authorization of public preventive restructuring. The obligation to submit it already at the beginning of the preventive procedure is a significant conceptual change compared to restructuring. During restructuring, the entrepreneur did not have to have a more detailed idea of the way to solve bankruptcy or impending bankruptcy.

This created legal uncertainty and often resulted in very strained relationships. As stated in the explanatory report to the law, the economic results of entrepreneurs who underwent restructuring in retrospect indicate that a formally successful restructuring rarely meant an economically successful restructuring, especially in situations where there was no fundamental change in the personnel organization of the entrepreneur and the restructuring measures were more they focused less on reducing the amount of creditors' claims. According to the negative definition, the court will not allow public preventive restructuring if there is an assumption that the entrepreneur's business is not viable. Situations are listed in a demonstrative way when it cannot be assumed that the

entrepreneur's business is viable, while these are situations that, due to their nature, formally indicate the non-viability of the business. This negative definition basically emphasizes the necessity of solving the bankruptcy of a legal entity through bankruptcy or restructuring proceedings according to Act no. 7/2005 Coll., because each of the mentioned assumptions indicates the bankruptcy of the entrepreneur without a realistic prospect of his recovery through preventive action [5].

Simultaneously with the decision on the authorization of public preventive restructuring, the court appoints an administrator for the entrepreneur by random selection from a special list of so-called according to a special regulation, but only if the entrepreneur is also to be granted temporary protection (i.e. if the entrepreneur also attached to the proposal his consent to the provision of temporary protection in accordance with the provisions of the law), or if it can be reasonably assumed from the draft plan and other annexes to the proposal that in the public plan approval process, it will be necessary to replace the group's consent with a court decision. Among other things, a decision on the authorization of public preventive restructuring also includes a statement on the provision of temporary protection and its duration, if the entrepreneur has fulfilled the legal prerequisites for its provision. The entrepreneur is entitled, for the purpose of achieving the goal of public preventive restructuring and for the purpose of supporting the negotiation of a public plan with the aim of enabling him to continue operating the business, to obtain the provision of temporary protection (the so-called general moratorium), especially provided that he attaches the consent of creditors to the proposal with its provision. In order to provide temporary protection in the framework of public preventive restructuring, the consent of the majority of unrelated creditors, calculated according to the amount of their unrelated claims, is required. However, the court can grant temporary protection even if at least 20% of all creditors, calculated according to the amount of their unrelated claims, agree to its provision, but two conditions must be met at the same time, namely that the concept of the plan does not involve any of the creditors partially forgiving the claim or recognizing its partial unenforceability, which would exceed 20% of his claim, and at the same time, the concept of the plan does not envisage a postponement of the repayment of any creditor's claim for more than one year. In both cases, only with the consent of creditors of unrelated claims. Creditors of related claims would most likely consent to the granting of interim protection, and therefore taking their consent into account for this purpose could potentially jeopardize the interests of unrelated creditors [6].

The effect of temporary protection is that it leads to a partial restriction of some actions and property dispositions of the entrepreneur. In the event that the creditors agree to the provision of temporary protection, they are authorized already in their consent to the provision of temporary protection to determine specific actions that the entrepreneur is authorized to perform only

with the consent of the advisor. In such a case, in principle, it can be any act, i.e. not only ordinary legal acts, but also acts that significantly change the composition of property, liabilities or contractual relationships, while this limitation is limited in time by the termination of temporary protection, depending on the type of legal act of the entrepreneur.

This dispositional limitation should therefore be applied from the moment of granting this consent of the creditors to the provision of temporary protection, i.e. j. the restriction should be implemented already at a time when temporary protection does not have to be provided, while its application depends on the type of action of the entrepreneur, for which the advisor's consent is required. As regards ordinary legal acts, the ordinary activity of an entrepreneur, which would be subject to approval by the adviser, such a restriction should be valid until the termination of temporary protection, unless the creditors have specified otherwise in their consent to its provision. However, when it comes to actions that significantly change the composition of the entrepreneur's property, his obligations or contractual relationships, in this case, the approval of the action by the advisor in terms of the limitation expressed in the creditors' consent to the provision of temporary protection, is time-limited by the provisions of the creditors' committee.

A key provision for the purposes of temporary protection provided within the framework of public preventive restructuring is the provision on the effects of the provision of temporary protection. Temporary protection should be seen as a type of specific urgent measure, which aims to provide the entrepreneur with time-limited protection sufficient to solve the impending bankruptcy and to effectively start and manage the process of rehabilitation of the entrepreneur concerned through public preventive restructuring. The effects of temporary protection apply generally to all creditors of the entrepreneur and provide him with protection in the form of bankruptcy and partial execution immunity, temporary impossibility of exercising security rights, suspension of certain deadlines, prohibition of offsetting related claims and limits in changes to contractual relationships.

#### 4. Conclusion

The adoption of the new regulation also meant a change in the assessment of a company in crisis, as it includes in its definition imminent bankruptcy, which is defined by the new legal regulation. The law defined imminent bankruptcy and introduced the obligations of the entrepreneur associated with it. It is not possible to objectively define imminent bankruptcy in advance for all imminent cases, therefore the legislation has chosen impending insolvency as a "benchmark". Impending bankruptcy means if, taking into account all the circumstances, it can be reasonably assumed that his insolvency will occur within 12 calendar months. At the same time, the entrepreneur's obligation to constantly monitor his financial situation so that he can detect

impending bankruptcy in time and at the same time the obligation to use all necessary, appropriate, effective and reasonable measures to avert impending bankruptcy, including the use of the possibility of public preventive restructuring or non-public preventive restructuring, is regulated. At the same time, the definition of insolvency is softened, from the current deadline of 30 days after the due date, a new deadline of 90 days after the due date applies. The obligation of a legal person-entrepreneur to file a bankruptcy petition is linked to his insolvency. The mentioned change is also caused by a new understanding of impending decline. Inability to pay is a typical reason for insolvency and affects a wider range of entrepreneurs than overdraft.

In conclusion, we would like to summarize the potential advantages and disadvantages of the new legislation analysed by us, including its potential applicability in the future. From our point of view, the indisputable advantage of preventive restructuring is the very fact that an entrepreneur can use preventive restructuring in the event that he is still threatened with bankruptcy and thus prevent a negative situation in the form of bankruptcy and subsequent "classic restructuring". The preventive nature of such a measure represents an immanent potential advantage of such a process over classic restructuring. The effectiveness of preventive restructuring can be enhanced by the fact that in the framework of preventive restructuring, agreements with creditors are less bound by legal rules than in the framework of "classical restructuring", where the rules are mainly subject to approval by the competent authorities and the court. Also, within the possible satisfaction of the claims of individual creditors, he is freer in decision-making during preventive restructuring, when it is not necessary to satisfy all creditors in a proportional way. If in practice preventive restructuring would work to a sufficient extent, it is possible to prevent the bankruptcy of individual companies in this way. For the entrepreneur, it also means avoiding the negative aspects of possibly successful restructuring (minimal satisfaction of creditors and the related impossibility of profit distribution) or bankruptcy (disqualification and potential liability for damages).

As a potential disadvantage, we consider the fact that even if the entrepreneur is granted temporary protection, it should normally last for 3 months with the potential to extend it by another 3 months. Doubts arise as to whether the duration of such temporary protection is sufficient. Another questionable fact is the amount of the advisor's remuneration in the case of preventive restructuring, which appears to be potentially as high as in the case of classical restructuring. Since it is supposed to be a preventive measure preventing the potential occurrence of bankruptcy, in our opinion, such a reward is a relatively serious and high expense and will therefore not be used by small and medium-sized enterprises, for which such a reward would represent a high expense and probably an unnecessary expense. From a legal point of view, in relation to preventive restructuring, the premise is that the

entrepreneur should consider preventive restructuring. The way in which the entrepreneur has to demonstrate that he has considered preventive restructuring is not specified. The legislation also operates with the so-called tests of imminent bankruptcy, tests of the best interest of creditors, tests of the rules of relative priority and tests of viability, the practical applicability of which will only be shown by time.

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## RECAST OF SLOVAK COMPANY LAW - FEW REMARKS ON PLANNED ELECTRONIZATION OF EXERCISE OF SHAREHOLDERS' RIGHTS

Filip Petrek – Matej Smalik

Comenius University in Bratislava, Faculty of law

Šafárikovo námestie 6

Bratislava, 810 00, Slovenská republika

filip.petrek@flaw.uniba.sk – matej.smalik@uniba.sk

**Abstract:** Slovak law is currently in a process of a preparation of a new Civil Code and new Act on Companies. This complex recast process shall bring a whole new regulatory framework of company law and civil law. While the preparatory committee subsequently publishes partial proposals, we take a look at one issue in particular: exercise of shareholders' rights in companies via electronic and digital means. Recent global events associated to the COVID-19 pandemic have resulted in dynamic changes in this respect practically all over the world, Slovakia not being an exception. Slovak law had to swiftly adopt solutions which would enable the entrepreneurs to adopt respective resolutions also remotely. In this paper, we analyze the respective experiences acquired thereof and try to apply them into the future. As indicated by the legislative intent of the recast of company law, published in 2021, several novelties and innovations can be expected in this area (e.g. decision-making by shareholders per rollam in private joint-stock companies). We take a closer look at them and analyze the several questions related to the electronic and remote general meetings of companies.

**Keywords:** corporation, business, company, shareholder, general meeting, digitalization, electronization

### 1. Introduction

In the Slovak Republic, the process of recast of private law has been going on for quite a long time. Without the ambition to recapitulate its long-term course or project its future more closely, we make a reference to the legislative intent of the recast of the company law, published in 2021 and approved by the government of the Slovak Republic in the same year. [1] It provides for the adoption of a new act on commercial companies and cooperatives. As the legislative material itself indicates, in the field of corporate law, the preparation of new legislation is based on the existence of several basic driving forces which should affect the prepared legal act and be taken into account in it:

- 1) Legislative reforms of selected states of continental Europe as an inspirational source and competition in the regulatory competition;
- 2) Europeanization of company law; and
- 3) Digitization and electronicization of processes in company law. [2]

It is the third mentioned area that significantly determines and is related, among other things, to legal regulation, selected partial aspects of which we will further discuss in this article.

The recast of company law represents an ideal moment in time for conceptual reflections on the future of the regulation of this issue. The experience with the global COVID-19 pandemic in recent years (2020-2022) has affected practically all areas of social life and also the areas of law that regulate them; corporate law and the internal life of business companies is no exception in this regard. The area of digitization and electronicization of processes in the law of commercial companies is broad, which is recognized even by the proposer of the legislative

intent when several sub-areas to be reflected in the new act are mentioned. One of them is the remote exercise of the shareholders' rights, which we will discuss further.

### 2. General remarks

At this point, we first take the liberty of sketching a few notes, or starting points which, in our opinion, are largely related to the topic of electronicization and digitization of corporate law and should be considered and taken into account when adopting new legal regulation of decision-making processes within commercial companies.

First of all, regardless of recent events in the form of the COVID-19 pandemic and the related reactions of legislators to it, we can observe the gradual colonization of a wide social space by digital technologies for several decades. The aforementioned development is increasingly accelerating, while the pace of these changes has only increased as a result of the (necessary) norm-setting response to the pandemic. One could speak of an overall acceleration of the "pulse of time", when we are looking at an increased demand for mechanisms enabling quick action and flexible decision-making. We can adequately apply this general statement to the life of business companies as well.

However, several questions are connected with the above. In a certain sense of the word, one can consider the creation of a certain digital divide that can be created between different groups of the population (and also entrepreneurs): the dividing line between them is probably broken on several factors, but age is undoubtedly a non-negligible aspect (differences between individual generations in use of technologies), as well as socioeconomic status (which determines accessibility to technologies). Therefore, we consider it legitimate, or it is

desirable, even when adopting specific solutions in the field of company law, to think carefully about what should be mandatory and what should be voluntary in terms of the use of electronic means and distance mechanisms, or representing an optional alternative to attendance mechanisms, or paper document. We cannot avoid the impression that the debates often involve only uncritical highlighting of the positives that are connected with the innovative mechanisms in question. We do not question them even a hint, but we are asked to add that reasonable and fair corporate law must also currently think about people and entrepreneurs, for whom various barriers make it difficult to access the relevant digital and electronic solutions applied in the legal life of business companies (which in our opinion may not threaten its modernity in any way).

Of course, the paralysis of business life that occurred in 2020-2022 as a result of the COVID-19 pandemic is a special experience, knowledge from which should be taken into account in the future. At certain specific points in time and periods, we witnessed the introduction of large-scale restrictions on movement, which had the effect of making it difficult to exercise rights and obligations in business companies. The bodies of commercial companies could not meet face-to-face, hold meetings and make decisions so flexibly. Various solutions were adopted in different jurisdictions to mitigate the impact of this situation, but the regulatory approaches and solutions mainly consisted in a certain relaxation of obligations (e.g. extension of various substantive and procedural law deadlines), but also in particular in the introduction of various alternative mechanisms, such as the rules for distance and hybrid meetings of bodies, expansion of per rollam decision-making, etc. In the conditions of the Slovak Republic, such a solution was mainly Act No. 62/2020 Coll. on some extraordinary measures in connection with the spread of the dangerous contagious human disease COVID-19 and in the judiciary and which amend some laws.

Pursuant to Section 5(1) of the act in question (as adopted), *"Collective bodies of legal entities established under the regulations of civil law or commercial law may, in times of emergency or emergency, use postal voting or allow their members to participate in the meeting of such a body by electronic means, even if it does not appear from their internal regulations or statutes. The provisions of Sections 190a to 190d of the Commercial Code shall be applied accordingly"*.

At the same time, according to its Section 5(2), *"If the decision-making conditions according to paragraph 1 do not result from the law, internal regulations or statutes, they will be determined by the statutory body acting with due care in the case of the highest body of a legal entity, and in the case of another body by this body. These conditions must be communicated to the members of the body well in advance of making a decision"*.

Thus, the Slovak legislator decided to enable the bodies of legal entities (and also companies) during certain specific legal states (state of emergency and state of emergency) to implement correspondence voting and participate in meetings by electronic means (e.g. video conference), even without this was subject to regulation in an internal corporate document. The basis, which should have been appropriately applied, was the regulation within Sections 190a to 190d of the Commercial Code, which apply to a public joint-stock company. However, as we explain further in the text, it is a really rigid regulation that takes into account the specific nature of a public joint-stock company, and on the contrary, it appears to be disproportionately strict for closed trading companies. For this reason, even later, the reference to the appropriate application of these rules was dropped from the law in question.

Last but not least, when designing the rules for the exercise of shareholders' rights, it is necessary to take into account the existing structure of business companies within the Slovak Republic - i.e. j. very limited occurrence of public joint-stock companies, as well as dispersed shareholder structures and, conversely, the fundamental dominance of the so-called one-person companies (primarily limited liability companies).

### 3. Current regulation and what should the future bring

#### 3.1. Current situation

The view of the current state of possibilities for the remote exercise of shareholders' rights at general meetings is as follows in terms of the applicable law and the current version of the Commercial Code:

- in the case of a limited liability company, the provision of Section 126 of the Commercial Code applies exclusively to the possibility of attending the general meeting in person;
- the same is true in the case of a private joint-stock company (see Section 184 of the Commercial Code);
- in the case of a public joint-stock company, the possibility of correspondence voting and participation in meetings by electronic means is subject to regulation within Sections 190a to 190d of the Commercial Code (which was also used by the legislator in support of the introduction of a temporary measure under Act No. 62/2020 Coll., responding to the situation related to the coronavirus). These rules are relatively strict and rigid, taking into account the basic characteristics of a public joint-stock company. Correspondence voting is carried out by means of a ballot, which must have an officially certified signature. With regard to the shareholder's participation in the general meeting electronically, i.e. in real time, the potential exercise of the shareholder's voting right must be signed with a qualified electronic signature, the qualified certificate of which must meet the conditions required in dealing with public

authorities, and be provided with a qualified electronic time stamp. [3]

- Regarding the possibility of *per rollam* voting, this is only allowed within a limited liability company (Section 130 of the Commercial Code) and within the aforementioned regulation of a public joint-stock company.

Of course, we must also mention the long-known problem, consisting in the very brief scope of the law of legal entities within the framework of general private law. The general legal regulation of legal entities within the Civil Code is very strict and does not consider the whole range of legal issues that are connected with the legal life of legal entities. The legal regulation of commercial companies (as a special type of legal entity) is currently more elaborately regulated in many issues, and the analyzed issue is no exception. [4]

### 3.2. Aspects to be considered (in relationship to future regulation)

Regardless of whether or not the business sphere will be confronted with a comparable situation in the next period, as in 2020-2022 (in terms of movement restrictions or various other related regulatory restrictions), we believe that the demand for implementation of distance meetings. Experience from the period in question has undoubtedly shown that this way of conducting meetings can often be more effective in specific situations in terms of speed, costs, etc. So, in our opinion, it is obvious and obvious that a certain reasonable regulation of the possibility of their actions should be preserved in the future - and to the widest possible extent. In this context, several basic questions arise:

*(a) where should the relevant legislation be contained?*

It is questionable whether there are sufficient differences in commercial companies compared to other types of legal entities that would justify special treatment in the future law on commercial companies. If we were to answer this question in the negative, it would be logical for the regulation in question to be included in the new Civil Code. In this regard, the legislative intent itself states that the subject of the adjustment within the expected law on business companies should also be *"the legal regulation relating to the company's bodies will generally adjust the rules of decision-making by the collective bodies of the company, including decision-making per rollam and remote decision-making (decision-making within the business management), acting on behalf of a commercial company, the manner of acting of a collective body, will develop the rules of invalidity and nullity of the resolutions of the general meeting, including the procedural rules of their application, which will be lex specialis to the general legal regulation in the new Civil Code"*. It would be possible to conclude from the above passage that the subject of *lex specialis* regulation in the Companies Act should primarily be specific rules of business management,

i.e. j. management of the business company by the statutory bodies. However, as far as the exercise of shareholders' rights at the general meeting is concerned, we are rather inclined to the opinion that we do not find certain specific differences that should result in the existence of a special regulation in the new law on commercial companies and cooperatives that would modify the general meeting regime of the highest collective body of a legal entity against the Civil Code. Other legal entities, especially associations of persons, also have a comparable type of body, while its essence is the adoption of decisions based on the exercise of voting rights. The scope and essence of these processes is therefore very similar for a wide range of legal entities, which leads us to the conclusion that as much of the relevant standards as possible should be contained in the new Civil Code.

*(b) which aspects of the implementation of the rights of shareholders should be insisted upon and which should be left in the hands of internal corporate regulation?*

In the case of considering what should be a certain minimum standard that the corporate law will require in the remote session of the general assembly - regardless of the specific technical means that will be used in such a situation, we primarily identify the following:

- sufficient verification of the shareholder's identity, or his proxy;
- such technical conditions that ensure and enable that all participating persons have the opportunity to hear each other during communication, or to express;
- technical conditions that enable voting in real time;
- when taking certain more serious decisions, it may be appropriate to require a certain formalization of the output.

The spectrum of technological platforms that can be used for the purpose of using the rights of a shareholder is really wide nowadays. One can imagine video conferences, e-mails, chat applications or other special programs. However, if we once talk about remote proceedings of the General Assembly session, it seems necessary for us to discuss and make decisions in real time, with the use of speech communication (this is also the basis of our view on the minimum requirements specified above). Text communication has rather common interfaces with correspondence or *per rollam* voting. The question remains, of course, to what extent the risk of abuse of these mechanisms by third parties increases with remote meetings of authorities. While there is naturally a higher degree of control in face-to-face meetings (also in terms of the presentation of shareholders, etc.), in the online space it is necessary to deal more closely with this risk in the future. Undoubtedly, there are relevant solutions that can ensure that only those persons who have the right to participate in the meeting of the body (general assembly) get to it - we say e.g. about security in the form of access codes, special accounts and the like. However, it seems

reasonable to us that the level of required rules in this regard should be left to internal corporate documents and that the legislator should not "tie" the hands of entrepreneurs too much.

In the end, a large part of business companies in Slovakia has a corporate structure consisting of people who know each other, and therefore the dimension of this problem will not be wide-ranging. Nevertheless, it is necessary to think about it more closely. Undoubtedly, the law of personal data protection also comes into play in this direction, which establishes various mandatory requirements for business companies as processors. It seems to us that it can be useful to regulate a whole range of other issues in the corporate document, the closer specification of which can be helpful. We say e.g. on the method of convening a remote meeting (invitation), conducting the meeting, voting, writing minutes and sending them out (taking into account specific technologies), more detailed rules responding to a possible failure of technology (e.g. a shareholder loses internet connection at a specific time, etc.).

#### *(c) voluntariness*

In our opinion, it is clear that the meeting of the general assembly in remote or hybrid form should be an option, not an obligation. We can imagine a discussion about how this option should be regulated within the dispositive standards of the corporate, or private law. A look at Czech legislation can be an inspiration. Pursuant to Section 158(2) of the Czech Civil Code, "*Foundation legal proceedings may allow the body to make decisions outside the meeting in written form or with the use of technical means*".

It is therefore based on the rule that if a legal entity is interested in the possibility of such a meeting, it must be explicitly stated in the founding (corporate) document. However, the opposite approach is also conceivable, which would already implicitly allow such a procedure (and the founding document could, on the contrary, prohibit such a variant).

### 3.3. Recast proposal

Following the comments formulated above, we allow ourselves to continue with the presentation of the relevant proposal, which the recodification commission puts forward in this regard (hereinafter referred to as the "**Proposal**").

Section 14 of the Proposal reads:

*"(1) The body of a legal entity made up of several persons (collective body) decides by resolution.*

*[...]*

*(3) The collective body may adopt resolutions outside of its session.*

*[...]*

*(5) The collective body may adopt the rules of procedure or other internal regulation, which will regulate the procedure for adopting resolutions and the activities of the collective body".*

The relevant rationale also emphasizes that the Proposal is aimed at approving remote and hybrid meetings of collective bodies of legal entities. We quote: "*it does not have to be a physical presence at the meeting, but it is also possible to participate by means of remote communication. The forms of participation can be different - some of the participants can participate in person, another part remotely*".

Furthermore, it is stated that "*the possibility is also introduced for each body to adopt its own internal regulations, the rules that will govern the processes of its decision-making. The provision of paragraph 5 is formulated explicitly, in order to highlight that such rules can be adopted by the body itself and do not have to be part of the founding act or statutes. These rules can be adopted by the body only within the possibilities and limits imposed by the law, the act of incorporation or the articles of association*".

We can therefore speak of a relatively high level of flexibility when the possibility of self-regulation by individual collective bodies is assumed. However, the limits can be enshrined both by law and by internal corporate regulations.

## 4. Conclusion

Our intention was to provide several suggestions on the subject of the electronic exercise of shareholders' rights and the realization of general assembly sessions, in the context of the ongoing recast of private and corporate law, and thus contribute to the ongoing discussion.

In short, we can summarize our basic theses as follows:

- it is appropriate to enable a more flexible exercise of the rights of shareholders remotely/hybridly compared to today (while maintaining certain basic mandatory minimum requirements);
- it is appropriate to perceive these methods as an optional alternative and not limit the possibility of face-to-face meetings in any way;
- the regime according to Sections 190a - 190d of the Commercial Code, designed for public joint-stock companies is too rigid and strict to be taken in the future as a general basis in this direction (as the legislator did during the pandemic in the framework of Act No. 62 /2020 Z. z.);
- conceptually, the regulation of these issues belongs rather to the new Civil Code, as these arise with different types of legal entities, not only commercial companies; - the possibility of taking decisions per rollam could also be introduced in relation to joint-stock companies (not only in relation to s.r.o., as is the

case today under Section 130 of the Commercial Code).

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## PROTECTION OF THE SELF-EMPLOYED TO THE EXTENT OF THE RIGHT TO REST IN THE LIGHT OF INTERNATIONAL, EU AND POLISH STANDARDS

Tomasz Duraj

University of Lodz, Faculty of Law and Administration

ul. Kopcynskiego 8/12, 90-232 Lodz, Poland

+48 42 6356371

t.duraj@wp.pl

**Abstract:** *The main objective of the foregoing study is to analyse the legal protection of the self-employed to the extent of the right to rest in the light of international, EU and Polish standards. The right to rest is one of the fundamental rights that should be enjoyed by every person performing gainful work, including the self-employed. On the one hand, it is important for people performing work duties because it contributes to increasing health and safety in the working environment, as well as allows for rest and proper regeneration of their strength. On the other hand, the right to rest strengthens the efficiency and effectiveness of work, which is important from the point of view of the interests of the contracting entity. While under international law the right to rest is guaranteed to every person providing work regardless of the legal basis of gainful activity, in Polish law this privilege is granted primarily to persons employed on the basis of an employment relationship, which raises justified doubts and controversies. The foregoing study was prepared as part of a project financed by the National Science Centre in Poland pursuant to the decision number DEC-2018/29/B/HS5/02534 (the project's registration number is: 2018/29/B/HS5/02534).*

**Keywords:** *self-employment, sole proprietorship, right to rest, protection of life and health, atypical forms of employment.*

### 1. Introduction

For many years, both in Europe and in Poland, we have been observing more and more clearly the phenomenon of the extensive spread of self-employment as an unusual form of gainful activity. This form is beginning to displace the classic employment relationship due to the possibility of significantly reducing employment costs (there is a transfer of public law burdens and risks related to the work performed, especially social risk) and conducting a rational employment policy (the entity commissioning work can give up the services of the self-employed in a relatively easy way). According to the report of GUS [Statistics Poland] on the first quarter of 2020, the number of self-employed people in Poland reached over 1.33 million. At the same time, OECD research conducted in 2019 showed that around 16% of working people in EU countries were self-employed. The spread of self-employment, under which people who engage in gainful activity very often operate in conditions similar to those of employees, necessitated the need to cover these contractors with protection, which until recently was reserved exclusively for those having an employee status. Therefore, both in the Polish legislation and in the regulations of many European countries, we are observing a tendency to extend some employee rights to self-employed people [1]. This trend is to a large extent a consequence of the adaptation of national legal orders to standards resulting from the norms of international and EU law, under which the legislator, when introducing protective regulations, covers all working people, using the term "pracownik" in a broad sense ("workers" or "travailleurs"). In addition, in Poland it is also associated with the need to adapt labour legislation to constitutional requirements, which broadly define protective guarantees [2]. *De lege lata* under Polish law, the self-employed already benefit from legal protection in the field of life and health, non-discrimination and equal

treatment in employment; guaranteed minimum wage and protection of wages for work; motherhood and parenthood; and the right to associate in trade unions, which consequently gives them broad collective rights.

The following paper provides an analysis of the legal protection of the self-employed in terms of the right to rest, made from a broad perspective, including both the standards of international and EU law and Polish law. When speaking of the right to rest in the broad sense, one should mean not only the right to a paid annual leave and days free from work, but also restrictions on maximum working time and the guarantee of daily and weekly rest [3]. However, while on the basis of international regulations the right to rest is guaranteed to every person performing work regardless of the legal basis of the gainful activity, in Polish law this privilege is granted primarily to those employed under an employment relationship, which raises reasonable doubts and controversies. Analysing the title issue, for the purposes of the study, I assume that the self-employed are natural persons who personally, under their own responsibility and risk, provide services as entrepreneurs for one or several (many) contracting entities in B2B conditions, without the possibility of hiring employees or using someone else's work on the basis of civil law contracts [4].

### 2. Methodology

Due to the multifaceted nature of the analysed issues, the author uses several research methods in the following article so as not be limited to only one of them. To a large extent, the comparative legal method will be used, especially when it comes to comparing the international and EU normative order in the area of the right to rest with the Polish regulation. The study will also use the dogmatic-legal and axiological method. The author's

multifaceted approach to the analysed legal issue, the penetration and complementarity of the above-mentioned methods in the study of the issue of self-employment, will allow for a thorough and multithreaded analysis of the title research issue.

### 3. The right to rest in the light of international standards

The broad approach to the right to rest, both in terms of subject and object matter, can be seen very well in the acts of the United Nations. At the forefront here is the Universal Declaration of Human Rights, adopted in Paris on 10 December 1948. Article 24 of this act guarantees everyone, and therefore also the self-employed persons, the right to leave and rest, including a reasonable limitation of working hours and periodic paid leave [5]. Also, the International Covenants on Economic, Social and Cultural Rights of 19 December 1966 ensure that all working people, regardless of the legal form their work is provided, shall be provided with the safe and hygienic working conditions and adequate rest, time off and reasonable working time limitations, periodic paid holidays and payment for public holidays (Article 7(d)).

Also on the basis of the acts of the International Labour Organization, the right to rest is very widely drawn. It is of a universal nature and should be granted to every person engaged in gainful activity, regardless of the legal basis for the performance of work. This is confirmed both by sectoral conventions concerning specific categories of professions whose specificity requires the right to rest (e.g. persons operating in road transport – ILO Convention No 153 of 27 June 1979 concerning working time and rest in road transport; medical staff – ILO Convention No 149 of 1 June 1977 concerning employment and working and living conditions for nursing staff; persons working in mines – ILO Convention No 46 of 21 June 1935 concerning limitations on working time in coal mines; seafarers – ILO Convention No 146 of 29 October 1976 concerning paid annual leave for seafarers) and ILO General Convention No 132 of 3 June 1970 concerning paid annual leave [6]. This act, which covers all workers, including the self-employed (see Article 2), guarantees them the right to paid annual leave of a certain minimum amount. This dimension may in no case be less than three working weeks for one year of work [7]. Under Article 12 of that act, it is prohibited to waive the right to minimum paid annual leave or to replace such leave by payment of some compensation.

Guarantees for the self-employed as regards the right to rest also result from the European Social Charter adopted by the Council of Europe on 18 October 1961. Article 2 regulates the right of all people performing work (in the original wording: 'workers', 'travailleurs') to fair working conditions, obliging States to: determine a reasonable daily and weekly working time and to shorten it in the event of productivity gains; provide paid holidays; at least two weeks' paid annual leave and a week's rest.

### 4. The right to rest in the light of EU standards

Also at the level of European Union law, which focuses primarily on the protection of employees providing their services on the basis of an employment relationship, you can find acts covering the right to rest of other contractors, including self-employed people. Article 31(2) of the Charter of Fundamental Rights of the EU (OJ C. 2007 No 303, p. 1, as amended) comes to the fore here, according to which every person providing work (in its original wording: "workers", "travailleurs") has the right to a limitation of the maximum working time, to daily and weekly rest periods and to paid annual leave. The right to rest on the basis of this act is understood very broadly, because it is interpreted from the perspective of dignity and protection of human life and health.

The protection of the self-employed with regard to the right to rest also results from the provisions of the European Pillar of Social Rights of 17 November 2017 (OJ C. 2017 No. 428, p. 10). Rule No 9 of that act relates to work-life balance. It guarantees parents and persons acting as guardians, regardless of the legal basis of their work, the right to adequate leave and flexible working arrangements.

It is also worth noting that Directive 2003/88/EC of the European Parliament and of the Council of 4 November 2003 concerning certain aspects of the organisation of working time (OJ L. L. of 2003, No. 299, p. 9), which is important from the point of view of the analysed issues. This act guarantees the right to rest primarily to employees employed on the basis of an employment relationship. This protection applies to areas such as: breaks from work during the working day; daily and weekly rest breaks and paid annual leave. It should be noted, however, that the purpose of the adoption of this Directive (as is apparent from its Preamble) was to guarantee to all persons performing work the protection of life and health, which is universal and includes every person, and therefore also the self-employed.

### 5. The right to rest in the light of the standards of Polish law – *de lege lata* remarks

Under Polish law, people who are self-employed are not expressly guaranteed the right to rest, which may raise significant doubts from the point of view of the international and EU standards presented above. Such a right is not granted to them *de lege lata* by the Polish Constitution (Journal of Laws No. 78, item 483, as amended).

On the one hand, the self-employed enjoy protection in the field of life and health in Poland [8]. According to Article 24 of the Polish Constitution, all work, and therefore also performed in conditions of self-employment, is under the protection of the Republic of Poland, and the state supervises the conditions of work. Article 66(1) of this act indicates that everyone has the right to safe and hygienic working conditions, and the manner of exercising this right and the obligations of the employing entity in this respect are specified in the Act, i.e. in Polish conditions it is the

Labour Code (Act of 26 June 1974, consolidated text Journal of Laws of 2022, item 1510, as amended). Pursuant to Article 304 § 1 and 3 of the Labour Code, protection in the field of safe and hygienic working conditions applies to natural persons conducting self-employed economic activity, whose work is organized by the contracting entity, in particular when the work (services) is provided in a workplace or other place designated by it [9]. On the other hand, the Polish legislature did not guarantee the right to rest for the self-employed, either in terms of paid annual leave and non-working days, or in terms of maximum standards of working time and the right to daily and weekly rest. Such a legal status is a consequence of the provisions of the Polish Constitution, which limits the personal scope of the right to rest only to persons employed on the basis of an employment relationship [10]. This follows expressly from Article 66(2) of that act, which provides that only the employee is entitled to public holidays and paid annual leave specified by law, and that his maximum working time standards shall be determined by statute. The basic argument for such an interpretation of the cited provision is the literal interpretation of Article 66 of the Polish Constitution. While in paragraph 1 the legislator guarantees 'everyone' the right to safe and hygienic working conditions, in paragraph 2 the phrase 'employee' was used to define the scope of the subjective right to rest. The principle of a rational legislator therefore determines that he wanted to give the two rights regulated in Article 66 of the Polish Constitution a different personal scope. I believe that there is no *de lege lata* legal basis for extending the constitutional right to rest to all performers of gainful employment regardless of the basis of their gainful activity [11]. I am not convinced by those representatives of the doctrine of labour law who forcefully refer to the questionable interpretation of the concept of a constitutional employee, which includes not only employees employed on the basis of an employment relationship, but also persons who personally perform paid work on a different legal basis. This concept in relation to the freedom of association in trade unions (Article 59(1) of the Polish Constitution) was also adopted by the Constitutional Tribunal. In its judgment of 2 June 2015 (K 1/13, OTK-A 2015, No. 6, item 80, Journal of Laws of 2015, item 791), the Tribunal stated that the status of an employee as a constitutional entity under coalition law should be assessed through the prism of three basic criteria: performing paid work; having a legal relationship (regardless of its type) with the entity for which the work is provided; having professional interest in the performance of work which may be protected in groups. However, this judgment is not directly applicable to the constitutional right to rest, because Article 59(1) of the Polish Constitution guarantees freedom of association in trade unions for everyone – not only employees within the meaning of the Labour Code, as in the case of the right to rest. I fully agree with A. M. Świątkowski, who stated that there is no need to create a separate definition of this concept on the basis of the Polish Constitution, because in

the system of Polish law there can be only one legal definition of the term "employee" [12].

The consequence of the legal solutions adopted in the Polish Constitution is that the ordinary legislator – as a rule – does not provide *de lege lata* for self-employed persons any protective guarantees, neither in terms of paid annual leave and non-working days, nor in terms of maximum standards of working time and daily and weekly rest. An exception may be regulations aimed at protecting public safety. This is the case, for example, with drivers who, regardless of the legal form of work provision (including under conditions of self-employment), enjoy protection with regard to the right to rest. This protection is guaranteed to drivers who are personally gainfully employed as entrepreneurs by the Act of April 16, 2004 on the working time of drivers (i.e. Journal of Laws of 2022, item 1473). The act introduces, among other things, a definition of drivers' working time (Article 26b), a maximum weekly working time (Article 26c) and an obligation to keep records of working time (Article 27d). This means that, *de lege lata*, self-employed persons can guarantee themselves the right to rest only in the provisions of a civil law contract, if they have an appropriate negotiating position in relation to the entity commissioning them to work, with the consent of both parties to the legal relationship. The principle of freedom of contract applies here, within the framework of which the parties may arrange the legal relationship at their discretion, provided that its content or purpose does not conflict with the nature of the relationship, the law or the principles of social coexistence (Article 353<sup>1</sup> of the Civil Code).

#### **6. The right to rest in the light of the standards of Polish law – *de lege ferenda* remarks**

Although the right to rest is one of the fundamental universal rights that should be granted to every person performing gainful employment, and the international legislator provides for its wide personal scope, in Poland this right is not legally guaranteed to self-employed persons. This may raise reasonable doubts, especially due to the fact that the right to rest is part of the broader protection of health and safety in the workplace, and a number of sole traders work in conditions of economic dependence that make their situation similar to that of employees. Therefore, I believe that, to a limited extent, the Polish legislator should introduce the right to rest, but only for those self-employed who, when performing work personally, are economically dependent on a specific contracting entity. It is with him that they should be guaranteed the right to a paid rest break. This type of right is provided for in the draft Labor Code of 2018, which never entered into force. Under Article 181(1) of that draft, an economically dependent self-employed person must be entitled to a break of not less than 10 working days after each period of provision of services for 182 days. The use of the break would take place within a further period of 360 days and within the period agreed by the parties to the contract for the provision of services or within the period



indicated by the economically dependent self-employed – with at least 30 days' notice. This document also guaranteed the economically dependent self-employed the right to remuneration for the time off work. It would be due in the amount of 1/10 of the remuneration due for the period of work to be paid after the end of each calendar quarter (§ 3). In addition, if taking time off was impossible due to the termination of the service contract or the loss of the status of economically dependent self-employed, such a person would be entitled to a one-off payment of remuneration (§ 4). This would be a form of equivalent for an unused rest break. On the other hand, the right to a paid rest break would not be granted to those self-employed who operate in conditions of lack of economic dependence on the ordering entity (e.g. they render their services for many different contractors). As a rule, they have such a strong negotiating position that they are able to independently negotiate the most important provisions of the contract, including those regarding the right to a paid break for rest. This kind of solution is, in my opinion, acceptable. Granting the right to a paid rest break to a limited extent to the economically dependent self-employed does not unduly interfere with the constitutional principle of economic freedom and the civil law principle of freedom of contract (Article 353<sup>1</sup> of the Civil Code).

However, I am not in favour of the legislator further spreading the right to rest to the self-employed. In particular, I am not convinced by those representatives of the doctrine of labor law who postulate that these people should be covered by regulations introducing maximum standards of working time and daily and weekly rest. Such interference would be completely unjustified. This would definitively destroy the flexibility of this form of providing paid work.

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## INDUSTRY 4.0 STRATEGY AND IMPLEMENTATION: PRACTICES FROM GERMANY

Coi Tran

### Technical University of Košice, Faculty of Economics

Nemcovej 32,  
04001 Kosice, Slovak Republic  
+421-908-730-901  
coi.tran@fpt.sk

**Abstract:** *With the current breakthrough technologies, the applications of AI, IoT, robotics have been accelerating and transforming the industries to a new level within a new period of the Fourth Industrial Revolution. Recently, Industry 4.0 has been playing a key role to shape the digital transformation around the world. Germany as a leading industrialised nation adopted the national Industry 4.0 very early to maintain its leadership in manufacturing industry. The objective of this paper is to provide an overview of Industry 4.0 and its current landscape. In addition, the paper discusses the case study from Germany in order to see the best practices, the lessons learned, and the current challenges that the country has faced after a decade of Industry 4.0 implementation.*

**Keywords:** *Industry 4.0, artificial intelligence, robotics, manufacturing industry*

### 1. Introduction

Over the past several decades, new and innovative technologies have been advancing significantly and shaping our economies and societies dramatically. Breakthrough technologies such as Artificial intelligence (AI), robotics and the Internet of Things (IoT) are playing important roles in our daily activities, in important fields of the economy such as manufacturing, healthcare, education, energy, transportation and logistics, legal and public services. The applications from those technologies are bringing new values and new economic benefits by improving efficiency and productivity, reducing significantly human intervention in many industries.

In order to capture the advantages from those innovative technologies to maintain the leadership of the manufacturing industry, the German government built up a national strategic initiative Industry 4.0 (or Industrie 4.0 in German) funded by the Ministry of Education and Research (BMBF) and the Ministry for Economic Affairs and Energy (BMWi). The concept of Industry 4.0 was presented to the public the first time at the Hannover Fair in 2011 [1, 2]. This approach aimed to boost digital transformation and interconnection of products, to increase the efficiency of processes, to add more value chains, and to explore new business models.

Around the world, national initiatives were also launched by industrialised countries to keep their industry competitive. From 2011, United States has implemented “Advanced Manufacturing Partnership 2.0” to create high quality jobs in the manufacturing industry and to enhance US global competitiveness. In 2012, Italy started “Intelligent factories clusters”. France initiated the program called “Industry of the future” in 2025 to boost the support for specific industrial products [3]. Other countries such as Japan, South Korea and China have also started their own national program rollout.

A decade after its first introduction, Industry 4.0 has changed from a conceptual framework to a global brand name of a paradigm shift for the digital transformation of the manufacturing industry.

The purpose of this paper is to provide an overview of Industry 4.0 and its current landscape after a decade of implementation. The paper discusses the best practices and lessons learned from Germany in implementing the Industry 4.0 strategy.

### 2. Literature review and major concepts

This section introduces theoretical framework of Industry 4.0 and some key technical concepts related to it.

Over the past few hundred years, three industrial revolutions have transformed the industries towards modernisation. In the mid-eighteenth century, the first form of water and steam power from the first industrial revolution was gradually shifted to mass production when the second industrial revolution approached in the early twentieth century. At the beginning of 1970s, the third industrial revolution followed with the new powerful strengths of digital computing, automation using the advances of information technology applied in mass productions. During the first three industrial revolutions, technological innovation has been a key driver to drive the economic growth.

Recently, breakthrough technologies have been accelerating and transforming businesses to a new level in a new digital era. These profound changes have brought disruptive impacts in a new industrial revolution called the Fourth Industrial Revolution.

The Fourth Industrial Revolution is characterized with the introduction of the Internet of Things, smart machines such as Cyber-Physical Systems (CPS). The smart factories have started production with the support of smart technologies such as robotics and automation, Artificial

Intelligence (AI), augmented reality. Moreover, smart factories have implemented smart sensors to connect to the network to capture and store data into the storage in either cloud computing or edge computing infrastructure. Therefore, in order to handle the huge volume of data generated by smart devices, Big Data analytics and AI are needed to process and extract the valuable output from the systems.

The following part explains the new concepts of new technical components of Industry 4.0 [13].

**The Internet of Things (IoT):** A network of physical objects having a range of smart and connected sensors that gather data, process and exchange it without human intervention.

**Cyber-physical Systems (CPS):** In manufacturing environment, these include smart machines, storage systems and production facilities capable of autonomously exchanging information, triggering actions, and controlling each other independently.

**Artificial Intelligence (AI) and robotics:** Multiple technologies to perform human-like processes such as understanding, learning, thinking and taking actions.

**Additive manufacturing:** Additive manufacturing or 3D printing is any process of creating a physical object through the continual addition of layers of material, in contrast with conventional manufacturing processes. This will revitalise local production and disrupt manufacturing, transportation and logistics industries.

**Virtual and augmented reality (VR/AR):** A rich, multisensorial, three-dimensional, 360-degree computer-simulated environment to allow interaction between virtual objects and real environment. Applications are in education, art and entertainment, museum, virtual shopping, surgeon assistant, manufacturing maintenance.

**Blockchain and distributed ledger technologies:** Blockchain technology creates and exchanges unique digital records without requiring a centralized and trusted party. Applications are from financial transactions to cryptocurrencies, digital identities or physical object tracking systems.

Industry 4.0 has key expected benefits as below [1]:

1. Individualised customer requirements
2. Flexibility in manufacturing
3. Optimised decision-making
4. Resource productivity and efficiency
5. Creating value opportunities through new services

6. Responding to demographic change in the workplace
7. Work-life-balance
8. Help a high-wage economy stay competitive

The current landscape of Industry 4.0 has shown that different countries have different industrial policies. However, they have to aim the same objectives: to increase national competitiveness or to maintain or relocate industrial activities. For example, United States, after significant industrial relocation to China, has set the target to increase value added, and to make better use of assets. Promoting Industry 4.0 helps to relocate of industrial activities and to generate more high-quality jobs in United States [3]. On the other hand, France has a different approach because its manufacturing industry is not very strong due to industrial obsolescence and high labour costs. Therefore, the digitalisation of production system can help France to deal with high labour costs, to create skilled jobs and to reposition its industry. The other industrialised countries such as Japan, UK, Italy have their own strategy with their own priority focus.

### 3. Germany's Industry 4.0 as a case study

This session introduces Germany's Industry 4.0 as an outstanding case study to show how Germany has built up the strategy to keep its global leadership in manufacturing. The paper also discusses the best practices, the lessons learned, and the current challenges that the country has faced after a decade of the Industry 4.0 implementation.

Germany has one of the most competitive manufacturing industries in the world today. In 2018, the share of gross value added of manufacturing sector is 22.7%, one of the highest levels among OECD countries [4]. The figure 1 shows the share of manufacturing industry over the years. Germany is still one of the few countries that have maintained the strong position of their manufacturing industry share over the past 20 years.

Four key sectors that dominate the manufacturing industry are the automotive industry, the machinery and equipment industry, the electrical equipment industry and the chemical industry [5]. According to Germany Trade and Invest (GTAI), Germany's automotive sector is the biggest automotive producer in Europe with the production of more than 3.1 million passenger cars in 2021 [7]. Besides that, Germany's machinery and equipment industry is the world's leading player with the global machinery trade share of almost 16 percent [8]. Those mentioned key sectors are expected to gain significant increase in gross value added from Industry 4.0.

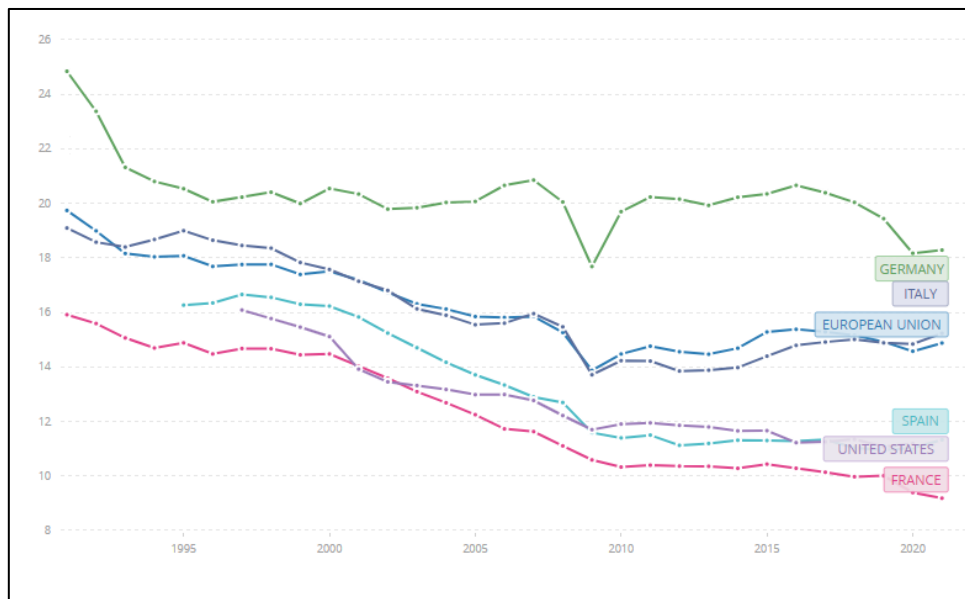


Figure 1: Share of manufacturing industry, value added (% of GDP) through the years  
Source: The World Bank data [6]

The above conditions show that Germany has a very good starting position for Industry 4.0 rollout. The following section discusses the strategy of Industry 4.0, its implementation, best practices, and current challenges.

*A design of dual strategy - becoming a leading market and supplier:* After first introduction of Industry 4.0 as the vision for Germany industry in 201, the Industry 4.0 working group under the coordination of German National Academy for Science and Engineering (Acatech) delivered the outline of strategy and platform for Industry 4.0. After that, the Industry 4.0 Platform was setup as a joint initiative by Germany's digital association (Bitkom), German engineering federation (VDMA), and German Electro and Digital Industry Association (ZVEI), also partnering with ABB, Bosch, Telekom, SAP, Siemens, Volkswagen and other enterprises [9, 10]. The Industry 4.0 Platform has become the mechanism to coordinate activities from different interest groups to implement its strategy.

The design perspective adopted a dual strategy in Industry 4.0: to maintain Germany's global market leadership as a leading supplier of smart manufacturing technologies, and in parallel, to develop new leading markets for CPS technologies and products [1].

*Implementation strategy:* The implementation of Industry 4.0 required complicated coordination between industry, research institutions, policy-makers, and stakeholders. From the beginning, the initiative was from individual members coming from politics, companies and science with loose cooperation. Later, with the strong coordination of the Industry 4.0 Platform, more stakeholders were involved, including enterprise resources, associations, and also trade unions [5].

Today, the Industry 4.0 Platform has five working groups of representatives from business, science, associations, federal ministries and trade unions:

1. Reference Architecture, Standards and Standardisation
2. Research and Innovation
3. Security of Networked Systems
4. Legal Framework Conditions
5. Education and Training

*Achievements and current landscape:* About a decade ago, Germany was facing many challenging issues such as labour cost rising, infrastructure renewal need, and a shortfall of skilled workforce [3]. After nearly 10 years of implementing the Industry 4.0 strategy, Germany has maintained a strong position of its industry sector when the latest gross value added of German industry is 20.2% in 2021, in comparison with a declining trend in other countries [6, 11]. Germany's automotive industry has shown its leadership in R&D with the spending of 34.1 percent of total German industry R&D expenditure of around EUR 71 billion in 2020 [7]. Besides that, the machinery and equipment industry achieved a record turnover of EUR 260 billion in 2021, making the industry the best performing industry in Europe [8]. Even though there were negative impacts from the COVID-19 pandemic, the indications of the industrial sectors have shown the relevance of the Industry 4.0 strategy and the resilience of the German economy.

Nowadays, IoT and CPS applications have been built and deployed in new smart factories as a reality and common practice [12]. The adoption of Industry 4.0 in German industry is not as the same level in different enterprises and in different industry sectors, even though the call for paradigm shift has received significant attention from the whole country [12]. Large-scale companies are more

mature in the Industry 4.0 implementation, while SMEs are still behind due to lack of long-term vision or lack of know-how and investment capital.

*Key barriers and challenges:* As mentioned before, there is a polarisation in implementing the Industry 4.0 strategy between large enterprises and SMEs. Besides that, Industry 4.0 still has a long way to go because the technological trends are still evolving towards more maturity. Those trends include autonomous systems, industrial AI, 5G network, edge computing, and more.

Additionally, challenges are also coming from lack of common standards for machine controllers and information system integration [12]. This issue links to a bigger topic of interoperation in Industry 4.0 where smart factories and platform-based systems have to interact seamlessly. Currently, GAIA-X project under the Commission of European aims to develop a safe and interconnected data infrastructure to ensure European digital sovereignty. The topic of interoperation needs a lot of efforts to be standardised for future application.

#### 4. Conclusions

Three industrial revolutions, over the past few hundred years, have transformed the industries towards modernisation. Technical innovation has been a key driver of economic growth, helping to create jobs, to improve the quality of life, and to increase in wealth and opportunities around the world.

Recently, breakthrough technologies such as AI, IoT, robotics have been accelerating and transforming the industries again to the Fourth Industrial Revolution. Industry 4.0 has been playing a key role to shape the digital transformation around the world.

Germany as a leading industrialized nation adopted the national Industry 4.0 very early to maintain its leadership in manufacturing industry, to be flexible to respond to crisis in international markets, and to keep its know-how and skilled workforce in Germany.

The recent economic indications have shown that Industry 4.0 has been contributing significantly to German economy to maintain its strong position. The Industry 4.0 strategy have received significant attention from different sectors in the economy. Besides results achieved, there are still barriers and challenges ahead. Those problems include interoperation issue, digital sovereignty, polarisation of implementation among enterprises, immaturity of new technological trends. Again, these issues will require a lot of efforts and collaboration from different organisations, policy-makers, institutions, and other stakeholders to continue to work together to find solutions.

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## HISTORICAL AND LEGAL DEVELOPMENT OF THE INSTITUTE OF A LIEN

*Darina Králiková – Dana Šadibolová*

**Faculty of Law of Matej Bel University in Banská Bystrica**

Komenského 20

974 01 Banská Bystrica

+421 915 832 151

kralikova.info@gmail.com – danica.sadibolova@gmail.com

**Abstract:** *The article deals with the historical and legal development of the institute of a lien commencing upon its establishment until its current legal enactment in the Slovak Republic. The article defines the development of a lien at the times of the Roman Empire in the context of its evolution where the legal institutes of a lien such as fiducia, pignus and mortgage are specified in more detail. A lien in the Kingdom of Hungary, a lien at the times of ABGB and the current legal enactment of a lien in the Slovak Republic form a compact view of the historical development of a lien in the context of its legal enactment in the Slovak Republic.*

**Key words:** *lien, historical and legal development of a lien, a lien at the times of the Roman Empire, a lien in the Kingdom of Hungary, fiducia*

### Introduction

Since its early beginnings, the economic life of the human society has been based on mutual cooperation between members of its society. Mutual cooperation and task sharing among its members enables a more effective acquisition and procurement of assets that are necessary for the survival of the whole society. Already at the time of the primitive society, a gradual rise in the level of organisation and cooperation would bring over-production of assets that far exceeded the needs for the survival of the members of the society. Consequently, stock and surpluses as a suitable means to acquire assets of another type would result from mutual exchange. A variety of objects of mutual exchange changed over the course of time. Later, non-tangible assets represented by personal services of members of the society became a subject of a mutual exchange. These social conditions enabled creation of first business relations. In principle, they represent reciprocal interdependent legal relations based on mutual trust. The content of such relations could be defined as a combination of reciprocal and interdependent obligations: „do ut des“, „do ut facias“, „facio ut des“ a „facio ut facias“ („I shall give so as you give“, „I shall give so as you do“, „I shall do so as you give“ or „I shall do so as you should do“) as Roman lawyers later defined the essence of unnamed contracts. In the cases of direct goods exchange, none of the parties would be worried about proper fulfilment of their obligations. In case of a direct real performance, the goods shall be present to inspect their quality and the obvious as well as the offered number. A continuous boom of the economy brought about various business relations resulting in an instant real exchange of goods whereas the agreed performance of the other party took place later. The reasons for such a time interval between the performance were given by local, natural as well as life-related circumstances. For example, the farmer was bound to return the corn he had borrowed after the harvest. The guarantee of fulfilment of the obligation was based upon the trust vested in the person of the debtor. In such cases, the creditor had no other security in his hands

by to force the debtor to fulfil his obligation. Debtor's honour represented by trustworthiness, confronted with the temptation to get material advantages arising out of non-fulfilment of obligations, enabled searching for solutions that would be efficient when securing one's obligations. Traders realized the absence of a proper means of security when negotiating challenging contracts the result of which was not sure or was dependent on unforeseeable natural factors. A traditional trade model based on the instant real exchange of goods offered the solution for securing the obligations payable in the future. In case of any doubts about non-fulfilment of the obligation for the accepted performance, the creditor would request the debtor to provide adequate collateral from his assets. This should mainly include those assets the debtor could immediately handle and submit them to the creditor. At the same time, both parties agreed that the creditor will return to the debtor the collateral providing the debtor has fulfilled his obligations in a proper and timely manner. The long-term practice confirmed that “items provide much more guarantee than the person of the debtor.” (Plus cautionis in re quam in persona – Pomponius, Dig. 50, 17, 25). The item retained as the collateral by the creditor did not only force the debtor to fulfil his obligation, but also it also subsidiarily provided a means of auxiliary performance in case the debtor's failure to perform for any reason whatsoever.

### 1. Development of a lien

The history of the institute of a lien dates back to the times of preclassical, classical and Justinian Roman Law by continuing with the feudal law at the medieval times until the codification of civil law in Germany.

The development of a lien dates back to the times of the Roman Empire which, besides the institute of a lien, saw many other legal institutes forming the basis for the current legal system of not only our country but of many other legal systems of the European Union.

In light of the aforementioned, I consider it important to deal with a lien and its forms since the times of “the Ancient Rome”.

### 1.1 A lien at the times of the Roman Empire

#### *Fiducia*

As far as the evolution is concerned, fiducia has been regarded as the oldest manner of real security of the claim. Its basis lies in transfer of the ownership right to the subject matter of a lien to the creditor under the condition of returning the collateral to the debtor after having fulfilled his obligation against the creditor.

Fiducia lacked an accessory nature of the claim whereas fiducia followed the legal order of the claim. Fiducia represented the creditor’s right to satisfy his claim in case of proper non-performance by selling the collateral, which is also the reason why some authors do not consider fiducia as the real lien. [1]

Converting the collateral into cash may have been set forth in a specific purchase agreement with the contracting parties even agreeing in forfeiting the collateral for the benefit of the creditor, which is currently excluded.

Fiducia, as the older means of security, could bring several pros and cons to the creditor. However, this institute unfairly weakened the debtor’s position in relation to transfer of the ownership to the creditor as well as the limited alternative when requesting return of the collateral from a third party in case the collateral had been transferred thereon.

Fiducia ceased to exist at the end of the classical period and it was replaced with the term Pignus to be applicable in all sources of law by re-codifiers of Justinian, the Emperor.

#### *Pignus*

Two forms of a lien were recognised at Roman times which have gradually developed into the current form of a lien, i.e. Pignus and Mortgage.

Pignus represented the creditor’s right to have collateral whereas the establishment of a lien required the collateral to be submitted to the pledgee or to a third party. [2]

Mortgage was the opposite of the pignus whereas the pledgee was not eligible to retain the collateral and the statutes did not require the collateral to be submitted to the pledgee or to a third party.

It is obvious that the difference between the above institutes mainly lied in handling the collateral in relation to the establishment of a lien.

At those times, the institute of a lien was not a complex institute, it belonged to both material as well as contractual rights. That’s why this institute can be sought in various forms. [3]

It was part of the law of obligation because it reinforced security of the property whereas it was made part of material rights thanks to a creditor’s right comparable with other material rights. Due to its materially based legal attitude, it needs to be referred to as one of material rights to a foreign subject matter. [4]

Pignus was established under the Roman Republic as a manner of securing the obligation when the subject matter securing the obligation was submitted to the creditor without transfer of the ownership right to the matter onto the creditor. This was described as establishment of the lien called Pignus.

The pledgee could be given the same rights and titles as the legitimate owner.

This was a real contract. Fiducia included transfer of the ownership to the creditor, which was not the case of pignus which consisted of real handing-over of the collateral to the creditor for occupancy.

The creditor was bound to take care of the collateral but was not allowed to enjoy it without the owner’s express consent, otherwise he would be charged with committing a civil delict. Further development of the Roman Law made room for the right to take fruits or usufructs of the collateral.

The creditor retained the collateral under his factual power but was not willing to take the subject matter as his own, which means it was a lighter form of occupancy – detention. [5]

In case of pignus, the creditor could not dispose of the collateral as the owner and could not acquire any ownership right by adverse possession, and even if the depositor’s ownership right was maintained after taking over of the collateral, the creditor could satisfy his claim by selling the collateral in case the debtor failed to perform.

In this case the position of both parties is more balanced than in case of fiducia. One collateral could not be connected with more liens. Pignus is a sort of possessory lien to applicable at present.

#### *Mortgage*

Fiducia and pignus had a possessory character and a lien occurred upon the real handing over of the collateral to the creditor’s detention or in case of fiducia, the creditor acquired ownership rights to the collateral.

Classical times of the Roman history saw the emergence of a third form of a lien removing any disadvantages of previous forms of a lien (fiducia and pignus).

Collateral by contract (mortgage) was formed on a consensual basis between the creditor and the depositor without a need of real handing over of the collateral. The

subject matter of this contract (*pactum hypothecae*) were creditor's and debtor's (depositor's) rights in case of any failure to perform. The creditor was eligible to acquire the collateral in detention, then convert it into cash and satisfy any of his claims by selling the collateral.

Even at those times, a lien started to meet various functions, such as:

- a coercive function – forcing the debtor to pay back his debt within its duration;
- a monetary function – converting the collateral into cash after the due date of the creditor's claim;
- a subsidiary function – converting the collateral into cash served as a substitutive source for satisfying the creditor's claim. [6]

The Roman Law categorised a lien according to the manner of its establishment:

- a statutory lien,
- a contractual lien,
- a lien based on an administrative resolution.

The subject matter of a lien was to retain it in case the claim became due. If the debtor failed to perform even after a repetitive appeal, the creditor could turn the item into cash.

In case of a contractual lien, the collateral could be sold without the auction, i.e. *brevi manu*, yet the debtor was always eligible to be paid *hyperocha*, i.e. the surplus obtained when selling the collateral.

At those time, it was possible to arrange a contractual forfeit of the collateral when the creditor could become the owner of the collateral if the debtor had failed to perform in a proper and timely manner. At Roman times, a lien would cease to exist upon cessation of the collateral or of the claim. A specific manner of cessation of a lien was revoking a lien by the pledgee or adverse possession of freedom of the ownership right. In case of adverse possession by freedom of the ownership right, the main prerequisite was good faith about non-existence of the lien and possession of the collateral for the period of ten years and in the absence of a pledgee for the period of twelve years. In the above manner, the depositor, the debtor and their heirs were excluded from adverse possession.

The most significant act from this period was *Corpus Iuris Civilis* governing the issues of establishment of the lien in the edition II to VI, implied behaviour, items exempt from establishment of the lien and mortgages. The above Act also defined the ways of cessation of the mortgage or a stronger legal position of a party to a mortgage.

## 1.2 A lien in the Hungary Kingdom

Times of the Hungary Kingdom saw the application of feudalism with the customary law being the main source of the private law. In this stage, the lien and all related

legislation was enacted on local and municipal levels. The lien in towns was much more developed due to an impact of the German Law and business relations.

Town legal and records formed basis of this legal enactment at that time. The oldest sources included the books of bratislavský, žilinský and štiavnický regions. Development of trade and loan relations laid the grounds for further evolution of a lien. The subject matter mostly consisted of movable as well as immovable assets. Land books also promoted development of first forms of mortgages whereas the pledged real estate would still remain the owner's property.

At the times of the Hungary Kingdom, other forms of securing the obligations emerged, either through a separate or an ancillary agreement.

Separate contracts included:

- a personal guarantee agreement – introduced by *Opus Tripartitum* with the guarantee being provided by an individual person,
- a personal guarantee agreement by assets – further divided into direct and indirect one,
- a guarantee agreement – handing over the collateral to the creditor in exchange for a monetary loan. A loan agreement was the oldest form of the guarantee agreement when the future debtor handed over the collateral to the creditor in exchange for a loan.

This referred to a real agreement resulting in so-called *a vadimonium lien* instituted by a collateral when in case of the debtor's failure to perform, the collateral would forfeit for the benefit of the creditor.

The collateral unconditionally belonged to the creditor since the establishment of a lien as he would also bear the risk of cessation or deterioration of the condition. In case of cessation of a lien, the creditor would not be eligible to request a new subject matter or its improvement or return of a loan. A pledgee, however, would not be obliged to return to the debtor the usufructs arising out of the collateral or its re-evaluation. If the collateral's value was lower than the agreed loan, the creditor would not be eligible to request any completion or improvement of the collateral.

Establishment of the lien could be dated back to the 13<sup>th</sup> century. An accessory lien was the institute ensuring only a certain claim whereas in case of a decrease in the collateral's value, the pledgee would be eligible for its completion. Execution of a lien was a different scenario, when after the sale of the collateral, the creditor was obliged to submit to the debtor the surplus from such sale. At the beginnings of development of the accessory lien, the respective legal enactment of a lien in relation to both movables and immovables was the same.



### *Antichresis*

The influence of the Church and its values had a substantial impact on development of institutes of a lien. The Church prohibited applying interests from loans, which sparked development of the institute of a lien to effectively avoid such a prohibition. Antichresis represented the institute of a lien on real estate which, besides securing the claim (the paid loan) legally enabled taking usufructs from the pledged real estate instead of prohibited interests.

The Antichresis lien was a temporal transfer of the ownership right under reservation of repurchase. [7] This type of a lien was instituted through the agreement, the court enforcement decision or by law. The contractual freedom when establishing a usufruct lien was rather limited. Contracting parties mustn't agreed on such conditions instituting a lien for the period longer than 32 years or that would anyhow prevent repayment of the collateral. By pledging the real estate, the debtor was left with so-called "mere" ownership. Other elements of the ownership right were exercised by the pledgee who had right to retain the property and enjoy usufructs arising therefrom. The creditor could ask for compensation of eligible or necessary costs related to the subject matter, but on the other hand, he was obliged to bear a tax obligation in connection therewith. The lien ceased to exist simultaneously with cessation of the claim, i.e. through its proper and timely repayment. The creditor was obliged to return the real estate and could charge for any costs he had incurred in relation to the collateral. In case of any obstructions from part of the creditor, the debtor could satisfy the debt in an alternative manner, e.g. through the court escrow or initiate proceedings on return of the real estate. The Antichresis lien was cancelled by a Caesarean patent no. 247 with the effective date of 1 May 1853 and was then substituted with a mortgage lien. Its publication was ensured by the entry into regional registry protocol. [8]

The old Hungarian law was a professional law, i.e. a yeoman, a townsman and subjects were governed by various legal orders. Townsmen had a honourable constitution, i.e. a descendible system and heritage. Subjects were under the legal sovereignty of a yeoman who let them enjoy a land for farming, yet he was not its owner. This was referred to as a urban relationship. Townsmen were not under the power of a yeoman, but under the legal sovereignty of a town which was based on privileges and therefore enjoyed a specific right. Professional orders were cancelled in 1948. [9]

Subjects then became owners of farmed lands with the yeomen having been given damages by the state due to cancelled urban allowances. Before the Hungarian legislation was able to modify the Hungarian private law to correspond with the contemporary state of law, battles against Vienna broke out; after suppression of the rebellion, the absolute government of 1852 introduced the Austrian General Civil Code instead of the Hungarian

private law and the respective property rights were governed by the land books directive of 1855 based upon the institute of land books. [10]

### **1.3 A lien at the times of ABGB (Allgemeines bürgerliches Gesetzbuch – the Austrian Civil Code)**

The General Civil Code no. 946/1811, Coll. or ABGB of 1 June 1811 plays a key role in relation to the development of a lien as it contains the detailed legal enactment of a lien with regard to the time period when this Code became effective and therefore, it formed the basis for the current amendment of the Civil Code. The topic of a lien was enacted in three parts of the above Code and it governed establishment, cessation and legal consequences of a lien, a security agreement and all related rights arising out of obligations that were inserted into public books. A lien was duplicately enacted in the General Civil Code, i.e. the Act no. 2/1863 Coll. and these statutes related to *lex generalis* and amended the debt enforcement, bankruptcy and general registry act as well as other specific legislation. ABGB defines a lien in more detail as a factual right serving the creditor for satisfaction of his claims in case of the debtor's failure to perform. ABGB regarded a lien as a unified institute and did not differentiate the form of a lien, i.e. whether it relates to a tangible or intangible asset, a movable or an immovable asset. [11] The collateral of a movable asset was referred to as *pignus* and the collateral of an immovable asset was referred to as *land collateral* – a mortgage.

ABGB stemmed from the Roman legislation. Establishment of a lien required the existence of a legal reason – *titulus*, as well as the manner of acquiring a factual right, i.e. *modus*.

As amended by ABGB, the lien could be acquired by law, a court decision, a contract or by will. A lien by law could only be established in course of bankruptcy proceedings.

A movable asset was in the creditor's deposit and if this was not feasible due to its nature, a lien was marked in a simple and obvious manner.

Real estate was registered into the land book and those that were not stated therein or were constructed on a foreign land for a short time could be pledged by depositing a certified document proving the establishment of a lien. ABGB also enacted judicial and contractual liens.

ABGB contained terms and conditions or ancillary agreements the breach of which was penalised by invalidity of a lien. For instance, the forfeiture agreement was deemed invalid if having been concluded at the time of executing the security agreement for the case if the debtor fails to perform as agreed. However, if this agreement was concluded after the maturity date of the creditor's claim, it was not deemed void.

A lien could be executed by means of a judicial auction as amended by specific legislation. Performance of the obligation was the main reason for cessation of a lien.

Real cessation of a mortgage had to be done through its deletion from the land book, otherwise this lien would survive.

#### 1.4 A lien at present

The Civil Code no. 141/1950 Coll. was the first Czechoslovak civil code which in its entirety governed the institute of a lien within our territory. This law revoked all present private legal statutes, notably The General Civil Code of 1811 (ABGB) as well as all patents, decrees, regulations and statutes amending the General Civil Code. The new civil code revoked all customary law arising out of court decisions and any other sources.

Legal enactment of a lien contained in the Civil Code no. 141/1950 Coll. was specified in more detail in the tenth chapter. §§ 188-193 amended the establishment, purpose and scope of a lien. Other provisions governed rights and obligations of the pledgor and the pledgee at the time prior to the maturity date of the claim and consequently, rights and obligations in case of the claim that became overdue. § 201 named the list of unfair and immoral practices that made the final agreement null and void. The prohibition of negotiating the forfeit lien prior to the maturity date of the claim is still valid nowadays. The provision of § 205 was defined as the extra lien on the real estate established by pledging the claim that had been secured by the real estate. Despite views of the professional public, currently valid lien-related statutes do not recognise the term "above lien" or "under lien". [12] The institute of a lien was also used when securing the rent. Pursuant to §394, the landlord had a lien on movable assets that form part of the rented item. This principle is still also applicable. Securing the carrier's or shipper's claims was exercised through a lien on item being shipped or transported. Security through a lien has been currently replaced by the retention title.

After re-codification efforts, the newly amended Civil Code no. 40/1964 Coll. was effective as of 1 April 1964. The code is still applicable and fully valid but has so far undergone substantial amendments and modifications that mainly related to contemporary social changes. These have had a considerable impact on enactment of a lien. The original civil code defined a lien under § 495 which cogently determined that liens and charges could only be established by law. On 1 April 1964, the possibility to establish a lien by legal acts ceased to exist. The previous legal enactment had corresponded with the existing social establishment preferring the socialistic economy. There was no room for providing private loans or establishing similar contractual relations that were mainly regarded as a manner of unjust enrichment. For these reasons, any provisions on securing the obligation by a lien that were established otherwise than by law were revoked. Between 1964 and 1991 this area was only briefly dealt with in a concise legal enactment defining solely its purpose and

essence. All subsequent social changes happening after 1989 paved the way for a completely new civil code. Due to time requirements related to any possible creation of the brand-new Civil Code, the previously applicable legislation was profoundly amended by means of the Act no. 509/1991 Coll. With its effective date of 1 January 1992, the third chapter of the Civil Code governs rights to other person's items while the provisions under § 151a - § 151m defined the basic scope and functioning of a lien. As demonstrated by practice, such legal enactment of a lien was not sufficient. Apart from other pitfalls, that legislation did not deal with establishment of non-possessory liens, which caused economic difficulties when obtaining and securing loans in the business area. There was a lack of the possibility to publish the existence of a lien on movable assets that, after having been pledged, would remain in the depositor's detention to continue enjoying them. Any loopholes stemming from the previous legal enactment were removed by the Act no. 526/2000 Coll. that could substantially amend the institute of a lien. The possibility to establish non-possessory liens on movable assets was resolved and so was the manner of registration of liens in respective registries. Rights and obligations of parties in case of competition of liens was enacted in more detail. Other amendments have brought slight modifications of a lien concerning the payment order (injunction) made directly from the bank account in relation to European and domestic financial institutions. [13] The Civil Code no. 40/1964 Coll. as amended, supplemented or otherwise modified has been the essential general legal enactment of the institute of a lien. Other material and legal issues in relation to some specific subject matters, such as flats, securities, intellectual property objects and business share are enacted in specific legislation. Other sources of a lien include laws and statutes governing possible forms of execution of a lien and their registration in respective registries.

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## MORTGAGE PLEDGE LAW IN THE CONTEXT OF COMPARISON OF THE LEGISLATION IN THE SLOVAK, CZECH AND AUSTRIAN REPUBLIC. COMPARISON OF PROVISIONS OF REVERSE MORTGAGE IN SELECTED EUROPEAN UNION COUNTRIES

*Darina Králiková – Dana Šadibolová*

**Faculty of Law of Matej Bel University in Banská Bystrica**

Komenského 20

974 01 Banská Bystrica

+421 915 832 151

kralikova.info@gmail.com – danica.sadibolova@gmail.com

**Abstract:** *The submitted scientific article deals with the matter of provision of reverse mortgages within the territory of the Czech Republic, the Slovak Republic and Austria by comparing the conditions for providing this financial product in the above countries. The main aim of the article is to assess the suitability of introducing reverse mortgages in the Slovak Republic in terms of the missing legal enactment in the given field as well as on the basis of the recommendation of the Ministry of Finance of the Slovak Republic and the National Bank of Slovakia. In the developed countries, a reverse or paid-back mortgage loan, especially designed for the retirees, was conceived a few decades ago with the original intent to enable the bereaved to survive in the real estate after the partner's death despite the insufficient income by converting the loan into the person's earnings instead of mere expenses.*

**Keywords:** *reverse mortgage, paid-back mortgage, mortgage upside-down, lifelong retirement pension.*

### Introduction

A mortgage loan is one of the active banking transactions, and it is a special loan aimed at repayment of other loans that have been used to invest in a property, it also aims at solving a client's housing issue, namely the purchase of the property, the completion, construction, and building modifications of the property. The risk of non-repayment of the loan by the client is secured by a pledge to internal real estate that might be in the process of building. The pledge is in the favour of a bank. "A pledge is a right in rem over another's property. The right in rem serves to secure and satisfy the pledgee's claim through the enforcement of the pledge." [1]

Encumbering real estate in the field of mortgage banking with a lien in favour of the bank is a common phenomenon both in our territory and in the world, which raises the need to devote to the topic of the lien established and exercised in the field of mortgage banking, adequate professional space in practical as well as theoretical level. In a democratic economy, legal security for obligations is one of the most important means of legal protection for contracting parties. Security of obligations serves to increase legal certainty and the stability of contractual relations.

The basic legal regulation on the security of obligations is contained in the Civil Code No. 40/1964 Coll., which also applies to commercial relations.

Act No. 90/2016 Coll. entered into force on 21.03.2016. on housing loans and on amending and supplementing certain acts, as a new legal regulation through which the current European legislation (Directives 2008/48/EC and 2013/36/EU and EU Regulation No. 1093/2010) has been implemented in the Slovak regulations. The aim of this change is to make the functioning of the credit market

more rational and efficient and to provide consumers with increased protection in the contractual relationships they enter into. Following the relative "modernisation" and "reform" of mortgage banking, space is being created to address the global problem of an ageing population in the context of mortgage affordability for the retirement-age population. Banks in the territory of the Slovak Republic offer the possibility of a mortgage loan in connection with real estate and housing as such, which, however, is intended more for the younger generation of the population, where it is assumed that they will be able to repay the loan during their lifetime, thus being able to secure the ownership of real estate unencumbered by a lien at retirement age.

Due to the minimal availability of this product for the elderly or retired population, the question of the possibility of introducing reverse mortgages in the conditions of the Slovak Republic will be outlined, also with regard to the institute of transferring the ownership right to the real estate to which the reverse mortgage relates, as an alternative to the pledge of the real estate currently used as a means of security in mortgage legal relations. The aim of the paper is to highlight the ageing of the population and the associated negative consequences in relation to the possibilities of solving the unfavourable financial situation of the elderly, as well as evaluating the appropriateness of the introduction of reverse mortgages in the Slovak Republic in relation to this group of the population.

The Slovak Republic is not currently one of the countries that offer reverse mortgages, and there are currently reservations against the introduction of this financial institution on our territory.

## 1. Current status of the issue in the context of the global scale

From the point of view of the available literature and after conducting a bibliographic survey, it can be stated that there are not many monographic works or works from specialized literature in Slovakia and abroad dealing with the issue of reverse mortgages. The term reverse mortgage is described in Wikipedia's public register of information as a release of equity, as a means of maintaining the use of a house or other object that has capital value, while at the same time obtaining a lump sum or a steady stream of income through the value of the house.

The advantage is that the income provider will be repaid the loan at a later stage, usually after the death of the property owner. The release of assets is therefore particularly advantageous for elderly persons who do not intend to leave an inheritance for their heirs in the event of death. A reverse mortgage is a form of equity release available in Australia, Canada, the USA and the UK. [2]

Equity release schemes (hereinafter referred to as the "ERS") are fixed asset conversion schemes that were introduced in the 1980s in the USA in the form of reverse mortgages. They have since spread to other countries in the form of other similar products. In the neighbouring Czech Republic, reverse mortgages are referred to as property annuities and in Austria, reverse mortgages are referred to as Leibrente - life annuities. The original intent of giving reverse mortgages was the idea of converting a portion of the value of a property, which is often a person's only asset, into cash paid either in a lump sum or through regular income, while preserving the property owner's right to live in the property until they die. Acquiring cash for a piece of real estate is not earmarked and can serve as an income supplement to a retirement pension. [3]

A number of derivative products of the ERS models currently exist in EU Member States, and the ERS scheme has basically evolved into two models of delivery, namely the credit model and the sales model.

### 1.1 Credit Model

The reverse mortgage credit model allows the lender to make a mortgage-backed loan on a portion of the value of the borrower's property, where the loan amount is typically provided up to a maximum of 50% of the value of the property. Factors such as the value of the property itself, the interest rate, the age and health of the applicant play an important role in assessing the amount of the loan granted. This model allows the loan to be drawn down in the form of regular monthly instalments with a pre-agreed repayment amount and maturity date, or a one-time lump sum payment.

The above model for obtaining a reverse mortgage usually stipulates the following conditions for obtaining a reverse mortgage:

- the minimum entry age of the borrower (usually set at a minimum age of 55 years),
- personal ownership of the property.

A reverse mortgage is usually repaid after the death of the borrower by selling the borrower's property. However, the borrower is entitled to repay the mortgage during the lifetime. Repayment of a reverse mortgage through the sale of the borrower's property occurs even if the property remains unused, unoccupied for a period of time that contractually entitles the lender to proceed with the sale of the property and satisfaction of the reverse mortgage granted to the borrower. During the entire duration of the credit mortgage relation, the senior does not make payments and remains the owner of the property and is obliged to bear all costs related to the maintenance of the property. For the bank providing this type of loan, it represents a risk—a decrease in the value of the property. The main feature of this credit model is the possibility of repaying the debt to the bank sooner rather than after the death of the client. Repayment of the mortgage can occur during the client's lifetime, including by the client's heirs if they are interested in the property. [4]

### 1.2 Sales Model

The sales model differs from the credit model by the legal relationship to the property. In the sale model, when the loan is granted, the ownership of the property shifts to the lender, and the client is entitled to live in the property for the rest of the life. The lender bears all the risks and costs associated with the property, thus eliminating the risk of devaluation of the real estate by inadequate care of the property by the client.

The client is entitled to either a lump sum payment for the property or regular instalments, at his/her discretion, and no longer has title to the property.

The ERS model has also started to be used in the conditions of the European Union, and in each of the individual member states of the Union where this model is used, there is a difference in the access of the population to this financial institute. The provision of reverse mortgages in individual EU countries is challenging due to the different legal regulation of the provision of reverse mortgages in individual countries, where it seems appropriate to develop binding legislation for all EU countries, which would comprehensively regulate the issue of reverse mortgages. [5]

Reverse mortgages are a widely available product around the world. The reverse mortgage differs from country to country basically only in its name and some of its features, but the essence remains the same.

## 2. Mortgage pledge law in the Slovak Republic

Currently, the Slovak law and order does not name reverse mortgage as a financial product. The National Bank of Slovakia (hereinafter referred to as the "NBS") was obliged by a government resolution to actively cooperate in the task arising from the National Programme for Active Ageing, i.e. to provide assistance in the consideration of the preparation of new legislation that would enable and regulate the conversion of long-term assets of Slovak

citizens into a regular income in old age, in the form of a reverse mortgage.

The NBS has made a significant contribution to taking a position in relation to reverse mortgages. In cooperation with the Ministry of Finance of the Slovak Republic (hereinafter referred to as MFSR), the NBS prepared an analysis of the existing legislative norms regulating reverse mortgages abroad as well as the experience with the provision of reverse mortgages in the world (hereinafter referred to as the "analysis"). The analysis was subsequently submitted to the inter-ministerial comment procedure. The NBS also participated in the evaluation of the comments from the international comment procedure. In connection with the analysis, the MFSR took a position on 22.02.2016, according to which it is obvious that there is a fundamental disagreement with any development of the legal regulation concerning reverse mortgages in the Slovak law and order. The reasoning of the opinion raises concerns about the management of the contractual relationship between the senior citizen and the financial institution by means of general terms and conditions formulated to the detriment of the senior citizen. A licence authorising an entity to provide reverse mortgages would not be a sufficient guarantee of clients' rights, where, however, supervision by the NBS could guarantee that clients' rights are preserved. The position of the Ministry of Foreign Affairs of the Slovak Republic further shows that the introduction of reverse mortgages in the Slovak law and order would result in:

- disruption of intergenerational relations between parents and children due to an increase in disputes and conflicts with possible final resolution only within the court system,
- serious changes to the traditional rules regarding inheritance, as the legislation on the granting of a reverse mortgage would interfere with the legislation concerning inheritance,
- complication of the legal relations related to the transfer of real estate at the moment of conclusion of the contractual relationship, when the senior would be in the position of a tenant, which could lead to complicated litigation.

The Ministry of Justice of the Slovak Republic said that it does not support and does not recommend any development of legal regulation of reverse mortgages in Slovakia. The analysis of the existing legislative regulation of reverse mortgages abroad with regard to the practice of granting reverse mortgages and related legal disputes was included in the inter-ministerial comment procedure, but did not proceed to the deliberations of the National Council of the Slovak Republic. [6] Despite the fact that the Slovak Republic rejects this financial product, there are a number of examples from abroad that document its advantages. Slovakia is currently no longer dealing with reverse mortgages, but in light of the current changes in the ageing population, it will need to be considered in the

future as a possible solution to the financial situation of many Slovak seniors.

### 3. Legislation and status of reverse mortgage lending in the Czech Republic

Reverse mortgages started to appear in the Czech Republic (hereinafter referred to as the "ČR") in 2008, when a foreign company was interested in entering the financial market in the Czech Republic with the provision of reverse mortgages, but this company did not have a licence to provide this financial product. The company offered to buy the seniors' property, which was to be purchased by paying the seniors an annuity for life, while bearing all the costs of maintaining the property. That relationship showed signs of a sales model. The terms of the loan were a minimum senior age of 65 and personal ownership of the property. The profit of the company would be based on the senior citizen's longevity, which aroused indignation. The company in question was neither a bank nor an insurance company regulated by the Czech National Bank. [7]

Consequently, due to legislative obstacles in the area of reverse mortgages, as well as ethical obstacles, the company failed to establish itself on the Czech market with the provision of reverse mortgages. [8]

Since 2015, the reverse mortgage has been offered by a Czech non-banking financial company and the mortgage is called "property annuity". The conditions for receiving an annuity from a property are at least 60 years of age and ownership of the property. The amount of the annuity takes into account the cost of the property valuation, the age and health of the senior.

The variability of annuity payments is following:

- one-time property annuity,
- payment of the annuity gradually over five years,
- regular monthly payments,
- a combination of the previous options.

On its website, the reverse mortgage company provides an illustrative calculation of the percentage of the property paid to the senior, where the most important factor influencing these percentages is the age of the senior. As an illustration, the company states that while a 60-year-old client will get only 15% of the property price, an 85-year-old senior will get 50% of the property price. It is clear from the above that the older the client's age, the higher the proportion of the value of the property that will be paid to the client. After joining the contractual relationship, the client is obliged to take care of the property, pay the monthly costs associated with the use of the property, while he must also bear the costs of property insurance. The client is the owner of the property until his death. The client is not entitled to sell the property, and is obliged to live in the property. This model is similar to the credit model.

The annuity matures in the event of:

- the death of the last owner of the property,
- the sale of the property by its owner,
- the owner not living in the property for at least 6 months,
- the owners not fulfilling their obligations in relation to the property.

In the event of termination of the loan relationship by the client during his/her lifetime, he/she is obliged to repay the loan with interest to the company. After the client's death, the property can be transferred to the heirs, who will repay to the company the annuity granted to the senior together with the contractually agreed interest, or the company can sell the property, whereby the sale will satisfy its claim under the contractual relationship and the balance of the value will go to the inheritance. [9]

#### 4. Legislation and status of reverse mortgage giving in the Austrian Republic

The reverse mortgage is known in Austria as "Immobilienrente" or "Umkehrhypothek", which literally means annuity from the property and income from real estate. There is another product called "Leibrente" and it also means annuity.

##### Leibrente and its types

Leibrente is regulated in § 1284 to § 1286 in Allgemeines Bürgerliches Gesetzbuch (Austrian Civil Code, hereinafter referred to as the "ABGB").

The following things emerge from the mentioned legal provisions:

Definition of the contract about Leibrente: "If someone has agreed to a pecuniary consideration or a consideration payable in money in specified periodic instalments (payments) over a person's lifetime, it will be a Leibrent contract."

Duration of Laibrente: "The length (duration) of the Leibenrente may depend (in terms of share) either on one contracting party only or on the other party (spouse of the contracting party) or even on a third party (close person). When there is a doubt, the annuity shall be paid quarterly in advances/advances and shall in all cases be linked to the life of the person on whom it is based until his death."

"Neither the creditor nor the descendants of the person who set up the product are entitled to change or cancel the contract (its content). However, it is possible for the first creditor to try to use the product, or the amount paid out, to satisfy its claim. However, the last of the potential creditors can only demand an advance on the part of the annuity that remains to the contractual partner (senior) in addition, after deduction of the subsistence minimum that must by law remain to him/her." [10]

Leibrente is a lifetime annuity on a property, particularly suitable for childless clients, especially as the transfer of

ownership of the property takes place at the same time as the loan is granted on the basis of the credit relationship. The grantee (the annuity provider) becomes the owner of the property when the contract is signed. In the event of the insolvency of the transferee, where the client's right to receive an annuity would be jeopardised, it is possible to secure the receipt of the annuity, e.g. by means of a bank guarantee, where the bank guarantees that it assumes the obligation to pay the annuity to the client on behalf of the lender in the event of the occurrence of the agreed terms and conditions.

The determination of the amount of the monthly annuity, unlike other reverse mortgages, depends on the agreement of the seller and buyer and is influenced by the following things:

- average life expectancy according to mortality statistics,
- type of annuity
- lifetime housing right, temporary housing right,
- the start of payment of the annuity.

As with other reverse mortgages, there is the possibility of an agreement between the purchaser and the selling senior that the lifetime right to live in the property extends to the spouse. [11]

##### Financial product Hypo-Lebenswert-Kredit

The product Hypo-Lebenswert-Kredit (hereinafter referred to as "HLK"), is a financial product similar to a reverse mortgage. It is offered by Austrian banks after meeting the following conditions:

- at least 60 years of age,
- ownership of the property in Austria.
- The loan obtained is purposeless, and the disbursement of the loan depends on the agreement between the bank and the senior. It can be granted in one lump sum or in regular monthly instalments.
- The senior is obligated to pay only that interest that he or she is able to pay monthly or quarterly. The loan can only be disbursed in euro and the bank accepts the repaid loan only in euro. The bank provides the senior with a loan in the maximum amount of 50% of the value of the property, up to a maximum of EUR 200,000. The interest rate can be fixed or variable. In the case of a variable interest rate, it is advisable for the client to insure an interest limitation.
- The maturity of the loan is set individually:
- the exact due date of the loan maturity,
- repayment of the loan by the inheritors of the senior while taking over the property,
- monetization of the real estate by the inheritors of the senior citizen, repayment of the loan,

This financial product has many features in common with a reverse mortgage. It is only available to individuals over the age of 60 who own a property. Ownership of the property is retained by the senior throughout the term of

the contractual relationship, which exhibits the characteristics of the reverse mortgage lending model. [12]

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## BIG DATA IN THE CONTEXT OF TRANSPORTATION – POTENTIAL, COSTS, TRENDS

Thomas Meier - Helena Makyšova

Slovak University of Technology in Bratislava

Ulica Jána Bottu 2781/25

Trnava, 91724, Slovakia

+421 906 068 kl. 473

Thomasmeier.chemnitz@gmail.com – helena.makysova@stuba.sk

**Abstract:** Big data technologies are more or less used in the individual areas of logistics. So far, the potential presented by intelligent systems in transport logistics has not yet been exhausted. However, increasing efficiency is also accompanied by steadily increasing energy consumption. The challenges of sustainable transport are the subject of pervasive global debates. This article describes which economic potentials are associated with the help of big data technologies and which trends and dangers are coming into focus. Furthermore, the effects and dangers of this technological development are pointed out. The article concludes with an outlook and considerations in the technical, political-economic and social context for successful sustainable action in the ecological sense.

**Keywords:** Big data, transport costs, rebound effect, “Last Mile”, sustainability

### 1. Introduction

Route optimization is also a special field of application for big data. GPS data, weather data and personnel plans are just three of the many data sources that go into the route optimization program. These huge amounts of data leave the human brain with only one heuristic decision option, it is almost impossible to rationally calculate this amount of information into a solution with regard to the most efficient option from an economic point of view.

Big data makes it possible to look at countless components at the same time and to filter out a solution at high speed. One of the most cost-intensive factors is the so-called 'last mile' in the delivery of the goods. The last mile describes the last delivery step to the destination, ie to the customer. Especially the strong growth in the area of B2C shipments. In the international context (national and international courier, express and parcel shipments), B2C shipments increased by 19.7% in 2020 compared to the previous year. In Germany alone, more than 4 billion parcel, express and courier shipments were delivered to customers in 2020. [1] The steadily increasing number of national parcel deliveries worldwide since 1990 also underlines the trend that the 'last mile' will continue to be used more frequently in the future. The following figure shows the volume of national parcel deliveries worldwide (in millions). The data was collected in 2020 by the Universal Postal Union (Union postale universale, UPU) [2].

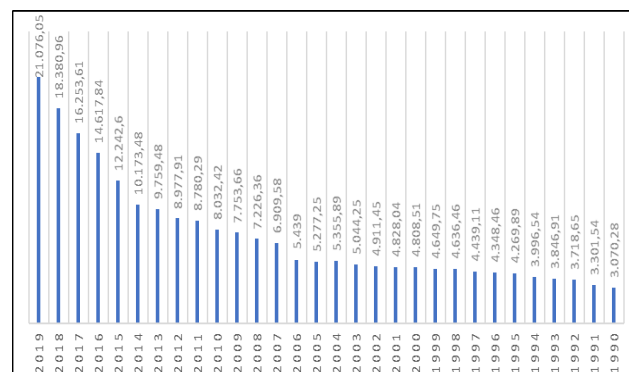


Figure 1 - Number of national package supplies in million, 2021 (Own presentation, 2021)

The main reason for this development is the dynamically growing online trade, which received a further growth spurt as a result of the pandemic. Given these figures, it seems sensible to pay special attention to the critical “last mile”. According to the Bundesverband Paket und Expresslogistik e. V. (BIEK). In view of the ecological consequences of such a growing handling volume, a rethink and immediate action must follow. From an economic point of view, mobile internet data usage and GPS data can suggest an optimized route to city suppliers and show customers the current location of the courier, allowing customers to track the location of their package while possibly ensuring they are home at the time of delivery to save the parcel deliverer additional costs and effort. According to UPS, which already uses big data in logistics, 350,000 more packages could be delivered in one year after the changeover and almost four million liters less fuel could be transported. In addition, vulnerable and important goods can be brought to the customer better and more safely. Sensors such as shock sensors or temperature sensors can be used to select routes that best suit the transported goods. In the case of shock-sensitive goods, for example, trucks could be given routes that avoid cobblestone streets or rough road bumps. [3]

At this point, the question must be asked whether this logic of increase can be broken through technological progress at all. The number of packages sent currently knows only one direction: Up! This logically means that traffic has increased and will continue to increase, especially in inner cities. In connection with the trend towards falling transport costs (the effects of current inflation due to energy prices are not taken into account in this analysis), there is a risk of rebound effects that overcompensate for the efficiency gained through the use of intelligent technology. [4] It can be stated that if a technology, a process, a product, etc. is inexpensive, the absolute use of it will also increase and require more resources overall than before the innovation. and more sustainable economy.[5]

## 2. Ecological challenges

From an ecological point of view, the Hanseatic City of Hamburg could take on a role model role in the future and act as a source of ideas for ecologically justifiable distribution logistics. In 2015, the Hamburg city logistics project brought together UPS and the city of Hamburg in a two-year model project aimed at reducing emissions caused by the increasing number of parcel deliveries. This should be done by UPS employees delivering the package delivery by cargo bikes, on foot or by bicycle. Furthermore, containers were set up at central locations in the city center as interim storage (so-called micro depots), from where the shipments were then distributed. A method that has already been successfully adapted and expanded by other cities such as Nuremberg. The logistics service provider Hermes, for example, is pursuing the approach of using delivery robots or delivery robots. The approximately 70 cm tall robots, which move at walking pace on six wheels, have a secure compartment that can accommodate packages weighing up to 15 kg. [6] This method of delivering goods promises delivery within 30 minutes within a radius of 5 kilometers. The communication between the robot and the customer takes place via a smartphone app. In the near future, drones that will take over the delivery of goods are also conceivable. However, these require a packing station specially developed for this purpose in order to be able to automatically insert and receive the packages. The functionality of such processes, which is essentially based on artificial intelligence, results in the creation of large amounts of data.

## 3. The cost of the transportation policy

Logisticians are fundamentally united by a “passion”: the system must be kept running. The following key data illustrate the challenges faced by logisticians who initially only describe the transport sector. For example, the following statistic shows the forecast average annual growth in transport volume of global container shipping in the period 2020 to 2023 by route. [7]

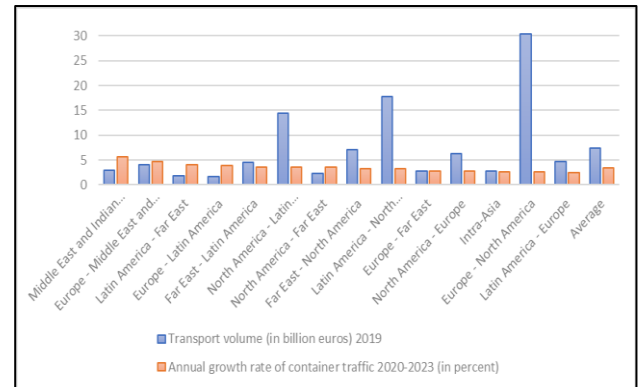


Figure 2 - Annual transport volume of global container shipping by route until 2023 (Own presentation, 2022)

It is estimated that data centers around the world consume more than 200 terawatt hours per year. For comparison: This corresponds to about two thirds of the total energy consumption in Italy in one year. [8] The trends that have been published in countless studies predict increasing electricity consumption up to the year 2030. Wired data traffic as well as data access via WLAN is currently increasing faster than the improvements in power efficiency, which could offset this increase in demand. [9] According to trend research, the energy required for production or consumer devices will also increase. Figure 3 shows the growth trends in global electricity consumption for the respective application areas of communication technologies.

Furthermore, it is shown that the transport volume in 2019 via the world's largest trade routes was between 2 and almost 18 billion euros. In the arithmetic mean, this corresponds to a monetary transport volume of around 7 billion euros per route and year. The growth forecast for container shipping is therefore almost 3.5% per year on average. For the handling of the Europe-North America route alone, this would mean that more than 32 billion euros will be handled in 2019.

If sales more than double, but profits remain almost the same, this is an unmistakable example of increasing cost pressure and requires optimization of the processes.

Air freight traffic has tended to only go in one direction in terms of handling volume for more than 25 years - upwards. In 2019, around 339,000 tons of air freight were handled at Munich Airport, compared to 57,000 tons in

1992. The following statistics show the development and confirm the trend. [10]

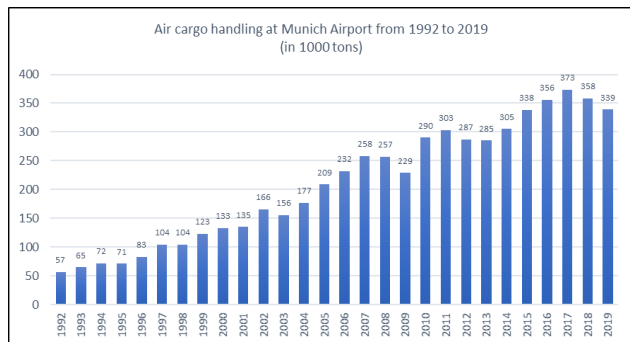


Figure 3 - Air freight volume at Munich Airport until 2019 (Own presentation, 2022)

Furthermore, the turnover of the courier, express and parcel industry has increased continuously in recent years. The current pandemic situation is clearly amplifying this effect. The turnover of the courier, express and parcel services in Germany doubled from around 10 billion euros in 2000 to around 21.3 billion euros in 2019. The average revenues remained at €5.94 in 2000 and €5.83 in 2019, however, were almost the same per shipment or even fell slightly. [11] The average growth rate based on the Figure 3- Air freight volume at Munich Airport until 2019 is a proud 6.83%, assuming exponential growth. If it is assumed that this trend will continue over the next 10 years, the handling volume at Munich Airport would almost double by 2030 and grow to around 656,000 tons.

In principle, it can be assumed that the more that is moved, the lower the costs for the routes will be. Transport costs have fallen massively since 1930, both in terms of sea freight and air transport, as well as in telecommunications, i.e. the transport costs of information. The following statistics show the drop-in prices on the high seas as an example. The data was collected by the Federation of German Industries (BDI) [12].

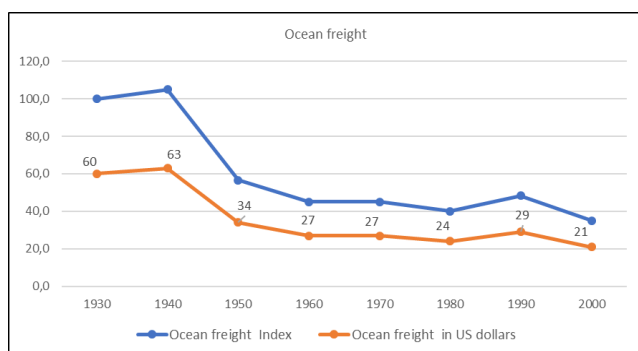


Figure 4 - average sea transport costs and port fees (Own presentation, 2022)

In turn, the falling costs have a direct impact on aviation in the passenger sector, insofar as ticket prices are now affordable for almost everyone. From the consumer's point

of view, this can certainly be seen as a welcome development; from the airline's point of view, this once again increases the pressure on the decision-makers responsible for costs and requires a dedicated look at the cost structure of the processes. In contrast to sea freight, air freight, measured by the weight of the transported goods, has a negligibly small share of the volume of international transport of less than one percent. However, the not inconsiderable relevance of air transport becomes clear with reference to the value of the goods. If you look at this, the share of air freight is around 40 percent. The reason for this lies in the suitability of air freight for, in addition to perishable or short-lived, capital-intensive goods. This is particularly evident when comparing the average value of a ton of sea freight, which was USD 943 in 2006, and the average value of a ton of air freight, which was USD 63,184 in 2006, ie 67 times. Air freight has advantages in particular in terms of speed, security and predictability, but has its greatest deficits in mass performance. [13]

**4. Consequences through the use of big data technologies**

Due to the increasing traffic in inner cities, the need for management of the 'last mile' became necessary. As a logical consequence, this led to the fact that most of the regulations that companies have to implement are made in this context. Essentially, this concerns regulations on the delivery of goods whose loading and unloading times, for example, are firmly regulated.

This also applies to the effects of seasonality, which are amplified in programs of all kinds and especially on very specific dates such as Christmas or special campaigns. These performance peaks represent logistical challenges that affect other logistics areas such as warehouse logistics. As a result, processes must then also be revised in terms of their efficiency and sustainability.

Furthermore, urgent shipments have increased for almost all kinds of products. This poses enormous challenges to the smooth functioning of supply chains. In the medical field in particular, it is of great importance that medication, for example, arrives at its destination on time. The same applies to perishable goods such as groceries. Due to the acceleration of the logistic processes, the time span for handling, transport and delivery has become shorter. Finally, the variety of destinations complicates the planning of "last mile" delivery routes.

**5. Conclusion and solution approaches**

On an economic level, technical solutions (big data technologies) can, under certain conditions, solve the challenges mentioned.

For example, the use of Robotic Process Automation (RPA) in combination with other digitization technologies can improve the supply chain in such a way that if the customer's delivery address or the delivery date of a shipment deviates from the customer's original order and

has to be changed, the shipment is redirected accordingly becomes [14]. Logistics companies can fully automate this process using the combined use of a chatbot + RPA. The change request from the customer or the supplier is recorded by the chatbot, the necessary data, such as the shipment number or the new recipient address, is recorded and forwarded to an RPA bot. Here the changed information is compared with a logistics system (e.g. an enterprise resource planning system), updated and the completion of the process is confirmed by passing this data on to the chatbot, which sends the information to the customer or supplier in the form of a confirmation email sent. The location of a physical object is just as necessary as a prerequisite for these technical solutions, as is the implementation of measured variables in the ongoing process. This entails unbreakable data transmission as a further requirement. In addition, large amounts of data not only have to be available in cloud applications, for example, but also have to be analyzed by experts. All in all, a resource-intensive procedure in every respect.

Solutions and concepts for ecologically sustainable transport of goods on this scale do not exist. They would also logically contradict the goals of logistics in terms of logistics performance. A further increase in the movement of goods, which at the same time goes hand in hand with a decrease in the consumption of resources necessary for transport, is a paradox. It is also mainly due to the described rebound effect. The transport of goods and goods leaves an ecological footprint that has never been left before in human history. The overexploitation of these planets reaches dimensions that make it almost impossible for the following generation, or at least the generation after that, to inhabit this planet [15].

That is why what is needed in the first place are concepts of “stopping”, not “keep it up, only faster and more”. The following solutions should provide inspiration for future holistic concepts.

The starting point should therefore not be the goal of maximizing profits, but rather the fact that resources are scarce. This problem could be alleviated by using existing infrastructures or even reactivating them.

Data centers, which are becoming ever larger in their dimensions and are the logical consequence of the economic objective, have an energy consumption that is mainly based on the necessary cooling of the servers. A popular solution is often to build data centers in cool areas and efficiently use the outside air as a cooling medium. The prerequisite for this is the existence of the necessary infrastructure and the cooperation of the responsible bodies from business and politics. A rethinking towards re-localization and renunciation must be understood as an opportunity. Designing the process chain and thus the transport routes as short as possible will be one of the greatest challenges in logistics in the 21st century.

Against the background of climate protection and the sustainability debate, it is essential to consider the entire product cycle in view of the further increase in production. Sustainability describes an economic form that does not consume its own prerequisites. [16] The efficiency

increase potential of digitization alone will not solve the ecological problem - rather it will exacerbate it in some areas. From development through production to disposal, concepts that offer sustainable and resource-saving solutions must be developed with the involvement of consumers and (if necessary) politicians. Furthermore, priority may have to be given to the process section that has the greatest potential, i.e. production and transport or mobility. Logistics 4.0 could provide answers in this area. In the end, however, the customer decides with his purchasing power what, when and how often he buys it. At the same time, climate change also means social change, in the context of which issues such as distributive justice, the status of human development, the understanding of values or the future of work must be included. Progress, growth, economy on the one hand and ecological issues on the other are often discussed controversially. It's just two sides of the same coin.

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## COMPARISON OF THE BODIES OF A JOINT-STOCK COMPANY AND A SIMPLE JOINT-STOCK COMPANY IN THE CONTEXT OF LEGISLATION IN THE SLOVAK REPUBLIC

*Marian Gešper*

**Matej Bel University**

Komenského 20, 974 01 Banská Bystrica, Slovak Republic

+421908 988 407

mariangesper111@gmail.com

**Abstract:** *The aim of the article is the analysis of the legal issues of a simple joint-stock company and the bodies of a joint-stock company in the legal order of the Slovak Republic (SR). The legal institute of simple joint-stock companies is relatively new in the Slovak Republic, therefore we will also focus on the results of application practice of this new type of company from a view of its bodies. In this context, we compare the authorities of a joint-stock company and a simple joint-stock company, and we will also focus on this issue from the point of view of the recodification of Slovak commercial law and the preparation of a new law on commercial corporations, as the case in Czech legislation.*

**Keywords:** *Bodies of commercial companies, joint-stock company, bodies of a joint-stock company, bodies of a simple joint-stock company, mandatory and optional bodies of capital companies.*

### 1. Introduction

Within the framework of the law of commercial companies in European conditions, the system of administration and management of joint-stock companies is the focal point and the most problematic area due to the existence of a single-level model of the management of joint-stock companies, which is, for example, in the UK or France and a two-level model in Germany, Austria, or the Czech Republic. The Regulation of the Council of the EC on Societas Europea for the needs of this transnational form of commercial company establishes the right of choice for the founders of the company between these two models. The national legal order of an EU member state should also regulate such a model that does not exist in the administration and management of a joint-stock company in a given member state. The legislation in the Slovak Republic of European society establishes the rules of a one-level system. The board of directors is a statutory body that manages the activities of a European company, determines the fundamental objectives of its business activity, supervises their implementation and acts on its behalf. Business management is ensured by executive directors, whom the board of directors can authorize to act on behalf of the company. However, this authorization does not result from registration in the commercial register, but results from the provisions of § 15 of the Slovak Commercial Code.<sup>1</sup>

In this context, when administration and managing joint-stock companies and the position of its bodies, we have to approach a simple joint-stock company, which is a relatively new type of company. We classify it as a capital company, and it was implemented in the Slovak legal system by an amendment to the Commercial Code, namely Act No. 389/2015 Coll. with effect from 1 January 2017.

<sup>1</sup>KUBÍČEK, P., MAMOJKA, M., PATAKYOVÁ, M., *Obchodné právo*. Bratislava: Univerzita Komenského v Bratislave, Právnická fakulta, 2010, p. 216

### 2. The original objective of the legal regulation of simple joint-stock companies

The goal of the new legal regulation of simple joint-stock companies was to offer a comprehensive solution for risky investment in startups,<sup>2</sup> to support their development in the Slovak Republic and to introduce such a legal regulation that would allow flexible setting of property relations within the company, the investor's operation in the company, the entry and exit of the investor from companies. The result of the new legislation is a hybrid form of a capital trading company, which takes over from a limited liability company, for example, the company's low share capital, the optionality of the establishment of a supervisory board, and from a joint-stock company takes over the concept of share capital spread over a certain number of shares with a certain nominal value, participation in the company is expressed by owning shares as a security.<sup>3</sup>

In the case of a simple joint-stock company, specific rules are created for this form of company, and for unregulated areas, the legal regulation of joint-stock companies is used as a general regulation. The Commercial Code regulates only specifics and deviations from the legal regulation of a joint-stock company. One of the peculiarities of a simple joint-stock company is that the provisions of the Commercial Code make it relatively easier for shareholders to withdraw from the company compared to a standard joint-stock company.<sup>4</sup>

The typical features of a simple joint-stock company include that it can be founded by one or more natural and

<sup>2</sup> Startup is characterized by low initial costs, higher business risk, but also a potentially higher return in the case when the company is established.

<sup>3</sup>MAMOJKA, M. a kol. *Obchodné právo I – všeobecná časť, súťažné právo, právo obchodných spoločností a družstva*. Bratislava: C. H. Beck, 2021, p. 706

<sup>4</sup>MAMOJKA, M. a kol. *Obchodné právo I – všeobecná časť, súťažné právo, právo obchodných spoločností a družstva*. Bratislava: C. H. Beck, 2021, p. 705

legal persons, the share capital is divided into shares, which must take the form of a book-entry security and can only be in the name, before the formation of a simple company, it must be subscribed the entire value of the share capital and deposits must be repaid in full. Features also include the possibility of issuing different types of shares with special rights, for example with different scope of entitlement to a share of the profit or liquidation balance, different scope of the number of shareholder votes, or different scope of the right to provide information about the company. The nominal value of the share capital can be expressed in eurocents, the list of shareholders is public and is maintained by the central depository, further separation of the company's assets from the shareholders' assets, optionality of the establishment of a supervisory board, separation of shareholders from the company's business management. A simple joint-stock company cannot publicly call for subscription of shares and cannot become a publicly traded company, before that it must become an ordinary joint-stock company. A simple joint-stock company can only be transformed into a joint-stock company. A merger with a joint-stock company is allowed only if a simple joint-stock company is dissolved and its assets are transferred to a joint-stock company.<sup>5</sup>

A simple joint-stock company was implemented into the law of commercial companies in the Slovak Republic, as a legal form with elements of a joint-stock company and limited liability companies. It is characterized by a high degree of disposability of the legal regulation enabling the creation of special types of shares issued by the company as well as the internal organization of the company created flexibly according to the purpose of establishing a simple company based on shares. Among several alternatives, the new legal form of the company was incorporated into the Commercial Code without any changes to the existing forms of commercial companies.<sup>6</sup>

As with the modification of a joint-stock company, as with a simple joint-stock company, the public is excluded from this legal institution when establishing and increasing the share capital. At the same time, it follows from the legislation that it has the lowest mandatory share capital of 1 euro among capital trading companies. The Commercial Code does not limit the establishment of a simple stock company only to the so-called startup purposes, we can establish it with the aim of any business plan. In comparison with other capital forms of business companies, and above all in contrast to the closest joint-stock company, a simple joint-stock company cannot be established for a purpose other than the purpose of doing business.<sup>7</sup>

<sup>5</sup>OVEČKOVÁ, O. a kol. : *Obchodný zákonník. Veľký komentár. I. a II. zväzok*. Bratislava: Wolters Kluwers, 2017, p. 1494 - 1495

<sup>6</sup>The legislative intention of the recodification of the law of commercial companies. Working group for the recodification of company law, April 2021, p. 14 – 15 available at: [https://rv.rokovania.sk/data/att/170923\\_subor.pdf](https://rv.rokovania.sk/data/att/170923_subor.pdf)

<sup>7</sup>MAMOJKA, M. a kol. *Obchodné právo I – všeobecná časť, súťažné právo, právo obchodných spoločností a družstva*. Bratislava : C. H. Beck, 2021, p. 706 - 707

The complete separation of the company's property from the shareholder's property and the resulting controlled business risk should have been one of the primary advantages of a simple joint-stock company. Because the economic-legal and psychological comfort consists primarily in the fact that the possible business failure of the company will affect only one direct investment.<sup>8</sup> The key feature and advantage should have been flexibility and a higher degree of autonomy of shareholders in adjusting their relationships. This can be done directly at the level of the company's articles of association (statutory law) or by using a special arrangement of shareholder agreements.<sup>9</sup>

### 3. Recodification of commercial law and simple joint stock company

The paradox is that, despite the above-mentioned reasons for incorporating a simple stock company into the Slovak legal order and the relatively recent period when it was supplemented by an amendment to the Commercial Code (from 1 January 2017), currently the working group for the recodification of commercial law in the Slovak Republic, no longer counts with it as a type of business company in the anticipated law on business corporations. Contrary to expectations, it is not used by entrepreneurs as often as expected. If the founders are also considering the type of business company they will use to develop their business activity, or to invest in it, they usually decide also in the so-called startups for a limited liability company, or for a standard joint-stock company. This is also shown by the statistical results of the use of individual forms of business companies at the end of 2020<sup>10</sup>, where there were only 258 simple companies for shares. Probably, some obvious advantages of establishing a simple company for shares were not sufficient in the overall view compared to other capital forms of companies. The above is worth thinking about in the case of other legal institutes being prepared for the recodification of company law and the overall positive impact on the Slovak legal system. Rather, the question is whether various theoretical constructions, which at first glance meet the requirements for facilitating business in the form of various hybrid forms of capital trading companies, are not being prepared prematurely and will have only a minimal effect on the development of commercial relations in the Slovak Republic in the future compared to the initial assumptions.

Within the framework of the upcoming recodification of the law of commercial companies, the effort will be that the standard legal forms provide a wide space for the

<sup>8</sup> *Eurocodex Commentary on Act No. 513/1991 Coll. Commercial Code under § 220h*, available at [epi.sk: https://www.epi.sk/eurokodex-komentar/Eurokodex-komentované-ustanovenie/Eurokodex-komentár-kp-220h-zákona-513-1991-Zb.htm](https://www.epi.sk/eurokodex-komentar/Eurokodex-komentované-ustanovenie/Eurokodex-komentár-kp-220h-zákona-513-1991-Zb.htm)

<sup>9</sup>OVEČKOVÁ, O. a kol.: *Obchodný zákonník. Veľký komentár. Zväzok I (§ 1 až 260)* 2. vydanie. Bratislava : Wolters Kluwers, 2022, p. 1835

<sup>10</sup>According to the Corwin information system, as of 15/12/2020, 297,512 limited liability companies and 7,998 joint-stock companies were registered in the Commercial Register of the Slovak Republic, which is an obvious disproportion to the 258 simple joint-stock companies, even if it is necessary to take into account their recent creation, i.e. from 1 January 2017.



private autonomy of the founders compared to the current situation. The recodification no longer proposes to adopt the legal form of a simple joint-stock company in future legislation. Space should be created for existing simple joint-stock companies to transform into a limited liability company. For those simple companies that do not use the mentioned option, it is proposed that they be subject to the regulation of joint stock companies.<sup>11</sup>

Taking into account the above-mentioned considerations in the possible recodification, which allow for the alternative of the transition of a part of simple joint-stock companies after the entry into force of the new Act on Business Corporations into the regime of joint-stock companies, this rather justifies the conclusion that a simple joint-stock company is a special type of a standard joint-stock company, respectively these are organizationally and legally very close forms of capital trading companies.

#### 4. The bodies of a simple joint-stock company in comparison with the bodies of a joint-stock company

The legal regulation of the bodies of a simple company for shares is neither complete nor general, as regards the status, scope, creation and decision-making rules of the bodies of this company. In the case of the general meeting and the supervisory board, the Commercial Code contains brief provisions that only determine deviations from the legal regulation of the status and scope of these bodies of a joint-stock company. In the case of the board of directors of a simple joint-stock company, the basic mandate is basically repeated as we know it with the board of directors of a classic joint-stock company. In a simple joint-stock company, the same scenario and principles of distribution of authority and scope between the board of directors and the general assembly apply, as apply to a joint-stock company. In the interests of operational business management, the board of directors is entrusted with the balance, or subsidiary authority and the general assembly has the authority to decide only on issues expressly entrusted by law or statutes. Unlike a joint-stock company, a simple joint-stock company has only two mandatory bodies, the board of directors and the general assembly. The supervisory board is an optional body, similarly to a limited liability company. In the case of the supervisory board, there is no mandatory participation of employees in the membership of this supervisory body.<sup>12</sup>

According to the provisions of § 191 par. 1 of the Commercial Code, all members of the board of directors are always registered in the commercial register, even if only some of them are authorized to act on behalf of the company, which is also subject to registration. The reason

<sup>11</sup>The legislative intention of the recodification of the law of commercial companies. Working group for the recodification of company law, April 2021, p. 15 available at: [https://lrv.rokovania.sk/data/at/170923\\_s\\_ubor.pdf](https://lrv.rokovania.sk/data/at/170923_s_ubor.pdf)

<sup>12</sup>MAMOJKA, M. a kol. *Obchodné právo I – všeobecná časť, súťažné právo, právo obchodných spoločností a družstva*. Bratislava: C. H. Beck, 2021, p. 749

for the addition was that, in the case of a simple joint-stock company, following the optionality of the establishment of a supervisory board, it is imaginable an imperfect simulation of monistic management of the company, in that the shareholders, for example, agree that instead of establishing a supervisory board, they appoint nominees from among minority shareholders to the board of directors who, as members, will participate in business management decisions, but will not be authorized to act on behalf of this company.<sup>13</sup>

#### 5. General Assembly

The general assembly is also the highest unelected body of the company, which decides on fundamental issues of the company's life, even in the case of a joint-stock company. In the legal regulation of the general assembly of a joint-stock company, the subsidiarity of the legal regulation of a joint-stock company is generally enforced in the Commercial Code. Special conditions are set for the adoption of some decisions of the general meeting of a simple joint-stock company, which is justified by the possible existence of shares with special rights and a lower degree of formality in the adoption of qualified decisions, which results from the private nature of a simple joint-stock company.<sup>14</sup>

The approval of a qualified at least two-thirds majority of the votes of the shareholders who own these shares is required for the general meeting's decision on fundamental issues of the company, i.e. on changing the rights associated with certain types of shares and limiting the transferability of shares, while the authenticity of the signature of the chairman of the general meeting must be officially certified.<sup>15</sup> For the approval of the decision of the general meeting to change the articles of association or to increase or decrease the share capital, to authorize the board of directors to increase the share capital (§ 210), to issue priority bonds or convertible bonds, to dissolve the company, or a qualified at least two-thirds majority of the votes of the shareholders present is required for a change in legal form. The authenticity of the signature of the chairman of the general meeting must be officially certified.<sup>16</sup>

Compared to the regulation in a standard joint-stock company, which does not allow shareholders to make decisions other than at the general meeting, the dispositive regulation of the general meeting of a simple company for shares allows the possibility for decisions to be taken outside the general meeting, i.e. in the form of *per rollam*. The articles of association can therefore specify that shareholders have the opportunity to make decisions outside of the general meeting, based on a draft decision

<sup>13</sup>OVEČKOVÁ, O. a kol. : *Obchodný zákonník. Veľký komentár. Zväzok I (§ 1 až 260)* 2. vydanie. Bratislava: Wolters Kluwers, 2022, p. 1836

<sup>14</sup>MAMOJKA, M. a kol. *Obchodné právo I – všeobecná časť, súťažné právo, právo obchodných spoločností a družstva*. Bratislava: C. H. Beck, 2021, p. 750

<sup>15</sup> According to the provisions of §220za par. 2 of the Commercial Code

<sup>16</sup> According to the provisions of §220za par. 3 of the Commercial Code



sent to all shareholders by the board of directors. The draft decision contains the wording of the proposed decision and the justification of the proposal, the deadline for delivering the shareholder's statement, which is 30 days, while the articles of association may determine a different deadline. This period begins with notification of the draft decision to the shareholder in the manner specified in the articles of association, otherwise by delivery. At the same time, the draft decision contains the documents necessary for the approval of the decision, other information and annexes according to the statutes. If the shareholder does not deliver his consent to the draft decision within this period, it is valid that he does not agree to the draft decision. The Board of Directors shall announce the voting results within 15 days of the deadline, if the articles of association do not specify a shorter deadline. The majority by which the proposed decision is adopted is calculated from the total number of votes belonging to all shareholders.<sup>17</sup>

## 6. Board of Directors

The board of directors is the company's statutory body, which manages the company's activities and acts on its behalf. The legal regulation of the statutory body of a simple company for shares essentially copies the powers of the board of directors of a joint-stock company. Here, too, the board of directors decides on all matters of the company, if they are not reserved by this law or the statutes to the competence of the general meeting or another body of the company. However, the addition, which we mentioned, is emphasized, that unless the articles of association stipulate otherwise, each member of the board of directors is authorized to act on behalf of the company. The members of the board of directors and the way they act on behalf of the company are also entered in the commercial register. If only some members of the board of directors act on behalf of the company, this shall be stated in the commercial register. A significant difference compared to a joint-stock company is that the law allows the framework of the board of directors' residual authority to be narrowed through the authority that the articles of association entrust to a body other than the general meeting and the supervisory board.<sup>18</sup>

Compared to the board of directors in a standard joint-stock company, the articles of association may specify that the term of office of the members of the board of directors of a simple stock company is not limited. In this case, the time limitation of the performance of the duties of the members of the board of directors does not fulfill its purpose, which consists in protecting scattered shareholders from the possible arbitrariness of the practically irrevocable board of directors. In a simple joint-stock company, a closed structure of close shareholders, who are often members of its bodies. At the same time, the provision in § 220zc par. 2 letter b) Commercial Code, where the articles of association may specify that

agreements between a member of the board of directors and the company are subject to the approval of the company's general meeting, the supervisory board, or another body of the company. As a result of the replacement of § 193 defining the powers of the board of directors in a joint-stock company, the possibility of internal limitation of the rights of the board of directors to act on behalf of the company by means of the articles of association, a decision of the general meeting, or the supervisory board cannot be applied to simple joint-stock companies.<sup>19</sup>

Even with this form, companies can transfer the competence of election and recall of board members from the general assembly to the supervisory board.<sup>20</sup> There is also a special regulation compared to a joint-stock company in that the board of directors must inform the shareholders if it finds that the company's loss has exceeded the value of one-third of the share capital or if it can be assumed, it informs the shareholders without undue delay. Thus, the board of directors of a simple joint-stock company is not obliged in these cases to convene a general meeting and propose measures, as is the case in the legal regulation of a joint-stock company.<sup>21</sup>

The peculiarity, compared to a joint-stock company, is that if a simple company has not established a supervisory board for shares, the shareholders have the right to demand information and explanations in addition to the right in § 180 par. 1, as well as the right to request information about the company's affairs from the board of directors in writing. If the board of directors still refuses to provide the information, the court will decide on the basis of the shareholder's proposal whether the company is obliged to provide the requested information. It is therefore an opportunity to continuously request information from shareholders even outside the convened general meeting.<sup>22</sup>

Another specific feature is the less strict regulation of the duties of the members of the board of directors if they conclude transactions in their own name or on their own account. There is only the obligation of the board of directors in the provisions of § 220zd of the Commercial Code to inform the company in writing, in contrast to the regulation of a joint-stock company. This is a relatively fundamental departure from the legal regulation of a joint-stock company in the provisions on the prohibition of competition. In the case of a simple stock company, there is no *a priori* prohibition of competition in these cases. On the basis of the information provided by the members of the board of directors, the company will evaluate whether it will allow the subject activity notified to the members of the board of directors, or determine any restrictions, or prohibits.

<sup>17</sup> According to the provisions of §220zb of the Commercial Code

<sup>18</sup> MAMOJKA, M. a kol. *Obchodné právo I – všeobecná časť, súťažné právo, právo obchodných spoločností a družstva*. Bratislava: C. H. Beck, 2021, p. 757

<sup>19</sup> OVEČKOVÁ, O. a kol. : *Obchodný zákonník. Veľký komentár. Zväzok I (§ 1 až 260)* 2. vydanie. Bratislava: Wolters Kluwers, 2022, p. 1937

<sup>20</sup> According to the provisions of § 220zc par. 2 of the Commercial Code

<sup>21</sup> According to the provisions of § 220zc par. 3 of the Commercial Code

<sup>22</sup> According to the provisions of § 220zc par. 4 of the Commercial Code

## 7. Board of Supervisors

The supervisory board, in contrast to a standard joint-stock company, is an optional body in a simple joint-stock company and is established if the articles of association so determine. If it is established by the articles of association and it is regulated in its provisions, the supervisory board can recall and elect members of the board of directors and thereby participate in the company's activities. The Supervisory Board supervises the performance of the board of directors' powers and the company's business activities. In the case of the establishment of a supervisory board, the election of the members of the supervisory board belongs to the general assembly, unlike the legal regulation of a joint-stock company, it is not elected by the company's employees. The articles of association may provide for the election of some members of the company's supervisory board by employees.<sup>23</sup> Apparently, only due to a legislative oversight, the possibility of electing members of the board of directors for an unlimited period does not apply to the members of the supervisory board of a simple stock company.<sup>24</sup> Therefore, if a supervisory board is established, its members are elected for a term determined by the statutes, for a maximum of 5 years.

If the supervisory board is established in the articles of association, it must consist of at least three members, who are only individuals. For a joint-stock company and a simple joint-stock company, a person on the board of directors cannot be on the supervisory board. The advantage of a simple joint-stock company over a standard joint-stock company is that the decisions of the supervisory board can also be taken per rollam, outside of the general meeting.

The optionality of its establishment has a rational justification in the more conservative business conditions of the Slovak Republic, where closed shareholder structures still prevail in joint stock companies. The supervisory board of a joint-stock company is established only as a result of legal obligations, and thus in such a "closed" joint-stock company it is not absolutely necessary for the control activity, thus it became only formal.

## 8. Conclusion

In the case of a simple joint-stock company, a breakthrough was considered, among other things, to abandon the idea of protecting creditors through strict rules regarding the share capital. The breakthrough was also understood as the admission of a minimum share capital of 1 euro and a minimum nominal value of one share at 1 eurocent. On the other hand, the transparency of the shareholder structure contributed to a paradoxical situation, which was not expected in theory, that entrepreneurs often chose a different type of business company. That is, information about shareholders to the

extent entered in the shareholders' register is published on the website of the central depository, which maintains the shareholders' register, and as we have already mentioned, shares of this type can only be registered in name and have a book-entry form.<sup>25</sup> Many entrepreneurs considered this disadvantageous for them. From the point of view of comparing the administration and management of a joint-stock company and a simple joint-stock company, where the legal regulation of the bodies of these companies is very close, even seemingly fundamental legal breakthroughs in the adjustment of a simple joint-stock company did not contribute to its more frequent use in business practice. This fact should also be taken into account during the recodification of commercial law and the preparation of the Slovak Act on Commercial Corporations.

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- [6] §220za par. 2 of the Commercial Code
- [7] §220za par. 3 of the Commercial Code
- [8] §220zb of the Commercial Code
- [9] § 220zc par. 2 of the Commercial Code
- [10] § 220zc par. 3 of the Commercial Code
- [11] § 220zc par. 4 of the Commercial Code
- [12] § 220ze of the Commercial Code

<sup>23</sup> According to the provisions of § 220ze of the Commercial Code

<sup>24</sup> OVEČKOVÁ, O. a kol. : *Obchodný zákonník. Veľký komentár. Zväzok 1 (§ 1 až 260) 2. vydanie*. Bratislava: Wolters Kluwers, 2022, p. 1937

<sup>25</sup> OVEČKOVÁ, O. a kol. : *Obchodný zákonník. Veľký komentár. Zväzok 1 (§ 1 až 260) 2. vydanie*. Bratislava : Wolters Kluwers, 2022, p. 1835

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Zarghoon, Sohaibullah

## THREE-DIMENSIONAL MULTI-PHYSICS HEAT TRANSFER PROBLEM SIMULATION OF STEEL BILLET IN INDUCATION FURNACE

Sohaibullah Zarghoon, Cyril Belavý

Faculty of Mechanical Engineering, Slovak University of Technology in Bratislava

Námestie slobody 17

Bratislava 1, 812 31, Slovakia

+421940096111

Sohaibullah.zarghoon@stuba.sk

**Abstract:** The paper is carries out the simulation of the induction heating process of steel billets that come out from continuous casting machine. Based on physics concepts and finite element method the numerical model is created in COMSOL Multiphysics® software, simulating the steel billet pre-heating.

**Keywords:** induction heating, heat transfer, finite element method, COMSOL Multiphysics®.

### 1. Introduction

Induction heating is a method through which electrically conductive materials generally metals are heated by alternating electromagnetic field. The main goal of induction heating is to achieve optimal operational efficiency as it consumes a lot of electrical power, but on the other hand it is cleaner to environment, compared mazut furnaces that are still in operation. An induction heating system consists of one or several inductors and a metallic part to be heated. The inductors are supplied with alternating current which induces eddy currents inside the component being heated due to Faraday's law. This technique is widely used in the metallurgical industry in an important number of applications such as metal smelting, preheating for operations of milling, etc. In general, those processes need a high speed of heating in located zones of a part of a conductive material. The overall process is complex and involves different physical phenomena: electromagnetic, thermal with phase change – i.e., multi-physical problem. A source of high-frequency electricity is used to drive a large alternating current through a coil. This coil is known as the work coil. The passage of current through this coil generates a very intense and rapidly changing magnetic field in the space within the work coil. The workpiece to be heated is placed within this intense alternating magnetic field and alternating magnetic field induces a current flow in the conductive workpiece, or billet in our case.

### 2. Problem description

The problem is taken from the Khan Steel company Afghanistan. Company had an induction heating furnace which is currently not used. Instead of the induction furnace, a mazut heating furnace is in operation, while it takes a lot of time to preheat the steel billet before rolling operation.

The question is, why the company uses a mazut heating furnace instead of modern, and clean induction heating furnace?

The answer is trivial, the core of the steel billet couldn't be re-heated properly. Induction furnace left the core of the

billet colder than outer regions. In terms of numbers, the average exit temperature of the steel billet leaving CCM is about 1000 °C, but hot rolling operation requires +200 °C to be added. The multi-physical computational model represents a tool by which the temperature fields can be visualized as the output of an applied magnetics field on the input side.

### 3. Geometrical setup

Geometry of the model consists of an air block, six inductors and steel billet, Figure 1.

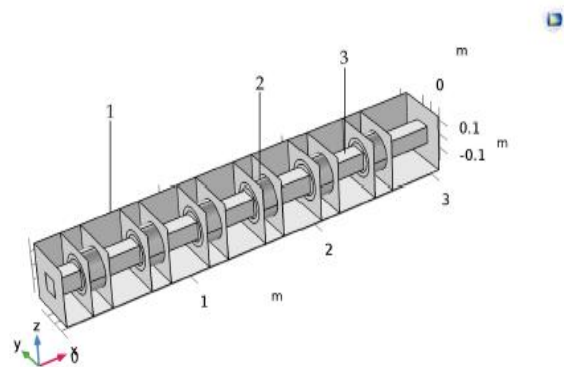


Figure 1: Air block, six inductors and three meters long steel billet

The dimensions of the pieces are defined bellow. The air block is containing a magnetic field line and it has the length of the billet, Figure.2.

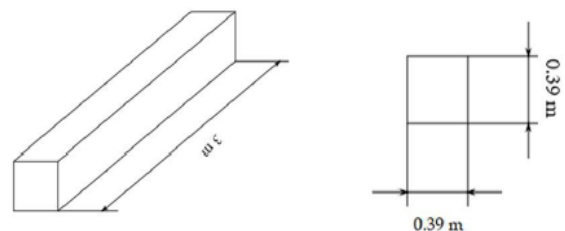


Figure 2: Dimensions of the air block

The ring represents an inductor coil, Figure. 3.

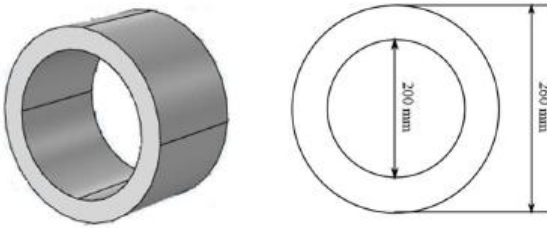


Figure 3: Dimensions of the inductor coils

The steel billet passes through inductor coils and has similar shape to air block, Figure.4.

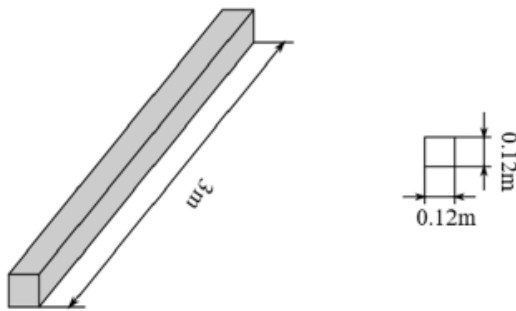


Figure 4: Dimensions of the steel billet

**4. Governing equations**

In general, the phenomenon of electromagnetic induction heating is based on three physical principles that are described below.

1. The energy transfer from the inductor to a billet heated by electromagnetic fields. To find an electromagnetic field the Ampere's law is used.

$$\oint \mathbf{B} \, dl = \mu_0 I$$

Where  $B$  is magnetic field ( $T$ ),  $\mu_0$  is vacuum permeability ( $T.m.A^{-1}$ ) and  $I$  is electrical current in one thread of a coil ( $A$ ). If the conductor has a solenoid shape, in this case, the magnetic field can be calculated by this equation.

2. If the conductor has a solenoid shape, in this case, the magnetic field can be calculated by this equation.

$$B = \mu_0 \frac{NI}{l}$$

where  $N$  is number of threads,  $l$  is the length of coil (m).

3. Transformation of the electric energy into heat due to Joule effect. The voltage induced in the billet can be controlled by the intensity and frequency of the current on the coil.

$$P = U.I = \frac{U^2}{R} = I^2 R$$

where  $P$  is electrical power (W),  $U$  is voltage (V) and  $R$  is resistance ( $\Omega$ ).

4. Heat transfer inside the billet using heat conduction equation. The Heat conduction law, also known as Fourier's law, states that the heat transfer time is through a material proportional to the negative gradient at the temperature and region through which the heat flows

$$q = -k\Delta T$$

Where the  $q$  is a vector of heat flux  $W m^{-2}$ ,  $k$  is constant thermal conductivity of isotropic material  $W m^{-1} C^{-1}$  and  $\Delta T$  is thermal gradient  $^{\circ}C m^{-1}$ . The time-temperature distribution in the volume of the billet is given by parabolic partial differential equation.

$$\rho C_p T' - \nabla(K\Delta T) = Q + h(T_{amb} - T)$$

where  $T'$  is the time derivation of the temperature  $T$ ,  $Q$  is the heat source generated by magnetic field or heat sink generated by material phase transitions,  $h$  is the heat transfer coefficient  $W m^{-2} C^{-1}$  and  $T_{amb}$  is the ambient or wall temperature of the induction furnace.

**5. Simulation parameters**

Simulation setup in COMSOL Multiphysics® consists of the definition of the model parameters, materials selection, electromagnetic and thermal power inputs, meshing, solution, and post-processing.

**5.1 Model parameters**

Table 1 Definition of numerical parameters

Name	Value	Description
H_coil	0.15 (m)	Height of the coil
r_coil	0.1 (m)	Inner coil radius
R_coil	0.13(m)	Outer coil radius
Airbox_width	0.39 (m)	Air box width
T_in	1273.2 (K)	Initial temperature of billet
N_coil	360	Coil turns
U_velocity	0.04 (m s-1)	Billet velocity
T_amb	293.15 (K)	Ambient temperature
Emissivity	0.8	Billet surface emissivity
F0	1000 (Hz)	AC frequency

**5.2 Materials selection**

In the material section, the appropriate material is assigned to the model. Material of the billet is steel AISI 4340 and to the box is air. Material with their physical and thermal properties are shown in detail in the Table below.

Table 2 Material properties

Part	Billet
Material	Steel, AISI 4340
Electrical conductivity (S m-1)	4.032e6
Thermal conductivity	44.5
Specific heat capacity	475
Density	7850
Relative permittivity	1

**5.3 Power inputs**

The inductor coils are defined (number of coils: 6 and each coil with 360 turns) applied current of 250 A to the first coil and 200 A to the other five coils and an AC frequency of 1000 Hz. The steel billet is pre-heated with an initial temperature of 1000 °C and moved with a constant velocity of 0.04 (m s<sup>-1</sup>) inside the coils. The radiation surface boundary condition is defined to the billet with an emissivity of 0.8 (-).

in order to heat this steel billet from temperature 1000 (°C) to a temperature of 1200 (°C) within 100 (s) the thermal power indicated by equation  $\dot{Q} = m \cdot C_p \cdot \Delta T$  is about 322 (kW).

**5.4 Mesh**

Since the eddy currents are mostly located in the skin depth of the surface of the steel billet, a tiny mesh size is needed for accurate results. The maximum element size of 2.5 (mm) is defined to the steel billet and normal size of the mesh to the other part of the model.

COMSOL Multiphysics® allows using a mesh control feature on edges, faces, and bodies. Figure 5 shows the meshed model with two different mesh controls applied to the steel billet and other parts of the model. The important part of the model that it is solved as a billet. To correctly capture the temperature distribution, a fine mesh is applied to that part of the model.

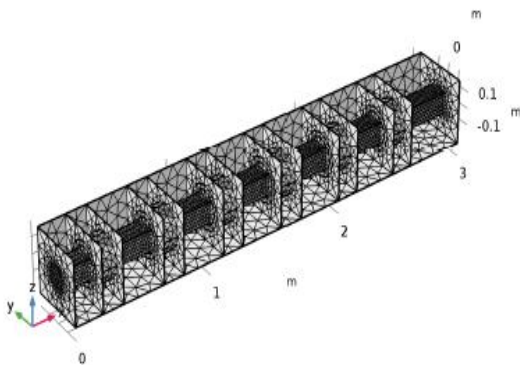


Figure 5: Finite element (triangular) mesh applied to computational domains

**5.5 Post-processing**

The temperature distribution along with the billet inside the induction furnace is in Figure 6. The steel billet moves inside the furnace with constant velocity. The magnetic field generated by coils and temperature raise in the billet. The maximum and minimum temperatures in the billet are showed in the billet figure below. The input part of the billet in the furnace has an initial temperature but when the billet moves along the furnace, the temperature raises. At the output of the furnace there is a desired temperature of the steel billet.

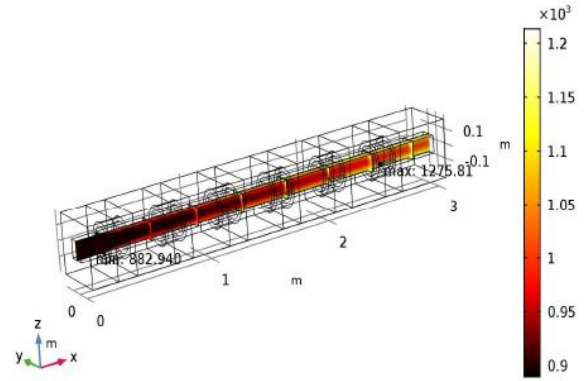


Figure 6: Temperature distribution in the volume of the billet (°C)

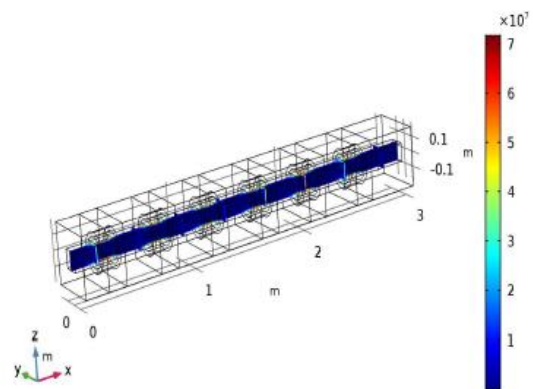


Figure 7: Normal current density in the volume of the billet (A m<sup>-2</sup>)

Temperature distribution over the cross section of the steel billet is shown in Figure 8.

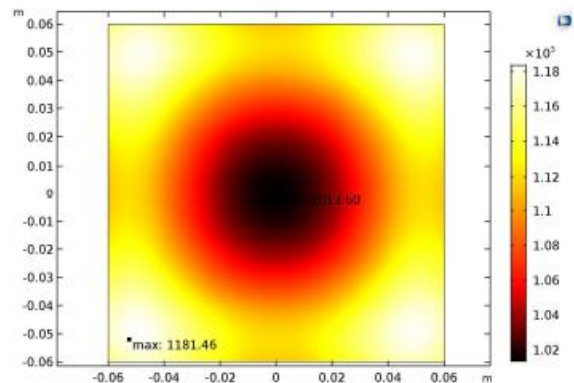


Figure 8: Temperature distribution over the billet cross section (°C)

As can be seen in the last figure the induction heating is prone to heat the outer regions of the billet surface primarily. By means of sophisticated numerical models a various combinations of input parameters can be tested to better understand this phenomena. The future work will be concerned with malfunctioning induction furnace in Khan Steel company.



## 6. Conclusions

In this paper the presented problem modeling and simulation was done in *COMSOL Multiphysics*<sup>®</sup>.

The main goal in the design of induction furnaces is to achieve optimal efficiency. Based on Physics concepts and finite element method the model is developed in a *COMSOL Multiphysics*<sup>®</sup> software for pre-heating of steel billet in induction heating furnace. Figure 6. shows a longitudinal section of the billet inside the induction furnace with a pre-heating time of 100 seconds. Figure 8 shows the cross-section of the billet. From the generated magnetic fields, heat flux is produced. Heat transfers within the billet through conduction. There is a maximum temperature at the outer part of the billet and a minimum temperature at the core. Furthermore, in the upcoming work a complex measurement will be done for simulation and control propose.

## Acknowledgements

The authors would like to gratefully thank for the support of the KEGA in the framework of grant project KEGA 032STU-4/2021.

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## Session: Natural Sciences

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Gulová, Slavomíra  
Kolesár Fecskeová, Lívia  
Matejová, Jana  
Morávek, Marko  
Harvanová, Denisa



## EFFECT OF CHORIONIC MESENCHYMAL STEM CELLS DERIVED EXTRACELLULAR VESICLES ON GENE EXPRESSION OF ACTIVATED CHONDROCYTES IN VITRO

Slavomíra Gulová - Lívia Kolesár Fecskeová - Jana Matejová - Marko Morávek - Denisa Harvanová

Associated Tissue Bank, Faculty of Medicine of P. J. Šafárik University and L. Pasteur University Hospital

Trieda SNP 1

Košice, 040 11, Slovakia

slavomira.gulova@upjs.sk

**Abstract:** Osteoarthritis (OA) is a whole joint disease with the great socioeconomical impact on whole population. There is lack of effective treatment which could reverse the progression of the disease. Nowadays, Extracellular vesicles (EVs) represent a promising tool in cell free therapy against cell based therapy. EVs have a diagnostic and therapeutic potential in many diseases including OA. In this study we stimulated chondrocytes with conditioned medium from OA synovial membrane to imitate the OA inflammatory microenvironment *in vitro* and we used EVs isolated from chorionic mesenchymal stem cells (Cho-MSCs) as a therapeutic tool. We found that EVs from Cho-MSCs downregulated expression of OA related genes (IL-6, IL-8, MMP-13, COX-2, RANTES) in chondrocytes activated with conditioned medium from OA synovial membrane.

**Keywords:** osteoarthritis, *in vitro* model, chondrocytes, extracellular vesicles, chorionic stem cells

### 1. Introduction

Osteoarthritis (OA) belongs to the most prevalent joint diseases in adult population causing pain and disability. The pathogenesis of osteoarthritis is still not fully understood and currently, there is lack of effective treatment. OA as a degenerative whole joint disease affects articular cartilage, subchondral bone, ligaments, capsule and synovial membrane [1]. OA affect diarthrodial joints, which include two adjacent bones covered by a layer of articular cartilage and encased by synovial membrane [2]. Articular cartilage is an avascular connective tissue composed of extracellular matrix and chondrocytes. Extracellular matrix (ECM) is composed of water, organic components, mainly type II collagen and aggrecan [1]. Chondrocytes have a key role in maintaining balanced turnover between anabolic and catabolic processes by balanced producing ECM components and degrading enzymes [3]. OA chondrocytes upregulate the expression of matrix-degrading proteases which are responsible for the breakdown of ECM components leading to degradation of articular cartilage [4]. Currently conventional treatments can improve symptoms but cannot reverse the degradation processes of cartilage. For the end stage of OA is surgical arthroplasty the only option. Mesenchymal stem cells (MSCs) with their immunomodulatory effects have a great potential in treatment of many diseases, however there are still concerns about their safety in clinical use. Therapeutic effect of MSCs mainly depends on their paracrine action. Extracellular vesicles (EVs) are fundamental paracrine effectors of MSCs and play a crucial role in intercellular communication, existing in various body fluids and cell supernatants. MSC-secreted EVs have promising cell-free-based regenerative therapeutic potential [5, 6]. According to International Society for Extracellular Vesicles (ISEV) are EVs naturally released from the cell that are delimited by a lipid bilayer and do not contain a functional nucleus [7]. EVs are considered to be intercellular communicators and vehicles for transport lipids, nucleic acids (mRNA, miRNA) and proteins between cells. With their cargo they can reflect the state of the cell of origin [8].

For isolation of EVs we used MSCs from chorion as a part of placental tissue. MSCs derived from placenta have a number of advantages, such as high degree of reproducibility, unlimited cell number and the elimination of invasive procedures. In this study we analysed the effect of EVs from chorion derived MSCs on OA related genes expression of chondrocytes activated *in vitro* [9].

### 2. Methods

#### 2.1 Samples collection

OA synovial membrane (SM) and cartilage were obtained from patients undergoing total knee arthroplasty. Chorionic membrane was obtained from patient undergoing Cesarean section. All tissues were collected with the approval of the local ethical committee with obtained informed consent from patients.

#### 2.2 Chondrocytes isolation and cultivation

Chondrocytes (CHRT) were isolated from cartilage by enzymatic digestion with Collagenase type II (Gibco™) overnight. CHRT were then seeded on 24 - well plate (50 000 cells/well) at passage 1 and cultivated *in vitro* with cultivation media contained 1% Antibiotic/Antimycotic Solution (Sigma-Aldrich®), 10% Fetal bovine serum, exosome - depleted (Gibco™), 1% Insulin-Transferrin-Selenium (100X, Gibco™), Dulbecco's Modified Eagle's Medium/Nutrient Mixture F-12 Ham (Sigma-Aldrich®), in condition of 5% CO<sub>2</sub> and 37°C.

#### 2.3 Preparation of conditioned medium from OA SM

SM from nine OA patients was carefully washed in Dulbecco's Phosphate Buffered Saline (Sigma-Aldrich®), dissected and weighted in order to obtain tissue samples at a ratio ~150 mg/mL media. Tissue samples were incubated in DMEM without phenol red (Sigma-Aldrich®), for 24 h at 37 °C in a humidified atmosphere and 5% of CO<sub>2</sub>. Conditioned medium (CM) from OA SM was collected, centrifuged at 300 g for 10 min at 4 °C to remove cell debris, filtered through a 0.22 µm filter and stored at -80 °C until use.

### 2.3 Cho-MSCs isolation and preparation of conditioned medium

Cho-MSCs were isolated from chorionic membrane by enzymatic digestion with Collagenase type II (Gibco™) overnight. MSCs were then seeded and cultivated *in vitro* with cultivation media contained 1% Antibiotic Antimycotic Solution (Sigma-Aldrich®), 10% Fetal bovine serum (Sigma-Aldrich®), MEM  $\alpha$ , nucleosides, GlutaMAX™ Supplement (Gibco™) and DMEM, high glucose (Gibco™) in the ratio (1: 1) in condition of 5% CO<sub>2</sub> and 37°C. Cho-MSCs were cultivated until 80% confluency was reached, then washed with 1xPBS and supplemented with DMEM without phenol red, low glucose (Sigma-Aldrich®), within 24 hours. Conditioned medium was then collected, centrifuged at 300 x g for 10 min at 4 °C to remove cell debris, filtered through a 0.22  $\mu$ m filter and stored at -80 °C until use.

### 2.4 Isolation of EVs from Cho-MSCs

EVs were isolated from Cho-MSCs conditioned medium. Briefly, conditioned medium was centrifuged at 3000 x g for 15 minutes to remove cells and cell debris. Obtained supernatants were supplemented with 25% w/v stock solutions of PEG 8000 to final concentrations of 8% PEG and with 3.75 M NaCl to final concentration of 75 mM NaCl. Samples were mixed gently by inverting the tubes three times and stored at 4°C overnight. EVs were concentrated by centrifugation at 1,500 x g for 30 min at 4°C. Supernatants were removed and pellet was resuspended in 1x PBS. To remove residues of PEG from the suspension, the EV-enriched fractions were washed with PBS and centrifuged at 110,000 x g for 2 h at 4°C. Obtained EVs samples were stored at -80°C until use.

### 2.5 Nanoparticle Tracking Analysis

Concentration and size distribution of EVs were analyzed by Nanoparticle Tracking Analysis (NTA) on LM10B Nanoparticle Characterization System from Nano Sight (Amesbury, U.K.) with a trinocular microscope and LM12 viewing unit with a 60mW laser working at  $\lambda = 405$  nm. Sample was diluted 10 times in depleted PBS. Results were displayed as a number-weighted particle size distribution. Video sequence was recorded via CCD camera operating at 30 frames per second and evaluated through the NANOSIGHT NTA 3.4 Analytical Software Suite.

### 2.6 Chondrocytes activation and co-cultivation with EVs

When CHRT reached 80% confluency, they were stimulated with pooled CM from OA SM (9 patients) in the ratio 1:1 within 24 hours. Based on NTA analysis, appropriate amount of extracellular vesicles was added to cells in the experiment. After 24 h activation, CHRT were cultivated with EVs from Cho-MSCs (1,13 x 10<sup>10</sup>/ well) in exosome free cultivation media for next 24 hours. CHRT cultivated in cultivation medium were used as a control group.

### 2.7 Analysis of Gene Expression by RT-qPCR

Total RNA was isolated from approximately  $2 \times 10^5$  stimulated, unstimulated (control) and treated chondrocytes using TRIzol reagent (Invitrogen™) and RNeasy Micro kit (Qiagen) following the manufacturer's protocol. Quality and quantity of RNA samples were analysed using NanoDrop spectrophotometer. Following this, 500 ng of RNA was reverse transcribed using SuperScript™ VILO™ cDNA Synthesis Kit (Invitrogen™) using oligo(d)T primers according to the manufacturer's protocol. The obtained cDNA was diluted 20x and used directly in qPCR or stored at -80 °C. Quantitative PCR (qPCR) was performed using PowerUp™ SYBR™ Green Master Mix (Applied Biosystems) on a CFX96 Real-Time Detection System (Bio-Rad). A 10  $\mu$ L reaction contained 1x PowerUp Sybr Green master mix, 500 nM of each forward and reverse primer and 1.5  $\mu$ L of 20x diluted cDNA. PCR conditions were as follows: 50 °C for 2 min for UDG activation, 95 °C for 2 min for initial denaturation, followed by 40 cycles of 95 °C for 20 s, annealing and extension at 60 °C for 1 min including plate reading. The relative gene expression of the selected target genes was calculated using the  $2^{-\Delta\Delta C_t}$  method [10]. Gene expression was normalized to two housekeeping genes (RPL13 and GAPDH), which were previously tested using the geNorm algorithm [11] and selected as the most stable reference genes. Gene expression was calculated as a fold change compared to the untreated control. The list of selected target and housekeeping genes and their primer sequences can be found in Table 1.

Table 1 Selected target and housekeeping genes and sequences of primers used in RT- qPCR.

Gene	Forward primer 5' → 3'	Reverse primer 5' → 3'
GAPDH	GTCTCCTCTGACTTCA ACAGCG	ACCACCCTGTTGCTGT AGCCAA
RPL 13	CTCAAGGTGTTTGACG GCATCC	TACTTCCAGCCAACCT CGTGAG
IL-6	AGACAGCCACTCACCTC TCAG	TTCTGCCAGTGCCTCT TTGCTG
IL-8	GAGAGTGATTGAGAGT GGACCAC	CACAACCCTCTGCACC CAGTTT
MMP-13	CCTTGATGCCATTACC AGTCTCC	AAACAGCTCCGCATCA ACCTGC
COX-2	CGGTGAAACTCTGGCT AGACAG	GCAAACCGTAGATGCT CAGGGA
RANTES	CCTGCTGCTTTGCCTA CATTGC	ACACACTTGGCGGTTT TTTCGG
SOX-9	AGGAAGCTCGCGGAC CAGTAC	GGTGGTCCTTCTTG CTGCAC

### 3. Results and discussion

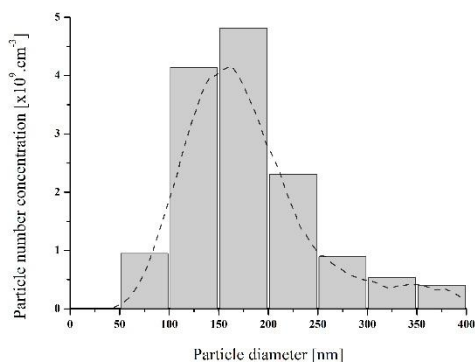


Figure 1 Particle size distribution of Cho-MSCs EVs obtained by NTA.

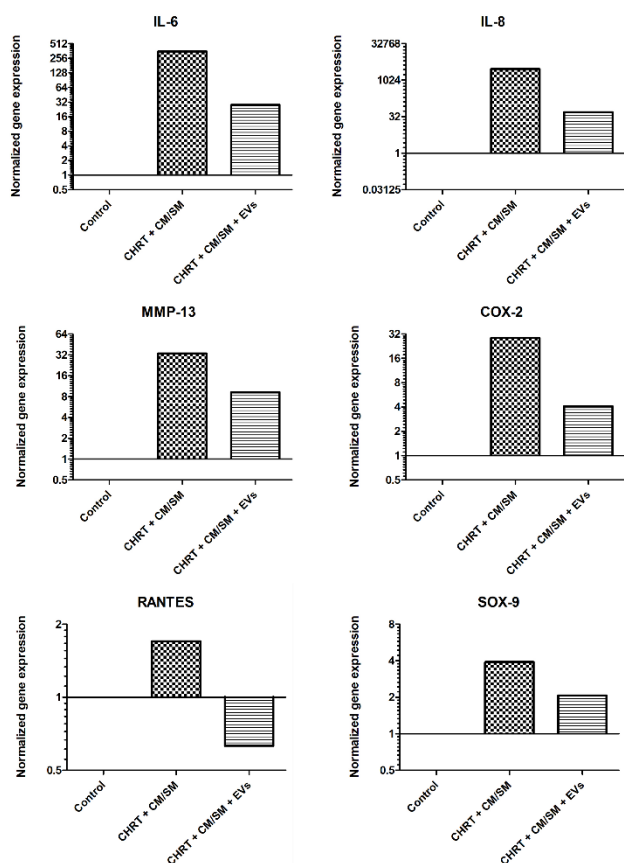


Figure 2 Graphs of normalized gene expression (CHRT – chondrocytes, CM/SM – conditioned medium from synovial membrane, EVs- Extracellular vesicles)

We have determined the impact of EVs from Cho-MSCs on gene expression of activated chondrocytes and analysed expression of genes related to OA, specially IL-6, IL-8, MMP-13, COX-2, RANTES. Based on RT-qPCR analyses we found, that normalized expression of OA related genes significantly decreased after adding EVs from Cho-MSCs compared to CHRT activated with CM from OA SM (Fig.2). IL-6 and IL-8 are proinflammatory cytokines

elevated in synovial fluid of osteoarthritic patients [12, 13], with important role in OA pathophysiology. IL-8 affects the release of MMP-13 [13], which is a major enzyme that degrades ECM proteins such as collagen type II, IV and IX, proteoglycan, osteonectin and others [14]. High MMP-13 expression was observed in patients with articular cartilage destruction, indicating a connection between levels of MMP-13 and cartilage destruction [15]. Zhang et al. observed suppressive effect of EVs isolated from human embryonic stem cell-derived MSCs on MMP-13 protein production in IL-1 $\beta$  treated chondrocytes [16]. Beneficial effect of murine bone marrow MSC derived EVs has been reported in murine chondrocytes *in vitro* model. The authors reported enhanced expression of anabolic markers (type II collagen, aggrecan) and decreased expression of catabolic (MMP-13, ADAMTS5) and inflammatory (iNOS) markers in groups treated with EVs [17]. Li et al. demonstrated that EVs from human bone marrow-derived MSC (hBMSC) have positive effect on OA IL-1 $\beta$  pretreated chondrocytes. They reported increased type II collagen, SOX9, BCL2, aggrecan and COMP gene expression and decreased levels of type X collagen, IL-1 $\beta$ , MMP13, and ALPL gene expression in group treated with hBMSC EVs [18]. Our results are in correlation with mentioned studies indicated potential of MSC derived EVs in cell free OA treatment.

### 4. Conclusions

EVs from Cho-MSCs had positive effect on chondrocytes activated with CM from OA SM and downregulation of OA related genes was observed. EVs from Cho-MSCs are a promising tool as a cell free therapy for OA, but further research is needed.

### Acknowledgements

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## Session: Medical Sciences

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Majerníková, Ludmila  
Obročníková, Andrea

## PROPOSAL OF A METHODOLOGY FOR ASSESSING THE QUALITY OF LIFE OF PATIENTS WITH MULTIPLE SCLEROSIS

Ludmila Majerníková

Faculty of Health care, University of Prešov in Prešov

Partizánska 1

Prešov, 08001, Slovakia

ludmila.majernikova@unipo.sk

**Abstract:** Multiple sclerosis (MS) is a serious progressive disease, affecting all dimensions of quality of life. Patients require a specific approach in solving various psycho-social problems. The goal of the project is to investigate the multidimensionality of the quality of life of patients with MS. Based on the current state of the issue, there is no evaluation tool (its subsequent verification for Slovakian conditions) that considers the specific needs and the perception of changes in the quality of life of a patient with MS. By investigating the multidimensionality of the quality of life of patients with MS, the goal of the project will be to develop, verify and make available a uniform, internationally accepted and recommended methodology for its assessment. The project is aimed at the higher education environment in the fields of nursing, midwifery, and health sciences, where the verified tool and its practical implementation will serve students, clinical and scientific teaching staff in clinical teaching.

**Keywords:** quality of life, multiple sclerosis, nursing

### 1. Introduction

The concept of quality of life encompasses dimensions of physical and mental health. It is clearly multidimensional in nature and cuts across different areas of an individual's personality. It is in line with the broadly defined focus of nursing, midwifery, and other health sciences, using knowledge not only from the medical but also from the humanities, which, in their complexity, ultimately extend into the social, educational, and educational spheres. The knowledge from the disciplines allows for a comprehensive view of the human being in its bio-psycho-social unity in the context of pedagogy, psychology, sociology, as well as the participation of other disciplines [1].

As many as 2.2 million people worldwide live with multiple sclerosis (MS), a chronic disabling neurological disease primarily affecting young adults [2]. About 80% of persons with MS are initially diagnosed with the relapsing–remitting form of the disease, and about 50% eventually develop a secondary progressive form 15 years after diagnosis. Uncertain prognosis and modest efficacy of current treatments make adjustment to MS particularly difficult for patients. MS is associated with diverse symptoms, such as fatigue, pain, depression, and cognitive dysfunction, significantly affecting patients in a variety of functioning domains which health care professionals often fail to detect [3,4]. Consequently, the concept of health-related quality of life (HRQOL) has increasingly received the attention of both researchers who aim to incorporate these somewhat hidden domains in established outcome measures, and of course MS to whom HRQOL is of key importance [5,6]. In the 1990s, the first MS-specific HRQOL instruments appeared in the literature [7,8].

Quality of life is an individual perception on their position in life following the cultural system and moral values in their living environment, which is associated with each's vision, standards, expectations, and attention. The role of

HRQOL assessment is to plan the next clinical management, to measure the outcome in the clinical study, to assess the health needs in a population, and as a source for budget allocation for health problems. Quality of life is a relevant outcome to be evaluated in patients with chronic diseases, such as multiple sclerosis.

In the previous years, various instruments have been developed for measuring QOL in MS patients, such as Multiple Sclerosis Quality of Life-54 (MSQOL-54), Hamburg Quality of Life Questionnaire in Multiple Sclerosis (HAQUAMS), Functional Assessment of Multiple Sclerosis (FAMS), Multiple Sclerosis Quality of Life Inventory (MSQLI), the Multiple Sclerosis International Quality of Life (MUSIQOL) and the Multiple Sclerosis Impact Scale (MSIS). Only MSQOL-54 and MSQLI consists of generic HRQOL instruments and several specific questions in accordance with the clinical manifestations and targets of MS management.

One of these, the Multiple Sclerosis Quality of Life-54 (MSQOL-54), was originally devised in US English, and subsequently validated in several languages [6,7].

### 2. Validation of the Multiple Sclerosis Quality of Life Questionnaire

The current state of quality-of-life assessment in patients with SM is characterized by considerable inconsistency and numerous differentiations in the use of assessment tools [2]. Generic questionnaires, designed exclusively for clinical practice, include the Short Form 36, Sickness Impact Profile, Nottingham Health Profile [3,4,5]. Clinical practice, demographic changes in terms of an ageing population, the increase in polymorbidity and chronicity of illness, the need to consider the needs of the individual and a holistic view of the individual necessitate the use of specific questionnaires that monitor the patient's quality of life in addition to their health status. These are specific

questionnaires for SM patients: the MSQOL-54 (Multiple Sclerosis Quality of Life Questionnaire) and the MusiQOL (Multiple Sclerosis International Questionnaire [6,7]).

The MSQOL-54 questionnaire was originally developed for English-speaking MS patients by Barbara G. Vickrey et al. and consists of two parts. The first part consists of questions assessing general health based on the SF-36 questionnaire. The second part is made up of eighteen questions designed specifically for SM patients to describe their specific problems and are based on expert opinion and a literature search. Fifty-four questions are divided into several headings and elicit data on the respondents' physical, mental, and emotional health, their cognitive abilities, social activities, limitations resulting from physical and affective indicators, pain intensity, fatigue, energy, the respondents' sex life, questions focusing on the respondents' subjective perception of health, health burden and quality of life. [4]. Given its multidimensional and content focus, their validation and incorporation into clinical practice is desirable [6].

*Table 1* Multiple Sclerosis Quality of Life Questionnaire *MSQoL – 54* [6,7]

<i>Subscale</i>	<i>NO. of items</i>	<i>Item number</i>
<i>Physical Functions</i>	10	3-12
<i>Role Limitations – Physical</i>	4	13-16
<i>Role Limitations – Emotional</i>	3	17-19
<i>Bodily Pain</i>	3	21,22,52
<i>Emotional Wellbeing</i>	5	24-26,28,30
<i>Energy</i>	5	23,27,29,31,33
<i>Health Distress</i>	5	1,34-37
<i>Social Functions</i>	5	20,33,51
<i>Cognitive Functions</i>	4	42-45
<i>Health Distress</i>	4	38-41
<i>Sexual Functions</i>	4	46-49
<i>Change in Health</i>	1	2
<i>Satisfaction with Sexual Function</i>	1	50
<i>Overall Quality of Life</i>	2	53,54

The validation process (in Slovakia) of the questionnaire was carried out in consultation with Prof. Barbara Vickrey of the University of California, Los Angeles, USA. The validated questionnaire itself has been and will be used in the educational process of undergraduate studies in nursing, midwifery, and other health sciences. Thus, the student will be able to personally experience the scientific work directly in the teaching process in its theoretical as well as practical aspects.

The management and organisation of the project implementation was managed by the principal investigator and his deputy through working meetings of the research team (workshops) at regular periods, considering the time subsidy of the whole project. The project will be implemented within a timeframe of 3 years.

Preparatory phase: 01/2020 - 12/2020

- Organize a working meeting of the research team (workshop), task differentiation,
- Addressing the use of financial resources, delegation of tasks.
- Plan the logistical preparation to ensure the conditions necessary for the start of implementation research.
- Conduct a search and review of studies focused on the assessment of quality of life of patients with MS.
- Identify the specificities potentially affecting the quality of life of patients in the context of meeting needs.
- Methodologically prepare the implementation of the research (obtaining the author's consent for the use of the selected MSQOL-54 questionnaire, certified back translation of the questionnaire, identification of the research population).

Implementation phase: 01/2021 - 12/2021

- Develop a linguistic-cultural adaptation of a globally recognized and standardly used
- MSQOL-54 questionnaire (double independent translation from English into Slovak and back translation into English).
- Pilot study conducted on a selected sample of respondents with its evaluation and necessary correction in accordance with the committee - neurologist, researcher, linguist.
- Distribution of MSQOL-54 questionnaires.
- Data collection, data sorting, data summarization.
- Statistical processing of data; psychometric testing of data, analysis, and synthesis of results.
- Presentation of partial results.

Dissemination phase: 07/2021 - 12/2022

- Working meeting of the research team (workshop), task differentiation, reassessment review of the use of financial resources, delegation of tasks.
- Verification of the MSQOL-54 assessment tool.
- Presentation of results at scientific and professional events.
- Preparation and publication of a scientific monograph in a domestic and foreign publishing house and a professional monograph in a domestic publishing house.

Inclusion criteria were MS patients fulfilling the McDonalds diagnosis criteria, age > 18 years old, able to read and write in Slovak; providing written consent to be recruited into the study. Exclusion criteria were subjects undergoing relapse in the previous month or having psychiatric disorders or other chronic diseases (diabetes mellitus, hypertension, etc.).

In the research part we used the Multiple Sclerosis Quality of Life-54 (MSQoL-54) questionnaire. Questionnaires are generally among the most frequent forms used for data collection. Since we are talking about a method that is specific and standardized, it is necessary that it meets the conditions that are: validity, objectivity, and reliability [8].

Validity states to what extent the method measures what it was created to do. Validity is ensured primarily by following the correct procedures for constructing the questionnaire. Objectivity is defined as the relative absence of personal errors. Reliability (reliability, accuracy of the measurement method) states the relative absence of errors during measurement [9]. An indicator of reliability is the coefficient  $r$ , whose values range from 0 to 1. In general, the higher the coefficient, the higher the accuracy of the measurement tool [8]. The author of the questionnaire used in our work is Dr. Barbara Vickrey from the University of California. The Slovak version of the questionnaire together with the scoring scale for evaluation was translated by doctors from the University of Prešov, Faculty of Health Sciences. Since the questionnaire did not include questions related to patients' demographic data, we decided to supplement the questionnaire with questions that were oriented to the duration of disease treatment, meeting social needs, work status, gender, marital status, level of self-sufficiency, age, disease treatment, highest education attained, occupation and social support.

In the validation process, we followed the recommended steps for the validation of quality-of-life questionnaires in patients with multiple sclerosis [10, 11]. A valid QoL measure refers to the extent to which a concept is well founded and corresponds accurately to the "real world." The validity of a QoL measurement is the degree to which the tool measures what it claims to measure. Three main properties must be explored: reliability, internal validity, and external validity.

Reliability - the reliability or internal consistency is the extent to which a measurement gives consistent results, that is, the extent with which a set of items in a dimension measures the same attribute. Reliability is assessed by the computation of Cronbach's alpha coefficients. Cronbach's alpha coefficients higher than 0.70 result in satisfactory reliability.

#### Internal Validity

Two main aspects must be considered: content validity and construct validity.

(i) Content validity is a nonstatistical type of validity that involves the examination of the questionnaire content to determine whether it covers all the aspects of the domain to be measured.

(ii) Construct validity refers to the extent to which the questionnaires developed from a theory do measure what the theory says they do. It mainly relies on statistical analyses of the internal structure of the questionnaire including the relationships between responses to different items. Construct validity was assessed by performing the following.

(A) Exploratory or confirmatory factorial analyses: in the case of confirmatory factorial analysis, a Kaiser-Meyer-Olkin (KMO) measure higher than 0.50 and a total variance higher than 70% indicate that the number of identified factors (or QoL dimensions) fit to the model.

(B) Rash analysis to explore the unidimensionality of each domain identified: unidimensionality is retained if item goodness-of-fit (INFTT) statistics values range from 0.7 to 1.2.

(C) Computation of correlation coefficients: correlation coefficients of each item with its dimension (item internal consistency (IIC)) higher than 0.40 and higher than the correlation coefficients of this item with other dimensions (item discriminant validity (IDV)) reflect a satisfactory construct validity.

#### External validity

External validity concerns the extent to which the internal construct can be supported by external criteria. External validity relies on assessment of the following.

(i) Convergent validity: relationships between the dimensions of the questionnaire and the dimensions of other previously validated questionnaires measuring the same concept.

(ii) Criterion validity: relationships between the dimensions of the questionnaire and other features: sociodemographic or clinical features [10, 11].

### 3. Results

The Slovak MSQOL-54 questionnaire was easy to administer and well accepted by our MS patients, with 90% of them stating that no embarrassing or difficult to interpret questions were present. The results were like those obtained using the original questionnaire on United States MS patients. Nevertheless, it is important to underline that it took an average of 16 minutes to complete the questionnaire, with more disabled patients taking longer. Help was necessary in 27% of all cases, a proportion that increased in relation to poorer clinical status.

As expected, the effect of neurological impairment was captured by the physical health composite score. EDSS was also an independent variable inversely related to physical health composite in the regression analysis, however it was not statistically significant after adjusting for age and clinical worsening.

Cognitive function, as assessed by MMSE, did not affect the composite scores. The regression analysis showed that MMSE score had only a small impact on mental health composite, and this disappeared after adjusting for age.

Disease duration over 10 years and clinical worsening in the previous year were significantly related to lower composite scores in univariate analyses, and in the multivariate model, clinical worsening retained its predictivity for lower physical health composite score.

In conclusion, our study has shown that the Slovak version of MSQOL-54 is easy to administer and is well accepted by patients. Neurological impairment, as assessed by EDSS has a limited influence on perceived quality of life as measured by MSQOL-54, while age and depressive symptoms has a major influence. In a recently published



study, MS patients and physicians disagreed on which domains of health status were most important for patients. We think that clinical trials and outcome studies should assess the effect of interventions considering, by means of accurate and reliable instruments, all components of health status that are considered important by the patients, and not simply rely on physician-assessed measures of disease status.

#### 4. Conclusions

Many scientific disciplines that deal with human beings discuss quality of life at a professional level. Philosophers, psychologists, sociologists, ethicists, and health professionals who provide nursing care to patients, including those working in social services, are part of the discussions. Many experts have contributed greatly to the development of the theme of quality of life. According to the authors of the large dictionary of sociology, the term quality of life is not very sophisticated. This term is characterised by qualitative parameters in the following areas: lifestyle, human life, way of life and living conditions of society. Quality is related to spiritual values and thus represents something that goes beyond the needs that can be satisfied through matter. With our contribution we wanted to present a framework of the process of validation of the selected measurement tool for the needs of neurological nursing, which will allow to use this tool in clinical practice in the conditions of our country with all the specificities.

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## QUALITY OF LIFE IN PEOPLE WITH EPILEPSY: A PILOT STUDY

Ludmila Majerníková

Faculty of Health Care, University of Prešov in Prešov

Partizánska 1

Prešov, 08001, Slovakia

ludmila.majernikova@unipo.sk

**Abstract:** A chronic disease such as epilepsy can negatively affect the quality of life of patients, especially its social area. The goal of the paper was to determine the relationship of variables such as gender, frequency of epileptic seizures and social support on the perception of quality of life among our respondents.

**Keywords:** quality of life, epilepsy, nursing

### 1. Introduction

Epilepsy is the most common chronic disease of the nervous system, specifically the brain, manifested by the recurrence of two or more epileptic seizures more than twenty-four hours apart [1]. The incidence of epilepsy depends mainly on age and is highest in children under one year of age and in the elderly. Each year, newly diagnosed epilepsy in developed countries is at 45-50 cases per 100,000 population [2].

Tefera et al. [3] reported that epilepsy affects approximately more than 50 to 70 million people worldwide, making it one of the most common neurological diseases worldwide, and that epilepsy is considered a treatable condition with a high therapeutic response rate (75%) when using currently available antiepileptic drugs. Inclusion in the social sphere of life is considered to be an important characteristic of a well-lived life of well-being, where the individual is aware of the importance of being included in society (closest relationships, community) and knows how to navigate in it, people are friendly, the individual himself is part of the events of the society and knows how to navigate in it, and the society is evolving in a positive direction [4].

The quality of life itself is characterized by the subjective evaluation of a person, which takes place in a certain cultural, environmental but also social context. It encompasses a complex of indicators namely, physical health, mental health, beliefs and faith and social relationships are also important which include social support, personal relationships, and sexual activity. Important factors that influence the level of satisfaction of individuals in the assessment of subjective quality of life in relation to the social domain are the level of social relationships and family life, also active life in society/community, social situation, enforceability of one's rights, security, employment - job satisfaction, level of education [5].

Although epilepsy is a widespread and serious chronic disease, in our country, the studies on quality of life in epilepsy are limited. While the psychosocial aspect of the disease has been underscored since years, its impact on the quality of life has been a subject of interest only recently.

Lately, investigators have been able to perform more potent studies with the advent of questionnaires measuring quality of life in epileptic patients. Among those questionnaires evaluating the quality of life, we can mention Epilepsy Surgery Inventory-55, Epilepsy Psycho-Social Effects Scale (EPSES), Liverpool Assessment Battery and Quality of Life in Epilepsy-89 (QOLIE-89) and Quality of Life in Epilepsy-31 (QOLIE-31), which has been derived from the QOLIE-89 [4, 5].

### 2. Methodology

The main objectives of our study were to investigate and evaluate the social aspect of quality of life in patients with epilepsy in terms of gender, disease duration and social status.

The research was carried out in three neurological outpatient clinics, two of which are in the town Kežmarok and one in the town of Poprad. The research was carried out in the time interval from 12/2021 to 02/2022, with 50 respondents diagnosed with epilepsy participating. We used for data collection a standardized questionnaire QOLIE - 31 by Vickrey et al. which contains 31 questions focused on the quality of life of patients with epilepsy and which could only be completed by respondents who had not experienced a simple or complex partial seizure in the last 4 hours or a generalized tonic-clonic seizure in the previous 24 hours, with responses completed by circling the best possible answer on Likert scales. The QOLIE-31 consists of seven domains including Seizure Worry, Overall Quality of Life, Emotional Well-being, Energy-Fatigue, Cognitive Functioning, Medication Effects, Social Functioning, and overall score. Higher scores in the QOLIE-31 indicate better QOL.

We also supplemented the standardized questionnaire with 17 questions focusing on sociometric variables to approximate our research sample. Our study sample consisted of 50 respondents with epilepsy, 30 of whom were male and 20 females with a mean age of 37.5 years, where the youngest respondent was 21 years old and the oldest was 50 years old, which was our maximum age range. The mean year of diagnosis of the disease was 2009 and the most common type of epilepsy of our respondents was grand mal. Up to 82% of our respondents were taking

antiepileptic medication regularly, which is an important aspect in disease management. Regarding the educational background of our respondents, the most common educational background was high school graduation and 33 respondents out of 50 respondents were employed.

### 3. Results

Overall quality of life scores was rated by the entire sample of respondents in the areas of emotional health (60.1), Fears of an epi attack (54.99), and impact of medications (54.01). Cognitive function (46.08) was rated the worst by respondents (Figure 1).

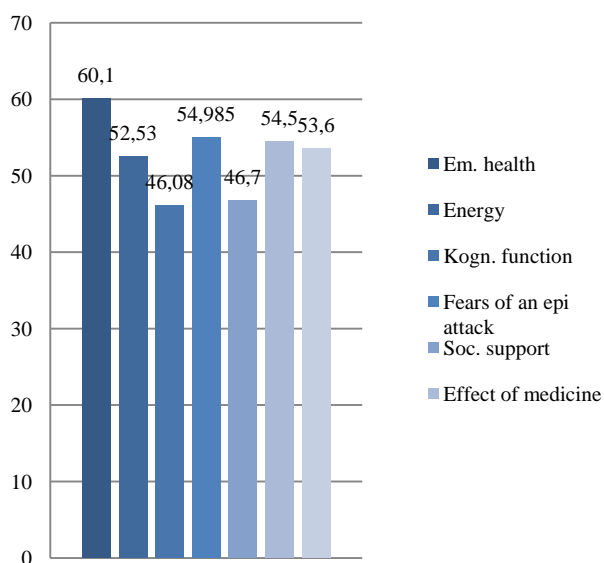


Figure 1: Overall quality of life in respondents

Based on the analysis of the results for which Spearman's correlation was used, comparison of the relationship between perceived social quality of life parameters and time of epileptic seizure occurrence, we found a negative correlation with the social quality of life domain under study, indicating that respondents who had recently had an epileptic seizure showed a lower level of social quality of life. We also correlated the results with all the domains studied, thus we can assess that respondents who had recently had an epileptic seizure show lower levels of their quality of life in the domains of overall quality of life, emotional health, exhaustion/energy, cognitive function, fear of having another epileptic seizure and effects of medication.

Figure 2 presents the results through which we assessed that the statistical results are significant in the observed variables in terms of the level of social support. Patients who had sufficient social support from their loved ones/family showed higher levels of quality of life in all the domains reported - overall quality of life, emotional health, exhaustion/energy, cognitive function, epileptic seizure fear domain, social domain and showed the most significant results in the domain of medication effects.

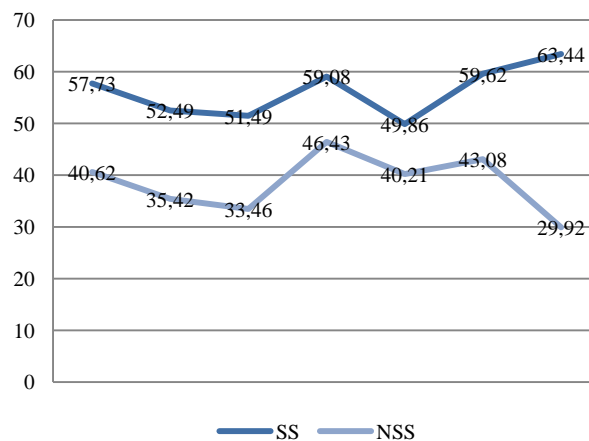


Figure 2: Social support

Based on the results presented in Figure 3, in which we compared our respondents based on gender, our hypothesis was not tested or the differences between men and women were not statistically significant. However, men showed better results compared to women in all the domains studied, namely in the overall quality of life, in emotional health, in the exhaustion/energy domain, in cognitive function, in the domain that explored the fear of having an epileptic seizure, in the social domain, and in the domain that explored the effect of medication - antiepileptic drugs.

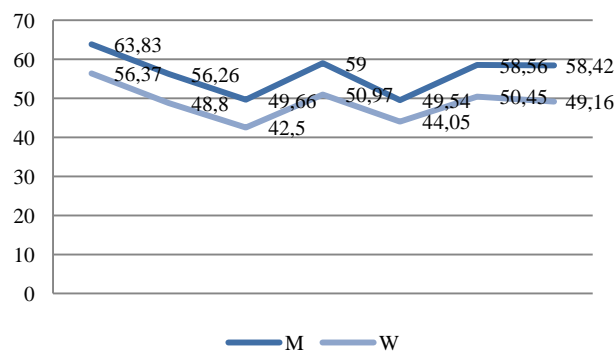


Figure 3: Gender

#### 4. Discussion

A study by Liu et al, [6] compared men to women who have been diagnosed with epilepsy. The number of participants was 158, of which 65 were women and 93 were men. In addition to the QOLIE-31, they also used the Self-rating Anxiety Scale (SAS), Self-rating Depression Scale (SDS), and Pittsburgh Sleep Quality Inventory (PSQI) to collect data. The aim of this research was to determine whether there are differences in the prevalence and influencing factors of anxiety and depression between men and women with epilepsy. The results showed that there was no difference between genders for the prevalence of anxiety and depression in this study.

However, mitigating factors for psychiatric comorbidities differed significantly between men and women: men with comorbid anxiety were more likely to be affected in terms of sleep quality, whereas anxiety symptoms in women were strongly associated with seizure frequency. An important and common predictor of anxiety and depression symptoms was the exhaustion/energy domain of quality of life, with males being more affected. Compared with our results in the exhaustion/energy domain, we found the opposite. Women had a worse quality of life compared to men. In our study, we did not find statistically significant differences between men and women.

In another study, the authors' team compared the subscales of the QOLIE-31 questionnaire with patients who were in remission from epileptic seizures and with patients after an epileptic seizure. From the results, they assessed that quality of life was reduced in all categories (QOLIE-31) in post-epileptic seizure patients, and these patients also showed a significant impairment in quality of life and activities of daily living compared to patients in seizure remission. We matched respondents who had a recent epileptic seizure with the social domain of quality of life, but Figure 3 describes all subscales of the questionnaire. Our results show that also patients after an epileptic seizure show a negative correlation in all subscales of the standardized questionnaire [7].

A study by Tefera [3] compared respondents who had an epileptic seizure within a month and respondents who had a seizure more than a month ago and compared the subsequent association of seizures with their quality of life. The results of the study showed that patients without a seizure episode within the last month had a better mean QOLIE-31 total score compared to patients who had a seizure within the last month. This study also described the correlation between the total score and the QOLIE-31 subscales. The overall quality of life showed a significant moderate negative correlation with the number of epileptic seizures. In general, an increase in seizure frequency decreases the overall quality of life score. An increase in epileptic seizure frequency primarily decreases seizure worry, emotional well-being, and the exhaustion/energy domain of quality of life, as shown by the significantly moderate correlation. However, seizure frequency was found to have a non-significant effect on the other

subscales of the QOLIE-31, and from our results we can confirm that our respondents who had recently had an epileptic seizure also showed poorer quality of life measures but in all domains of the standardized QOLIE-31 questionnaire examined.

Previous studies of QOL in people with epilepsy, performed mostly in Western Europe and North America, have highlighted diminished QOL. It was demonstrated that Quality of life was worse in patients with epilepsy than in the general population; it was comparable or worse in patients with epilepsy than that in patients with other chronic conditions; and it was like that of healthy persons in patients with well-controlled epilepsy [10].

Like our study and studies revealed that the most important for patients with epilepsy were social and psychological aspects of daily life: frequency of seizures, effect of antiepileptic drugs [11, 12, 13]. Frequency of seizures was described as one of the most relevant determinants of poor QOL scores [14].

#### 5. Conclusions

Quality of life depends not only on the free choice of the individual, but also on the need to strengthen social support and the patient's perception of it. It is important to note that if the patient perceives low social support, he/she may experience various manifestations of dissatisfaction, behavioural disturbances, emotional disturbances, and also suicidal ideation [8]. In terms of the disease, there may be a change in social status, social descent but also loss of social and family prestige, which can greatly affect the quality of life of the patient and their psyche. There may also be a situation where social contacts, which may be particularly important for the patient, are reduced or even disappear [9].

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## NURSING MANAGEMENT OF PERISTOMAL SKIN COMPLICATIONS

Andrea Obročníková

### University of Presov, Faculty of Health Care

Partizánska no. 1  
Presov, 08001, Slovakia  
tel: +421 51 7562 460  
andrea.obrocnikova@unipo.sk

**Abstract:** All persons with stoma are at risk of developing peristomal skin problems. This is true regardless of the type of stoma or available devices for stoma care. There are measures that can be taken to reduce the possibility of peristomal skin problems. These measures include preoperative marking of the stoma site, preoperative education, appropriate bag placement, and skin protection. Stomal problems can be a source of frustration for patients, but a properly functioning stoma in a patient educated in its care can lead to a highly functional individual with a high quality of life, comparable to a person without a stoma.

**Keywords:** stoma, peristomal skin problems, stoma site marking, stoma care, education

### 1. Introduction

The purpose of creating a colostomy is to ensure the derivation of stool after the removal of the aboral part of the colon or rectum, it is also used in the defunction of the aboral part of the colon to protect the distally placed anastomosis, or in the decompression of the intestine in the acute management of an aboral obstruction with a future definitive surgical solution. The purpose of creating an ileostomy is to ensure the derivation of intestinal contents after removal of the HC and rectum, temporary defunction of the anastomosis in the rectal area, and permanent/temporary decompression of the oral part of the worm during obturation [1]. Indications include proctocolectomy in ulcerative colitis or colorectal anastomosis problems (excessive defecation/incontinence), in familial adenomatous polyposis of the intestine, as a temporary axial ileostomy in low colorectal and colorectal anastomoses (prevention of overflow from the anastomosis), and as a non-frequent indication as a staged ileostomy in IBD (Ulcer, Crohn's), or as a staged ileostomy in IBD (Ulcer, Crohn's), or as a staged ileostomy in colorectal anastomosis, double-headed ileostomy in advanced recurrent, unresectable pelvic tumours (gynaecological, rectal) with concomitant symptoms of obstruction/ incontinence [2]. In general, it can be stated that enterostomies are most commonly performed in the treatment of colorectal and bladder cancer, constipation, pelvic floor dysfunction, and inflammatory bowel disease [3, 4].

Ostomy complication rates are high, with severity ranging from mild complications, requiring local treatment, to severe complications, requiring reoperation/ correction. Stomal complications cause morbidity, psychosocial consequences (worsening of CI, social isolation). Peristomal skin complications (PSC) are not negligible. Peristomal skin complications have been shown to affect 18-75% of patients [2, 4].

Healthy peristomal skin is essential for pouch adhesion, which prevents secretions from seeping onto the skin [5].

A small area of skin can have a big impact on your overall health and comfort. There are many negative impacts of PSC, all of which can cause serious problems, such as leakage; pain; irritation; itching and general discomfort; unpleasant odor; additional health care costs; and additional time needed to address these problems [6].

### 1.1 Causes of peristomal skin complications

Maintaining intact peristomal skin is proving to be a challenge for patients, their caregivers and the healthcare teams that work with them. The goal of proper ostomy management is to know the causes of skin disorders and to know how to treat and prevent them. Aids and accessories need to be assessed to ensure that they are appropriate for each individual stoma, to prevent leakage of discharge and to maintain healthy peristomal skin. Several strategies and products can be used to protect and treat the skin, including barrier creams and films, powders, pastes, sealants, cleansers, lotions, and ostomy accessories. The use of products can affect patient care and clinical outcomes and economic costs. Quality patient education on ostomy care improves outcomes, is part of quality care, and increases the effectiveness of nursing services [5].

Ileostomies and loop ileostomies in particular, are responsible for the largest proportion of peristomal skin complications. Complications range from mild irritation to full-thickness ulceration, leading to pain, distress, and in some cases significant social isolation related to leaky pouching. They are among the most common postoperative complications and usually occur within the first two weeks of stoma creation. Peristomal skin complications may also present as late complications, months or even years after the first operation. Treatment should be tailored to the underlying cause of the complication. Treatment may include changing the use of other pouch systems, altering the topical care regimen to the administration of systemic medications (if the cause of the complication is related to a systemic disease process), and, in some cases, necessary surgery [4].

The type of stoma, size and location on the abdominal plane (prolapse, retraction) can affect the tightness of the pouching system and poor fit can result in leakage and consequent skin irritation. Loop ileostomies account for the largest proportion of peristomal skin complications (79%) in patients [7].

Loop ileostomies often discharge near the skin because the stoma itself often does not protrude enough, being too flat. It is not uncommon for a loop ileostomy to sink further into the abdomen after the initial postoperative swelling has subsided. Probably involved in this is the fact that a larger defect in the fascia must be created to allow the two bowel cranks and the mesentery to approach the skin, and thus the stoma is not protruding enough to seal well. A low stoma leads to accumulation of effusion near the stoma site and eventual leakage under the flange. Terminal stomas are subject to similar technical problems. An inadequately everted stoma will shrink after the first few weeks (as the swelling subsides), and may recede to the level of the skin or below. A stoma under tension/stretch may compromise blood supply and venous return, subsequently causing ischemia. Even if the stoma is eventually viable, it often recedes. In obese patients, the mesentery of their stoma is thicker and shorter, so their stomas are particularly at risk for these ischemic events, which can lead to retraction of the stoma. Leakage is even more severe in a retracted stoma, where the orifice is located below the abdominal plane.

Even a well-everted stoma may exhibit leakage problems if it is placed in a deep skin fold, causing peristomal skin retraction around the perimeter or in only one or two locations. Any unevenness of the peristomal plane can cause accumulation of discharge and lead to leakage. The risk of peristomal plane inequality is significantly higher in patients with a higher BMI. Skin folds often occur immediately after surgery, but may also appear years later as a result of parastomal herniation, weight gain or weight loss. They may also occur as a result of mucocutaneous separation, localized infections, diabetes, and steroid use.

Patients may suffer from peristomal skin complications related to the pouching system products themselves. Mechanical injury to the peristomal skin or hair follicles may occur as a result of repeated removal of adhesive flanges and skin barrier products. Damage may also occur as a result of violent and excessive cleansing of the skin. In patients with sensitive skin or allergies, any of the products of the pouching system may cause dermatitis. Flanges, paste, barrier rings, even the plastic of drainage bag clips can cause burning, redness in patients. Many times this allergic reaction leads to seepage and causes further denudation and ulceration [2].

Peristomal skin complications can develop from immunologic or disease-related processes. Fungal infections benefit from the warm, moist environment found beneath the barrier lining or may occur as an opportunistic infection if the patient is undergoing

antibiotic therapy [2]. Peristomal fistulas are particularly challenging and there are multiple predisposing conditions. Crohn's disease is a well-known risk factor for fistulae. Peristomal infection and abscess formation predispose this area to fistulae. Peristomal pyoderma gangrenosum (PPG) is a painful and rare cutaneous complication that most commonly occurs in patients with inflammatory bowel disease. PPG can occur at any time after stoma formation, sometimes weeks to years later. The wounds occurring with PPG are extremely painful and rapidly enlarge with the slightest trauma causing difficulty in adherence of the pouch and leakage of exudate onto the skin [8].

## 1.2 Types of skin changes

*Contact irritative dermatitis* - arises at any period of the life of the ostomate as a result of chemical, mechanical and biological irritation of the skin. By the action of pollutants, the protective properties of the skin are weakened and seepage into the epidermal layer occurs. Inflammation occurs, manifested by erythema, skin oedema, blistering and oozing. Mechanical erosions occur most often as a result of an unreliable approach to stoma treatment. Erosion is caused by forcible removal of the ostomy appliance during replacement unless the ostomate uses the recommended accessories (cleaning solution, cleaning foam, patch remover). Chemical irritation of the skin is caused by exposure to aggressive excreta when the ostomy appliance is run under. Not only for skin changes, but also for the initial problem with underdraining, it is necessary to seek the help of an ostomy nurse in a timely manner. Due to skin irritation, a non-allergic non-infectious inflammation of the skin occurs at the site of exposure to the pollutant, the development of which is very rapid, we are talking about the occurrence within a few hours. The peristomal skin in this complication is initially red and swollen, and as the defect deepens, sharp, burning pain increases. Swelling erosions occur, which may bleed as a result of the mechanical cleansing of the skin. Dry, clean skin around the stoma without adhesive residues or stool is essential for safe fixation of ostomy appliances. In addition, skin damaged by contact irritant dermatitis is constantly moist, producing tissue fluid that makes it impossible for the devices to adhere and stick to the skin. Severe cases of cutaneous irritant dermatitis may also cause short-term hospitalisation of the ostomate. It is necessary to achieve tightness around the stoma and prevent further leakage of the devices [2, 9].

*Maceration* - is the most common complication that every ostomate encounters sooner or later. It is caused by the action of aggressive intestinal contents that get under the adhesive surface of the ostomy appliance. The cause of its occurrence is most often an improperly chosen or poorly cut out ostomy pouch, uneven terrain around the intestinal outlet, excessive sweating or failure to follow the recommended procedure for treatment of the intestinal outlet with the ostomy device. The solution is an appropriate ostomy pouch, complete with accessories to protect the skin, and cutting out the appropriate size of the ostomy system (Fierlová, 2018). Maceration is manifested

by discoloration of the skin, shedding of the superficial layer of skin and wrinkling. It is caused by excessive moisture in the skin under the pad. Macerated peristomal skin is more susceptible to mycotic or bacterial infections [2, 9].

*Mycotic infections* - a very common cause of infections is *Candida albicans*, which thrives well in moist environments. Emphasis is placed on proper hygiene care in the treatment of the outlet, prevention of underflow of devices, gentleness in washing the peristomal skin, etc. Candidiasis on the peristomal skin may manifest as white crusts with red spots. Treatment requires application of antifungal ointment in a thin layer [2, 9].

*Pseudoepitheliomatous hyperplasia (PEH)* - is the result of untreated maceration of the skin. It is characterized by a papillomatous, cauliflower-like appearance of the skin in the immediate vicinity of the stoma. If there is no improvement with intensive care, human papillomavirus infection, recurrence of inflammatory disease (M. Crohn's) or neoplastic changes must be excluded. Histopathologically, granulomatous inflammation occurs in PEH. Usually this problem is solved by the stomasister by ensuring dryness of the skin around the stoma, by applying lapis infernalis (silver nitrate) or by creating light pressure by inserting a convex ostomy appliance [2, 10].

*Hypergranulation on the mucosa* - accelerated healing of the skin covering, which grows over the intestinal mucosa and gradually closes it. In most cases, the solution is only surgical [11].

*Folliculitis* - plucking out hairs by replacing the ostomy pad leads to minor injuries in the hair bulb area. Secondary colonization by bacteria and inflammation of the hair bulb manifests as folliculitis. Prevention of folliculitis is by regular hair removal or the use of patch removers. The most gentle method of hair removal is shaving with an electric razor, the use of a razor leads to injury of the superficial layer of the skin and depilatory creams are a common cause of allergic contact dermatitis [2, 10].

*Allergic contact dermatitis* - contact allergy is a rare cause of peristomal dermatitis. Allergens can be contained in common hygiene products (soaps, shower gels, shampoos), in cosmetic products for stoma care (cleaning solutions, protective creams, pastes, pads) or in the ostomy appliances themselves, such as the pad or the adhesive part of the ostomy appliance. Clinically, contact dermatitis is manifested by erythema, small papulovesicles, erosions, and later crustsquamous lesions. In contrast to irritative dermatitis, the lesion is not sharply demarcated from the surrounding skin, it gradually fades into the periphery and spread of the eczema to a distant area of the skin is evident. Subjectively, intense itching is present. In therapy, it is necessary to remove allergens and apply topical corticosteroids. In case of allergy to the adhesive parts of the ostomy appliance, a hydrocolloid pad can be applied [2, 10].

*Decubitus ulcers* - are the result of sustained pressure on the skin, which causes ischemic necrosis of the skin. The most common reason for their occurrence is improper choice of ostomy appliance. Decubiti are formed mainly when a two-piece appliance is applied due to the pressure of the fixing plate or adhesive tape, which prevents the appliance from coming off. Initially, erythema and maceration form, then deposits of dry necrosis and ulceration. Patients complain of great soreness in the area of the defects. In therapy, the most important thing is the replacement of the device and the defect is treated according to the stage of healing of the chronic wound [10, 12].

### 1.3 Evaluation of peristomal skin

Table 1 Areas of peristomal skin assessment

Documentation	Assessment of changes	Observation
Clinical history	Abdominal contours/folds	Incorrect determination of hole size
Extent and duration of disease	Change in weight	Incorrect use of the product
Frequency of appliance replacement	Outlet consistency	Incorrect storage of the product
Appliance replacement technique	Skin turgor	Any predisposing factors
Treatment and effects	Size and shape of the stoma	Signs of leakage on the bag

[12]

### 1.4 Therapy of peristomal skin

*Skin folds* - clean the skin, make sure the folds are dry, apply a protective cream or film. Fill with paste, tape paste or glue.

*Seepage caused by folds* - before applying the bag, clean the skin, apply barrier cream/foil and align the skin with paste or sealant.

*Leakage caused by parastomal hernia* - clean the skin, apply barrier cream, flatten the skin and use flexible, bulging devices and a pad under the hernia.

*Leakage due to retracted stoma* - clean skin, apply barrier cream/foil, use convex devices to prevent leakage.

*Exposure of skin* - use adhesive removers to prevent irritation of peristomal skin, assess patient technique and instruct, use barrier film to protect skin.

*Painful skin* - apply a protective powder as a first line, remove excess powder, and then apply a barrier sheet or cream. Resize the opening and check. Patient's technique.

*Wet skin* - apply protective powder to dry the site, in case of a very wet site use a cool blow dryer remotely to ensure effective adhesion of the bag, apply barrier film.

*Folliculitis* - use adhesive remover and shave the area regularly.



Pyoderma gangrenosum - treatment with steroids and/or dermatological examination [5].

## 2. Conclusions

The goal of proper stoma treatment is to prevent peristomal skin soreness. It is essential that healthcare professionals understand skin damage and know how to treat and prevent it. A comprehensive skin assessment is used to determine the necessary treatment, and early detection prevents unnecessary physical discomfort and reduces the number of discomforts. There is a wide variety of products available today, which can make it difficult for nurses to choose the optimal ones. Incorrect use of products can affect clinical outcomes, patient satisfaction and quality of life and increase the financial burden.

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## ROLE OF THE NURSE IN THE MANAGEMENT OF FATIGUE IN CANCER PATIENTS

Andrea Obročníková

### University of Presov, Faculty of Health Care

Partizánska no. 1  
Presov, 08001, Slovakia  
tel: +421 51 7562 460  
andrea.obrocnikova@unipo.sk

**Abstract:** *In this article, the author discusses the issue of cancer-related fatigue, which affects the quality of life of cancer patients but is still underestimated and undertreated in clinical practice. In order to bring the above mentioned issue closer to the reader, the article presents its characteristics, etiological determinants, dimensional symptomatology and briefly therapeutic strategies of cancer-related fatigue. The article offers an overview of cancer-related fatigue rating scales for a better understanding of its impact on the life of the affected individual, family and recommended nursing interventions for the need of a comprehensive approach to its management.*

**Keywords:** *fatigue, assessment, cancer, nurse, role*

### 1. Cancer-related fatigue

Cancer-related fatigue syndrome (CRF) is a persistent feeling of cancer patients. It has been experienced by almost every person with malignant disease, with an incidence ranging between 80 and 100%. It occurs as short- and long-term side effect of most anti-cancer treatments and a consequence of cancer itself, can occur at any stage of the cancer disease, from its diagnosis to many years after treatment ends [1]. According to the National Comprehensive Cancer Network (NCCN), CRF is a distressing, persistent, subjective sensation experienced by patients that interferes with physical, mental, cognitive, and emotional functioning without such distress occurring prior to the disease itself or preceded by increased physical activity [2]. The European Association of Palliative Care has developed a working definition of cancer fatigue based on the European Organisation for Research and Treatment of Cancer (EORTC), which describes as a subjective feeling of tiredness, weakness or lack of energy [3].

#### 1.1 Aetiology CRF

According to Professor Jurga [4], fatigue 'is a complex condition whose aetiology is multifactorial and therefore requires a multifaceted approach', it is rarely an isolated symptom, which makes its management particularly difficult. The exact mechanism that causes such excessive fatigue is not yet known. CRF is currently receiving increased attention despite the fact that the specific mechanism contributing to its development is not yet fully understood. Variety of factors play a role in the development of fatigue, such as substances produced by the cancer, chemical levels substances, ions, hormones or metabolites. Fatigue is often the result of combined mechanisms that cause it [5]. The presence of a cancer and its treatment greatly depletes the energy of the patient, also the fatigue can be adversely affected by metabolites in the breakdown of the tumour. Cancer treatment (e.g. combined chemotherapy and radiotherapy intensifies fatigue). Studies describe that patients with cyclic chemotherapy suffer from cyclic fatigue (due to leukocyte depletion), often occurring when receiving high-dose chemotherapy

and after hematopoietic cell transplantation. Chemotherapy drugs that cause fatigue are vinca alkaloids, 5-FU, antimetabolites, and alkylating agents [6]. Impaired nutritional status (nausea, vomiting, mucositis, diarrhea, anorexia and cachexia), inadequate rest and sleep, anaemia in advanced tumours, medicines with a depressant effect (opiates, antidepressants, antihistamines, benzodiazepines, sedatives, anxiolytics,) psychological burden (problems in relationships, communication, financial problems, impaired social role performance, hopelessness), psychiatric diagnoses (emotional changes - depression), other causes - malnutrition, dehydration, hypoxia, infection, heart, liver, kidney failure, neuromuscular disorders, the pain causes a reduction in the patient's motor activity, weakening of the muscles and the whole body, which is associated with a feeling of increasing fatigue, etc. [7-9].

#### 1.2 Symptoms of CRF

From a nursing perspective, cancer fatigue is the most limiting symptom that, depending on its intensity, indisposes the cancer patient in all dimensions of quality of life. This symptom has a strong impact on patients' psychological, physical, and social wellbeing, and therefore on their quality of life. It limits the ability to perform specified tasks, to take an active part in social life and to engage in favourite activities (interests and hobbies). Routine daily activities can be a great burden for the patient, costing much more effort and energy than usual, and even eating or talking is perceived as a great effort. Patients report that fatigue does not subside even with rest and sleep, on the contrary, it causes stress and anxiety also in the long term and can have consequences for family members or caregivers [10, 11].

Symptoms of cancer-related fatigue occur every day or almost every day for at least two consecutive weeks [12]. The fatigue that accompanies cancer is in many ways different from the fatigue we experience normally. Individual symptoms can be divided into physical, psychological, cognitive domains (table 1).

Table 1 Symptoms of cancer related fatigue

Physical domain	Psycho-emotional domain	Cognitive domain
general weakness or pain	reduced motivation or disinterest in activities	reduced concentration and attention
muscle weakness or stiffness, feeling of heavy legs, stiffness	increased moodiness (irritability)	impaired short-term memory,
decrease in muscle strength through loss of speed and fine coordination of movements	apathy, a feeling of helplessness	reduced ability to think clearly and difficulty in making decisions
trembling of the hands and eyelids, unsteadiness when moving, feeling faint or like vomiting, tinnitus and fogging in front of the eyes,	inability to regenerate strength	loss of concentration, thinking problems generalized malaise
increased need for sleep (no freshness) or insomnia, tachycardia, shortness of breath on exertion and anaemia	anxiety, sadness, frustration, depression at the forefront	loss of motivation and energy, slowed speech and movement

[8, 13-15]

1.3 Assessment of CRF

Fatigue is a subjective symptom that is well perceived but difficult to confirm and measure by any examination. Recommendations for CRF intervention include ongoing assessment; non-pharmacological interventions including patient and family education about CRF and self-care strategies; and pharmacological treatment [16].

In 2014, ASCO developed a clinical practice guideline for physicians requiring regular screening for fatigue, its assessment, and patient education about options to alleviate the problem. All health care providers should monitor for the presence of fatigue from diagnosis through completion of primary treatment. Bower et al. [17] recommend monitoring for the presence of fatigue even after primary treatment has been completed. All cancer patients should be screened for fatigue at least once a year. Ideally, patients could be screened for fatigue at the initial visit, at the beginning and end of primary cancer treatments, annually during follow-up care [18]. To provide quality health care to the oncology patient, it is necessary to assess objective and subjective data of fatigue. Measurement tools have now been developed to assess specific fatigue in cancer patients. There is no universally accepted standard for the measurement of fatigue, but a variety of instruments can assess fatigue and related consequences. These instruments can be generally divided into three major categories: *very brief, single-item instruments* that can be used for fatigue screening and longitudinal monitoring of fatigue; *brief, multi-item but unidimensional instruments*; *comprehensive, multi-item, multidimensional instruments* [18, 19].

Table 2 presents several fatigue measurement tools used in research and clinical practice.

Table 2 Instruments for fatigue assessment

Instrument	Description	Reference
<i>Single-item screening instruments</i>		
Visual analog scale (VAS-F) for fatigue	Uses a 10-cm, 0- to 100-mm line; assesses severity only	Glaus, 1993
NCCN intensity tool	0–10 scale; assesses severity only	Mock et al., 2007
<i>Multi-item, unidimensional instruments</i>		
Brief Fatigue Inventory (BFI)	9 items; 0–10 numeric scale; measures severity of fatigue in past 24 h	Mendoza et al., 1999
Fatigue Symptom Inventory (FSI)	13 items; 0–10 numeric scale; measures fatigue severity, duration, and impact on QOL in past 7 d	Hann et al., 1998
Functional Assessment of Chronic Illness Therapy-Fatigue (FACIT-F)	13 items; 5-point, 0–4 scale; measures fatigue severity, duration, and impact on QOL in past 7 d	Yellen et al., 1997
<i>Multi-item, multidimensional instruments</i>		
Multidimensional Fatigue Inventory (MFI)	20 items; 7-point Likert scale; measures general, mental, and physical dimensions and activity level in past 24 h	Smets et al., 1995
FACIT-F	40 items; 5-point, 0–4 scale; includes 13-item FACIT-F scale; also measures physical, social/family, emotional, and functional dimensions	Yellen et al., 1997
European Organisation for Research and Treatment of Cancer Quality of Life Questionnaire-Fatigue Module (EORTC QLQ-FA13)	13 items; measures physical, emotional, and cognitive aspects of fatigue, fatigue interference, and its sequelae	Weis et al., 2013
Revised Piper Fatigue Scale (PFS-R)	22 items; 11-point scale; measures behavioural, affective, sensory, and cognitive dimensions of fatigue	Piper et al., 1998

Note: QOL = quality of life, source: [18, 20]

There are many questionnaires investigating either just fatigue as a symptom, or quality of life with simultaneous questioning about fatigue (its perception, symptoms). Questionnaires used in research should assess all dimensions of fatigue so that they are comparable across patients. The instruments should meet the criterion of scope (time-saving), and last but not least, the criterion of validity, reliability, sensitivity, responsiveness [21].

1.4 Nurse’s role in assessment of CRF

According to O’connor and Aranda [15], in addition to the physician, the nurse has an indispensable role in the assessment of fatigue in the patient by observing the symptoms of fatigue during hospitalization and actively questioning the patient about its presence. A comprehensive assessment of a patient’s fatigue begins with taking a careful history, obtaining the patient’s fatigue pattern, and identifying all contributing factors. In the physical assessment of the patient, the nurse measures and

records vital signs at a frequency according to the clinical indication. Monitors for pallor, blood loss, labored breathing, poor capillary refill, poor posture, cachexia, altered mobility, gait, peripheral edema, cognitive impairment, chest pain, weight (compare current weight to pre-treatment weight or last recorded weight), assesses functional status and activity level/ ECOG or PPS, assesses patient's ability to perform ADL, IADL, AADL. In conversation with the patient, the nurse assesses what is the normal level of energy, activity/exercise and its changes. focuses on the onset of fatigue, its progression over time, its duration, its relationship to treatment, provoking and mitigating factors, the quality of the fatigue (in the patient's own words, the effect on the body/ mind). The nurse detects the severity or other signs of fatigue. She uses VAS 0-10 (none - worst) to measure intensity and assesses the severity of fatigue using the FATIGUE GRADING SCALE adapted NCI CTCAE (Version 4.03). 1st degree (mild) fatigue gradually subsides after the patient rests, 2nd degree (moderate) fatigue does not tend to subside with rest, the patient limits instrumental daily activities (food preparation, shopping and managing money, using the telephone). 3rd degree (severe) fatigue does not subside with rest, limits the patient in self-care activities (e.g. bathing, dressing/ undressing, feeding, using the toilet, taking medication). She asks about accompanying signs of fatigue (shortness of breath at rest or with activity, rapid heart rate and chest pain or heaviness in the legs and the effect of fatigue on mood and ability to concentrate, on daily activities, on sleep, on family. She is interested in past coping and treatment options for fatigue (use of drugs, transfusions), time period since cancer treatment [22].

The nurse observes the signs of fatigue and evaluates related factors determining the worsening of the fatigue syndrome. Monitors the quality and quantity of the patient's sleep (the time needed to fall asleep and the feeling after waking up, monitors changes in thought processes or behavior. Changes in the patient's sleep pattern can be a factor that contributes to fatigue. Fatigue can be aggravated by many factors along with lack of sleep, and that emotional stress (anxiety, depression), side effects of drugs (beta-blockers, calcium channel blockers, tranquilizers, alcohol, muscle relaxants and sedatives), over-the-counter drug interactions, and progressive CNS disease. Attention is focused on the results of laboratory and diagnostic tests (glucose in the blood, hemoglobin/hematocrit, urea/ammonia in the blood, proteins, vitamins, iron in the blood, oxygen saturation at rest and during activity) [23].

### 1.5 Nursing intervention in coping CRF

Care for patients with fatigue is based on a complete assessment. The nurse works with the physician to rule out other causes or concomitant causes of fatigue (for example, anemia) and to determine the need for further examination.

*Exercise.* In clinical trials dealing with fatigue in cancer patients, regular physical activity has been ranked as one of the important factors in the fight against fatigue. Studies investigating the effect of physical activity on the development of fatigue during or after cancer treatment have shown a statistically significant relationship between regular exercise and fatigue reduction compared to a control group. Aerobic exercise (walking, running, cycling) under laboratory conditions demonstrated a reduction of fatigue by up to 50%. The general recommendation of the NCCN Fatigue Practice Guidelines is to initiate regular exercise early in the cancer treatment period, which must be strictly individualized and limited by the patient's symptomatology. To achieve a favorable outcome, it is recommended that every patient, regardless of age, undergo a stress test and echocardiographic examination to determine cardiac function [14, 24]. It is recommended to individualize the exercise based on the disorders (bone metastases, thrombocytopenia, anemia, fever or active infection) and the phase of the patient's treatment (before, during, after treatment). The level of activity should increase with a gradual increase in the frequency, intensity, time and type of exercises. This intervention results in the perception of a surge of physical energy, an improvement in appetite, and an increase in the ability to perform ADLs. The nurse should include physical therapy, occupational therapy, or community programs in the nursing plan.

*Energy conservation.* It is necessary to explain to the patient how to properly schedule activities during the day with an emphasis on saving energy (alternating activities with rest). Patients are advised to perform activities at the time of the greatest amount of energy, carefully organize time, methods and space for performing activities, select essential and non-essential activities and delegate activities to loved ones. It is suitable to advise the patient to keep a 24-hour fatigue/ activity diary for at least 1 week to identify specific activities that represent an unnecessary energy drain. This information can help the patient make decisions about adjusting their activities to take advantage of episodes of high energy levels. Patients should use energy-saving devices (e.g., elevator) and ADL and IADL assistive devices such as long-handled bath sponge, long shoe scraper, sock puller, long-handled gripper to maximize efficiency and minimize labor load [22, 23].

*Sleep.* Patients are emphasized to observe sleep hygiene: creating a comfortable environment for sleep, without disturbing stimuli (significant lighting, noise, visitors), relaxing activities before bed, avoiding psychostimulants, limited naps during the day (max. 30 min.) without affecting sleep at night. The nurse provides comfort to the patient with a gentle massage, gentle touches, and heat, which leads to relaxation. It supports the patient to express feelings related to the impact of fatigue.

*Nutrition.* The nurse promotes or ensures sufficient hydration, unless it is contraindicated, and adequate nutrition (consumption of protein sources, even in smaller,

more frequent meals) and in follow-up care, to provide information about the nutritional and hydration regime.

**Psychosocial support.** Anxiety, problems coping with the disease and treatment can contribute to the development of fatigue. Not knowing that treatment can induce fatigue causes stress in patients. It is advisable to recommend patients to use psychiatric and psychological techniques (relaxation therapy, imagination, distraction by listening to music, working in the garden, taking a walk [25]). The nurse recommends supportive therapies: counseling, support groups (in person and online), and personal diary writing, mind-body strategies: meditation, yoga, acupuncture cognitive-behavioral therapy, mindfulness-based stress reduction therapy, attention recovery therapy: games, reading and social activities, massage therapy [20].

**Medication.** In cooperation with the doctor, the nurse discontinues the use of all drugs that can cause or worsen fatigue and applies drugs to eliminate the causative factors (e.g. iron supplement) and in patients not receiving oral food, ensures a parenteral balanced intake of fats, carbohydrates, proteins, vitamins and minerals to ensure energy sources [22, 23].

In moderate or severe fatigue, the nurse cooperates with the doctor, based on the assessment of the condition and causes of fatigue, decides on further assessment at the oncology department or at the general practitioner. She monitors vital functions according to clinical indications, collects biological material for hematological, biochemical electrolyte profile, hormone levels. She monitors the results of laboratory tests, as well as thyroid function, if the patient is taking immunotherapy and a urine test to rule out a urinary tract infection.

#### *Pharmacological approach in the treatment of fatigue*

Systematic symptomatic treatment focuses on the elimination of comorbidities resulting from the cancer disease that potentially intensify the cancer patient's fatigue. Pharmacological interventions are indicated in specific cases. These include treatment of pain, sleep disorders, depression, anaemia, cachexia, etc. In clinical practice, the most commonly prescribed medications that secondarily affect the perception of fatigue, such as: erythropoietin (used in the treatment of chronic anemia after chemotherapy), psychostimulants - methylphenidate, dextroamphetamine, pemoline (used to increase mental function and alertness), corticosteroids (are recommended to be administered during anticancer treatment in low doses), megestrol acetate (used in cancer patients suffering from anorexia), antidepressants (can alleviate symptoms of fatigue in individuals who also have mood disorders or suffer from excessive anxiety) [4, 8, 26, 27, 28].

## **2. Conclusion**

Abnormal fatigue is the most frequently occurring symptom in the course of cancer, which is not given adequate attention not only by patients but also by health professionals. The causes of abnormal fatigue are unknown, but various predisposing factors are involved in

its pathophysiology, which we can and currently can influence. CRF leads to limitation of physical activity, self-sufficiency, increasing frustration, feelings of inferiority, dependence on others and decreased self-concept. These issues require multidisciplinary attention, without which the quality of life of the cancer patient cannot be achieved or maintained. The aim of this paper was to inform the professional medical community about this problem of cancer patients because of the need to develop interdisciplinary cooperation (oncologist, hematologist, gastroenterologist, nurse, physiotherapist, nutritionist, psychiatrist, psychologist, volunteer, priest, occupational therapist) in favour of treatment and ensuring the dignity of the patient's life.

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Šomodiová, Patrícia

## SELECTED ASPECTS OF FAMILY READING IN PRIMARY EDUCATION

Zuzana Chanasová – Silvia Kaščáková – Beata Murínová

Faculty of Education, Catholic University in Ružomberok

Hrabovská cesta 1,

Ružomberok, 034 01, Slovakia

tel.: +421 44 432 6842

e-mail: zuzana.chanasova@ku.sk, silvia.kascakova@ku.sk, beata.murinova@ku.sk

**Abstract:** *The report is focused on selected aspects of family reading in primary education. In it, we define family reading as one of the forms of support for differentiated education, which we deal with within the project KEGA 017KU-4/2022 named Stimulus and barriers to differentiated learning with a view to ensuring equal opportunities in education for socially disadvantaged pupils. Further in the report, we present the results of questionnaire-based investigation focused on family reading of primary school pupils, which we conducted in the first half of 2022. There were two types of questionnaires, the first one was addressed to parents and explored how family reading can aid the development of reading literacy. There, the parents of primary education pupils suggested what would help their child in the development of reading literacy. The second questionnaire was addressed to teachers of primary school pupils. Equally, we used it to investigate what in the family environment would help the primary education pupils in the development of reading literacy. We were also interested in the degree of parental participation in this area. We found out that a certain percentage of parents have no capacity to be involved in the area of their children's reading in the family environment, but almost seventy percent of parents are as involved in the development of reading literacy as the school.*

**Keywords:** *family reading, literary education, primary education, parents*

### 1. Introduction

Current theories of teaching and learning, such as social constructivism, point out the need to take into account not only the ability of the pupil, but also the environment in which they live, and which influences their experiences. The family environment is the place where the child first meets reading. It is here that reading aloud by an adult person takes place and the child has an opportunity to handle a book for the first time.

Socha claims that reading is essentially a relational phenomenon, with individual relationships organised at different levels: author – reader, reader – text, reader – reader, reader – institution, reader – reference community [1]. The child is able to improve their literacy in the everyday life of the family. The key to this means of literacy learning is parental role modelling of literacy as a useful tool in problem solving and in creating social literacy practices that children can participate in as a functional and important part of their lives. Kováčová as a part of early bibliotherapy. Among other things, she also focuses on therapeutical and educational possibilities of working with a book [2].

### 2. Family reading

According to Germušková, high-quality artistic literature should have an important status particularly in the postmodern world, and especially in family [3]. The parent aims at the child as a future reader and current pre-reader, but the parent – reader is also important. The parental reading role model significantly contributes to building the child's love for literature. Thanks to the parent that picks up books for themselves, the child can notice that their parents read as well [4]. The child can observe that the parental reading activity does not cease with putting the

book down, but is followed by conversations about the read text, evaluation of books, topics, inspiration from books, etc. After all, the parents' reading interests are also a part of the family and its functioning within the reading culture becomes natural for the child too. The familiarity of reading in the family is perhaps the most natural way of encountering literature and reading and it is clearly a challenge for the parent [5]. The encounter with a book in the school environment already has the character of a task, obligation, it is assigned by an authority, and thus it can lose its attractiveness for the child. In the home environment, the positive attitude towards books and reading also trickles into the relationship of the family members. The time capacity of parents that they devote to educating a reader, e.g. by reading aloud, cannot be separated from the relationship, because through reading aloud, the child does not meet merely the literary text itself, but also the parent. Family, that facilitates the child's encounter with a book, is letting the book affect them with the text, as well as illustrations and overall book design (size, shape, graphics, etc.). Within the framework of reading habits and attitudes, it also addressed "... the conditions of pupils' home and school environment, which is considered very important from the reading literacy development point of view" [6]. The results brought interesting conclusions, for the purposes of our research we highlight the conclusion that is related to the family environment. The results revealed that "parents and the family environment play an important role in the development of reading literacy, especially at the pre-school age" [7].

The aesthetic charge of the book, the artistic aspect, even if the illustrator worked with only a limited colour range, artistic techniques, all of that makes up the book that a



child can touch, smell, in case of music (audio) books also hear, touch, if it is a tactile book, etc. Books influence the child even if they do not yet understand the text. The child watches illustrations depicting the story line, visual material, though which they can name things, animals, natural phenomena and so on.

Trávníček uses the term “*family reading infrastructure*” to name family reading and the natural effect on creating the foundations of positive attitude towards artistic literature, which happens from an early age [8].

Family cultural patterns tend to repeat themselves in the next generation. Even though we present and follow up on the results confirming the importance of cooperation between family and school in reading and improving the reading literacy and building up a reading culture in a child, it still has to be admitted that we come into contact with the life reality of a Slovak family and a Slovak school and the idea of cooperation concerning a book for a child may seem romantic, impossible (e.g. due to high workload of parents, high workload of teachers). In the submitted report, we work with the term of family reading and for the purposes of the research, we established a definition of family reading. It is *reading/ reading aloud by an adult – a member of the child’s family*.

### 3. Research

We wanted to know whether parents or other family members conduct family reading. In the report, we select some of the established research questions, which we subsequently analyse. The questions are:

- *What is the benefit of family reading from teacher’s perspective?*
- *We asked parents what they think would help their child in the development of reading literacy?*
- *What would teachers welcome as help from parents in the development of reading literacy?*
- *What is the degree of parental participation in the area of reading?*

In the research we used two types of questionnaires. The first one was addressed to parents, and the second one to primary school teachers. The research was conducted over a period of three months – April to June 2022. The questionnaires were distributed mainly in electronic online form to different regions of Slovakia. After the distribution, 380 questionnaires from parents and 106 questionnaires from teachers were returned to us. In the parental questionnaire, in terms of the gender of the parent/family representative, there participated 86.3% of women and 13.7% of men. In terms of the mother’s education, university education appeared as the most prominent representative – 55.5%. In terms of gender, the questionnaire for teachers was completed by 95.3% of women and 4.7% of men completed the questionnaire. The age of teachers ranged from 24 to 69 years old.

### 3.1 Family reading from the teacher's point of view

We investigated, where the teachers see the benefits of family reading in primary education. From the teachers’ open-ended answers were formed two basic categories.

- 1<sup>st</sup> category - teachers see the benefit in strengthening of relationships. We called it – the family relationships level. From their answers we select: *it brings the family together, strengthens the relationships and inspires children to discovery and new reading; improves communication with parents; more emotional connection parent-child is created; a wonderful experience for children, but also their parents, that creates, among other things, connections in the family; it is a great benefit for the whole family*
- 2<sup>nd</sup> category - teachers see the benefit in the child’s development. We called it – the developing function. From their answers we select: *they are able to express themselves better, have richer vocabulary; pupils like it more than an audio recording; irreplaceable activity for children development; encourages and motivates the child to read independently, during family reading children have an opportunity to also listen to literature they would not otherwise choose for independent reading; it is a great gift and benefit; thus children can choose to read literature they are interested in and hear the speech intonation, pauses in the text...; it encourages child in their literary activities, they are more active during lessons, they take more interest in details;*

### 3.2 Development of reading literacy - parent's point of view

With the second research question, we asked parents what would help their children in the development of reading literacy. We asked parents the question: *What could help the child develop their reading literacy (the ability to read and understand the text)?* A total of eight areas were crystallised from the answers. The most represented area was *reading more, more time for reading, practicing reading*.

- In this category there were answers such as: *regular reading by parents as well as children, seeing us adults read.*
- Another category was *increasing the motivation to read.*

There were answers such as: *a mood for reading, arouse interest in reading; engaging texts, books that are captivating; more modern texts; let the child freely choose a book to read; more books by Czech authors in Slovak, build enthusiasm for books at school, have a school library available, introduce reading lessons at school, not only in the classroom and not only from the compulsory reading book; encouragement by a group of friends; more motivation from the school and the environment;*

attractiveness of the read text; suitably chosen literature; interesting, engaging books, books with tasks. Another area that parents mentioned as helpful in developing the reading literacy was discussing what was read, reproducing the text. They're occurred answers like conversation about what was read; re-telling what was read; explanation of the text; clarification of any unknown words; analysing the text after reading, discussion about the read text. Another category was: detachment from the ICT. There were statements like: to watch TV and use mobile phone less; only if reading did not have to compete with television; to spend less time on mobile phone. Another rather frequent area was regular visits to the library, promotion of new books. Another category was reading clubs. In this are there were statements like: reading diary in school; writing a reading diary and illustrate it; reading workshops in school; debate meetings; discussions with friends about the texts; writing club at school; club discussion about what was read with peers that had read the same book; interesting discussions with authors of children's books; work as much as possible with literature, compulsory reading textbook and magazines. Another category was games for reading development, worksheets. Here there were statements like: implement creative activities involving a book; playful dramatization of some stories, perform a fairy tale. The last category was more cooperation with teacher in the area of questions regarding the correct reading learning and the possibility of having a school speech therapist at school.

### 3.3 Development of reading literacy - teacher's point of view

The third question was directed at what the teachers would welcome from parents as help to improve pupils' reading literacy. Equally, we asked teachers, what help from parents they would welcome in order to improve reading literacy. The teachers mentioned mainly: to choose a suitable text for the child; read regularly before going to bed and discuss what was read with children; once a week I gave parents texts to take home, based on the text the children were meant to draw what they read about. Sadly, it was completely only by three – four pupils. I also had a complaint that I was overburdening the children, so I stopped it. When asked how often you read with your parents? only three to five replies that they read, otherwise not at all; that parents would not read to the children only in the first grade but encourage the children to read books even in the following grades, second, third...; for example, I could imagine parents coming to read something to us in the classroom. Pupils would be proud of their parents; participate in reading activities; cooperation with the teacher; linking the reading at home with the reading at school; personal parental example; involve parents more in the teaching process and teach them how to help their children at home. The homeroom teacher should also teach the parents of Roma pupils; dedicate less time to children in the area of the Internet; reward the child when reading; dramatize the read text; use own example to show that reading enriches people internally and entertains; encourage extracurricular reading; more moments spent together

with a book, e.g. also in nature, outdoors, in the yard...; we organise a year-round reading competition in the classroom; create worksheets focused on conversations with parents; surely, so that they would devote more time to family reading at home. Many parents should put down their mobile phones, stop reading nonsense on social media and spend more time reading with their children; dedicate more time to children reading aloud together; check on their children more in terms of extracurricular reading and writing reading diaries.

In conclusion, we present an interesting statement from one teacher: If they introduced to children their own favourite childhood book or consulted e.g. librarians, who have an overview knowledge of this area, and would subsequently choose a "tailor-made" book for their child, which they could give as a present, e.g. for a birthday. Parents know their children well and librarians have an excellent overview knowledge of children books, so together I think they would be able to choose a book that would appeal to that child so that they would want to read another one. I also think that parents could read a book excerpt aloud to their children using expressive reading. I think that children would enjoy it and if they saw that the parent himself/herself is interested in reading, it would arouse their interest too.

It is pleasing to see that both parents and teachers are aware of the importance and effects of family reading on the child's future.

### 3.4 Parental participation

The last topic was the parental participation in this area. We investigated the matter from the perspective of parents themselves, but also teachers. We were also interested in parental participation in this area. From the *Questionnaire for parents*, we found out that 39.9% of parents are actively involved in their child's education. 14.1% of parents are involved but would like to be involved more. 27.6% of parents sometimes participate and sometimes not. 8% of parents are not particularly involved but would like to participate more. The remaining 10.6% of parents said they are not involved at all (5.3%), or they are unable to assess (5.3%).

Table 1 Comparison of the results of both questionnaires

Name of Style	Parents questionnaire	Teachers' questionnaire
a) school is completely sufficient; the parent does not need to participate	5 %	10,4%
b) parents expect more from the school	4,2 %	20,8%
c) parents do not care	0,8 %	11,3%
d) parents would like to participate more/ do not have the time	5,3	38,7%
e) parents participate to the same extent as the school	69,5 %	14,2%
f) school is not sufficient; parents need to do more	6,6%	1,9%
g) other	8,6 %	2,7 %
TOTAL	100 %	100%

This question was linked to the question used to examine what parents think is their degree of participation in the school context in the area of reading. 69.5% of parents stated that they actively participate in this area to the same extent as the school. What was interesting is that 6.6% of parents think that school is not at all sufficient and they, as parents, need to participate much more. On the other hand, 5% of parents think that school is completely sufficient, and that the parent does not need to do anything. 5.3% of parents do not have the capacity to do more and 4.2% would welcome more activity from the school in this area. A small percentage – 0.8% of parents do not care about this.

At the same time, we wanted to compare the issue from the teachers' perspective. In the *Questionnaire for teachers*, we asked about their opinion on the degree of parental participation in reading. From the teachers' perspective, 10.4% of parents consider school to be completely sufficient. 14.2% of parents, from the point of view of the teachers, participate to the same extent as the school. According to the teachers, 38.7% of parents would like to be involved more, but do not have the spare capacity to do so. 11.3% of parents, from the teachers' perspective, do not care. 20.8% of parents expect more activity from the teacher/school than from themselves as parents.

As we can see in *Table 1*, the views of the parents differ from the views of the teachers on the degree of their participation in reading of their children.

While 69.5% of parents think that they participate in the area to the same extent as the school, teachers think that there are only 14.2% of such parents. From the teachers' perspective, there are 38.7% of parents that would like to participate more, but do not have the capacity to do so (time, etc.). Only 5.3% of parents stated this option. From this it can be concluded that teachers view things more negatively than parents themselves. Or the parents claim that they are more active, which was, however, not confirmed by the teachers.

#### 4. Findings and final discussion

From the selected four areas of investigation, we came to conclusions.

- Teachers see the benefit of family reading in the strengthening of family relationships, as well as in the development of the child in several areas – such as communication, motivation to read, strengthening the positive attitude to literature, etc.
- Teachers would welcome if parents would read more to their children at home, offer suitable literature to them, visit libraries together.

In the research, we also looked at the degree of parental involvement in reading.

- Through the research, we identified a group of parents actively participating in their children's education, which made up almost forty percent.
- The degree of their participation in the context of school and the area of reading revealed a large group of parents of almost seventy percent, who consider their participation equal to the institution of school.
- The research revealed a small percentage of parents dissatisfied with the school's degree of participation, which parents consider their own role – to participate more alongside the school.
- Furthermore, there is a small percentage of parents who are completely satisfied, where the participation of school is sufficient for them.
- Some parents do not have the spare capacity to be involved more and would welcome more activity from the school in this area, and the lowest percentage make up the parents that stated *they do not care*.

Regarding the investigated problematics, we also mirrored the questions to the teachers. They reviewed the degree of parental participation in the area of reading as follows.

While the prevailing opinion among the parents is that they participate to the same degree as the school, the teachers conclude that there are far fewer involved parents. They attribute this to the parental constraints, such as time, saying that parents do not have the spare capacity. Here the two groups of respondents disagree, parents claim that they are active, teachers claim that parents are not active, or they participate to a small extent.

In the area of differentiated education, and based on our research, it seems that there are big differences among primary school pupils in the extent to which family reading is conducted at home, which in turn significantly affects the level of reading literacy of the primary education pupils. The currently used teaching materials support differentiated teaching to a very small extent. One of the options could be developing suitable methodologies and teaching aids, which would facilitate the organisation of teaching in such a way as to respect the different abilities, opportunities and needs of pupils.

**Affiliation:** The paper is a partial outcome of the project *KEGA 017KU-4/2022 named Stimulus and barriers to differentiated learning with a view to ensuring equal opportunities in education for socially disadvantaged pupils*.

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## THE MEANING OF LIFE AND ITS IMPACT ON THE COMMON MAN IN MODERN TIMES

Ludmila Majerníková

Faculty of Health Cre, University of Prešov in Prešov

Partizánska 1

Prešov, 08001, Slovakia

ludmila.majernikova@unipo.sk

**Abstract:** *The question of the meaning of life and death is a question that has been present in human life since time immemorial. We can say that these questions arise from the very nature of our being, from our nature. According to Viktor Frankl, the questions that concern the meaning of our life, whether they are explicitly asked or only vaguely suspected, are specifically human questions. The meaningfulness of everything, not just the meaning of life and death, is a human question. By man is a being who possesses reason and is aware of its greatness, it is worthy to say that it is only he who seeks and finds the meaning of everything that touches humanity. This theme has not escaped scientific scrutiny. Even today, this issue seems to be very topical and urgent. Today there are many people who intensely experience a feeling of inner emptiness, incompleteness, general dissatisfaction and, conversely, there is also an increasing number of people who are seeking inner fulfilment and searching for the true meaning of their lives. We were also interested in whether the level of life meaningfulness is higher in secondary school students or university students.*

**Keywords:** *quality of life, meaning life, student*

### 1. Introduction

The meaning of life has a hierarchical composition arranged in a complex system in which the parts are interconnected and related to each other. It can be stated that the sources of the meaning of life are certain components of this system, its basic building blocks. In conjunction with this, attempts have been made to delineate specific characteristics that would help to describe the nature of the system of meaning in a particular individual. Reker named these properties the dimensions of meaning in life and proposed to distinguish four properties: structural components, the content of the experience of meaning (i.e., the sources of meaning), the breadth of meaning (the distinctiveness of meaning), and the depth of meaning (the quality of meaning in life). Sources of meaning in life refer to two dimensions namely: breadth of meaning in life and depth of meaning in life [1, 2].

Breadth of meaning in life refers to an individual's tendency to experience meaning in life based on engagement in multiple values. It is about having one's meaning built on one strong value or on several not necessarily identical values that allow an individual to derive his or her meaning in life in different situations and based on different experiences [3, 4, 5]. Thus, the breadth of meaning can be characterized as a measure of the variety of resources that fulfill the needs of meaning. Theoretical reflections on this dimension of meaning in life have raised several question marks, whether one has one main source of meaning or more. Research in this domain has demonstrated a tendency for most people to have multiple values [6].

According to Reker [2], depth of meaning in life refers to the quality of the experience of meaning. Two approaches to defining this dimension are included in the literature. Ebersole understands the depth of meaning in life as the

intensity and complexity of the experience of meaning in life. He developed a qualitative method with criteria for assessing depth of meaning with five classes of depth: deep, above average, average, below average, and shallow. Reker and Wong conceptualize depth of meaning in life as the level of self-transcendence that an individual realizes. They distinguish four degrees of depth:

- a. Self-preoccupation - the prevalence of the search for gratification and comfort,
- b. individualism - the predominance of the realization of personal potential,
- c. collectivism - the predominance of service to others and participation in public social and political affairs,
- d. Self-transcendence - the prevalence of values transcending the individual towards a sense of the whole world and ultimate meaning [7, 8, 9].

In analysing this categorization, Van Ranst and Marcoen found the identity of the 3rd and 4th degree factor, so they narrowed the categorization to three degrees, calling the third-degree self-transcendence. Halama, also taking inspiration from the work of Reker and Wong, elaborated on a four-stage classification of this dimension, but which was divergent, reflecting the specific statements made by the respondents in the Meaning of Life Profile questionnaire. They consisted of the following scales:

- a. self-satisfaction - a value representing a direction towards one's own utility, interpreting the effort to fulfill one's basic needs.
- b. striving for social support - a value oriented towards social relationships (family, friends, partner) and the support one receives from them,  
Self-actualisation - a value that refers to the pursuit of self-improvement and fulfilment of one's potential,
- c. self-transcendence - a value by which a person transcends himself by orienting himself towards other

people (e.g., helping), towards the well-being of the whole, or towards the fulfillment of religious or philosophical ideals [10, 11, 12].

Also, in connection with the depth of meaning in life, questions have been generated about its relation to the degree of life meaningfulness, or to optimal functioning. In Reker research found that individuals who pursued meaning at levels 3 and 4 of his categorizations had more fulfilled lives than those who pursued it at levels 1 and 2. In Halama research also addressed differences between groups defined by the depth of realized meaning in the level of experienced meaningfulness. While the results for high school students were not very satisfactory, for college students the lowest score on the PIL questionnaire was for the self-focused group, the slightly higher scores were for the group focused on seeking social support and on self-realization, and the highest score was for the group focused on self-transcendence. This finding highlights the importance of self-transcendence as part of the meaning of life system [2, 3].

## 2. Aim and methods

The empirical part of our work was carried out in the form of a survey. In the survey of our work the following problem was addressed: What is the level of meaningfulness of life among students at the secondary school and university?

Subsequently, we set the main goal of the work. The main objective of our survey was to find out, analyse and evaluate the level of meaningfulness of life among the students at the secondary school and college. In the context of the main objective, we formulated partial objectives:

Partial Aim 1: To find out the overall level of meaning in life among students at the secondary school and university.  
Partial Aim No. 2: To compare the level of meaning in life of students at the secondary school and university on each dimension.

The study population represented 92 respondents - 81 women and 25 men. The questionnaires were collected from two locations (Košice and Prešov). The results were collected in November-December 2021. We purposively sampled high school and university students.

The Life Meaningfulness Scale [2, 12], based on the three-component model of the meaning of life, was used to ascertain the level of life meaningfulness. The scale has three dimensions (cognitive, motivational, and affective), each of which contains 6 items. The cognitive dimension is understood as the overall direction in life, life mission or understanding of life (example item Have I succeeded in finding a certain mission or task in my life?) The motivational dimension refers to goals, plans and the level of commitment to them (Do I have goals in life that I would like to fulfill?) and the affective dimension represents life satisfaction, fulfillment, optimism coming from experiencing the meaning of life (Am I satisfied with my life even though it is sometimes difficult?).

Respondents answer the items on a Likert scale ranging from 'do not agree at all' to 'agree completely'. Based on the responses, it is possible to calculate an overall life meaningfulness score, but also a raw score from each dimension. The total scale score takes values from 18 to 90. To ascertain the internal consistency of the scale, Halama used Cronbach's alpha coefficient, which was 0.87 (or 0.78 for the cognitive, 0.76 for the motivational, and 0.78 for the affective dimensions). Using correlations with several other scales (PIL, Noodynamics Test, PMI - Meaning in Life Index), the author verified the validity of the scale, and the resulting correlation coefficients ranged from 0.48 to 0.80 for the dimensions of the scale and from 0.68 to 0.81 for the total score, indicating sufficient validity of the scale [2, 12].

The results of the survey were processed using statistical methods of descriptive statistics - calculating frequency (n) and percentages (%), calculating mean (M), standard deviation (SD), maximum and minimum values (max - min). Using t-test (Student's distribution), we compared statistically significant differences between two matched sets of respondents.

## 3. Results

A total of 92 respondents participated in our survey (via an online questionnaire), of which 35 respondents (12 males, 23 females) were secondary school students and 47 students (30 females and 17 males) were undergraduate students.

The total score of the Life Meaningfulness Scale for the respondents was 68.63, with the highest possible score on that measurement tool being 90. Across the domains, respondents scored highest in the Affective Dimension D3 ( $27.08 \pm 2.98$ ), lower in the Cognitive Dimension D1 ( $24.02 \pm 2.99$ ), and lowest in the Motivational Dimension ( $17.53 \pm 2.95$ ). The highest possible score in each dimension has a value of 30 (Figure 1).

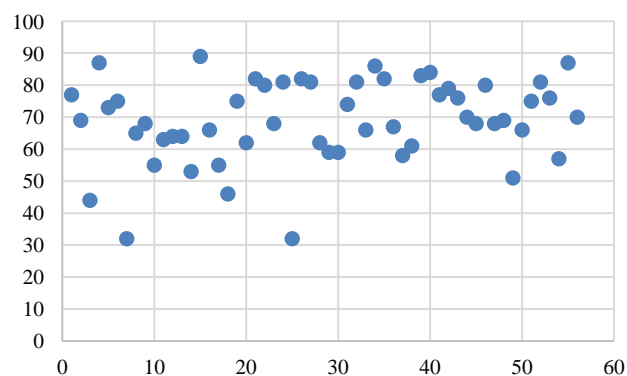


Figure 1 Graphical representation of the total score of the Life Meaningfulness Scale

In our work, we compared two groups of students - undergraduate and high school students - using the Life Meaning Questionnaire. On the basis of the analysis of the obtained data according to the methodology compiled by

the author of the questionnaire Halama [2, 12], we found that there were no significant differences between the groups of respondents we studied. High school students scored lower overall ( $68.36 \pm 9.87$ ) than college students ( $68.9 \pm 9.77$ ). High school students scored lower on each dimension. In the Cognitive dimension, the mean scores were 24.02 for high school students and 24.62 for college students; in the Motivational dimension, high school respondents scored a mean of 17.53 and college respondents scored a mean of 18.36. The Affective dimension was also evaluated based on the analysis of our questionnaires in favor of high school students, where they achieved a mean score of 25.92.

Table 1 Results of the Life Meaning Scale Comparison

Dimensions	Students at secondary school SS (n 35)		
	M	SD	Min-max
D1 Cognitive dimension	24.02	2.99	22- 30
D2 Motivational dimension	17.26	2.95	23 – 30
D3 Affective dimension	27.08	2.98	20 – 29
LMS global score	68.36	9.87	37 – 85
Dimensions	University students US (n 47)		
	M	SD	Min-max
D1 Cognitive dimension	24.62	2.82	22–30
D2 Motivational dimension	18.36	2.55	23–30
D3 Affective dimension	25.92	2.68	20–29
LMS global score	68.9	9.77	32–98

N - number, M - average, SD - standard deviation, Min - max - minimum and maximum values

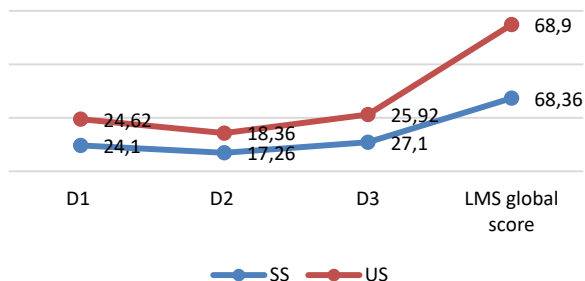


Figure 2 Results of the Life Meaning Scale Comparison

Using a t-test, we found statistically significant differences in the responses between the compared groups of students, with the cognitive dimension, motivational dimension, and total LMS questionnaire scores analyzed in favor of the undergraduate students. Only in the affective domain did the university students achieve statistically significant responses.

Table 2 Statistical evaluation of the Life Meaning Scale comparison

Dimensions	responds (N =92)		
	US (47)	SS (35)	p
D1 Cognitive dimension	US (47)	SS (35)	0,004

D2 Motivational dimension	US (47)	SS (35)	0,000
D3 Affective dimension	US (47)	SS (35)	0,000
LMS global score	US (47)	SS (35)	0,008

p - the level of statistical significance

#### 4. Discussion

In our work, we hypothesized that there is a statistically significant difference in the level of life meaningfulness between high school students and college students. Our survey was conducted in the cities of Košice and Prešov, addressing students using the standardized online questionnaire Life Meaningfulness by Halama.

The results showed that students achieved an overall Life Meaningfulness Scale score of 68.63, with the highest possible score on the measurement tool being 90. In each domain, respondents scored highest in the Affective dimension ( $27.08 \pm 2.98$ ), lower in the Cognitive dimension ( $24.02 \pm 2.99$ ), and lowest in the Motivational dimension ( $17.53 \pm 2.95$ ). The highest possible score in each dimension has a value of 30.

The aim of the research part of Tomšík work [13] was to verify the differences in the level of life meaningfulness with respect to age, gender, and place of residence while attending school. The author hypothesized that there is a statistically significant difference in the level of life meaningfulness between high school students and university students, a difference in the level of life meaningfulness in terms of age and place of residence during study (dormitory, home environment). Through the research the author confirmed that there are no gender differences and differences between Czech and Slovak university students in the expression of life meaningfulness but there are significant differences in terms of age and home environment.

Fabián [14] in another research investigated the influence of spirituality on the perception of meaningfulness in adolescents. The results of the research indicate a significant relationship between the active practice of faith and the perception of meaningfulness in this age group.

In the research conducted by Tomsik [13], 249 college and high school students participated in the research. The study used Halama measurement tool as we also used it in our survey. The mean score of the surveyed respondents was lower (66.12) than in our survey. The original Slovak questionnaire Profile of Sources of Meaning, or the Sources of Meaning Questionnaire [2, 13] allows to find out the specific values that provide a given person with the experience of the meaning of life, the subjective significance of the given values, and on the basis of a qualitative analysis, the degree of transcendence of each value.



Cognitive component - refers to the cognitive framework that contains beliefs, values, and assumptions about oneself, the world, and one's life. "An indicator of a developed cognitive component of meaning in life is a high degree of purpose in life, an awareness of coherence and order in life, and an awareness of one's ultimate purpose and mission in life" [2]. Conversely, experiences of chaos and purposelessness of one's life are manifestations of an unsatisfied need for meaningfulness in life and existential emptiness. In our research, college students scored statistically higher on the cognitive dimension (M 24.62) than high school students (M 24.02) at the  $p=0.004$  level of significance.

Motivational component of meaning in life - includes goals, values and activities that an individual finds valuable and important and also investing energy and time in pursuing them. "A well-developed motivational component is characterized by the presence of various values and goals, a high degree of commitment and effort to fulfill them, and also the ability to strive for goals despite obstacles and setbacks [2, 12]. An underdeveloped motivational component results in a lack of life goals, activities, experiencing boredom, apathy, and hopelessness regarding possible goal attainment. Also in this area, as it can be seen from the results of our analysis, the better scores were achieved by university students (M18.36) compared to high school students (M17.26), with the level of statistical significance reaching  $p=0.000$ .

The affective component of the meaning of life - the realization of the goal is associated with positive experiencing and, on the contrary, obstacles that make it impossible to continue on the path to the goal are associated with negative experiencing. A strongly developed affective component can be identified through various positive emotions and feelings related to life such as happiness, optimism, satisfaction. On the other hand, a weakly developed affective component is manifested by experiencing dissatisfaction, unhappiness, depression, sadness as well as anxiety and pessimism [2, 12]. Only in this domain we observed better scores in high school students (M27.08) compared to college students (M25.92), and the level of statistical significance was high at the level of  $p=0.000$ .

## 5. Conclusions

It is very important to be aware of how the lack of meaningfulness in life affects the psychological state of a young person, what the warning signs are and how we should act in a given situation. This is an issue that has been very topical in recent years, but one that few people have addressed in practice. Therefore, we think that it is necessary to be informed about this topic. Lack of life meaningfulness has a great impact on the formation of personality, feelings, and future life of adolescents.

The aim of our work was to find out the level of life meaningfulness of students studying in high school and college and to evaluate each area of life meaningfulness

according to a standardized questionnaire and compare their differences. We found differences in the approach to the meaning of life in the overall perception of meaningfulness as well as the perception of its dimensions according to the cognitive, affective, and motivational dimensions in favour of college students compared to high school students, except for the affective aspect of the perception of lived life meaning.

In the process of forming the meaning of life, the formation of a relationship with values is a particularly important issue. Values are determining for a person, and he approaches them by setting certain goals or living a life that meets the quality of the chosen value. A child has different values, a young person has different values, an adult has different values. The family in which an individual grows up, the environment, meeting certain people, experiences, life situations, but also the search for an answer to the question of the meaningfulness of one's life, have a significant influence on the individual's value ranking.

## Acknowledgements

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## PHILOSOPHICAL LITERARY STORIES IN THE CONDITIONS OF NON-FORMAL EDUCATION WITH AN EMPHASIS ON ENVIRONMENTAL ISSUES

Simona Borisová

**Constantine the Philosopher University in Nitra**

Dražovská 4  
Nitra, 949 01, Slovakia  
+421 37 6408 253  
sborisova@ukf.sk

**Abstract:** *The paper focuses on the application of the methods of the Philosophy for Children educational program, the main part of which is work with the philosophical literary text. Philosophy for children, as a form of applied philosophy, inherently provides a wide space for reflecting on global problems in a way that is usually attractive, engaging, and even funny. A fundamental reason for the introduction of philosophizing into educational practice is that the program acts as a stimulating way of developing the quality of thinking, communication, cooperation and other useful skills and abilities for the personality and society. By including literary stories and environmental issues, children learn to think for themselves along with others. The methodological part of the paper is devoted to the active application of the given program in non-formal education.*

**Keywords:** *Philosophy for Children, philosophical literary stories, non-formal education.*

### 1. Introduction

According to Zelina [10], changes to a more effective solution to global problems (ecological problems, information overload, problems in the field of human rights, declination of values, achieving and maintaining peace, mass media dependence, etc.) consist primarily of better education. According to the given author, it is necessary to return to asking basic questions about the meaning of our being, knowledge, the possibilities of influencing and developing them. The paper deals with the options of solving the given questions through the applied philosophy contained in the educational program *Philosophy for Children*.

Szabó [8] considers the perspectives of applied philosophy on two levels: on one level, it concerns the re-evaluation of traditional philosophical ideas, which are a source of wisdom, and on the other level, it concerns the re-evaluation of current social, health, political and environmental problems. K. Lippert-Rasmusen [6] provides an unconventional view of the issue of applied philosophy. According to him, in contrast to traditional philosophy, applied philosophy addresses, among other things, an audience of "non-philosophers". This means that the nature of this philosophy has the ambition to have a practical impact on solving global problems. One of the variants of the practical application of philosophy is the program called *Philosophy for Children*, which is designed in such a way that, when it is included in educational practice, it is primarily based on the interests of children.

### 2. Philosophical literary story, community of inquiry and philosophical discussion in the program *Philosophy for Children*

Sasseville and Gagnon [7] believe that the ultimate goal of philosophizing is to give children enough space to learn to think independently. In the *Philosophy for Children* program, we can observe the pattern of independent thinking already in the initial phase of the meeting, in

which a philosophical story is read, when the pattern of solving debatable problems is provided by the dialogues of the appearing characters in the story.

A philosophical story is used as a method of providing space for thinking about various questions of life, it is related to the life of the reader, his/her experience, interests, it is a stimulus for dialogue and discussion, because from the story the participants of the community of inquiry (it is a group that solves and discusses several philosophical issues) derive questions for examination. We can capture the essence of a philosophical text by comparing it with an aesthetic text. The philosophical story does not remain on the surface of the solution of the problem, the goal is to encourage the reader to the subsequent solution of the problem. On the other hand, a philosophical text is not always on the same level as an aesthetic text, because the aesthetic experience of the text is not its primary intention.

A literary story is the most classic form of creating a stimulating atmosphere for cooperation in a community of inquiry, other impulses are also used, for example a picture, a poem, a fairy tale, a video, comics, an excerpt from a song or a newspaper article. In this case, the great emphasis is placed to the facilitator (teacher, educator) in the sense of getting to know the interests, developmental level, problems and knowledge of the members of the research community as best as possible, in order to be able to choose the most stimulating story (or other stimulus) for the discussion. Therefore, from an early age, children can develop their thinking in an interesting way by exploring their surroundings through observing phenomena, asking questions, discussing ideas and solving problems.

In a clearer picture (Figure 1), we describe the methodology of the community of inquiry. The main persons are the facilitator (teacher/educator who directs the course of activities and works according to certain rules)

and participants (children/pupils). All participants form a research community. The activities of the community of inquiry are usually reading a philosophical story, creating philosophical questions, choosing questions by voting and they have a philosophical discussion, which we consider to be crucial in developing the above-mentioned personality qualities. If necessary, the facilitator can include additional activities that are developed in methodical manuals. It is necessary to include feedback, in the process of which it is an evaluation of the entire philosophical activity - the participants will evaluate how they worked, what they can improve in the future, how they worked as a group, what difficulties they experienced, whether they were interested in the solution of the topic and what they got from the discussion and activities they take away. In the given program, the child is led to philosophize in the discussion process.

The reader of the article may be interested in whether the child is capable of philosophizing or of philosophical reflection. It is necessary to draw attention to a significant difference between academic philosophy and the philosophy that is the subject of our interest. We have based on the opinion and experience that the child has the potential for philosophical reflection, and in the case of a well-prepared facilitator, the child can make further progress in the area of philosophizing.

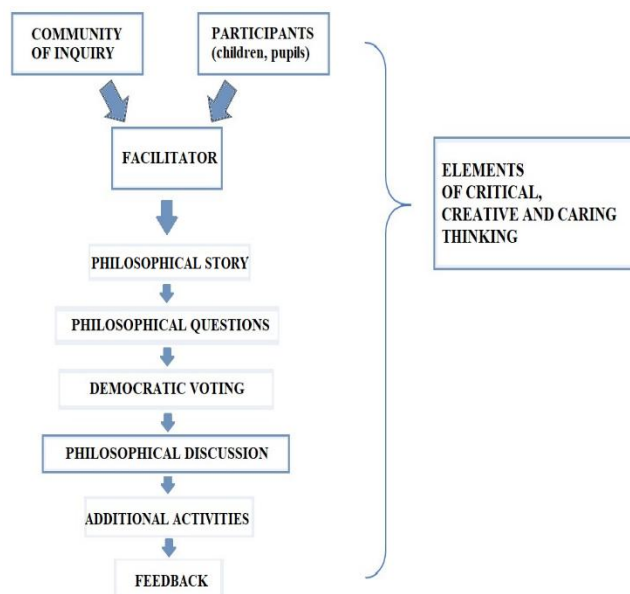


Figure 1: Concepts of Philosophy for Children in the procedural level

### 3. Themes of nature in the literary stories and activities of the Philosophy for Children in non-formal education

Non-formal education (for example, in many countries in the form of a children's school club) provides a wide scope for applying the methods of the *Philosophy for Children program* due to the variable organization of time. The facilitator is not bound to a specific teaching subject and time but can adjust the activities not only according to the topic, interests and abilities of the children but also in

terms of their current interest in participating in the activity.

M. Lipman [4] when developing the individual dimensions of thinking (critical, creative and caring) uses a parallel between the ecological support that provides an environment for the growth of natural species and the community of inquiry (research community) for the development of thinking. In other words, thinking needs its natural environment, which would facilitate its development. The participants of our research addressed several topics related to nature and the environment – animal cruelty, animal protection, diseases, natural phenomena. M. Lipman, A. M. Sharp and F. S. Oscanyan [5] present the opinion that it is difficult to develop ecological love for nature without a certain philosophical understanding of what nature is and what it provides to man. According to the overall ability (diverse interests, age and maturity of the participants), it is possible to solve several questions related to the environment through philosophical investigation:

- *What is nature?*
- *Are people part of nature?*
- *-What does nature provide us?*
- *Does man own nature?*
- *Do animals have rights?*
- *Can nature be cruel?*
- *In what cases does a person have the right to destroy nature?*

If the children choose a question about nature protection, the facilitator can develop the discussion in several ways (it depends on the age and maturity of the children/students). The criteria for the selection of the text for the participants are primarily their interests, age, difficulty of the text. In the *Philosophy for Children program*, there is a rule that the translator and the facilitator can change some parts of the stories [5]. However, it is necessary to preserve the philosophical character of the text as well as its didactic purpose. A philosophical story is usually worked in such a way that the participants of the group read it together, for example sequentially, or every other participant reads it and vice versa, or they determine the order of reading among themselves. The point is that everyone from the group is involved in reading the story, because already at this moment a searching community begins to form.

For children aged 8-12, it is possible to work, for example, with the book *Kio & Gus*, which is written for the use of *Philosophy for Children*. The book is focused on getting to know the world. The main characters learn to see the world not only from their point of view but also from the point of view of others. There are topics focused on knowledge about nature, its protection and sustainability. The methodological guide to this book is called *Wondering at the World*. Both publications together form an educational program, the goal of which is to awaken in children the ability to think about nature. We can use an

analogy to scientific thinking here: both the book and the activities lead children to create the kind of questions that scientists ask themselves. They learn to look for the causes of phenomena and understand their laws. The methodological manual contains topics such as:

"Thinking about water",  
 "Beauty in nature and beauty in created things",  
 "Waste and wastewater",  
 "Different ways of perceiving the world",  
 "Human rights and animal rights".

The text of the manual represents a certain map for the facilitator to be able to create an atmosphere of reflective thinking. The Kio & Gus book focuses on practicing diverse acts of thinking, encourages curiosity, research, the ability to be critical, draw conclusions and formulate hypotheses. When reading the book, the reader identifies the narrator because a different character tells the story in each chapter. It is necessary for the reader to discover who the narrator is, because both characters perceive the world in a different way.

The author of this paper worked in informal education in 2020-2021 and at the same time carried out empirical research that touched on the *Philosophy for Children* program and its part - caring thinking. The age of the participants was 9-11 years. During the school year, the children in the group read various philosophical stories (including Kio & Gus) and discussed nature topics out of their own interest, for example:

"Why does every animal, plant and tree have a name?"  
 "Can animals really talk?" "Do plants think?"  
 "Do vegans exist because they can't eat meat or because they don't want it?"  
 "Why we have fear of something (for example storms)?"  
 "Why do some people kill animals cruelly?"

#### 4. Conclusions

This paper deals with the issue of a philosophical story with a focus on the environment, namely in non-formal education. It does not present the results of the conducted research, but some claims and statements are based on our empirical research. We can consider children as natural philosophers because they have a seemingly unlimited supply of questions beginning with the word "why" (not in every case it is a directly philosophical question, the criterion of a philosophical question is the ambiguity of the answer to it, it is debatable), questions based on wonder at the world. A fundamental reason for introducing philosophy into educational practice is that its implementation can be a stimulating way to develop soft skills, critical thinking, cooperation and other useful characteristics for both personality and society. Many researchers address these results [1], [2], [3], [9].

By including the environmental questions, the pupil is led to think for himself/herself along with others. With a little practice, preparation and a fair amount of courage, even

educators who do not have deep experience with philosophy can include the methods of *Philosophy for Children*, work with a philosophical story and supplementary activities. Based on the topic, we consider it necessary to fulfill several tasks, in addition to providing opportunities in the area of research in the Philosophy for Children program, to ensure adequate training of future and current educators who are interested in the program and want to apply it in their practice. Educators should be introduced to individual literary stories, their characters, didactic purpose and the methodology of working with stories. It would be appropriate to create space for teachers and future teachers who want to develop in this direction and should receive support. It could be beneficial and possible to create a certain supportive, safe space in which educators who are excited by the subject program can meet and together they can discuss current problems not only from educational practice, philosophy, but also current problems of social life.

The article emphasizes that educators should choose interesting stimuli for discussion, the problem must be related to the lives of children/pupils, it is possible to work with texts about nature, the forest, pollution of the planet, animals and the like. This is also related to the inclusion of methodological manuals and other materials for the implementation of the Philosophy for Children program, which will facilitate the work of the program for teachers and educators, as well as the selection of literary stories and supplementary activities. The paper can inspire readers to use discussion more often in educational practice, as well as to try to start from the interests of the children/pupils/students and support their natural curiosity.

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## SIGNIFICANCE OF CHILD'S PLAY

Marie Bajnarova

Faculty of Education, Institute of Education and Social Studies, Palacky University

Žižkovo nám. 5

Olomouc, 779 00, Czech Republic

marie.bajnarova@seznam.cz

**Abstract:** The review study deals with the topic of child's play as child's play in pre-school age has become a vital tool of education and thus requires proper attention. The study is also based on the notion by Elkind that if children are given the opportunity to play, this gives them the time to develop their curiosity, imagination, creativity, and therefore strike a proper balance between love, work, and play. Child's play reflects the relationship between a child's personality and outer reality. A child's ability to reflect and transform outer reality is usually based on direct stimuli, their interests and motivations. The study emphasises the significance of child's play and presents prominent theories which strive to explain its stimuli and causes.

**Keywords:** Child's play, theories of play, game, education

### 1. Introduction

Children's play can reveal a lot about the social and cultural context in which a child finds himself, because play involves rituals reflecting values, ideas and attitudes of the given environment. Children's play shows the relationship of the child's personality to the surrounding reality, because the game is mostly based on direct stimuli, interests and motivation of the child.

During childhood, every child likes to play and likes toys with the help of which he creates his own world and stories. Children's play and toys developed over time in accordance with the conditions of the time. Changes in society and lifestyle influenced the content of children's play. Views of children's games can be found in some of the surviving artifacts that show us how children's games appeared in society, e.g. children's playfulness and ingenuity can be seen in a painting from 1560 entitled Children's Games by Bruegel Jr., which was able to capture more than 230 children engaged in 83 different games in a wide square. Bruegel's captured scenes lead us to slow study and deciphering of all the children's games. Bruegel's composition has no pattern in the visual arts, so it should be understood as a painted encyclopedia without moralizing undertones [1]. Also, Comenius also pointed out that adults should offer beneficial games to child, because child have to occupy themselves with something [2].

#### 1.1 Methodology

The study is also based on the notion by Elkind [3] that if children are given the opportunity to play, this gives them the time to develop their curiosity, imagination, creativity, and therefore strike a proper balance between love, work, and play. Child's play reflects the relationship between a child's personality and outer reality. The study does not neglect aspects of children's play in the context of learning. The review study asks the question: How did the meaning of children's play evolved? The author seeks an answer to this question through available sources and focuses on the theoretical concept of children's play. Initially, the study presents classical and modern theories of play. Then the

study presents four basic categories of games according to Caillois. The last chapter deals with child's play in the context of learning.

### 2. Classical and modern theories of play

In 1994, Mellou divided theories of play into two groups: The 1st group contains classical theories that were created in the 19th century and early 20th century; and the 2nd group is focused on modern theories that were created after 1920. Classical theories of play attempt to provide the causes, functions, and purposes of the game. This group includes [4]: a) Theory of excess energy; b) Theory of recreation or relaxation; c) Theory of exercise; d) Theory of recapitulation (Tab. 1). Classical theories of play are focused on the motivational power of children's play and deal primarily with its physical and instinctive side. Classical theories of play have become the focus of attention of philosophers, theorists and researchers, who recognized importance of play in child development and thus laid the groundwork for further advances in modern (and current) theories of play.

Modern theories of play (Tab. 2) are conceptually and historically different from classical theories because they deal with how play benefits the psychological development of children. Modern theories continue to make an important contribution to how educators in pre-school education should plan and implement their curriculum, organize the play environment with regard to the evaluation of children's development in game situations [5].

Table 1 Classical theories of play, modified according to Saracho and Spodek [6]

Classical theories of play	Author and year	Opinions
Surplus energy theory	Schiller (1759-1805)	Humans and animals produce energy that is sufficient to meet their survival needs. The game serves to rid of excess energy from the organism.
	Spencer (1875)	During childhood, the organism develops an uncontrollable desire to play, which Spencer considered a superfluous

		activity. Spencer's surplus energy theory combined the game and the survival of the human species, creating a relationship between excess energy and Darwin's theories of evolution.
Theory of recreation or relaxation	Lazarus (1883)	The game is considered a way of breaking down the barriers created as a result of fatigue from tasks. The game fulfills the function of relaxation.
Theory of exercise	Gross (1898, 1914)	Instinct is the source of the play, for instinct is a force in itself. Play is the conscious practice of instinct purely for pleasure. An activity ceases to be a game if it becomes an automatic activity, when the rules are set and the game is taken seriously, or when a goal is added to the game. Play is a pleasant exercise of instincts or impulses. At the same time, it is pointed out that children's games imitate adults. The game is not only fun, but also creative. An important biological and sociological aspect is attributed to the game [7].
Theory of recapitulation	Hall (1908)	The game provides a space to express instincts. The roots of games are found in rituals and the need for magic. Play is not perceived as an activity that develops future skills, but rather serves to rid the organism of unnecessary and primitive instinctual skills. Hall's theory of recapitulation states that no new skills or abilities can appear in the game because the game consists of remnants of the evolutionary past [8], i.e. children acquire an animal stage, such as climbing and swinging.

		knowledge).
	Ellis (1973)	Play is a stimulus-seeking activity that provides opportunities for children to manipulate objects in a new way. The game increases the level of motivation and excitement. Individuals think best in situations that provide an optimal degree of novelty, uncertainty, and complexity.
Meta-communicative theory	Bateson (1955)	Children use pretend play to inform their peers about how they imitate reality. In this way, children learn to function on two levels: a) They pretend the purposes of objects or situations; b) They try to understand the authenticity of life. Play and fantasy perform an important function in the cognitive development of children.
Cognitive theories	Piaget (1962)	Children gain knowledge through processes: a) Assimilation – children receive information from the outside world and transform it into their experiences; b) Accommodation – there are three phases of the play: 1. Sensorimotor; 2. Symbolic; 3. Playing with rules. Play reflects the level of cognitive development of the child.
	Vygotsky (1930, 1933)	Play is not just a product of cognitive development, but it is an activity that directly supports the development of children's cognitive abilities. A symbolic play or dramatic play encourages abstract thinking of children. When creating an imaginary situation, children learn to act in response to external stimuli, but also in accordance with internal ideas [10]. Sociodramatic play involves playing with other children in contexts that typically simulate social context. The game serves to expand the cognitive development of children.

Modern theories of play tries to explain the existence of the game and help us understand its function in the development of children. Modern theories specify the conditions of children's lives that influence their play behavior and provide an understanding of play as a form of cognition or a form of symbolization. Modern theories include: a) Psychoanalytic theory; b) Arousal modulation theory; c) Metacommunication theory, d) Cognitive theory.

Table 2 Modern theories of play, modified according to Saracho and Spodek [9]

Modern theories of play	Author and year	Opinions
Psycho-analytic theory	Freud (1938)	The game serves as a catharsis that allows children to get rid of negative emotions. Children play to get rid of negative feelings caused by trauma or personal conflicts, and through play they achieve greater emotional stability. Children use play as a means to help them manage their hidden thoughts. The role of the play is related to the socio-emotional development of the individual. Children use the play to act out roles of adults. Play allows them to cope with reality.
Arousal modulation theory	Berlyne (1960)	In the child's central nervous system, there is a need to maintain arousal at an optimal level, and play allows the organism to look for sources of excitement that provide specific stimulation (for example, examining an object to develop

### 3. Four basic categories of games according to Caillois

Children's games can be characterized in many different ways, for example, the French anthropologist Caillois [11] explored the different possibilities of play and proposed the division of games into four basic categories, according to whether the principle of competition, principle of chance, principle of play so-called "as if" or principle of vertigo prevails in games. However, Caillois adds that these four designations do not describe the world of the game in its entirety, but merely classify it into four categories, each with its own main dominant principle. These four categories are called by name and embedded in the gaming sphere (Tab. 3).

Table 3 Four categories of children's games, modified according to Caillois [12]

Title	Principle	Characters
Agon	Principle of the competition (e.g. when children are playing football)	Match competitions; rivalry focused on a certain characteristic (speed, strength, endurance, memory, ingenuity, etc.); game rules; the motivational aspect for all participating players is the desire to excel in a given field; there are also competitions between children's peers that take the form of bullying.
Alea	Principle of chance (also a name for a game with	The hope of a favorable coincidence becomes a motivation; no qualities or abilities of the player are developed; it manifests itself in risk-taking, and risk is

	elements of gambling, e.g. dice, cards)	what the player bets on the game; surrender to fate.
Mime-sis	Principle for game activities so-called "as if" (e.g. thief and policeman game, theater)	Fictional world; the child pretends, believes and convinces others that he is someone else through play; one's own personality is hidden under a mask and disguise; imagination develops here.
Ilinx	The principle of vertigo (e.g. games where children spin to dizziness, fall and movements cause them to lose their orientation)	An attempt to suppress the stability of perception for some time; indulgence in trance or daze; children's play of the "blind grandmother" type; dance; spinning on the heel; merry-go-round; swinging on a seesaw.

**4. Child's play in the context of learning**

The concept of children's games can already be found in the pioneers of pedagogy, for example in the ideas of Rousseau, Pestalozzi, Froebel, Dewey and Montessori. These pedagogical pioneers believed in the importance of play in education and pre-school education (Tab. 4).

*Table 4 Pedagogical pioneers in the field of children's play*

Author and year	Opinions on the child's play
Rousseau (1762)	The game should be free. The child is thus be free to decide what is right for him [13]. Rousseau believed that children under 5 should only learn through play, and he rejected the idea that play is essentially "doing nothing." Thoughts about childhood and play are expressed primarily in the work of Emil. A look at the role of imagination and imaginative play in his work sheds light on the perception of childhood, human happiness and the potential of education to create a better life [14].
Pestalozzi (1827)	Free play should be part of the educational method. Pestalozzi emphasized the development of child's sensory perception and unique child's exploration, which should be verified by his own understanding of the problem and independent solution. The child should be able to freely pursue his own interests. He placed special emphasis on the child's spontaneous and own activities. Furthermore, he is of the opinion that children should not receive ready-made answers, but should arrive at the questions independently. He was looking for a balance between three elements: hands, heart and head [15].
Froebel (1840)	Froebel based the philosophy of education on the idea that preschool education should be built on natural play to prepare the child's mind for the path of learning. The child is to be given the opportunity to express himself, the child is to project his inner states into the outer world through language, play, drawing and rhythms. Froebel respected the freedom of the child and considered play as a form of creative activity. Children should be provided with gifts in the form of toys or toys should be arranged in a series with increasing difficulty, which promotes the development of the child (for example, the child is allowed to assemble his own toy). Froebel understands toys as symbolic objects, because the child plays not only with physical things, but also with symbolism [16].
Dewey (1933, 1934)	The game must have some purpose or idea, otherwise it lacks focus. The game involves intelligence in shaping the activity and in order to achieve certain results. The game gradually becomes work as tangible forms and conscious intention become controlling forces, and this involves greater use of intelligence in perceiving the relationships between means and ends. The play naturally

	transitions into work [17].
Montessori (1914, 1949)	The adults should offer the children the means necessary for their development, because it is their mission. Every activity of the child is crucial, for the child is busy with his hands and brain. Periods of activity form an integral part of social life, which develops from moment to moment. Children work, not play [18].

Currently, it is often discussed how to support children's cognitive, social, emotional, creative and physical skills through active involvement in learning through play, as learning and play should be experienced as joyful, meaningful and interactive. For example, in September 2018, the American Academy of Pediatrics published a clinical report titled *The Power of Play: A Pediatric Role in Enhancing Development in Young Children* [19], which highlights the fact that developmentally appropriate play, both with parents and peers, is a unique opportunity to promote social-emotional, cognitive, language, and self-regulating skills that build a child's executive functions. The authors of the clinical report draw attention to the fact that the game promotes the formation of stable relationships with all caregivers. Furthermore, the authors note that if a child lacks play it will disrupts his development and learning in prosocial behavior. On the one hand, the authors draw attention to the view that learning through play is developmentally appropriate because it taps into a child's advantage of the child's innate curiosity and facilitates the often difficult transition from kindergarten to school, and on the other hand, they add that there is a lack of evidence and practical guidance on how learning through play can be used effectively in school conditions. Inspirational statements defending the importance of children's play in the center of learning are selected from the clinical report (Tab. 5).

*Table 5 Children's playful learning, modified according to the clinical report The Power of Play: A Pediatric Role in Enhancing Development in Young Children [20]*

The issue of children's play	Assertion
Play and social skills	Social skills are part of playful learning and enable children to listen to instructions, pay attention, resolve conflicts and concentrate on tasks.
Active participation in the game	Children are often actively engaged. They are passionately immersed in the game, which develops executive functional abilities and contributes to school readiness.
Playing in the 21st century	Play is essential for acquiring 21st century skills that are crucial for later success, i.e. problem solving, collaboration and creativity. The demands of today's world require that a teaching method such as memorization be replaced by innovation, application, and transfer. Play is essential for health and provides opportunity to practice and hone the skills needed to live in a complex world.
The game is not just about fun	The game is not just about having fun, but about taking risks, experimenting and testing the possibilities.
Game with objects	Playing with objects progresses from early sensorimotor explorations to the use of symbolic objects for communication, language, and abstract thinking.

Movement game	The development of basic motor skills through play is necessary to promote active life and prevent obesity.
Playing outdoors	Outdoor play provides an opportunity to improve sensory integration skills, and the breaks is essential for physical health. Playing outdoors brings together children from different backgrounds together and develops friendships.
Pretending to play alone or with others	In a pretended play, children identify with some social role, which allows them to create their own rules and learn to cooperate.
The influence of play on the effects of functioning and structures of the brain	Play has both direct and indirect effects on the structure and functioning of the brain by leading to changes at molecular, cellular and behavioral levels that promote learning and adaptive or prosocial behavior.
Advantages of the game	Benefits include: improvement of executive functions, language, early mathematical skills, social and physical development; developing health and a better sense of action. Children who play for 1 hour a day are better able to think creatively and manage multiple things at once.
Play in preschool education	Focusing on cultivating executive functions and other skills through playful learning in the child's early years is an alternative and innovative way of thinking about pre-school education, i.e. developing the joys of learning through play.

## 5. Conclusions

The concept of the importance of children's play developed together with the development of pedagogical and psychological theories dealing more deeply with childhood and the overall development of the child. In classical theories, the meaning of play lay in the physical and instinctive side of the child, which laid the foundations for modern and contemporary theories of play. In modern theories, the importance of play is attributed primarily to the psychological development of the child. We can argue that the mentioned meanings and opinions from the theories of play presented in Chapter 2 can be used by the preschool educator in the classroom for planning of educational activities or to explain the behavior of children during games. Thanks to the division of games into four basic categories according to Caillois, the meanings of games can be found in the principles of competition, chance, game activities the so-called "as if" and vertigo. Also, through a clinical report from The American Academy of Pediatrics, we can see how the understanding of children's learning has changed in the last few decades and the importance of children's play has expanded to include creative thinking, problem solving and social-emotional learning, which is classified as a basic skill in today's 21st century. From the ideas of the pioneers of pedagogy, through modern theories of play to contemporary views of children's play, the meaning of play is clear: In the upbringing of the child, play occupies a prominent place and is a manifestation of independence in his contact with the environment, in learning about the world and his own possibilities. Children are supposed to get acquainted with objects and their manipulation during games affects their intellectual development, motor development, increases not only self-confidence, but also the overall psychological level of the children and also strengthens their independence. Children's play is

undoubtedly the most comprehensive educational tool in the preschool period, because it is the child's basic activity at this age. Child devotes the most time to his play. However, it should still be important to pay attention to children's play in a more systematic way, as games creates a desirable relationship and attitude to activities that are needed in learning and work and participates in the child's later approach to real life. Contemporary educators, but also educators and parents, should not ignore the fact that in the preschool age of the child, play becomes the dominant activity and with the help of games the child prepares for later real life, because he is deliberately placed in model situations that he has to deal with and that he may encounter in the future.

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## ANALYSIS OF PERFECTIONISM AND SELF-ESTEEM IN THE CONTEXT OF ATTACHMENT(BONDING) STYLE IN INDIVIDUALS WHO ARE PHYSICALLY ACTIVE

*Jana Hubinská – Dominika Doktorová – Barbora Scherková – Patricia Šomodiová*

**University of Ss. Cyril and Methodius in Trnava**

Námestie Jozefa Herdu 2

Trnava, 917 01, Slovak republic

+421917187544

jana.hubinska@ucm.sk – dominika.doktorova@ucm.sk – scherkova.barbora@gmail.com- somodiová@ucm.sk

**Abstract:** *Our study is focused on connection between perfectionism and self-esteem in the context of attachment. The survey involved 100 respondents, of which 50 were physically active and 50 physically inactive and 52 men, 48 women. We used standardized PBI, HMPS, R-MPS and RSES questionnaires. We have founded a no significant relationship was found between attachment (bonding) style and perfectionism in both groups, a statistically significant negative relationship between self-esteem and the bond to the father in the control group, no significant difference in self-esteem was found between the examined and control group. There was no significant difference in dimensions: organization and parental expectations between men and women. We found a significant relationship between the overall perfectionism score and the dimension: parental criticism.*

**Keywords:** *perfectionism, self-esteem, attachment (bonding) style, physically active people*

### 1. Introduction

The topic of attachment (bonding) style is currently being researched in connection with various personality characteristics or personality traits, which can be formulated differently on the basis of attachment style and parenting style at a later age. We decided to pay attention to self-esteem and perfectionism in connection with attachment (bonding) style.

Researches about self-esteem or perfectionism has often been connected to eating disorders [3], dissatisfaction with one's own body, or with top athletes [20; 21]. In the research, we compare the sample of physically active and physically inactive people. As was found out in the research [32], there is a higher self-esteem in people who physically exercise. Similar results are reported by Laborde, Guillen and Mosley (2016), who found, based on the results of their analysis, that adult athletes who physically exercise regularly have higher self-esteem, positivity, resilience, and endurance than those who do not physically exercise. We also decided to focus on the differences between men and women in the observed variables [1]; [19]; [13]. Kling, Hyde, Showers and Buswell (1999) state that men present higher self-esteem than women, on the other hand, Klimstra, Hale, Raaijmakers, Branje and Meeus (2009) found that women show a higher level of self-esteem than men.

Based on researches about perfectionism in people engaged in physical activities, there are more statistically significant differences between men and women [2]; [8]; [1]. However, there are also studies that have not shown a statistically significant difference in perfectionism between genders [13]. We are inclined to believe that the attachment style is an important source of personality and traits that an individual will naturally have at adulthood. Parenting style influences the later behaviour of the individual. It is confirmed by the researches mentioned above, where parental perfectionism, parental demands,

parental expectations and criticism contribute to the development of perfectionism in children [12]; [17]. Laible (2004) found that attachment style has a direct effect on an individual's self-esteem. Based on this knowledge and researches, we are interested in the topic of attachment style in connection with perfectionism and self-esteem in physically active people and physically inactive people, but also between men and women.

### Research goals

We set the following goals, which we focused on in the research:

- to find out the connection between attachment style, perfectionism, and self-esteem;
- focus on the differences between men and women in the observed variables.

Research questions and hypotheses:

In the research we set following hypotheses:

H1: There is a significant relationship between attachment (bonding) style and perfectionism in both groups.

H2: There is a significant positive relationship between attachment (bonding) style and self-esteem in both groups. (Hypotheses H1 and H2 were established based on [17]; [11]; [29]; [25]; [6].)

H3: There are significant differences between the physically active (examined) group and physically inactive (control) group in the self-esteem.

H4: There are significant differences in the physically active (examined) group between men and women in the dimension: organization.

(Hypotheses H3 and H4 were established based on [9]; [8]; [32]; [21].)

H5: There are significant differences in the physically active (examined) group between men and women in the dimension: parental expectations.

H6: There are significant differences in the physically active (examined) group between men and women in the dimension: parental criticism.

H7: There is a significant relationship in the physically active (examined) group between the overall perfectionism score and the parental dimensions of perfectionism.

(Hypotheses H5, H6 and H7 were established based on [1].)

## 2. Methods

### 2.1 Research basis

In the research, we paid attention to physically active respondents compared to inactive ones. The lower age limit of the group was 19 years, the upper age limit was 35 years. The research group (N = 100) consisted of 52 men and 48 women. The average age of respondents was 24.01 years, the median was 24 years, and the most represented age (the mode) was 24.00 years.

Table 1 Descriptive characteristics of age between the genders

	Women	Men
Mean	24,38	23,67
Median	24,00	24,00
Mode	24	24
Standard deviation	2,017	1,779
Minimum	21	20
Maximum	32	28

The research sample was divided into two groups, namely the examined group (physically active people) and the control group (physically inactive people). These groups were as balanced as possible in terms of age, gender, and education. Of the total number (N = 100), 50 respondents (50%) were included in the group of physically active (examined group) and 50 respondents (50%) were included in the group of physically inactive (control group).

Table 2 Sample layout in terms of groups

Group	N	%
Physically active/ examined group	50	50
Physically inactive/ control group	50	50

Table 3 Description of age layout in individual groups

	Physically active/ examined group	Physically inactive/ control group
Mean	24,18	23,84
Median	24,00	24,00
Mode	25	24
Standard deviation	1,892	1,952
Minimum	20	20
Maximum	32	32

### 2.2 Materials and equipment for data collection

In order to collect data, our respondents were presented with the following, questionnaires:

Parental bonding instrument (PBI), originally written by psychiatrist Gordon Parker [26]. Questionnaire focuses on determining the parental bond perceived during the first 16 years of an individual's life, when we assume that parental bonding is highly important for the future development of the individual [26]. This questionnaire is aimed at adolescents, but administration is possible from the age of 16. In 25 items, there are parents evaluated on a four-point scale, where the mother and father are evaluated separately. The method contains two subscales, the parental care scale, and the parental overprotection scale. By combining the results in the subscales, the following types/styles of bonds are determined: optimal bonding, affectionless control, affectionate constraint, weak bonding.

Table 4 Assessing the style of attachment through the style of bonding [7]

Style of bonding	Attachment style
Optimal bonding - lower score in overprotection, higher score in care	Secure attachment
Affectionless control - higher score in overprotection, lower score in care	Insecure - disorganized attachment
Affectionate constraint - high score in overprotection and in care	Insecure - ambivalent attachment
Weak bonding - low score in overprotection and in care	Insecure - avoidant attachment

Frost Multidimensional Perfectionism Scale (F-MPS) from 1990 with 35 items contains six dimensions of perfectionism. This scale of perfectionism is one of the self-assessment methods used to capture the dimensions of perfectionism. It consists of 35 statements, which the respondent evaluates on a five-point Likert scale, which indicates 1- strongly agree, 5- strongly disagree. It consists of six subscales [12]: concerns over mistakes, personal standards, parental expectations, parental criticism, doubts about actions, and subscale organization.

Multidimensional Perfectionism Scale (HMPS), which describes in detail how neuroses from inability to achieve the impossible manifest themselves [14]. Higher score reflects higher level of perfectionism. This questionnaire contains 45 items that focus on: *self-oriented perfectionism, other-oriented perfectionism, socially prescribed perfectionism.*

Rosenberg Self-Esteem Scale (RSES), one of the most widely used tools for measuring global self-esteem, was used to assess the degree of self-esteem [33]; [23]. RSES consists of 10 items, half of which are formulated positively, and the other half are worded negatively. The respondent's role is to tick one of the options he is most in favour of (strongly agree-agree-disagree- strongly

disagree). This scale was originally created for college students but was later used to measure self-esteem even in other groups [30].

**3. Results**

We chose program SPSS 20 to process the results. As a statistical method, we decided to use correlation analysis to determine the direction of the relationship between attachment style and perfectionism, as well as relationship between attachment style and self-esteem. We also used comparative analysis to find out the differences between the physically active sample and the physically inactive sample and, last but not least, to find out the differences between men and women in the observed variables.

In the first statistical procedure, we verified whether our selected variables, which we chose for testing in individual hypotheses, have a normal distribution. The normal distribution was not confirmed for all variables, so we worked with a nonparametric tests. From the nonparametric tests, we chose the Mann-Whitney U test to analyse data. The test was used to compare the individual variables. We also used the U test to compare the differences between men and women and also the differences between the examined and control group in the variables: attachment style, self-esteem and perfectionism. For correlation, we chose the Spearman correlation coefficient to determine the relationship between the individual variables and the Kruskal-Wallis test to compare the groups in individual variables.

H1: There is a significant relationship between attachment (bonding) style and perfectionism in both groups.

*Table 5 Relationship between variables attachment (bond) and perfectionism in both groups*

Spearman Physical activity			Attachment (bond) father	Attachment (bond) mother	Overall perfectionism score
Yes	Attachment (bond) mother	P Sig. N	1,000 .381 50	.127 .381 50	.177 .220 50
	Attachment (bond) father	P Sig. N	.127 .381 50	1,000 .381 50	.011 .939 50
	Overall perfectionism score	P Sig. N	.177 .220 50	.011 .939 50	1,000 .381 50
No	Attachment (bond) mother	P Sig. N	1,000 .445 50	.111 .445 50	.057 .693 50
	Attachment (bond) father	P Sig. N	.111 .445 50	1,000 .445 50	.070 .630 50
	Overall perfectionism score	P Sig. N	.057 .693 50	.070 .630 50	1,000 .381 50

Based on Table 5, there is not statistically significant relationship between the overall perfectionism score and the style of bond to the father and also the style of bond to

the mother in the examined group. We can also see that there was no statistically significant relationship between the individual styles of bonds to the mother and to the father in the examined group. No statistically significant relationship was found between the overall perfectionism score and the style of bond to both parents. There was no statistically significant relationship between individual styles of bonds to the mother and to the father in the examined group.

H2: There is a significant positive relationship between attachment (bonding) style and self-esteem in both groups.

*Table 6 Relationship between variables attachment (bond) and self-esteem in both groups*

Spearman Physical activity			Attachment (bond) father	Attachment (bond) mother	Self-esteem
Yes	Attachment (bond) mother	P Sig. N	1,000 .381 50	.127 .381 50	.262 .066 50
	Attachment (bond) father	P Sig. N	.127 .381 50	1,000 .381 50	.172 .231 50
	Self-esteem	P Sig. N	.262 .066 50	.172 .231 50	1,000 .381 50
No	Attachment (bond) mother	P Sig. N	1,000 .445 50	.111 .445 50	-.283* .046 50
	Attachment (bond) father	P Sig. N	.111 .445 50	1,000 .445 50	.153 .290 50
	Self-esteem	P Sig. N	-.283* .046 50	.153 .290 50	1,000 .381 50

Based on Table 6, we can see that there was no statistically significant relationship between the bond to the father and the bond to the mother in the examined group. However, we found a statistically significant negative relationship between self-esteem and the bond to the father in control group  $p = -.283$ ,  $sig < 0.05$  ( $sig = 0.046$ ). We did not find a statistically significant relationship between self-esteem and the bond to the mother in the control group. We also did not find a statistically significant relationship between the bond to the mother and bond to the father in the control group.

H3: There are significant differences between the physically active (examined) group and physically inactive (control) group in the self-esteem.

*Table 7 Differences between groups in the variable: self-esteem*

Self-esteem	Group	N	MR	U	P
	Examined	50	51,37	1206,500	0,764
	Control	50	49,63		

To find out the differences between the groups, we chose the nonparametric Mann-Whitney U-test. Based on Table 7, we can see that the result of the Mann-Whitney U-test for the total self-esteem score is  $U = 1206,500$ ;  $p > 0.05$  ( $p = .764$ ). Through significance, we state that there is no statistically significant difference in self-esteem between the examined group and the control group, but the examined group ( $MR = 51.37$ ) shows a higher self-esteem score than the control group ( $MR = 49.63$ ).

H4: There are significant differences in the physically active (examined) group between men and women in the dimension: organization.

*Table 8 Gender differences in the dimension: organization in the examined group*

Dimension:	Group	Gender	N	MR	X2	p
organization	Examined group	Man	29	24,59	0,277	0,598
		Woman	21	26,76		

To determine the differences between the groups, we chose the nonparametric Kruskal-Waliss test. Based on Table 8, it can be seen that the result of the Kruskal-Waliss test for the total score is  $x^2 = 0.277$ ;  $p > 0.05$  ( $p = .598$ ). Through significance, we state that there is no statistically significant difference between the genders in the dimension: organization, but women ( $MR = 26.76$ ) in the examined group show higher score in the dimension: organization than men ( $MR = 24.59$ ).

H5: There are significant differences in the physically active (examined) group between men and women in the dimension: parental expectations.

*Table 9 Differences in the dimension: parental expectations between genders in the examined group*

Dimension:	Group	Gender	N	MR	X2	p
Parental expectations	Examined group	Man	29	24,69	0,215	0,643
		Woman	21	26,62		

To determine the differences between the groups, we chose the nonparametric Kruskal-Waliss test. Based on Table 9, we can see that the result of the Kruskal-Waliss test for the total score is  $x^2 = 0.215$ ;  $p > 0.05$  ( $p = .643$ ). Through significance, we can state that there is no statistically significant difference between the genders in the dimension: parental expectations, but women ( $MR = 26.62$ ) in the examined group show higher score in the dimension: parental expectations than men ( $MR = 24.69$ ).

H6: There are significant differences in the physically active (examined) group between men and women in the dimension: parental criticism.

*Table 10 Differences in the dimension: parental criticism between genders in the examined group*

Dimension:	Group	Gender	N	MR	X2	p
Parental criticism	Examined group	Man	29	25,71	0,014	0,905
		Woman	21	25,21		

To determine the differences between the groups, we chose the nonparametric Kruskal-Waliss test. Based on Table 10, the result of the Kruskal-Waliss test for the total score is  $x^2 = 0.014$ ;  $p > 0.05$  ( $p = .905$ ). Through significance, we can state that there is no statistically significant difference between genders in the dimension: parental criticism, but men ( $MR = 25.71$ ) in the examined group show higher score in the dimension: parental criticism than women ( $MR = 25.21$ ).

H7: There is a significant relationship in the physically active (examined) group between the overall perfectionism score and the parental dimensions of perfectionism.

*Table 11 The relationship between the variables: overall perfectionism score, parental expectations and parental criticism*

Spearman		Parental expectations	Parental criticism	Overall perfectionism score
Parental expectations	P	1,000	,127	,177
	Sig.	.	,381	,220
	N	50	50	50
Parental criticism	P	,127	1,000	,011
	Sig.	,381	.	,939
	N	50	50	50
Overall perfectionism score	P	,177	,011	1,000
	Sig.	,220	,939	.
	N	50	50	50

In Table 11 we can see that in the overall perfectionism score we did not find a statistically significant relationship between the overall perfectionism score and the parental expectations. We found a statistically significant relationship between the overall perfectionism score and the parental criticism  $p = .204$ ,  $sig < 0.05$  ( $sig = .04$ ). In examining the relationships between the dimensions parental criticism and parental expectations, we found that there was a statistically significant weak positive relationship  $p = .790$ ,  $sig < .01$  ( $sig = .000$ ).

#### 4. Discussion

The goal of the research was to determine whether there is a relationship between attachment (bonding) style, perfectionism, and self-esteem in a physically active sample (examined group). We focused on the differences between men and women in the observed variables and we also focused on the differences between the physically active individuals (examined group) and the physically inactive individuals (control group).

H1: There is a significant relationship between attachment (bonding) style and perfectionism in both groups.

In hypothesis H1, we assumed that there is a significant relationship between attachment (bonding) style and perfectionism in both groups. According to several authors, attachment (bonding) style is considered to be the most common etiological factor for the development of perfectionism [26]; [31]; [10]. A relationship between high parental expectations and perfectionism has also been found [15]; [25]. Similarly, a consistent relationship between parental criticism and perfectionism has been found [17]. Therefore, parental expectations and criticism seem to play an important etiological role in the later development of perfectionism. For example, as previous researches had found there is a relationship between high parental expectations, parental criticism, and perfectionism [17]; [25]. Based on our findings, it should be noted that our results contradict the researches of the mentioned authors, because we did not find a significant relationship between the overall score of perfectionism and the bond to the father or to the mother in the examined group. There was also no significant relationship between the different styles of bonds to mother and father in the examined group. No significant relationship was found between the overall perfectionism score and the style of bond to the father and also the style of bond to the mother. There was no significant relationship between the different types/styles of bonds between mother and father in the study group. However, the attachment (bonding) style does not have to affect perfectionism, development of perfectionism may be affected by many other factors [5].

H2: There is a significant positive relationship between attachment (bonding) style and self-esteem in both groups.

Within the hypothesis H2, we focused on whether there is a positive relationship between attachment (bonding) style and self-esteem in both groups. According to Vágnerová (2008), the child takes and acquires certain opinions and patterns from the mother, which is the basis for this child's self-esteem. If the mother fails in any way, the child may be prone to negative evaluations and to negative self-esteem. Attachment (bonding) style has a direct effect on an individual's self-esteem. Adolescents with higher levels of secure attachment have also shown higher levels of self-esteem [22]. If parents have high self-esteem, the child acquires this pattern and also models high self-esteem in the same way. There was no significant relationship between the bond to the father and bond to the mother in examined group. However, we found a significant negative relationship between self-esteem and the bond to the father in the control group (physically inactive). We did not find a significant relationship between self-esteem and bond to the mother in the control group. We also did not find a significant relationship between the bond to the mother and bond to the father in the examined group. Based on our results, we do not agree with the authors and their researches.

H3: There are significant differences between the physically active (examined) group and physically inactive (control) group in the self-esteem

We focused on the differences in self-esteem between the physically active and physically inactive group. The core and important essence of a harmonious and integrated personality is adequate and appropriate self-esteem, which corresponds to the real qualities of a person. An individual with a healthy self-esteem perceives himself/herself adequately, knows his/her own value and is aware of his/her strengths and weaknesses, adapts well to the environment and is not overestimated or underestimated [16]. Tilindiene, Emeljanovas and Hraski (2014), in their study, pointed to higher self-esteem in people who physically exercise. Laborde, Guillen and Mosley (2016) agree with these results, they found, based on the results of the analysis, that adult athletes who exercise regularly have higher self-esteem, positivity, resilience, and endurance than those who do not exercise. However, based on the results, there was no significant difference in self-esteem between the examined group and the control group. However, we found that physically active individuals show higher scores in self-esteem in comparison to physically inactive people. According to Miljaković and Rijavec (1996), low self-esteem is accompanied by a certain sense of inferiority or low self-confidence, while people with high self-esteem are aware of their shortcomings, which push them to improve, but also have a positive thinking about themselves. According to Blatný (2010), individuals with high self-esteem tend to draw overvalued, even exaggerated, conclusions about themselves. At the same time, their assumptions about their own performance mostly exceed their real abilities, which in turn leads them to a certain failure [16].

H4: There are significant differences in the physically active (examined) group between men and women in the dimension: organization.

We paid attention to the differences between genders in the dimension: organization. According to Parker and Stumpf (1995), women score higher than men in this dimension. Parker and Mills (1996) also confirmed these results, with women scoring in dimension: organization significantly higher than men. On the contrary, Anshel, Weatherby, Kang and Watson (2009) claim that men score significantly higher in dimension: organization than women. Based on the results of the research of Parker, Stupf (1995) and Parker, Mills (1996), the results of our research were in agreement. We recorded higher scores in the dimension: organization for women than for men. People, who are characterized by this type of dimension are people who care about a certain order and structure [12].

H5: There are significant differences in the physically active (examined) group between men and women in the dimension: parental expectations.

We focused on whether there is a statistically significant difference in the examined group between men and women in the dimension: parental expectations. We relied on research by Anshel, Weatherby, Kang and Watson (2009), in which they found that there are differences in the dimensions of perfectionism between the genders in people who exercise regularly. Gucciardi, Mahoney, Jalleh, Donovan and Parkes (2012) found the opposite result, namely that there are no gender differences in the dimensions of perfectionism. Results of their research agreed with the results of our research. We did not find a significant difference between the genders in the dimension: parental expectations. However, we have noted that physically active women score higher in the dimension: parental expectations than men. We also agree with the results of Anshel, Weatherby, Kang and Watson (2009), who reported that women scored significantly higher in dimension: parental expectations than men. Based on the results, it can be stated that physically active women whose parents have exaggerated expectations of their children (daughters) have a higher tendency to perfectionism.

H6: There are significant differences in the physically active (examined) group between men and women in the dimension: parental criticism.

We focused in hypothesis H6 on whether there is a statistically significant difference in the examined group between men and women in the dimension: parental criticism. Parental expectations and criticism play an important etiological role in the development of perfectionism [11]. Based on this, we opted for a comparative analysis between genders in the parental criticism dimension. Anshel, Weatherby, Kang and Watson (2009) found gender differences in the dimensions of perfectionism. They also found that physically active women scored higher in parental criticism than men. Based on our results, it can be stated that men are more sensitive and prone to parental criticism to such an extent that they can influence them and cause perfectionist tendencies as such. However, our results do not match the results of Anshel, Weatherby, Kang and Watson (2009).

H7: There is a significant relationship in the physically active (examined) group between the overall perfectionism score and the parental dimensions of perfectionism.

In the last hypothesis H7, we focused on whether there is a relationship between the overall perfectionism score and the parental dimensions in the examined group. We can observe a relationship between high parental expectations, parental criticism, and perfectionism [17]; [25]. We have therefore decided to verify this result. In our results, we did not find a statistically significant relationship between the overall perfectionism score and parental expectations. We found a statistically significant relationship between overall perfectionism score and parental criticism. In examining the relationships between the parental criticism and the parental expectations dimensions, we found that

there was a statistically significant weak positive relationship. We agree with the results of Kawamura, Hunt, Frost and Dibartolo, (2001), which confirm a consistent relationship between parental criticism and perfectionism. However, we do not agree with the claims of other researchers [15]; [25] who argued that there is a relationship between parental expectations and the overall perfectionism score. The results of the data analysis show that physically active people are more influenced by parental criticism, which may be exacerbated by parental expectations themselves, which can often be excessively high.

## 5. Conclusions

To better understand the issue of attachment (bonding) style in connection with perfectionism and self-esteem between physically active and physically inactive individuals, we focused on examining individual variables. Our main findings include following:

- no significant relationship was found between attachment (bonding) style and perfectionism in both groups
- we found a statistically significant negative relationship between self-esteem and the bond to the father in the control group
- no significant difference in self-esteem was found between the examined and control group
- there was no significant difference in dimensions: organization and parental expectations between men and women
- we found a significant relationship between the overall perfectionism score and the dimension: parental criticism.

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## THE SOCIAL PEDAGOGUE AND THEIR WORK IN THE SCHOOL ENVIRONMENT

Romana Longauerová

Catholic University in Ružomberok

Hrabovská cesta 1A

Ružomberok, 03401, Slovakia

+421 44 430 46 93

romanalongauerova1111@gmail.com

**Abstract:** This paper focuses on the work of the social pedagogue in the school environment in which they work. The aim of the paper is to characterize the competences of the social pedagogue and theoretically define their activity in the school system. Social pedagogy focuses its attention on marginal forms of behaviour in the school environment. The effective action of the social pedagogue in the process of change, is conditioned by the social need and the increase of deviant behaviour in the school environment. In the context of continuing education of social educators, there is a need for continuous discussion about their competencies, continuing education and addressing problem behaviours of pupils associated with the development of society in all countries. The school system thus needs to respond to the way of life of its pupils and implement different forms of assistance.

**Keywords:** social pedagogy, competences of social pedagogy, problem behaviour of pupils,

### 1. Introduction

The profession of social pedagogue has undergone dynamic development. Life situations that contribute in a negative way to the marginalisation of society are increasingly occurring in school children and in the family environment. In the school system, the social pedagogue's priority focus is on pupils and their environment. Experience shows that these are vulnerable and easily influenced groups. In addition to professional knowledge, competence skills, the social educator also possesses personal enduring characteristics. There are demands placed on their personality which they apply when working in the school environment.

### 2. The social pedagogue and their competences in the school environment

The social pedagogues have their own position in the Department of Education in the context of education and training. The school is a professional institution that plays an important role in prevention, particularly in primary prevention and, since problem behaviour is very common, also in secondary prevention. In a supportive school environment, the social pedagogues carry out their work on a multidisciplinary basis (Niklová et al., 2018).

As a professional employee, the social pedagogue focuses on individual activities according to Act No. 138/2019 on pedagogical employees and professional employees:

- prevention of socio-pathological phenomena and prevention of drug addictions,
- providing counselling to pupils who are at risk of risky behaviour or who have been functioning in a socially disadvantaged environment for a long period of time,
- providing counselling to families, legal representatives, school staff,

- carrying out social-educational activities in the school environment in relation to pupils themselves, families, and school staff.

In the continuous development of society, the need for a preventive dimension of social pedagogy is increasingly coming to the fore.

Hroncová (2009) stresses the need for the professionalisation of prevention activities and the systematic implementation of these activities within the school. Within the framework of professionalization and the development of scientific knowledge, the use of the knowledge of science and research in the field is essential. She defines the priority areas and socio-educational activities of the social pedagogue, focusing on:

- young people from socio-cultural backgrounds that are in some way disadvantaged,
- pupils with behaviour that is at risk,
- pupils who are at risk of socio-pathological phenomena.

As Baláž (2000, p. 12) states, '*social pedagogy is a frontier pedagogical discipline that responds immediately to the dynamics and mobility of the social environment, therefore its subject matter is expanding, its methods are evolving and both theoretical and practical links are multiplying.*'

At a conference held in Bratislava in 1999, entitled *The Current State of Social Pedagogy in Slovakia*, conclusions were drawn on the possibilities of applying the social pedagogue in dealing with social pathological phenomena and on the possibilities of their prevention. Miňová (2000) also agrees with the above, specifying the preventive areas of the social pedagogue's action on:



- drug addiction problems,
- regular absence of the pupil from the teaching process,
- alcohol dependence syndrome,
- disturbed family relationships,
- behavioural disorders,
- the syndrome of the abused, and neglected child.

According to Tokárová (2005), the social pedagogues, in the framework of social and educational influence on the pupil, first analyses the environment in which they meet the pupil. The social pedagogue contributes to the improvement of the environment with specific, economic, and regional features by optimizing the educational process.

Foreign experience shows that an important function of the school, besides education and training, is to focus on the socialization of the individual and their development. The social pedagogue, in cooperation with a multidisciplinary team, with their experience, education and professional competence, offers a space for the fulfilment of these prerequisites. The main aim of their action is to improve the social and psychological functioning of pupils and their families in the context of education.

### 3. Problem behaviour of pupils and its prevention in the school environment

In the conditions of the Slovak Republic, the document *Strategies of prevention, crime, and other antisocial activities in the Slovak Republic for 2016-2020* points to the need to professionalize the prevention of problem behaviour and other antisocial activities, stating that its purpose is to develop the prevention system through prevention programmes and projects at national, regional, and local level. The document responds to the recommendations of international institutions and the importance of cooperation between entities working in this field. It indicates that unsystematic solutions to problem behaviour and insufficient application in practice cause an annual increase in the level of crime, anti-social activity, and an increase in socio-pathological phenomena in schools. The response to the increase in these phenomena is to strengthen preventive programmes directed at education, science, and research.

In 2021, the Slovak Republic published a document with an action plan for tackling bullying in schools for 2022-2023. The document describes activities leading to the elimination of bullying and highlights the need for professional teaching staff in the school environment. In response to raising awareness of these risks, the document focuses on the following objectives:

1. Increase the expertise of educational and professional staff working in education in their approach to bullying.
2. Strengthen cooperation with governmental authorities for mutual information and effective collaboration.
3. Establish measures to eliminate future risks.

4. Monitoring, strengthening information and awareness on bullying.

According to the Centre for Scientific and Technical Information, 86.3% of schools encountered bullying in the 2019/2020 school year.

According to Ondejkovič (2001), the purpose of prevention is to effectively intervene in the social regulation of student behaviour in order to prevent the occurrence of socially pathological behaviour.

Matoušek (2001, p. 190) perceives the concept of professionalization as follows, '*Professionalization of a particular occupation is understood not only as a maturing process, but above all as a growth-development process and is characterized by several distinctive processes.*' The author further states that the process of professionalisation is characterised, in particular, by the improvement of the quality of services provided and the development of professional training of professionals.

The need for professionalisation and the creation of an effective model for the prevention of problematic behaviour of pupils is also referred to in the *Report on the State of education in Slovakia from 2013*. This document stresses that in order to introduce inclusive education, it is necessary to create an inclusive team of professional staff, which includes a social pedagogue.

The social pedagogue, as a professional employee, can contribute to the prevention of pathological behaviour through their preventive and intervention work.

### 4. The need for a social pedagogue in the school environment

According to the author, Határ, who points out the personality characteristics a social pedagogue should possess and thus contribute to the effective functioning of pupils in the school environment:

- Empathy - represents the general ability of a person to empathize with the experience and actions of another person, in school terms this means the ability to look at the world through the eyes of the child with whom we are currently working, the ability to deal with emotions and to identify with the vision of the person in question.
- Discretion - represents for the social educator the capacity for confidentiality and adherence to professional ethics.
- Authenticity - represents the social educator's ability to remain truthful with the student in any situation. The social educator becomes truthful, friendly, and trustworthy to the child.
- Professionalism - the condition to practice the profession of social pedagogue is the condition of qualification and professionalism. This means that, according to the legislation in force, the social

pedagogue must meet the professional competence and be able to link social norms with the pupil.

- Acceptance - the ability to accept the pupil in any situation, to accept the pupil as he or she really is.

Kraus (2000, p. 44) defines a social pedagogue as: ‘a professional prepared theoretically, practically, and conceptually for educational action wherever it contributes to the formation of a healthy way of life, especially where the environment of individuals or groups acts in a destructive or noncreative way in the satisfaction of needs. The social pedagogue is therefore a professional who manages and organises at a professional level the educational process and influences children, adolescents, and adults in the direction of desirable personal development.’

Határ (2009, p. 35-36) defines the social pedagogue as ‘... a professional facilitating, by means of various techniques, tools and procedures characteristic of their profession, the alleviation of social contradictions between the client and the society which the client is a part of. In their work, they use a range of professional competences which, in part, enable them to more effectively meet the set objectives in relation to individuals, groups, societies and the whole of society; he is an erudite expert in the field of education and social issues; in their work, they apply an interdisciplinary and transdisciplinary approach to the prevention, solution and investigation of social and educational problems and phenomena; they are one of those professionals who positively influence the development of the psychological and physical aspects of the personality.’

In addition to their personal qualities, the social educator can be an asset to the school as they bring professional objectivity, honesty, and humanity to the teaching process. They must be sufficiently prepared for the job and bring practical experience. These characteristics translate into socio-pedagogical work with the pupil in school conditions.

## 5. Conclusions

The system has undergone many changes in its modern history, especially in the fields of education, leisure, the occurrence of social pathologies and the progress of information and communication technologies. Various aspects of globalization have been translated into the functioning of social processes. In the direction of further education of social educators, it is necessary to constantly discuss their competences, continuous education, and the solution of problematic behaviour of pupils connected with the development of society in all countries.

The school system must thus respond to the way of life of its pupils and implement various forms of assistance. Part of the social pedagogues' work activities, responding to the ongoing changes in social events, are problems related to the family environment, interpersonal relationships, problematic behaviour at school and, last but not least, problems related to socio-pathological phenomena. The

commodity and materialistic way of life as one of the manifestations of globalization will encompass all areas of a pupil's personality as it is related to their value orientation.

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## SUPERVISION IN SOCIAL WORK IN SLOVAKIA

Jana Kamanová

### Katolícka univerzita v Ružomberku

Hrabovská cesta 1A  
Ružomberok, 03401 Slovak republic  
00421 44 430 46 93  
Jana.kamanova767@edu.ku.sk

**Abstract:** *The paper deals with supervision and its use in the development of organizations in Slovakia. The focus is on organizations providing social services. The author in the paper treats the topic according to the current legislative norms, defines supervision, supervisor, presents a view of selected research in the field, clarifies the quadrilateral of supervision.*

**Keywords:** *organization, relationships, supervision, training*

### 1. Introduction

In our paper we focus on supervision in social work in Slovakia. We see supervision as a regularly used tool to enhance human and professional potential. It has become a natural part of social work education and practice. It is equally important for the development of organizations that are part of the social sector and an important link in society in improving the delivery of social services.

The aim of this paper is to highlight the importance of supervision in the provision of social services in Slovakia.

According to Vaska, supervision is a method of continuous development of the social worker's professional competencies, which is achieved with the help of a qualified supervisor through reflection, support, supervision methods and techniques, and at the same time protects the social worker from burnout syndrome. Supervision is seen as a tool for optimizing and verifying the correctness of procedures, and a space for seeking alternatives in the work of the social worker, for providing feedback, and which, through its interventions, protects the user of social work services from harm or abuse (Vaska, 2012, p. 26)

According to Schavel (2004), several factors work in favor of the application of supervision in social practice, such as:

- education of supervisors in the helping professions,
- legislative environment,
- awareness and expertise in the field of supervision in social work on the part of graduates of the helping professions,
- the profiling of supervision theory in social work practice,
- publishing activities in the field of social work supervision,
- motivation of professional social services staff to prevent burnout syndrome and to strive for improvement of their professional activities for the benefit of the client.

### 1.1 Legislation of supervision

Supervision is legally anchored in the laws of the Slovak Republic. The first law of which it was a part was the Act of the National Assembly of the Slovak Republic No. 305/2005 Coll. On Social and Legal Protection of Children and Social Guardianship and on Amendments and Additions to Certain Acts. Currently, this Act defines it in connection with the accreditation of institutions providing services in the field of social protection of children and social guardianship: 'a written supervision program and the method of ensuring the supervision program of the measures for which accreditation is sought' (Act No 305/2005 Coll., §73 ).

Act of the National Assembly of the Slovak Republic No. 448/2008 on social services and on amendments of Act No. 455/1991 Coll., on Trade Enterprise, as amended, §9 states. (Act of the National Council of the Slovak Republic No. 448/2008 Coll., §9 )

According to the Act of the National Assembly of the Slovak Republic No. 138/2019 Coll. - on pedagogical employees and professional employees, § 36 states that a pedagogical employee performs specialized activities in career positions - supervisor. (Act of the National Assembly of the Slovak Republic No. 138/2019 Coll., §36)

According to the Act of the National Assembly of the Slovak Republic No. 219/2014 Coll. on social work and on the conditions for the performance of certain professional activities in the field of social affairs and family and on the amendment and supplementation of certain acts, Section 7 states that a condition for the issuance of a permit for the performance of independent practice of a social worker is the provision of supervision. An applicant for a permit may ensure supervision for the performance of independent practice of a social worker only by a natural person who has completed professional accredited training as a supervisor in the field of social work or counselling work of at least 240 hours. (Act of the National Assembly of the Slovak Republic No. 219/2014 Coll., §7)

According to the Slovak Government Regulation No.296/2010 on the professional competence for the

exercise of the health profession, the manner of further education of health professionals, the system of specialization fields and the system of certified work activities, § 75 continuing education states that the organiser of continuing education submits an evaluation report of the guarantor or supervisor on the contribution of the educational activity to practice. (Government Regulation No 296/2010, §75)

Decree No. 31/2006 of the Ministry of Health of the Slovak Republic on the amount of reimbursement of a health worker for continuing education, in § 1, paragraph 8, states that the remuneration for the supervisor for his/her professional activity is also considered as an economically justified cost. (Decree No 31/2006 of the Ministry of Health of the Slovak Republic, § 1)

### 1.2 Supervision in research studies

The authors Brozmanova Gregorova, Vaska and Vrt'ova (2021) in their scientific study focused on the reflection of supervision in social work as a subject of scientific studies. In their research, they searched 403 research studies in professional databases, of which 63 research studies were included in a systematic review, which they explored in more depth.

The authors concluded that scholarly interest in supervision in social work contexts has been growing, particularly in the last 10 years, although in an initial literature screening the authors identified studies dating back as far as 1925. The authors conclude that social work and supervision have an inseparable history. The first written references to supervision in social work can be found in social work pioneer Mary Richmond's 1917 work *Social Diagnosis*, where she comprehensively elaborates on this way of developing the professionalism of social workers.

Based on their analysis, the authors conclude that supervision in social work intertwines its perception as a tool for development or support from an external environment, with the performance of internal supervision. However, in recent years, the primary focus of scholarly studies has been more on external supervision (25 studies reported supervision in an external form, 2 in an internal form, 15 in both, 21 did not specify).

This fact may be related to the development of so-called clinical supervision in social work, which is gradually moving away from the managerial/administrative function of supervision typical of social work. At the same time, the implementation of external supervision in the conditions of the Slovak Republic is clearly related to the current legislation, which determines the obligation to provide a supervisor from an external environment (Brozmanová Gregorová et al., 2021).

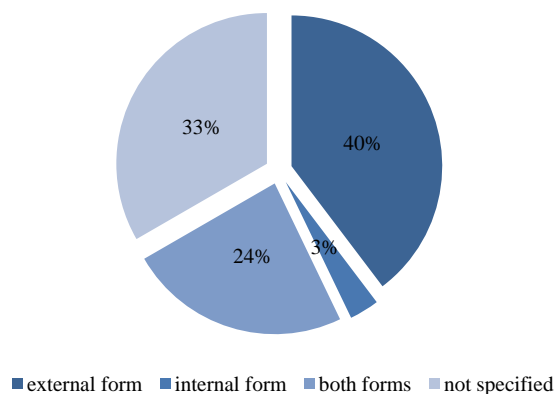


Figure 1: Forms of supervision

### 2. Supervision training

The training of the first supervisors in Slovakia dates back to 1999, when on the initiative of a German-Slovak working group under the auspices of the Ministry of Labour and Social Affairs of the Slovak Republic under the leadership of Martin Scherpner and Ján Gabura. This marked the beginning of the era of professionalization of supervision as an effective aid in various areas of social interventions in Slovakia (Schavel, Hunyadiová, Kuzyšin, 2013).

Supervision is carried out by accredited supervisors, graduates of accredited education in the study program "Supervision" or "Supervision for the helping profession". Currently, 199 supervisors are registered on the website of the Ministry of Labour, Social Affairs and Family of the Slovak Republic. The Ministry of Labour, Social Affairs and Family of the Slovak Republic ("MoLSW SR") shall register/re-register a natural person - supervisor in the list of supervisors on the basis of his/her written application. The natural person shall be kept in the list of supervisors for five years from the date of inclusion in the list. A natural person who has been on the list of supervisors for five years from the date of his/her entry on the list shall be removed from the list of supervisors by the Ministry of Labour and Social Affairs of the Slovak Republic ([employment.gov.sk](http://employment.gov.sk)).

According to the authors Schavel et al, there are currently almost 700 graduates of the above training in Slovakia, but only about 300 of them are actively supervising. The authors point to the lack of a continuous process of continuing education for supervisors, the lack of supervision of the quality of supervision performed, and also the failure to provide mandatory supervision of novice supervisors. The authors also point to the declassing of the quality of training through the use of a form of online education, which they do not perceive as acceptable given the specifics of supervisory training (Schavel et al., 2022).

### 3. Relationships in supervision

In the early 20th century, supervision was described as a counselling process, namely a process between supervisor

and supervisee, with the focus being the client and the improvement of their situation. Around the 1980s, in the context of the naming of the burnout syndrome, the focus in supervision shifted from the client to the worker-supervisor. This concept prevailed strongly until the end of the 20th Century. It was the supervisor-supervisee-client triangle. The organization was completely ignored or understood as an unspecified context in which supervision takes place. However, because of the supervisors' experience and the situations dealt with, it was necessary to accept the organization as another party involved in supervision. Thus, instead of a triangle, we perceive a quadrilateral in supervision: supervisor - supervisee - client - organization, where each of them deserves respect (Havrdova et al., 2011).

An optimal relationship in supervision is a prerequisite for effective supervision work. In the process of supervision it is necessary to respect several conditions that create these relationships, a good relationship must be maintained throughout the supervision process.

It is important that the supervisor accepts the supervisee's level of knowledge and experience, the supervisor should not have unreasonable expectations, the supervisor should not assume performances that the supervisee does not yet have, the supervisor must handle criticism with care.

The supervisor must accept the supervisee's expectations, needs, thoughts and feelings about his/her client and working with him/her. The supervisee can then be more proactive, more open, and can gain a more appropriate perspective on his or her work.

In the supervision process, a personal individual approach to the supervisee is necessary. If the anonymous authority of the supervisor is strengthened, there may be a complex process of self-knowledge of the supervisee and empathic understanding in relation to the client. If the supervisor also talks about his/her work and experiences, it models not only openness for the supervisee, but also a process of reflection and self-examination. The supervisee gets what he or she needs from supervision, among other things, when he or she does not feel threatened.

For the supervisee, support from the supervisor is necessary throughout the supervision. The supervisor should promote positive aspects in the supervisee's work in order to support the supervisee's further independent action.

The supervisor should teach the supervisee to relax in working with clients, teaching him/her to observe and reflect on the non-verbal reactions and attitudes of his/her clients. He should also help him to recognize and reflect his own feelings and reactions towards his clients.

The supervisory relationship is not only educational in nature; with a sensitive supervisory approach, it can lead to

an increased capacity for self-awareness and self-reflection.

In a supervisory relationship, the relationship between the social worker and the clients is analyzed in an atmosphere of safety and trust. Respecting the value of trust is related to the protection of personal data, but also of all information that the supervisor has learned from the supervisee (or members of the supervision group). Third party information is only possible with the explicit informed consent of the supervisor or all members of the supervision group. Should even one member of the supervision group express disagreement, this is binding on the supervisor and the other members of the group (Schavel et al., 2017).

### 3.1 Supervisees

Supervisees are not only individuals, but also groups of social workers, working groups consisting of professionals representing other helping professions, as well as students of social work, teams or organizations operating in the social sphere. The basic competences of a supervisee consist of preparation for supervision meetings, clarification of their topic, and active work on meeting their needs with the help of the supervisor. The supervision process is built on the quality of the relationship between the supervisor and the supervisee, and the latter can also later decide on the success of the supervision. (Rusnáková, 2017)

According to the Social Services Act, in Criterion 3.4: Supervision system at a social service provider, the standard lists specific types of social services where the provider is obliged to implement supervision. (Annex 2 of the Social Services Act)

### 3.2 Social services staff perceptions of the importance of supervision

Research conducted by Schavel et al. (2018) focusing on the perceived importance of supervision among employees in social service settings yielded interesting findings. The research consisted of 260 respondents, of which 93.08% were female and 6.92% were male. In the past, supervision was perceived as a control mechanism; the supervisor was relegated to the level of an auditor. The research confirms that this view has now been overcome. 70% of social service workers agreed with the statement that supervision is a tool for them to improve the quality of their work. More than 85% of respondents agreed with the statement that supervision is a form of continuing professional education. More than 90% of them perceived supervision as a method of self-development. For the helping professions, burnout syndrome is a serious problem. Supervision is perceived as an important element of prevention by 66% of respondents. Respondents expressed their opinion on the statement whether supervision improves the work of the whole organization in the final questions of the research. More than 66% of employees of social service institutions expressed absolute agreement with this statement.

The authors conclude that supervision intended for employees of social service facilities is an important tool in promoting psychohygiene and work efficiency. It reduces the risk of burnout syndrome and thus contributes to the quality of social services. In general, supervision can increase the social skills of the supervisee, as it is developmental, educational and empowering, but it can also look for problems and their solutions in specific cases and allows workers to understand what hinders their understanding with the client.

#### 4. Conclusions

The topic of supervision is quite interesting and rich. It was not possible to cover all aspects and therefore we focused on the legislative definition, an introduction to some research in the field and a look at the supervision quadrilateral. The treatment of this topic gave us a different perspective on the field of supervision, we worked with several sources of professional and scientific literature, we familiarized ourselves with the current research in the field.

The enrichment for us, and we believe for the reader, was the research that dealt with the perception of the importance of supervision among social service employees and the view of supervision as a subject of scientific studies. Supervision as a supportive tool to enhance the professionalism of helping professionals specifically in social services is very important.

From studying the available resources, we can conclude that supervision is a powerful tool needed for the development of both individuals and organizations providing social services.

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Act of the National Assembly of the Slovak Republic No. 138/2019 Coll. - on pedagogical and professional staff and on amendment and supplementation of certain acts

Act No. 219/2014on Social Work and on Conditions for the Performance of Certain Professional Activities in the Field of Social Affairs and Family and on Amendments and Supplements to Certain Acts

Government regulation No. 296/2010 on professional competence for the exercise of the health profession, the method of further education of health professionals, the system of specialisation fields and the system of certified work activities

Decree of the Ministry of Health of the Slovak Republic No. 31/2006 on the amount of reimbursement of a health worker for further education

## THE NEED FOR SOCIAL WORK IN THE SCHOOL SYSTEM IN SLOVAKIA INSPIRED BY USA'S SYSTEM

Romana Longauerová

**Catholic University in Ružomberok**  
 Hrabovská cesta 1A  
 Ružomberok, 03401, Slovakia  
 +421 44 430 46 93  
 romanalongauerova1111@gmail.com

**Abstract:** *The main aim of this paper is to define the historical context of school social work and to highlight areas in the school system that need to be addressed. The paper offers a comparison of school social work in the USA and Slovakia. The article responds to the issue of the establishment of school social work in the legislative conditions of the Slovak Republic in the process of globalization and education reform.*

**Keywords:** *social work in school environment, social worker, education in international context, history of school social work*

### 1. Introduction

In contemporary society, changes are taking place that affect the development and consequently the direction of social work. With the increasing need for help and support in different dimensions of human beings, there is a need for the development of social work in different systems. One such system is the school and school settings. Social work is embedded in the state organized system. It is a subject to changes in political developments, new findings in research and is influenced by the changing needs of society. Formal education, like other systems, is a subject to reform and is a subject of daily debate. Social work has had to adapt to the issues and implications of postmodernity even more thoroughly than is the case with other social science disciplines, given the wider range of individual activities, the richness of practice and methods, the variability of client numbers, and the strong links with the social policy of the state. Koscurova (2013) points to new social problems and generally defines social work in education as a specialized field of social work, which, however, is not legislatively anchored in our conditions.

#### 1.1 Socio-pathological phenomena in the school environment

Currently, there is an increasing incidence of socio-pathological phenomena in schools and an increase in problems in the actual education of pupils, which are often caused by social problems. In addition to the educational and upbringing process, pedagogical staff often deal with a package of social problems such as:

- dysfunctional families - the associated negligence and abuse of pupils,
- pupil aggression,
- bullying and cyberbullying,
- child prostitution,
- various types of substance and non-substance addictions,
- truancy,
- inclusion problems for pupils with special needs,
- guidance of pupils on issues of personal development (Emmerová, 2007).

Matulayová (2008) considers the school social worker to be the expert on the problems occurring in the pupils'

social environment. A school social worker can assess the impact of the environment on the individual and work with the school as a social system that needs to be linked to the pupil's extra-curricular environment.

At the same time, however, there is a lack of professionals in the school team to support the social functioning of pupils. Despite the increasing incidence of pupils' social problems affecting the educational process, school social work and the position of the school social worker, in the current school context, is a social work discipline that is not anchored by legislation.

### 2. School social work in the Slovak Republic and the USA

In the conditions of the Slovak Republic, school social work is slowly taking shape, and it is not known to which model of social work the Slovak school social work will be mostly inclined. According to Matulayova's (2013b) research, there is a lack of impetus in both the theoretical and practical levels in the practice of school social work. Musil (In: Matulayová, Musil, 2013) argues that through the process of professionalization of social work, public awareness and raising the status of social work, we can contribute to the establishment of school social work in legislative conditions. The conditions of social work practice and the current context are influenced by socio-economic and political conditions in society. School Social Work Association of America (2017) defines school social work as follows:

- School social work is a specialized field of practice within the broad field of the social work profession.
- School social workers bring specific knowledge and skills to school systems and school counselling settings.
- School social workers are trained professionals who can assist in the following areas: behavioural problems, positive behaviour support, student academic performance support, individual



counselling, and therapy, promoting a positive classroom climate, and consultation with teachers, parents, and school administrators.

- School social workers help schools fulfil their mission, which is a key indicator in student achievement.

The introduction to the International Standards for School Social Work states that school social workers are an important element of the educational system. In practice, school social work assists pupils and the pupils' families with social and health disadvantages. However, it is not a pedagogical activity or a duty of education. School social work also includes primary, secondary and tertiary prevention, which is carried out by the school social worker with the aim of improving the conditions for pupils' education (School Social Work Standards, 2012).

According to Musil (2013), the need to support the process of institutionalization of school social work in the Slovak Republic as:

- recognition of the specific problem of school social work,
- recognition of the specific way of solving the problem by the school social worker,
- the social expectation of help, when confronting the pupils and its surroundings with the problem,
- the mutual expectation of assistance in a generally accepted and socially recognised way.

Constable (2013) also characterises school social work as being long term, with the social worker working with the pupil from the beginning of the problem to the end and being an integral part of the school team. He considers school social work to be one of the most challenging disciplines due to its multidisciplinary status.

The need for the establishment of school social work in the Slovak Republic is addressed in its survey by the civic association Persona, whose aim was to create a document of quality standards for school social work services and to contribute to the implementation of the project Stablishing social work in school facilities and introducing personal-social education programmes in schools, which was implemented through the Operational Programme Effective Public Administration. The aim of the project was to identify the social problems that affect the school success and social development of pupils and to highlight the actors with whom the school cooperates in solving these problems. The survey focused on the need to establish the profession of school social worker in schools. The Persona Civic Association carried out the survey from October 2018 to September 2019. The project involved 33 social workers who were working at the time of the project, in the field of school social work or in the field of socio-legal protection of children and social curatorship. The second group of respondents, consisted of 47 pedagogical and professional staff of primary and secondary schools. The results of the questionnaire survey

show that the most common social problems encountered by pedagogical and professional school staff in their practice are aggression, bullying, behavioural disorders, truancy and drug experimentation. The absence of experts in social problems in the multidisciplinary team of pedagogical and professional staff is also explicitly linked to the social problems of pupils recorded by schools. Schools do not have in-house professional staff and use the services of external, accredited bodies to deal with pupils' social problems. The results of the survey show that prevention is present in schools, but to an insufficient extent. Prevention programmes are implemented on a small scale, unsystematically and often in an inappropriate form. The survey carried out showed the need for social workers as experts in the field of pupils' school success and the creation of a positive school climate. In terms of the optics of categorizing the social worker profession as a professional staff in education, the conclusion of the survey offers individual recommendations for the establishment of the social worker in education.

Social work in school settings has a long tradition abroad. In these countries, it is seen as part of a modernised school system, with the primary aim of prevention programmes aimed at pupils' socio-pathological phenomena. In the United States of America, for example, school social work has had a tradition for several decades.

### 3. Historical context of school social work

The beginnings of school social work date back to 1906-1907 in the USA, when the first private agencies and civic associations were established to help pupils with homework on a voluntary basis. It was also in these years that the first private organisation for school social workers was formed - the American Association of School Social Workers. Social work developed in response to changes in social problems in the society that triggered a response to changes in the school system (Mizrahi, Davis, 2008). The development of social work in the school system in the U.S. was also related to the social, political, and economic indicators in the country. In the 1890s due to high migration, the population of young people under the age of twenty increased. The socio-political conditions in the country also changed the view of the school system as a part of the larger social system. There was a growing need for social workers to work in the school setting and for multidisciplinary collaboration between social workers, students, school staff, families, the community, and school leaders. Social workers were seen as instrumental in the systemic transformation of schooling and the creation of healthy school and family or community environments for students (Skyba, 2015).

The first opportunities for school social worker positions emerged in New York City, Chicago, Boston, and Hartford. The role of school social workers was to assist students with homework and parents with educational fundraising. The first mention of school social workers comes from home visits to students (visiting teachers services). Prevention programmes were lacking at this

time, and school social workers worked with pupils when their problems were no longer easily identifiable. The situation in the school environment showed that the school system needed professionals who were able to understand the socio-economic influences of the environment, pupils' learning in the school environment, learning outcomes and pupils' attendance at school. These reasons have marked a shift in the debate on school social work (Lengyel, 2013). In the U.S. today, 38% of high schools and 41% of elementary schools have social workers. There are approximately 800 students per social worker in a school, a standard established by the American School and Health Association, which calls for multidisciplinary collaboration. The role of school social workers in the U.S. is primarily prevention and intervention in particular areas of student social problems related to racial segregation, the development of poverty, violence, and student crime. Under the School Counseling Program, U.S. schools in need of a social worker can apply for a grant. However, interest in the development of school social work has gradually become evident in other countries. School social work practitioners in Canada, Australia, New Zealand, China, Vietnam, and Japan have built on the foundations of school social work that began in the United States. In the European context, school social work developed in the school system, especially in the UK and Ireland, the Nordic countries, France, the Netherlands, and Germany. In Germany, social work in school settings developed in the 1970s (Lengyel, 2013). Socio-political processes in the 20th century changed the view of the school as a part of the wider social system. The need for multidisciplinary collaboration between social workers themselves and educators, families, pupils, and the community came to the fore. School social workers, through their work in school settings, have been instrumental in the systemic transformation of schools (Skyba 2015). School social work differs in its methodological background, due to the country where it has been gradually shaped and created. The trends of content focus have developed in a similar direction in each country; differences can be seen in the range of services offered and in the coverage of schools by social workers.

#### 4. Conclusions

Abroad, the social worker in the school environment helps to develop a positive climate in the school, helps to catch and detect problems in pupils early, can also catch latent destruction in pupils, disharmony of personal development, emotional affects, various forms of deviant behaviour, addictions, suicidal tendencies. The International Network of School Social Work states that social work in the school environment is carried out in 53 countries worldwide, including the Slovak Republic (Raines, 2013). In the Slovak legislation, despite the absence of legislative anchoring of social work in the school environment. Projects have been implemented in the Slovak Republic to highlight the need for the establishment of standards and development of social work in the education sector.

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## SUBJECTIVE CRIMINOLOGICAL ASPECTS OF RACIALLY AND ETHNICALLY MOTIVATED CRIMINAL ACTIVITY

*Dana Šadibolová – Darina Králiková*

**Faculty of law, Matej Bell University in Banská Bystrica**

Komenského 20

974 01 Banská Bystrica

+421 948 318 202

danica.sadibolova@gmail.com – kralikova.info@gmail.com

**Abstract:** *The author focuses on the personality of perpetrators who committed racially and ethnically motivated crimes as well as on the psychological characteristics of a perpetrator's personality and on a criminological characteristics regarding the personality of those who committed racially and ethnically motivated crime. The author also focuses on typology and classification of perpetrators responsible for such a crime.*

**Key words:** *ethnicity, criminology, criminal, psychology, race, criminal activity*

### 1. Personality of the perpetrator of racially and ethnically motivated crime

*“In criminology as well as psychology, the offender's personality is most often understood as an organic whole of a mental life, encompassing individual's biological basis and social conditions of their life together with social relationships.”* [1] Professional scientific studies focus on the individual's specific characteristics in order to define the person. These characteristics distinguished the perpetrator from other people.

In criminology, the perpetrator is looked on as the individual who committed a specific crime as well as a member of the group of people who committed similar criminal activity. This scientific study looks for the common traits these individuals have. The group of offenders demarcated like this is subsequently compared with the group of persons who do not commit criminal activity. Attention is drawn to similar and different characteristics in this comparison. The information collection gained in this way is subsequently used in other scientific fields, most often in criminal law, criminology, psychology, etc.

Despite individuals' different characteristics, which are typical for each one of them, it is possible to categorize these people on the basis of qualities that are identical in nature in terms of various factors, such as lifestyle, living conditions, the way crime is committed, and the motive for their behaviour. These manifestations, activities and signs can be observed, described and differentiated as well as compared. Currently, however, criminology focuses on offenders' set and demarcated personality traits, which includes those that are: a) general, b) particular, c) personal. [2]

Clarifying what the entire personality of offender is like does not only help us to understand the perpetrator but also to create an effective way regarding the dealing with this person. The resulting picture of offenders is provided by various scientific disciplines, i.e. not only criminology but

also sociology, philosophy, anthropology, pedagogy, psychiatry, history, and other scientific studies. The effort to clarify perpetrator's personality even led to the creation of a new scientific study—personology—which deals with personality psychology. [3]

Current scientific disciplines, whether it is criminology or other study, are not focused on individual offender as much as they used to be in the past. Social changes also caused these disciplines to look on perpetrator not only from the point of view of punishment but also from the point of view of correction and prevention. Society realizes that punishment causes certain amount of prevention; however, this can not fix the damages resulting from a crime. More and more attention is paid to the objective conditions and causes that often times lead to criminality. Therefore, criminology currently deals with several problems from the point of view of perpetrator who has committed various crimes: a) the relationship between the offender's criminal behaviour, the personality and environment, b) existence or absence of differences between offenders and people who have not committed criminal activity, c) the possibility regarding perpetrator's correction resulting in life when the person does not break the legal code or at least extending the period in which the offender does not reoffend, d) the influence of psychological state or mental disorder on the criminal activity and the possible treatment of the latter, e) the influence regarding addiction to addictive substances on the criminal activity and its possible treatment. [4]

The answers to these problems depend on the offender's personality itself, the treatment this person receives by the relevant law enforcement authorities, the appropriate choice regarding the punishment and correctional facility, the provision of counselling and other suitable educational activity as well as the possibility of reintegration into society after the release from a prison. All of these factors affect the offender's personality, which criminology itself assesses among other things on the basis of the person's interests, attitudes, abilities, character traits, temperament,

the characteristics from the point of view of will and motivation. The perpetrator's adaptation after the release from the prison is also important. The attitudes in the society are also critical here. They include the extent to which its members allow the individuals with a criminal record to work and coexist, or more precisely to socialise. The way offender's personality is considered has also changed in terms of the extent to which the individual characteristics are examined. Whereas in the past criminology tended to focus more on the analysis regarding individual characteristics, which were considered static, nowadays the personality of the offender is viewed in a comprehensive way, with experts taking into account the possibility of its change that is based on the various conditions affecting the offender during the lifetime. Criminology now acknowledges that it is possible to make socially appropriate changes as far as perpetrator's personality is concerned. These changes will make life easier for the offender as well. [5]

As far as practice is concerned, the description of the offender's personality is based on these established characteristics: a) sociodemographic characteristics—this includes among other things the offender's age and sex, motivation to commit the crime, information on the crime in terms of substantive criminal law, information on the perpetrator in terms of procedural criminal law, b) information on the offender's societal and social place—especially in the immediate surroundings, such as school, family, work or other social groups, e.g. various leisure activities. The thing that is mainly examined is the individual's ability to harmonise the internal needs with the needs that the above-mentioned groups have, c) family and personal anamnesis—this includes health and criminal anamnesis of the individual and the family, d) the result of the expert opinion—if it was ordered, mainly by psychiatrist, sexologist, and psychologist. [6]

The offender's personality can also be examined from the deeper point, in which criminology includes: a) conditions affecting the offender's psychological changes, b) living criminogenic conditions that are a cause of the crime, c) personality traits regarding sociology and psychology with an aim to clarify the possibilities of the perpetrator's correction as well as his return to normal life, d) the perpetrator's motive to commit crime in terms of wider context including various facts, such as addictions, mental disorders, etc., e) the perpetrator's previous criminal activity with focus on the reasons why it was committed and circumstances in which it took place, f) completed types of sentence, the perpetrator's behaviour while serving it and success or failure concerning the integration into society after the release from the prison, g) the offender's way of life, the economic situation, and social position before the crime was committed, h) prognoses regarding possible ways of offender's correction. [7]

The offender's personality can be characterised from psychological and criminological point of view.

### **1.1 Psychological characteristic of the personality of the perpetrator who committed racially and ethnically motivated criminal activity**

The development of the examination the offender's personality thus went through changes that were needed and forensic psychology was developed. It focuses primarily on the offender's personality. The offender thus becomes an object of research in psychology and psychiatry, which tries to not only punish the person but also to understand the perpetrator and change the behaviour. This happens in order to prevent a criminal activity. [8]

The psychological research regarding the offender's personality is a source of information that provides scientific disciplines with characteristic traits, which make perpetrators similar to one another or different than other offenders and people who have not committed a crime. In terms of the psychological characteristics, the common traits of the perpetrators are mainly impulsiveness and hyperactivity, which may lead to aggressiveness. Demarcating of these traits is supposed to help to create the tools for criminality prevention and understanding criminal behaviour as well as its causes. For example, juvenile offenders are characterised by reduced mental performance or intelligence compared to their peers, who have not committed a crime. However, individual factors must be examined on the basis of real facts and not on the basis of prejudices or unverified assumptions. For example, lower intelligence is not necessarily conditioned by lower the individual's lower economic situation. The natural intelligence level is not conditioned by a person's economic status. [9]

Psychological assessment of the offender now also takes into account the perpetrator's perception of the surroundings and the people in it, the offender's character traits, and behaviour towards other people, which determines the offender's social class. The research done in this area categorised perpetrators based on the social behaviour, which divides into: a) dominant behaviour—people in this category feel a need to control everything and often demand that others around them do what they do, b) aggressive behaviour—the person acts aggressively towards those around them when it comes to communication, assertion of that person's views, and demeanour. The person is characterised by vigour or strictness as far as behaviour in society is concerned, c) submissive behaviour—the individual behaves submissively towards people in their surroundings and usually tries to please them. The person from this category tends to adapt and is characterised by submissiveness as well as unwillingness to stand up for their opinions or needs. These people can be described as modest or obedient, d) affiliative behaviour—the person is friendly, open and cordial towards those around them and has no problem to build relationships or to make friends. [10]

The psychological definition of offender's personality has now advanced to an examination of intellectual disability

and psychopathy. In the case of intellectual disability, development has led to the recognition that this fact must be assessed from a psychological point of view and, if confirmed, taken into account in judicial decisions. Criminology refers to a personality affected in this way as an oligophrenic, defining the individual through the following character traits: a) a so-called "born criminal,"—an individual whose psychological disability or disease is congenital and cannot be cured, b) the individual is characterised by dangerous behaviour of a violent or sexual nature, c) the person commits a criminal activity due to the lack of other social factors. Most of the time, they lack role models at an early age to inculcate basic values in them, d) these individuals are unable to assess the consequences of their actions when it comes to perception of events, so the preventive function of punishment is pointless, e) these individuals are prone to follow strong personalities, which makes them suitable candidates for a variety of menial jobs within organised crime groups, f) if they are born into an environment where criminal activities are common, there is a high likelihood that they will do the same. [11]

These characteristics were later refuted by the new findings of sciences, which disproved the relationship between intelligence and criminality and rather considered education, the cultural status of the individual and his surroundings, as well as other things as supporting factors. Another theory that emerged during the psychological assessment of the perpetrator's personality is the identification of the perpetrator with a psychopath. It is considered to be a response to the needs of judicial practice, although it must be said that a comprehensive definition of the concept still does not. However, it must be said that a psychopathic personality is not a guarantee of a criminal act. Its creation is conditioned by a variety of factors, and scientists still cannot pinpoint with precision the combination that certainly causes psychopathy. Experts include disorders during prenatal development or childbirth, abandonment by parents in early childhood, or an unhealthy and emotionally cold relationship with the mother among the suspected factors. A psychopath may but does not have to commit criminal act. On the other hand, they often cause the most damage when it comes to crime. This causes that public then associates the term psychopath with the term serial killer or mass murderer. However, there are socially functional psychopaths in the society. These psychopaths have never committed any crime. This makes it hard to determine their number in the society. In terms of their personality traits, experts say that they are rather egocentric people who lack empathy and emotions. They are irresponsible and they do not feel guilt or remorse. They are very selfish and often unable to postpone the satisfaction of their needs.

### **1.2 Criminological characteristic of the personality of the perpetrator who committed racially and ethnically motivated criminal activity**

Persons who have committed a crime as well as those who have committed a misdemeanour are considered offenders in terms of criminology. Many times, the personality of an

offender is shaped by the misdemeanours they committed before committing more serious crimes. [12]

Criminology, in terms of the personality of the offender, focuses on adequate assessment of the personality of the offender in terms of the specific conditions that caused them to commit particular types of crime. This primarily includes disorders of a neurotic nature, which are also referred to as anxiety disorders. They do not affect the individual's nervous system or personality. They arise when an individual ignores existing problems in various areas of life over a long period of time and usually do not give rise to illegal acts. However, they often manifest themselves in connection with juvenile offenders. In their case, the accumulation of these problems leads to the commission of random crimes through which they compensate their unfulfilled psychological needs. [13] These offenders may engage in racially, ethnically motivated crime, which may be conditioned by a young person's desire to belong somewhere or to experience acceptance and appreciation. For this reason, they become easy targets for the organised groups, which they subsequently join.

In terms of the criminological characteristics of the personality of the perpetrators of the crimes studied for this article, these persons may have neurotic, mood and alcohol dependence disorders and, to a lesser extent, possible schizophrenia or personality disorders. In terms of their nature, this article does not consider other disorders to be decisive concerning the mentioned offenders, because the persons affected by them either commit criminal activities unconsciously or focus on another group of crimes.

### **2. Typology of the perpetrators of racially and ethnically motivated crime**

From a criminological point of view, offenders can be classified on the basis of different sets of characteristics that serve to classify them into different groups, each of which is subject to a certain characterisation. These defined groups are often referred to as offender types, while the term type itself can be defined as "a certain complex of characteristics which, although they do not characterize the entire personality of an individual, are common to a larger number of persons, from which, according to the occurrence of these very characteristics, a group can be formed for later practical use." [14] This typological classification of offenders into defined groups means that, in practice, they can be identified more quickly on the basis of the existing knowledge. However, there are other reasons why it is done like this in criminology. It is mainly ensuring the prevention of the commission of crime. If it succeeds in classifying the different types of offenders, it can focus its attention on the risk groups, which includes offenders. It should be noted, however, that the various typologies of criminology and criminology may be different because in practice there is rarely an offender who fits precisely into just one constructed group. Thus, a large number of these groups have arisen in

practice, as new knowledge leads scientific disciplines to create new and new classifications that cover older ones. Various disciplines contribute to this process, including sociology, psychology, psychiatry, pedagogy and others. Nowadays, statistics, which help in verifying new hypotheses about perpetrators, are gaining importance in this area. In practice, the typology helps not only to speed up the process of clarification of criminal offences, but also when it comes to work with persons who have already been released from prison as well as troubled individuals, especially young people, in psychiatric institutions and penal institutions. The typology also helps in terms of prevention, as it helps to innovate methods to reduce crime. Initial typological attempts were made by assessing well-known offenders who became famous for their criminal activities and the public thus became interested in them, which led to criminology having a wealth of different information about their lives or about themselves. Of course, this may not always have been accurate information, but its accumulation in similar cases confirmed the early typological theories. In the early days, serial and mass murderers, perpetrators of serious crimes such as robbery, political offences or assaults, and so on, thus became the subject of typological activity. Only later developments have brought the observation of offenders without such a background and selected on a random basis, and it is the results obtained in this way that are being evaluated by statistics. In the early period, in terms of typology, the focus was only on the perpetrator, with no attention paid to the victim. Similarly, from a typological point of view, it was only later that social factors began to be taken into account and the offender ceased to be a "born criminal" [15]

### **3. Classifications of the perpetrators of racially and ethnically motivated crime**

Offenders can be classified on the basis of specific characteristics, on the basis of which we can define a clearer picture of a particular group of those persons who commit racial, ethnic crimes.

On the basis of gender, it can be concluded that men are more likely to be perpetrators than women. They are increasingly involved in crime, particularly violent crime. In the case of female perpetrators, property or economic crimes are committed more often, i.e. they do less damage. It is usually a crime of theft, embezzlement or fraud. When the economic situation worsens, women resort to pickpocketing, which in some cases even becomes a source of livelihood. However, crimes that have not been reported for various reasons cannot be included in the above statistics. [16]

In the case of classifying perpetrators according to gender, it should be noted that secondary victims, who are mainly children, are often also created. They often suffer from the criminality of their parents, especially women. In addition to the above-mentioned crimes of an economic nature, it is necessary to mention, in the case of women, in particular the secondary crime that occurs in the performance of

prostitution. In addition to petty theft, this may include in particular the consumption, storage and transmission of illegal addictive substances and the like.

Thus, in terms of the crimes studied for this article, the perpetrators are more likely to be men, because racially and ethnically oriented crimes are predominantly violent in nature. Of course, it is not excluded that this crime is also carried out by women, but in terms of the classification of crimes, this is less likely.

The second qualifying characteristic is the age of the offender, as this causes changes within the personality and influences his temperament. Individuals of different age groups usually react differently to the same event, which of course also applies to perpetrators of different ages. Juvenile offenders are more likely to focus their criminal activity on obtaining psychotropic substances or the resources with which to secure them. However, the drug dealing itself is an adult affair. That is the case of any other organised criminal activity.

In terms of violent crime, older offenders are more likely to carry this out, as opposed to economic and property crime, which is more likely to be carried out by other categories for various reasons. In most cases, the majority of offences are committed by persons under the age of twenty-nine, most of whom are male, committing both property and economic crimes. [17]

From the point of view of the crime studied for the purpose of this article, the category of age is somewhat more difficult to define because violent crimes can be committed by different age groups, especially if racially and ethnically motivated crimes are carried out through organized groups. They are usually headed by adults, often elderly individuals, and also include juvenile members who, for various reasons, serve in subordinate roles.

Classification based on nationality and state or ethnicity is implemented in criminology because of frequent population movements. In the past, this was often seen as a way of punishment or a way for offenders to avoid punishment in their home country. This reason has not disappeared even today, which is why countries are increasing their vigilance in terms of the criminal activities of immigrants. Criminology in this case focuses on the legitimacy of this heightened attention and the conditions that influence immigrants' criminal behavior, particularly their social and cultural conditions in their home country, their education, and their criminal histories.

This classification of perpetrators is now becoming increasingly relevant, especially in terms of the issues of terrorism and extremism. In fact, racially and ethnically oriented crimes can be partly classified as activities typical of these institutes. The current problems caused by migration to the European Union have not only caused widespread panic, but have also highlighted the EU's security problems in terms of ensuring safety from

recidivists who may have been among these refugees. In terms of hate crimes and their perpetrators, it is the groups of perpetrators that can be included in the above classification. A typical example are members of terrorist groups who profess to the Islamic faith, whose terrorist and extremist activities include the very crimes mentioned above, although often the primary motivation is more likely to be an attack on the democratic system itself, and the killing of Christians or Europeans is merely a tool for spreading fear.

The classification category is also the means of committing the crime, where criminology includes mainly:

- Random offenders - they carry out their crimes based on a specific trigger or a specific situation. Most of the time, their crimes are not planned.
- Occasional offenders - an offender carries out a crime based on an opportunity that presents itself, for example, an individual steals money from a person sleeping next to them on a train.
- Perpetrators of property crime - the subject of the crime is usually embezzlement and the perpetrator is usually a person who works in the organisation. - Perpetrators of violent crime - persons provide for the fulfilment of their needs through violence against people or carry out the offences in question with the sole intention of harming or killing a particular person.
- Sex offenders - their activities are focused on crimes of a sexual nature or crimes related to prostitution.
- Drug offenders - their age is statistically decreasing and in practice they are mostly engaged in activities related to the production or distribution of illicit addictive substances.
- Organised crime perpetrators - who carry out their activities on the basis of an established plan resulting in financial gain or the acquisition of a sphere of influence in various areas, especially in the public or state administration.

In this respect, violent criminals are again of most interest to us based on the nature of the racially and ethnically oriented crimes through which they harm or kill people based on common characteristics they have selected.

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## ORGANISED CRIME IN THE SLOVAK REPUBLIC

*Dana Šadibolová – Darina Králiková*

**Faculty of law, Matej Bell University in Banská Bystrica**

Komenského 20

974 01 Banská Bystrica

+421 948 318 202

danica.sadibolova@gmail.com – kralikova.info@gmail.com

**Abstract:** *Organised crime in the Slovak Republic. Organised crime has again become an interdisciplinary problem, which means that IT can not be discussed only as a criminal law problem but also as the societal problem, which that needs to be reduced to the smallest extent possible. Organised crime continues to change its form and nature, which cause it to become more and more dynamic as well as topical problem despite being initially invisible for regular citizens—however, its manifestations are fatal. I focus on the development of organised criminal groups that were created prior to and after 1989 on the Slovak territory. This article highlights the development and occurrence of the most famous and recently dismantled criminal group on the Slovak territory.*

**Key words:** *criminality, mafia, organised group, criminal group, organised crime*

### 1. History of mafia and organised crime

Organised crime appeared for the first time in ancient Egypt. Organised groups of grave robbers were active back in those days. These groups could be included in the structure of organised crime according to current conditions. The Dark Ages also contributed to organised crime formation in a way that is not insignificant. This was the time when early forms of Sicilian mafia and Neapolitan Comorra were established. They belong to the largest criminal organisation even now. Colonisation of new areas, slavery, piracy, poverty, the resistance of the lower class to ecclesiastical and secular power, and the resistance of people when other county dominated their state led to the creation of various secret groups with specific hierarchy. [1]

The prime example of this is Sicily. In the 19th century, the Sicilian citizens faced constant oppression and needed protection. The Italian government did not care about them very much. In addition, living conditions were also not very adequate and poverty continued to deepen. Hatred of official power has given rise to another one that was kind of unofficial. There was a need for someone to provide the people with the kind of guarantee and protection in these harsh conditions since the country was not able to do so. This is when mafia comes. Its members wanted to provide this protection, essentially substituting the state. Of course, it was not for free.

The people's hatred of feudal Bourbon politics led them to resort to mafia before the unification of Italy. Many people thought that the mafia would disappear from Sicily as soon as the situation calmed down and the country began to make slow economic progress. However, they did not expect that this problem will be talked about several centuries later when feudal anachronisms have been gone forever. Thus, economic progress itself does not contradict a Mafia-type phenomenology, as the Italian South demonstrates. Mafia focused primarily on the control of peasants who had a small piece of land. They might also

use the threat of violence from outlaws as a way to make them entrust property to their protection. The mafia does something similar today—its members force businessmen to sign the so-called “mafia insurance”. They achieve it with blackmailing or under the pretext of possible robbery. People who nowadays violently demand money by others for forced property protection use the same methods. They are the so-called security guards, which means they substitute the state in one of the most important functions, namely, the protection of private property. Mafia is almost always an order mechanism, but its members also expect the creation of criminal and social chaos, which they subsequently have to keep under control. This was true for the period of the revival, and it is equally true for the period of the recent escalation of criminality. [2]

The mafia gradually established itself as a scary phenomenon. It is dangerously spreading nowadays not only in the western democratic countries but also in the post-totalitarian states in the Central and Eastern Europe, where it uses all the problems and maladies connected with the change to the typical democracies. Slovakia is one of these states. It is mafia as well as criminal structures that serve as the means to commit organised crime, which is one of the most dangerous social problems the whole world faces right now. Their negative activity interferes in almost every part of the societal life and it influences society to their image with a clear intention—to get the greatest profit possible[3]The mafia is always an organised crime, but not every form of organised crime is the mafia. Organised crime is thus a broader term than mafia.

### 2. Organised crime on the Slovak territory

Organised criminality became a part of history of the Czech Republic and Slovakia. It is still present in our territory today, which is evident from many contemporary sources, as well as from the activities of the authorities for combating this criminal phenomenon. Although our republic does not have as deep history as Italy, China, Japan, USA, Colombia, Mexico, currently we can speak of



a developed underworld even in our country. Despite the fact that many changes occurred in different time periods, it is suitable to divide the development of organised crime in our territory into the period before 1989 and the period after 1989, taking into account the change of the state regime.

### 2.1 Organised crime typology

Criminal organizations vary in size, scope, geographical coverage, relations with power structures in the home state, internal organization and structure, the scope of their lawful and unlawful activities, and the combination of "tools" they use to evade the application of the law and to engage in unlawful entrepreneurship. [4]

In terms of scope, organised crime can be divided into: Domestic organised crime, which is committed within a national state; International organised crime, in other words national organised crime, which has a potential to endanger state sovereignty of some countries; global organised crime that is connected with the globalization processes, higher mobility and other things.

Organised crime may be described either by geographical criterion (taking into account that organised crime is globalized, it is possible to look on certain locality as a main centre of certain organisation) or by prevailing type of organised crime. In terms of penetration into social structures, organised crime can be classified into the following groups: limited penetration of organised crime - organised crime groups focus primarily on obtaining finance and resources and minimising the risk of detection; established organized crime - organised crime groups seek to legalize profits; socially engaged organised crime - organised crime groups enter the spheres of politics, state administration, local government, culture, charity, etc.; parallel functioning of organised crime - society itself is linked to organised crime, all societal decisions are based on the need of organisation or organised crime organisations.

There are four phases of organized crime: phase 1 - establishment of the criminal organization, phase 2 - stabilization, phase 3 - consolidation, and phase 4 - integration. If organised crime is socially engaged or directly parallel in society, it is mafia-type organisation. [5]

The bare mentioning of such an organization makes it clear that ethnicity is important. There are two types of organised crime: mafia-type and managerial-business-type. [6]

The Mafia type is based on personal experience, is characterized by a more conspiratorial nature, it tends to use more simple and harsher practices, it also tends to operate in communities with a higher propensity for violent conflict resolution, while the managerial-business type is based on functional relationships, it uses considerably sneakier practices, with a striving and impression of law-abidingness, it uses "ultima ratio" as a means. [7]

### 2.2 Organised crime prior to 1989

Former CSFR also did not avoid organised criminality due to its strategic location and other factors. The territory became a point of interest for eastern criminal structures, including groups from Germany and Austria. Before 1989, the first criminal groups began to form, especially Čonka's group from Poprad in the 1970s, Babinský's group "king from Orava" in the 1980s, or Zelíková group and Bielíková group from Bratislava. However, according to experts at the time, not all of these groups met the defining characteristics of a criminal group, but their opinions differ in this regard. An important aspect of the formation of criminal groups before 1989 was also the criminal activities of ethnic groups, in our country mainly olašský cigáni (a branch of Romani nation). [8] J. Krahulec and P. Fajčík, in their article published in 1988 in the criminal proceedings, dealt with this very issue, describing the structure of the groups of this branch of Romani nation, where Vajda was the head, who, together with two senior subordinates, was a member of the council that decided in disputes. [9] These "trials" take place secretly and the result or better said sanction is mainly financial punishment. The money is used to help incarcerated members of a group and their families. Over the course of evolution, members of these groups have developed a distrust of the rest of the population, and this caused that marriages can only be contracted between members of the group. With further development, they became professional criminals, especially pickpockets, and they secured an increasingly better economic position through their activities. Of course their biggest profits are from the crime they have been committing in the economy since 1956 - the Moment of settlement. Before 1989, they mainly committed so-called reserved crimes - smuggling, illegal purchase and sale of foreign currencies in the socialist Czechoslovakia, speculation. Today, they commit mainly tax crimes, fraud in the purchase of goods, corruption, extortion, intimidation of witnesses and so on. Given their international connections with families in Bulgaria and Romania, among other countries, crime detection in this community is extremely challenging.

The existence of organized crime on the territory of the Slovakia before 1989 is obvious, although many authors have a different opinion concerning organized crime in the CSFR. Organized crime clearly existed in the past, albeit in much more covert forms, which was probably due to the state regime as well as the criminalization of organized crime.

### 2.3 Organised crime after 1989

In 1990, the authors of the literature commented that in the CSFR the problem of organized crime "exists only in the embryonic forms of group crime." In 1991, official statements, which reiterated the "Initial forms" *But no longer specified to the area of illegal currency exchange, Theft and illegal export of cultural heritage objects, robbery and theft by burglary.* were protracted. International organized crime of theft, extortion and distribution of motor vehicles is coming to the fore." [10]

In 1992, official sources report the arrival of groups from the former USSR to the Slovak territory, rather than the existence of organised groups of Czech or Slovak origin. The aggressiveness and brutality of the perpetrators and the increase in the dangerousness of the crimes committed are also associated with this period [11]. With the establishment of the independent Slovak Republic and the transfer of competences from the former Ministry of Foreign Affairs to the Ministry of the Interior of the Slovak Republic, the problem of dealing with issues with which the inhabitants had no experience arose - terrorism, international organised crime and ecological crime. There has been a continuous increase in tax evasion, illegal invoicing, robberies, trafficking in arms and strategic raw materials, etc. [12]

"A fundamental change in the security situation in the Slovak Republic, especially in terms of the creation of criminal groups and their violent manifestations, began to occur in 1996. It can be assumed that this is the reason why the officers of the PF started to systematically and purposefully obtain an overview of the number and distribution of criminal groups and their activities only since 1997, when the first successes related to the dismantling of some criminal groups on the territory of the Slovak Republic were recorded. It is clear from the police information that criminal groups were active on the territory of the Slovak Republic at different times during this period. Groups composed of citizens of the Slovak Republic had a dominant position. Some of them covered their activities with activities in private security services but also with other types of entrepreneurship. However, groups composed of foreign nationals (Ukrainians, citizens of the former Yugoslavia, Chinese, Vietnamese) operated in the Slovak Republic. In addition to the above, it can be noted that the criminal scene was also influenced by criminal groups operating from abroad (e.g. citizens of Turkey and former Yugoslavia organised drug trafficking and smuggling). From a territorial point of view, it was possible to observe the activities of criminal groups in every region of the Slovak Republic." [13] Mention can be made of the criminal activities of groups from China and Vietnam, which committed the crime of extortion and also forms of other violent crime.

Police investigations in the second half of the 1990s showed that more structured and coordinated criminal groups began to form on the Slovak territory. These groups were becoming more dangerous, especially in Banská Bystrica, Košice and Bratislava. Their activities have been linked to murder, robbery, extortion, theft of motor vehicles, drug crime, economic crime, smuggling, etc. [14]

### 3. Criminal group in Banská Bystrica

"Černákovci" was the name of the group centred around Mikuláš Černák. It was located in Banská Bystrica. SBS (Private Security Service) was formed out of the rivalry between business security firms. One group was the so-called Karatisti in the Natali bar, which was subsequently destroyed in 1997 by a rival group of M. Láboš and A.

Házy. Mikuláš Černák joined this group. The group committed violent crimes, which was particularly evident due to the murder of M. Vlček in 1993, which was allegedly ordered by Černák, proving his position in this criminal group. A year later, M. Černák was to carry out the murder of a member of a rival group from Prievidza. (15) After the deaths of Láboš and Házy, the group came under the influence of CBS Security - a company led by Černák and his associates. [16] That's when the group began its illegal activity, namely extortion and racketeering. The group began to be shaped and structured by the system of superiority and subordination. They recruited specialists from various fields, whom they used to carry out their criminal activities. [17]

From the resources acquired through illegal activities, the group established legal businesses (e.g. Romeo - an erotic salon, Renox - a construction company, Shark - a gym, Sargon, Shark - a nightclub, etc.). The number of members of this group has varied at different times and is therefore unknown. However, various groups could work together. A good example is a cooperation of Černák's group with Mello's group in Prievidza and also with Poprad group. Between 1996 and 1997, 27 of the 45 murders were committed by these groups. [18] The Poprad group was also linked to the Černák criminal group, which it hired to murder police informant J. Filip in 1994. [19] a connection with the Pápay family active in Dunajská Streda can also be deduced since he murdered M. Šipoš and E. Potáč - competitors in Dunajská Streda. This murder was ordered by T. Pápay. In the eastern part of Slovakia, Černák's group showed its position by assassinating and murdering R. Holub [20] and other members of the "underworld". [21]

As for the disintegration of the Černák group, in December 1997, following a nationwide manhunt, Mikuláš Černák handed himself into the hands of the police. He was accused of blackmailing and murdering businessman Grzegorz Szymanek. In January 2000, the Regional Court in Banská Bystrica gave him an unconditional 15-year prison sentence for extortion, kidnapping and murder. Mikuláš Černák appealed, whereupon the Supreme Court upheld his sentence for extortion, but found there was insufficient evidence of murder, so the 15-year sentence was reduced to 8½ years. At the end of 2002, he was released on good behaviour by the county court. In March 2003, the Supreme Court overturned the Regional Court's decision, but Mikuláš Černák had already fled to the Czech Republic in the meantime. In August of that year, however, the Czech authorities caught him and brought him to Slovakia. In 2005, Mikuláš Černák was charged with the murder of a member of a rival group, Petar Klesć, and in 2005, murder charges were added for the murder of Imrich Olah, Robert Remiáš, and the kidnapping of Michal Kováč the younger. 2 Months later, Mikuláš Černák was already facing charges for the murders of Emil Potasch, Milan Šipoš and, in 2006, for the murders of witnesses Marian Karcel and Pavel Lenhart. Murders of Jozef Filip and Gustáv Slivenský were later added. In 2007, Černák

was accused of six murders and organizing another, and the next day he confessed to participating in some of them, but denied that he himself had committed the murders. In 2009, Mikuláš Černák again faced charges of ordering the murder of Miroslav Vlček, an inconvenient witness. In his closing remarks, Černák unexpectedly confesses to the murder of Filip in 2009. [22] Today, Mikuláš Černák is serving a life sentence. His group became notable for its huge income from extortion and extortion rackets, contract killings, fuel fraud, as well as customs fraud and pimping.

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