



Proceedings of the
16th International Scientific Conference:

European Forum of Entrepreneurship 2023

“Business environment in a whirlwind
of turbulent changes”



NEWTON COLLEGE

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“Business environment in a whirlwind of turbulent changes”

The current international security and economic situation in the form of high inflation is having a significant impact on all national economies and international supply and demand chains. This situation can be addressed through a comprehensive transformation of the corporate environment, business models and also new technological concepts.

The aim of this year's XVI Conference is to stimulate a space for an open international discussion between domestic and foreign experts in relation to current economic issues in the context of the security, economic and technological situation.

The socio-economic development of the Czech Republic and the countries of the European Union will be discussed mainly in the context of new challenges and opportunities in these sectors.

For more information please follow the website of the conference: <https://www.efp.cz/en/>



The Way to survive turbulent changes in the work environment: Investment in employee development (a systematic review)

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* 1. Introduction

In today's unstable world, for which the acronym VUCA (volatile, uncertain, complex, ambiguous) has become almost universal, work organizations often struggle with how to thrive. A somewhat unconventional perspective is provided by the authors of Psychological Capital (PsyCap), which is the subject of this article. According to them, for too long, organizations have focused on gaining new talent for their organizations and for existing employees have only addressed the shortcomings of their work and how to fix them. They have also focused little on how to retain and improve existing employees as they are the ones who can help them gain competitive advantage (Luthans et al., 2007). They also mention that in the post economic crisis era, they perceive negative feelings in employees and managers, loss of confidence etc., which negatively affects their performance. Therefore, perhaps now is the right time to turn to positive psychology, which focuses on developing skills in people to help them cope with the adverse circumstances of world events.

This article is designed as a systematic review study on the topic of psychological capital with a focus on its use in today's rapidly changing world. Authors used qualitative research on professional sources.

2. Theoretical background

The concept of psychological capital has its roots in the field of positive psychology, which is concerned with the study of human strengths, virtues, and optimal functioning (Slezáčková, 2010). Psychological capital is a construct that refers to a positive psychological state of mind characterized by four key elements: self-efficacy, hope, resilience, and optimism. Self-efficacy refers to an individual's belief in their ability to successfully execute the actions needed to achieve their goals. Hope is the belief that a desired future is possible and the determination to make it happen. Resilience is the ability to bounce back from adversity. Optimism is the belief that good things will happen in the future (Luthans et al., 2007). These individual factors are known and scientifically supported in their



own right. However, the authors of psychological capital assume their greater efficacy in the form of a higher order construct. However, it is not impossible that in the future some other factor could be added to the four existing ones, e.g. flow, gratitude, mindfulness etc (Luthans et al., 2015).

Since its inception, the concept of psychological capital has received increasing attention from researchers and practitioners in various fields, including organizational behavior, human resources management, and leadership development. A growing body of research has shown that psychological capital is a powerful resource for individuals and organizations, and can have a significant impact on a wide range of outcomes, such as job satisfaction, organizational commitment, and overall well-being (Luthans et al., 2015).

2.1 Components of psychological capital

The components of psychological capital are inter-related and interact with each other in complex ways. For example, high levels of self-efficacy may lead to higher levels of optimism and hope, which can in turn lead to greater resilience and well-being. The interplay of these components is what makes psychological capital such a powerful resource for individuals and organizations alike (Luthans et al., 2015).

The criteria used by Luthans et al. (2015) to select each psychological factor is as follows:

- Grounded in scientific theory and research.
- Existence of a valid measurement method.
- State-like construct, not a trait (thus open to change and human development).
- Positive impact on desired attitudes, behaviors and especially performance.

Hope

Hope has been incorporated into psychological capital in the form of Rick Snyder's concept. Hope has been defined as a combination of pathways thinking and agency thinking. Pathways thinking

refers to the mental generation and visualization of multiple possible paths or goals towards a desired outcome, while agency thinking refers to the belief in one's own abilities to take action and pursue their goals. Hope is therefore a unique blend of future-oriented thinking and self-efficacy, providing individuals with a sense of direction and the motivation to take action (Luthans et al., 2007).

Research has shown that hope plays a crucial role in enhancing psychological well-being and overall life satisfaction. High levels of hope are associated with positive emotions, lower levels of stress and anxiety, and greater life satisfaction (Keating et al., 2014).

Self-efficacy

The term self-efficacy refers to an individual's confidence in himself or herself – the ability to mobilize the motivation, cognitive capacity, and activity needed to successfully complete a task (Stajkovic & Luthans, 1998). In the context of leadership, the term leadership self-efficacy can be found directly in the literature. It is a manager's belief in his or her ability to lead people (McCormick, 2001).

A comprehensive review of research on leadership self-efficacy already exists. The studies show that leadership self-efficacy plays an important role in successful leadership and team performance, and is associated with improved performance under stress, motivation for leading change, and leader effectiveness (Deemer et al., 2020; Dwyer, 2019). This characteristic is not innate but can be developed through educational programmes (Keating et al., 2014). Deemer et al., s (2020) study shows that leadership self-efficacy can mediate the relationship between Big Five personality traits and leader effectiveness, especially when job autonomy is high and job demands are low.

Resilience

Resilience in psychological capital is defined as a person's ability to bounce back from adverse events, conflicts, or even positive events, toward progress and increased responsibility. Like the oth-

er components of psychological capital, resilience can be learned (Luthans et al., 2007).

With regard to resilience in a leader, based on the available literature, there appears to be a direct relationship between the stress of their job and their ability to remain resilient during prolonged exposure to an adverse event (Ledesma, 2014). Another study then points to a link between certain leader behaviors and the resilience of their followers (Salehzadeh, 2019). Resilient employees then score higher on job engagement questionnaires (Mache et al., 2014).

Optimism

At first glance, optimism appears to be more dispositional and thus might not seem to fit the criteria for inclusion in psychological capital. However, even an optimistic style of interpreting life events can be learned. Martin Seligman (2006), in fact, wrote an entire book about this, *Learned Optimism*. Seligman understands optimism as an individual's attributional style, that is, the way in which an individual attributes causes to the positive and negative events that he or she experiences in his or her life. Seligman divides this attributional, explanatory style into 3 dimensions. The dimension of permanence relates to time and at its extremes you will find stability on one side and temporariness on the other. According to Seligman, an optimistic person tends to attribute stable causes to his successes and thus assumes that he will continue to thrive in the future. Whereas he evaluates failure more as a temporary cause, as a current failed moment that may not be repeated in the future. The second is the dimension of pervasiveness with the extremes of specificity and universality. A person with an optimistic attributional style evaluates positive events as universal. That is, when something positive happens to them at work, their optimism extends to other areas of their life, such as family or leisure. Conversely, they explain failure in specific terms and do not extend it to other areas. The last dimension is personalization, which ranges from externalization or internalization, where the optimistic

individual perceives success as something with internal causes, whereas failure with external causes that he or she could not control. In psychological capital, optimism is associated with the expectation of positive outcomes and positive attributions of events (Luthans et al., 2007).

This construct is positively related to job performance, specifically to the performance of sales representatives (Seligman, 2004). Furthermore, dispositional optimism has been found to have an indirect effect on employee burnout, work engagement, or commitment to the organization (Barkhuizen et al., 2014), or it has also been found to have an effect on employee evaluated performance (Luthans et al., 2005).

2.2 The positive effects of psychological capital

There are several benefits from improving one's psychological capital. The effect of this construct on other work environment variables is summarized, for example, in a meta-analysis of 51 independent studies with a total of 12,567 employees. First of all, it pointed out the influence of psychological capital on desirable employee attitudes such as job satisfaction, commitment to the organization, and well-being of the individual, and this relationship is significant (correlation coefficients ranging from $r = .48$ to $.57$). In addition, the meta-analysis pointed out the influence of PsyCap on desirable employee behaviors in the form of organizational citizenship behavior ($r = .45$) and employee performance ($r = .26$). This meta-analysis also maps the impact of psychological capital on negative variables such as undesirable employee attitudes (cynicism towards change, job stress and anxiety). There was a significant negative correlation ($r = .29$ to $.49$) between all of these and psychological capital (Avey et al., 2011).

Other, follow-up studies also confirmed the positive relation of PsyCap with job satisfaction (Abbas et al., 2014; Alessandri et al., 2015), work engagement (Alessandri et al., 2015; Joo and Lim, 2016)



and multiple measures of job performance (supervisor-rated and objective sales performance) (Peterson et al., 2011). Moreover, PsyCap has been found to be related to other positive variables such as innovative behavior (Hsu and Chen, 2015; Abbas and Raja, 2015; Alshebami, 2021), problem solving (Ho and Chan, 2022) or work happiness (Williams et al., 2015).

The negative associations of psychological capital with undesirable variables were also further explored and some were found, for example, with work-related stress (Abbas and Raja, 2015) and burnout syndrome (Leon-Perez et al., 2016).

3. Measuring psychological capital

Psychological capital also has its own methods of measurement. These are primarily the self-assessment twenty-four-item Psychological Capital Questionnaire (PCQ), from which a shorter, twelve-item version, the PCQ-12, was developed. The authors declare the good psychometric properties of both methods (Luthans et al., 2007; 2015), and the properties of the latter have been validated in a Spanish language adaptation on a sample of 798 employees (León-Pérez et al., 2016). Nevertheless, there are some studies where the results of psychometric investigations are not so clear-cut, e.g., inadequate factor structure of the questionnaire (Djourova et al., 2018), Czech authors mentioned a total of 3 studies in their research where there are discrepancies (Dudášová et al., 2021).

Other measurement methods are the CPC-12 questionnaire, which does not only deal with psychological capital itself, but also with related variables such as job satisfaction and organizational commitment, and then the Implicit Psychological Capital Questionnaire (I-PCQ), which is the only non-questionnaire method. It is a semi-projective method where the examiner gives the respondent three situations from the work environment in turn and the respondent tries to come up with a story for each of them. This is then supplemented by a questionnaire with descriptions of the charac-

ters in the stories. This method is unique because of its ambiguity for respondents who do not know exactly what is being measured in this method and do not find it easy to modify their answers to reflect this (Luthans et al., 2015).

4. Developing Psychological Capital

Among the most well-known interventions for the development of psychological capital are the so-called Psychological Capital Interventions (PCI), i.e. interventions designed specifically for the development of psychological capital. In the pilot and subsequent “first” study, these were two-hour interactive sessions filled with facilitator-led activities aimed at developing different parts of psychological capital. The specific content of the study is only described in a framework, it does not provide us with a precise overview of the steps. However, the results provided satisfactory answers, namely that even brief interventions can have a positive effect on the development of psychological capital and can also have an impact on job performance (Luthans et al., 2010). This method has also received a replication study due to its popularity. The improvements in this study were shown between the first and second measurements in overall psychological capital and its individual components. With the exception of resilience, which showed improvement only on the third (follow-up) measurement (Dello Russo & Stoykova, 2015).

In addition to PCI, scientific research has also looked at the effectiveness of other methods of development. For example, a meta-analysis including 41 studies categorized methods into these categories: PCI, positive psychological interventions, stress reduction programs, programs based on the JD-R model, and other interventions. There were no significant differences between groups (Lupşa, et al., 2020).

Online training programs have gained popularity during periods of social isolation (or have become the need and only training option for many organizations). In two studies (with 118 and 110 par-

The dimension of permanence relates to time and at its extremes you will find stability on one side and temporariness on the other. According to Seligman, an optimistic person tends to attribute stable causes to his successes and thus assumes that he will continue to thrive in the future. Whereas he evaluates failure more as a temporary cause, as a current failed moment that may not be repeated in the future. The second is the dimension of pervasiveness with the extremes of specificity and universality. A person with an optimistic attributional style evaluates positive events as universal.

A completely different perspective is offered by interventions based on coaching. These are no longer dimensioned as classical educational activities aimed at the masses of people, but as activities based on the needs of a specific individual. Coaching has been meta-analytically found to have a significant positive effect on individual benefits in an organizational context, of which for the area of psychological capital, the most important category is well-being.

ticipants), no difference between PCI in its online variation and its traditional face-to-face version was confirmed. Thus, it seems that the online environment is also sufficient for training. Besides, the results also showed no difference between online PCI and so-called micro-learning, which is a training program in which the content is divided in smaller parts over a longer period of time (Carter and Youssef-Morgan, 2022).

Another way of looking at the development of PsyCap is through the development of the individual components of the construct. The development of self-efficacy is possible through, for example:

- mastery of tasks;
- vicarious learning and role modelling;
- social persuasion;
- positive feedback;
- physiological and psychological arousal (Bandura, 1997).

Salanova and Ortega-Maldonado (2019) add that this can include, for example, development through various interactive communication skills training. Hope is associated with goal-setting –

thus, different goal-setting theories are used for its development, e.g.:

- SMART methodology, where one sets a goal to meet the following criteria: specific, measurable, achievable, relevant, time-bound;
- the stepping method, in which the resulting main goal is divided into several sub-goals;
- setting goals in line with the individual's personal values and challenges;
- positive selftalk activities (Salanova and Ortega-Maldonado, 2019).

Strategies for developing optimism teach individuals to accept their past, appreciate the present, and be confident about the future. Activities that can help with this are positive self-talk and the ABCDE model, which is a cognitive strategy for dealing with negative life events. One must become aware of the negative event (adversity), the beliefs one has about oneself (beliefs), the real consequences (consequences), then contradict the personal negative beliefs (dispute) and actively take steps to overcome the negative event, the setback (energize) (Salanova and Ortega-Maldonado, 2019).



→ Activities for development of resilience alone lack sufficient empirical support (Forbes and Fikretoglu, 2018). To maintain higher resilience factor scores across time, one-on-one methods such as coaching, rather than group activities, are more effective (Vanhove et al., 2016; Grant et al., 2009).

A completely different perspective is offered by interventions based on coaching. These are no longer dimensioned as classical educational activities aimed at the masses of people, but as activities based on the needs of a specific individual. Coaching has been meta-analytically found to have a significant positive effect on individual benefits in an organizational context, of which for the area of psychological capital, the most important category is well-being (Theeboom et al., 2014). Sub-studies have then looked directly at the effect of coaching on psychological capital, observing significantly higher values not only immediately after positive psychological micro-coaching, but also after 4 months (Corbu et al., 2021). Furthermore, the effect of a coaching-based leadership intervention on psychological capital, work engagement and performance of managers has been demonstrated (Peláez Zuberbuhler et al., 2020).

5. Implications for organizations

In the following lines we present a summary of potential implications for organizations:

1. Hiring and selection of new employees: Organizations can incorporate assessments that measure an individual's level of PsyCap in the hiring and selection process. This can help identify individuals who possess the resources connected to PsyCap and therefore assume their success in the workplace. Keeping in mind that questionnaires and other types of assessments are not infallible.
2. Leadership development: As stated in this article, leaders who possess high levels of PsyCap can have a positive impact on their employees and their performance. Therefore, it can be

beneficial to start developing PsyCap of the leaders, and after that move to employees.

3. Training and development of employees: Organizations can also offer training and development programs that focus on building and enhancing employees' PsyCap and thereby create more resourceful teams.
4. Performance management: The development of individuals' PsyCap can be used as a tool for performance management. Thanks to questionnaires managers can identify areas of strength and weakness in employees' PsyCap, and can develop strategies to enhance it where necessary. This method could be also used in collaboration with for example 360 feedback.
5. Organizational culture: Organizations can foster a positive workplace culture that supports development and maintenance of PsyCap just by providing opportunities for learning and growth, talking about positive psychology and its constructs, and recognizing employees who possess high levels of PsyCap.

Overall, focusing on PsyCap can be beneficial for organizations in many ways. By investing in the development of PsyCap, organizations can improve employee well-being but also enhance their job satisfaction and job performance that can lead to a more productive and successful workplace.

6. Conclusion

In the modern, fast-changing world, psychological capital is of paramount importance. It has been found to be positively associated with a wide range of outcomes, including job satisfaction, performance, well-being, and mental health. For example, individuals with high levels of psychological capital tend to have greater job satisfaction, perform better on the job, and have better mental health outcomes.

In the fast-paced and uncertain environment of the modern world, psychological capital enables individuals and organizations to adapt and thrive. It gives individuals the belief in their ability to suc-

ceed, the hope to overcome challenges, the resilience to bounce back from setbacks, and the optimism to keep moving forward. For organizations, a

workforce with high levels of psychological capital can lead to better performance, greater job satisfaction, and a more positive work environment.

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The Way to Survive Turbulent Changes in the Work Environment: Investment in Employee Development

ABSTRACT

The modern world is marked by constant change and uncertainty, as technological advancements and globalization continue to reshape the way we live and work. That is how our world is described in The World Economic Forum's "The Future of Jobs Report 2020". In such a fast-paced and dynamic environment, individuals and organizations must have the ability to adapt and thrive. In the report, the World Economic Forum also anticipates a list of work skills for 2025 – the first self-management skills such as active learning, resilience and flexibility are now appearing. Competencies of self-management are very closely related to the concept of psychological capital (PsyCap).

Psychological capital is a construct that refers to a positive psychological state of mind characterized by four key elements: self-efficacy, hope, resilience, and optimism. Since psychological capital is viewed as a developmental state, it can be effectively trained. According to the report, as technology and automation change the nature of work, individuals with high levels of psychological capital will be better equipped to adapt to and succeed in the new job market. Additionally, the report notes that businesses that invest in the psychological well-being of their employees will be more productive and successful in the long-term. In the field of scientific research, the construct is also associated with other variables that are beneficial to business, such as job satisfaction, job performance, organizational commitment and many more.

The purpose of this article is to provide a systematic review on this topic and to summarize the implications for organizations.

KEYWORDS

Psychological capital, self-efficacy, resilience, optimism, hope, positive psychology





JEL CLASSIFICATION

A22; I20, I21, I23; M12



Strategy development: Ignoratio elenchi problem

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* 1. Introduction

Working with business economy realities presents some significant pitfalls that need to be addressed. Mathematically, one cannot work with an open system, an elusive solver of strategic cases. We lack a set affecting the reality as such comprehensively. The solver always works with some restricted set and simplifies the open system based on the chosen elements. The solver enters the apparent chaos with the need to obtain and organize facts, which implies the need to deal with the problem of ignoratio elenchi. Ignoratio elenchi accepts an irrelevant conclusion or proposition that may have validity but does not address the given issue. Therefore, the solver must always have an accurate knowledge of what is being proved, not prove something different than intended.

The paper aims to discuss the setting of abductive reasoning for solving strategic cases in the context of methodological background, pointing out the fundamental differences from the hypothetically-deductive method of neoclassicism. At the same time, the problem of experimentation within open systems with reasoning based on a formal-mathematical apparatus is discussed. The solver's necessary interpretation and simplification of reality demonstrate the appropriateness of

using abductive reasoning, as indicated by the elaborated solution of the Monty Hall problem, which forms the principled basis of Stackelberg's strategy game. The contribution of the elaboration to strategy formation in business practice is made by enriching it with systematic work with facts, reflecting on methodological assumptions, and systematizing the formation of a set of facts as a starting point for the application of game theory in strategic management of the enterprise.

2. Methodological Basis of the Judgement Formation

According to Peirce (1958), the abductive inference is a way of inverting deductive reasoning to produce synthetic inference. The strategic case solver accepts a provisional hypothesis as a reasonable possibility for explaining the case (e.g., in explaining the moves of a competing subject), and the hypothesis yields consequences that can be experimentally verified based on an assessment of consistency or inconsistency with the facts. That is a formalization of the logical procedures of applying "common sense" (in the sense of referring a probabilistic predicate to a subject) to practical applications in open social systems (Fann, 1970, pp. 8-9)¹.

¹ For more details, see Cenek (2017, 44–55)



Table 1 » Methodological Approaches as the Economic Theories Basis

Approach	Characteristics	Period	Representative
Positivism	Generalization of phenomena, facts, and empiric experience	1900–1960	Bunge
Structuralism	Arranging phenomena into structures	1930–1980	Foucault
Critical Realism	Semi-regularities in structures in the investigation of phenomena	1960–present	Bhaskar
Structuration Theory	Variability of structures and their stabilization over time	1970–present	Giddens
Hermeneutics	Understanding the meaning attributed to phenomena and clarifying the relationship between people and subjective motives	1960–present	Gadamer
Poststructuralism	Critical evaluation of the state of knowledge	1960–present	Foucault

Source: Author’s elaboration based on Blažek, Uhlíř (2011)

In addition to pragmatism, abduction (used in this thesis as the primary method of obtaining and evaluating facts for the strategic management of a business entity) stands out as the privileged method of critical realism. At the same time, a surprising link can be traced between the guessing instinct (also the *modus operandi* of pragmatism) and critical realism, a direction that is opposed to pragmatism². Critical realism is often a subject of criticism for not bringing anything new but merely combining positivism and structuralism (in the first phase, by studying empirical phenomena, and in the second phase, by looking for regularities and connections between phenomena).

The question of methodological approaches is often regarded as fundamental in the context of economic sciences, in the words of Lawson (1997, p. 282): “*I will summarise my central argument as follows. The fundamental deficiency of contemporary mainstream economics is not at the level of broad theory, as many critics claim, but at the level of methodology.*” Suppose we review some of the significant scientific failures in recent years, in the form of, e.g., the collapse of large business entities

or the onset of an unpredicted global financial crisis, the highly relevant question arises — how to reflect the reality of the methodological approaches the best.

2.1 Transcendental Realism

Transcendental realism aims to solve the contradiction between **the empiricism of open and closed systems**. Reality is undoubtedly defined by its openness, where different mechanisms act simultaneously and can thus reinforce, weaken or even cancel each other out (Baert, 1996, pp. 515–516). However, scientific knowledge is often gained by simplifying reality into closed systems, which results in a significant loss of information and negates the complexity of open systems.

Performing experiments in laboratory conditions (e.g., statistical testing of a selected sample according to selected isolated parameters) yields results valid for the given closed conditions (within the economics framework). Thus, only entities in the empirical domain (in the form of the typical positivist approach) are understood to be authen-

² For more details, see Cenek, Holík, Palatová (2022, 38–46).

tic. In contrast, **the stratified theory of reality** as the core of transcendental realism goes further in the context of open systems and distinguishes three domains (Downward and Mearman, 2009, pp. 130–141):

- Current domain – summarization of objective phenomena and events.
- Empirical domain – a set of experiences regarding phenomena and events.
- Existing (non-topical, deep) domain – the set of structures, forces, mechanisms, and tendencies that trans actual control or influence events and phenomena at the level of the current domain.

The existing domain is inaccessible to human cognition, even though it conditions all action. That represents a fundamental difference from the traditional positivist conception, which considers only entities at the level of the empirical domain to be authentic. However, the reality of the deep domain follows from the criterion of causality, which classifies real everything that produces an effect (Kovanda, 2010, p. 614).

The trans factual control or influence of domain-level phenomena and events by the topical domain results from causal mechanisms. Even when these mechanisms are present, their manifestation in the form of an effect may be disrupted by other causal mechanisms resulting in the manifestation may not be evident or carried out (Martin, 2009, p. 520). Regarding the sub-artifacts of the existing domain, it is helpful to define (Martins, 2006, pp. 671–685):

- Structures – the primary conditions determining the emergence of a given phenomenon. Structures further consist of forces.
 - Forces – may or may not be activated, and if they are activated, they may or may not be actualized in the form of specific phenomena and events.
- Mechanism – a force directing structures to manifest a particular effect. A “modus operandi” setting forces in motion.
- Tendency – the activated operation of a mecha-

nism as a continuous activity that may or may not be actualized in concrete phenomena and events.

By delineating the sub-artifacts of the existing domain and its potential influences, we can challenge the Humean concept of causality, which underlies positivism and says that if phenomenon Y regularly follows phenomenon X, then both the necessary and sufficient condition for affirming that X is the cause of Y is met. However, explaining how Y is achieved falls outside the empirical domain. It thus does not form part of the investigation of causality between X and Y, thus significantly weakening the explanatory value of investigating the phenomena in question.

Realists, both transcendental and critical, oppose such simplifications contrary to reality (referring to the deep domain) and demand that explanations of given phenomena consist of taking into account all the relevant structures and forces that determine the phenomenon in question, following the nature of open systems (with which empirical positivist concepts of investigating closed systems conflict). Thus, using verification or falsification based on the assumption of closed systems becomes problematic (Kovanda, 2010, p. 615).

In transcendental realism, reality consists of phenomena and events that cannot be reduced to exclusively topical phenomena. All phenomena exist and operate more or less independently of our awareness of them. The crucial question, therefore, arises as to **how to explain the deep mechanisms, tendencies, structures, and forces belonging to the existing domain**. The empirical realism of positivism cannot provide such an explanation through induction or deduction, whereas transcendental realism provides it through **the abductive method** (Kovanda, 2010, p. 615).

2.2 Critical Realism

Bhaskar (2013) has related transcendental realism primarily to the ontology of the natural sciences, while Lawson (1997) and other authors have ap-



plied it to the social sciences in line with the belief that the social sphere is similarly stratified, structured, and fundamentally open. Fleetwood (1996, p. 733) uses the example of mutually beneficial transactions involving economic agents. The analogy to win-win strategies in the frame of stakeholders' approach to corporate strategy development. That is an action in the topical domain. The assumption that exchanges occur without collusion or fraud is tied to the empirical domain, and rules in the form of property rights that govern action in the topical domain are subject to deep structures. *"The term 'critical realism' actually comes from a combination of the terms 'transcendental realism' and 'critical naturalism,' the core of which is that it 'subordinates the natural and social realms to the same ontology.' Although Lawson is aware of certain differences between the two realms, he applies transcendental realism – in the form of critical realism – to economics, believing that if economics becomes a successful science in terms of the natural sciences, its potential for formulating optimal economic-political recommendations will increase."* (Kovanda, 2010, p. 616).

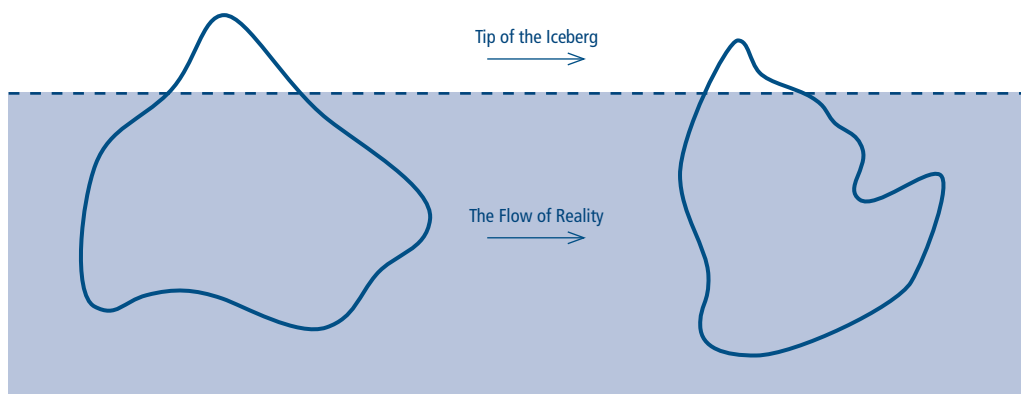
Unlike natural structures, however, social structures depend on the practical activities that consti-

tute those same structures (Baert, 1996, pp. 516–517). Social structures also do not exist independently of individuals' conceptions and definitions, and they exhibit significant dynamics in their ability to substitute one structure for another.

While an individual agency is essential, it cannot be understood independently of the social structure of which it is a part. Economic agents always act in a particular context, and the social structure goes beyond the individual and, at the same time, constitutes the product of human agency (Baert, 1996, p. 517). According to critical realists, the failure of mainstream economics stems from the fallacy of *"ignoratio elenchi"* in overlooking the openness of economic systems and inferring the conclusions of the actions of economic actors within closed systems (Fleetwood, 2002, p. 31). The actual domain is not reflected within the mainstream.

Critical realism solves this problem by using the causal-explanatory mode. The consequences of specific events cannot be deduced or predicted, but **the causal mechanisms and social structures that govern and influence these events can be uncovered (described, explained)**. The power of explanation is a fundamental goal of economics

Figure 1 » Reality and the apparent empirical material



Source: Štěkláč (2013, p. 12)

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and also an epistemic criterion for evaluating theories. “From the point of view of [...] the scientific [critical] realist, the economic world is similar to the clock in that both share a surface and a deep or hidden structure. While we observe the surface phenomena, [the clock-face or movement of the hand], hidden [beneath the clock-face] are the causal mechanisms that shape the observable phenomena or the [‘even more hidden’] mechanisms that generate these ‘hidden causal mechanisms.’ The epistemic goal of economic theory is to construct theoretical models that enable economists to discover these hidden causes and processes.” (Boylan, O’Gorman, 1997, p. 506).

If Hayek described the social rules necessary for the operation of price mechanisms, or Marx described the ability of human labor to generate profit, then the ability to describe an unobservable domain has been demonstrated (Fleetwood, 2002, p. 35). “So how do you ‘describe’ a real domain that is not observable? Such a ‘description’ involves three processes. First, in the abstraction process, we drop relatively unimportant aspects that would function more as distractions in the ‘description’ process. A process of retrodiction follows this. This

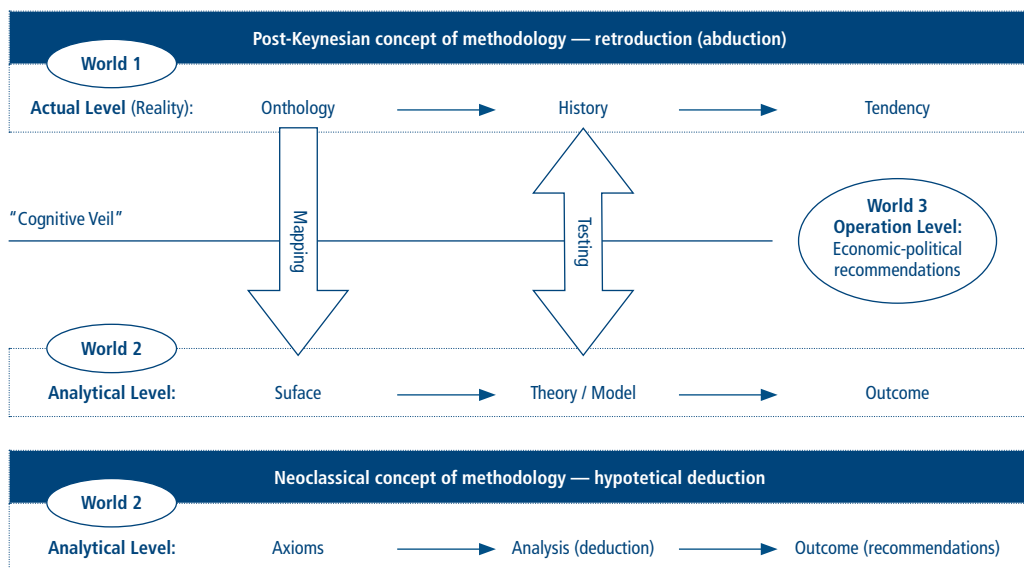
is the implicitly creative process in which the researcher ‘leaves through’ in their mind already acquired knowledge of other causal mechanisms, structures, and tendencies. The final process of the retrodiction mentioned above is, as we know, an explicitly creative process in which the researcher, for example, with the help of metaphor or analogy, already constructs a category, ‘describes’ the unobservable, and searches for the best explanation.” (Kovanda, 2010, p. 619).

The search for the best explanation is thus analogous to the pragmatic abduction process introduced. The core of the guessing instinct, following the laws of nature, relates to the actual domain and man’s ability to be in harmony with it. By acquiring and verifying facts, the solver reveals only the surface of the problem as a part of reality in a state of “constant flux” in the metaphor of the tip of an iceberg (see Figure 1). The three levels of reality are also close to Popper’s notion of three world layers — the physical, mental, and the products of human thought (Jespersen, 2011).

The Post-Keynesian methodology of abduction aptly illustrates the application of critical realism. The aim is to bring worlds 1 and 2 closer (see Fig-



→ **Figure 2 » Post-Keynesian Methodology Based on Abductio**



Source: Štěkláč (2013, p. 15), edited by the author

ure 2). In contrast, the neoclassical approach uses only the analytic level in world 2 through axiomatic deduction, not based on reality (all axioms are more or less given). Therefore, the axioms cannot be empirically tested and cannot be subject to falsification (mathematical-deductive models do not produce false results provided the mathematical operations are correctly implemented). *“Any effort devoted to achieving the results of such research is, at least at the macroeconomic level, essentially a waste of time. Mostly, neoclassical economics, with its potential for analytical precision of solutions, can be used to practice logical thinking, not for economic policy recommendations”* (Štěkláč, 2013, p. 15). Neoclassical research occurs only in a closed second-world system (the analytical level) with no connection to the actual level.

3. Inference in Open Economic Systems

The problem of interpreting and simplifying reality into a knowable system (to form a judgment) is

illustrated in Stackelberg’s strategy game, from which the focus is on solving Monty Hall’s problem in the position of illustrating the basic principle of inference by solving from the end (within the framework of the extensive form of the strategy game). The implications of applying the experiment in open economic systems with arguments based on the formal-mathematical apparatus are then discussed in an overarching way.

3.1 The Stackelberg Strategy Game

The Stackelberg model is a strategic game involving two players in the form of a leader and a follower (there may be two groups of players depending on the actual conditions of the chosen industry). It represents an extensive game form because the two players do not make decisions simultaneously but sequentially. In the first phase, the leader decides on the production volume (alternatively, the price or other parameters can also be decided). In the second phase, the follower determines the pro-

duction volume in response to the amount of production determined by the leader³.

In the initial model, Stackelberg describes an essential variable of credible (reliable) commitment that a market leader creates. At the same time, the leader must know ex-ante that a competitor in the form of a follower observes his behavior and derives the resulting output from this. In this sequence lies the crucial difference from Cournot's model, in which simultaneous movement of both players is applied.

The solution to the strategy game lies in the use of the principle of backward induction, which consists in solving the game from the end nodes toward the beginning. When starting from an end node, it is necessary to find the optimal solution of a subgame, after which a new end node is created as a solution of this subgame, from which it is moved to the next subgame, where the solution is compared with other end nodes.

Here again, the optimal solution of the subgame is found with the continuation of other nodes to the beginning, where the solution of the whole strategic game is found. Backward induction leads to a Nash equilibrium where no player can improve his position by unilaterally changing his chosen strategy.

The application of Stackelberg's competition is still being extended, whether as specific as in supply chains or marketing channels (He, 2007, pp. 385–413). However, the developments in security are particularly stimulating, where the application of the strategy is derived from the need to protect a valuable resource with a systematic search for potential threats. The decision-makers (in the position of leaders) first design a strategy so that the resource remains secure regardless of the strategy adopted by the successor (Brown, 2006, pp. 530–544). Alternatively, a strategy is formed that is "immune" to the competitors' reactions (followers) anticipated during strategy formation. The

implementation of abductive reasoning mentioned above can significantly contribute to achieving a defined optimum in the form of a robust strategy (reflecting the intended and anticipated actions of cooperating and competing actors in the context of complex business environment conditions).

3.2 Monty Hall's Problem

In Monty Hall's problem, the decision-maker chooses one door out of 100, with "win" (the quantity desired by the decision-maker) behind one door and "nothing" (the quantity not desired by the decision-maker) behind 99 doors. In the first round, the decision-maker chooses one door out of a hundred without any clues as to where the "win" might be hiding (so no informational advantage can be gained). The probability that he chooses the door with the "win" is 1 in 100 or 1 %. The probability that he does not choose the door with the "win" is 99 %.

In the second round, the presenter opens 98 doors, behind which there is no "win" (or rather, there is "nothing"), and the decision-maker may or may not change his choice. The probability that the decision-maker chose the door with the "win" in the first round remains 1 %. However, for the second — remaining door, the probability is 99 % that the decision-maker chose the door that does not hide the "win" in the first round (thus, the probability shifts to the remaining doors from the others that were opened sequentially, cumulatively).

Since this is a dependency relation between two rounds, the new situation at t+1 time cannot be considered a new decision problem with the assignment of a 50:50 probability distribution, which would negate the information value obtained from the sequential relations. Based on the known probabilities, it is worth it for the decision-maker to change the decision in the second round and select

³ The practical application of the proposed methodology under defined conditions is the subject of the article by Cenek, Mikuš, Holík, and Bechný (2020). *Strategy Development: Case of Business Practice*.

→ the remaining door with a probability of 99 % to select the door hiding “nothing” in the first round.

The informational value is secured precisely by taking causality into account. Inductively obtained facts about the game allow us to apply abductive reasoning to find the best explanation for a possible change of choice in the second round:

- Rule: The probability of making a mistake is higher than the probability of a win on the first go.
- Conclusion: The presenter opens a door where there is no “win.”
- Case in point: Changing a decision increases the probability of getting a “win.”

For clarity, the mathematical solution can be applied to the traditional game format, in which the decision-maker selects one door out of three. In the first step, the decision-maker chooses with probability $1/3$ that he has guessed the door behind which the “win” (and not one or the other “nothing”) is hidden.

In the second step, the presenter always reveals the door behind which “nothing” one or two is hidden (if “nothing” 1 was chosen in the first step, then “nothing” 2 is revealed, if “nothing” 2 was chosen, then “nothing” 1, if “win” was chosen, then “nothing” 1 or 2). Suppose the decision-maker chose “nothing” in the first round, he gains a “win” by changing his choice (if he does not change, he does not gain). Suppose he chose the “win” (with probability $1/3$), he gains “nothing” by changing the choice.

The probability that the decision-maker wins by changing the choice equals the sum of the probabilities $1/3 + 1/3$ and is $2/3$. The probability of winning by keeping the first choice is $1/3 + 1/3 = 2/3$.

The mathematical solution to the decision problem is formulated by Bayes’ theorem, which connects the conditional probability of a phenomenon and its opposite conditional probability (Bayes, 1970, pp. 134–153). Bayes’ theorem states that if we have two random phenomena, A and B, with probabilities $P(A)$ and $P(B)$ where $P(B) > 0$, then:

$$P(A|B) = \frac{P(B|A) \times P(A)}{P(B)}$$

$P(A|B)$ is the conditional probability of event A, given that event B has occurred. $P(A|B)$ is the probability of event B conditional on the occurrence of event A. In a practical application, if the “win” is behind door number 1, the presenter never opens that door and opens one of the remaining doors with probability $1/2$. The probability that the “win” is behind the unselected door if the remaining doors have been open is:

$$P(M1|O3) = \frac{P(O3|M1) \times P(M1)}{P(O3)} = \frac{1 \times \frac{1}{3}}{\frac{1}{2}} = \frac{2}{3}$$

Following the above illustration, e.g., door 2 was selected, and the presenter opened door 3 in the second round ($O3$ = open 3), which revealed “nothing” (the presenter could not open door 1 because $M1$ = “win” is behind door 1). The probability that the “win” is behind door 1 equals $2/3$.

The solution of Monty Hall’s problem forms the basic principle for the Stackelberg strategy game, which also applies analogous reasoning to the proposed abductive reasoning methodology, here in the form of backward induction – solving from the end (the extensive form of the Stackelberg strategy game under oligopoly conditions is based on backward induction with deriving the optimal strategy from the last decision node to the root).

3.3 Formally-mathematical Systematization

The corporate economy strategy represents a very complex variable and the most complex variable in business entity management. Given the standard conditions of strategy making, we may question the applicability of the experiment. The objective observation of phenomena occurring in controlled situations is complicated in determining those variables which are to be varied and those which are to remain constant.

The effect of systematic changes in one or more independent variables on the dependent variable to test the effectiveness and efficiency of interventions clashes with the very closedness of the system. It is impossible to identify which variables to exclude, — which affects the control of covariates (confounding variables), whereby the higher the control, the higher the internal validity of the study (Hendl, Remr, 2017, p. 169).

Control of confounding variables is not desirable. We cannot clearly define which variables to consider as confounding. That would undermine the strategy-making process as a creative process with significant scope for flexible work with the guiding factors (the guiding factors are equal to the facts assessed as strategically essential for the subject entity's future). Each factor has the potential to become a future asset of the enterprise, as well as it can also become its destruction. It depends on management and its ability to work with facts, which are used as imaginary bricks for building a strategy.

To create an experiment compatible with the complexity of strategy, which is linked to the business environment conditions complexity, we would need to create an open system. However, that would lead to several major obstacles, the existence of internal paradoxes and the impossibility of formulating an open system in closed conditions in particular.

Let S denote the set of all sets that are not their own element (i.e., sets that do not contain themselves).

$$S = \{X \mid X \notin X\}$$

Cantor's system defines this set well, which means that it should be possible to decide for any set M whether this set constitutes or does not constitute an element of the set S . However, such a decision cannot be made in the case of the set S itself, because it would conflict with its definition. Suppose S is not its own element and should belong to S by definition. Suppose S constitutes its own

element, then it should not belong to S by definition.

The problem manifests itself in the inability to create an open system in closed conditions. If the constructing agent is the human mind (marked as the set L), then the set L would become its own element and, simultaneously, a superior element. We lack the necessary higher level to embed the solution aspect (the set L itself) in the created contextual conditions.

The experiment for strategy creation is based on the creation of a strategy by strategies, which would have to accommodate all potentially created strategies that are strategies. However, if there is a strategy of all strategies that do not contain themselves, then it would have to be either **incomplete** (if it does not contain itself) or **wrong** (if it does contain itself).

The simplest solution to this paradox, referred to as Russell's paradox (Holeček, 2014), is rejecting the phenomenon (which would negate the experiment itself in constructing its conditions). However, in mathematics, we cannot reject the existence of a set that fully satisfies the definition simply because it provides questionable conclusions. Rejecting the existence of such a set would mean that the definition of the set itself is unsatisfactory.

Bertrand Russell proposed the solution to the above paradox in collaboration with Alfred N. Whitehead in "Principia Mathematica" (Russell & Whitehead, 1997). It is a theory of types in which every mathematical object (individual, set, relation) has a type with strict hierarchical dependence. Thus, types are arranged in a hierarchy, where sets can only contain objects of lower type (Holeček, 2014). However, when designing an experiment, we lack the necessary meta-level.

Russell's paradox can also be avoided, e.g., by applying the Zermel-Fraenkel set theory, which introduces a regularity axiom forbidding sets from containing themselves. Willard van Orman Quine then developed the "New Foundations" axiomatization, which simplifies to some extent the type theories of the "Principia Mathematica" by not us-



ing a hierarchy of types and eliminating the axiom of selection. The theory is based on two axioms (Holmes, 2018):

- Extensionality axiom — two objects are the same on condition they consist of the same elements.
- Separation axiom scheme — a set $\{x \mid P\}$ exists if P is a formula of first-order logic that can be derived from a well-defined type theory formula by removing all type indices (while ensuring that variables of different types do not merge).

The second axiom can replace many of its cases where finite axiomatization eliminates the need to mention types in definitions (Hailperin, 1944). In the partitioning scheme, a layered formula is often applied. A formula ϕ is layered if there is a function f , which gives back a natural number to all universe objects, and for $\{x \in y\}$ apply $f(x) + 1$, and for $x = y$ apply $f(y) = f(x)$. In such a case, a partitioning axiom scheme can be formulated in the form that exists for every layered formula ϕ (Forster, 2009).

In practical application, this solves the initial problem that arises if we have a set $\{x \mid x \notin x\}$ of all sets that are not elements of themselves and ask whether this set is an element of itself. Both outlined answers immediately lead to a contradiction.

4. Conclusion

The strategic case solver works with the symptoms and consequences of specific actions of stakeholders and the business environment, where the phenomenon's nature and cause-and-effect relationship are unknown (naturally, the competitor does not communicate his strategic direction). Thus, when forming a judgment based on the abductive method, a conclusion (a premise with a certainty value) is available within the structure of syllo-

gisms, and by applying a rule (a probabilistic premise), the solver reconstructs the case.

Unlike the hypothetical deduction with an exclusively analytical (axiomatic) level inherent in the neoclassical conception of methodology (which is also discussed in the thesis), the application of abduction offers a link between reality and the analytical level through ontological mapping and testing of accepted hypotheses (theories, models) to uncover tendencies and formulate recommendations based on the reveal of the "cognitive veil."

At the methodological level, there is a discussion of the follow-up problem of strategic work linked to systems with limited experimental possibilities, i.e., with a justification of why inference involving indexical codes reflecting case context and knowledge about it should be used.

Formal-mathematical apparatus is used to argue the problem, and the solution to the well-known Monty Hall problem is explained using abductive reasoning and the explicit structuring of syllogisms. The solution to the Monty Hall problem also forms the fundamental principle for the Stackelberg strategy game, for which the importance of backward induction for finding the optimal strategy is pointed out. The ideal strategy can then be considered as one that is immune to the reactions of competitors whose actions are anticipated by the solver through the outlined principles of abductive reasoning already in the strategy formation.

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Strategy development: Ignoratio elenchi problem

ABSTRACT

The paper aims to discuss placing the methodology of working with facts for strategic management through abductive reasoning in the context of methodological assumptions and relating reasoning to the problem of linking open and closed systems with a practical example of the link between Monty Hall's problem and Stackelberg's model of the extensive oligopoly strategy game. In abductive reasoning, a conclusion (a premise with a certainty value) is provided within the structure of syllogisms. The solver reconstructs the case by applying a rule (a probabilistic premise). The formal-mathematical problem of working with an open reality system argues for the appropriateness of using inference involving indexical codes reflecting the context of the case and knowledge about it. The importance of inference and deduction is illustrated by a solution to Monty Hall's problem, which also forms the basic principle for Stackelberg's strategy game.

KEYWORDS

Strategic management, pragmatism, abductive reasoning, ignoratio elenchi, explanatory hypothesis, risk decisions, game theory

JEL CLASSIFICATION

B40; C11; C12; D01; D21; D43; D81; D84



Motivation to study at universities in the Czech Republic

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* 1. Introduction

The higher education environment has changed significantly in last decade. The development of technology and trend of digitalization have contributed to these dynamics as it has revolutionized the way students share knowledge, search information and get experience as well as the knowledge and skill requirements of graduates on the labor market (Mok and Jiang, 2018). Moreover, the education market is becoming more and more competitive as the number of educational institutions is increasing.

It can be argued that a complex interplay of internal and external social factors affects students' motivation to pursue higher education and get a university degree. The reasons why students choose to enroll in higher education are significant because they also frequently reflect their motivation for further learning once they are there. Similarly, students' expectations can have an impact on the learning process as well as the overall satisfaction in higher education process. Many students may feel anxious about the transition from high school to college. One problem are the discrepancies between students' prior expectations and the

reality of university life, which can lead to significant distress or even higher dropout rates if not managed properly (Hassel and Ridout, 2018).

The current study was undertaken to explore the main motive in deciding to study at university; what are the students' expectations; and whether there are differences between Czech public and private university students' perspectives on these topics. Up-to-date research on topics of students' motivation in context of public and private universities comparison is very limited.

2. Problem formulation and theoretical background of motivation

The aim of the study is to identify the main motives and expectations associated with studying among students of both public and private universities of economic and management orientation. For this qualitative research, we set the following research questions: (1) What is the main motive in deciding to study at university? (2) What are the students' expectations regarding university studies? (3) What are the differences between students who prefer a private university compared to public university students in terms of motivation to study? →

→ The research sample was divided into 2 groups. Group 1 – students of public universities and group 2 – students of private universities of the Czech Republic.

According to Nakonečný (1997, p. 17), motivation is “...an intrapsychic process that has its source in the individual's internal and external situation.” Thus, it can be characterized as a process of directing, maintaining and energizing behavior, which, although based on biological sources, is a psychological phenomenon (Nakonečný, 1997). According to Plamínek (2015), the purpose of motivation is the non-violent creation of a positive attitude towards something – often a performance or a way of behaving.

Hayes (2003) argues that intrinsic motivation comes from the individual him/herself, whereas extrinsic motivation comes from external sources (e.g. salary, promotion). The basic factors inducing motivation are needs and values. Other motivational forces can include e.g. attitudes, spiritual dimensions of personality, biological determination, social determination, cognitive processes, and voluntary decision making. Madsen (1972) distinguishes four models of motivation:

1. **The homeostatic model** is based on the biological interpretation of the motivation of human behaviour, which is based on the so-called homeostatic hypothesis, according to which the emergence of need is the result of a disturbance in the balance of the organism. On the basis of the need, an impulse to satisfy the need arises through motivated behaviour leading to the restoration of homeostasis. Smékal (2002) states that all human motives cannot be understood on the basis of motivated behavior. Essential for personality is also the so-called heterostasis, overcoming the equilibrium that maintains what has been achieved, and searching, creating the new. According to Provazník and Komárková (1996), the homeostatic model is suitable for describing motives that have their basis in organic needs. Man is not passive, as the homeostatic approach implicitly assumes;

moreover, he is not only a biological organism but a social being in the broadest sense.

2. **The hedonistic model** assumes the importance of emotions in human life. Emotions are seen as the main prerequisite for achieving pleasure (pleasant emotions) and avoiding distress (unpleasant emotions). Emotions dynamize all human activity, but they also have an orienting function, since man consciously seeks out pleasant situations, approaches the pleasant and, conversely, tries to avoid or move away from the unpleasant. S. Freud with his psychoanalytic theory can be counted among the many representatives who promote Hedonism.

3. **The humanistic model** is based on humanistic hypotheses, which assume that the individual systematically repeats certain actions and assumes certain legitimate goals behind its manifestations. Among the most important representatives of the humanistic approach is Abraham Maslow. His theory of satisfying needs is organized in a hierarchical structure and their fulfillment takes various forms depending on specific, subjective, internal conditions and assumptions and on objective, external conditions. The lower-order needs must be satisfied sufficiently for the higher-order needs to be met – see below.

4. **The cognitive model** is based on the assumption that cognitive processes have motivational potential. Cognitive processes have motivational effects; they are related to a person's readiness for action. Cognition is involved in the origin and nature of motivation. One of the basic theories belonging to cognitive models is Festinger's theory of cognitive dissonance. According to this theory, a person perceives, evaluates and cognizes his/her environment and self during the course of his/her life.

There is no single, universally accepted theory describing motivation, and it cannot be expected to be achieved any time soon. Nevertheless, the concept of motivation is indispensable, as only through it are we able to understand the psycho-

logical reasons for human behaviour and to some extent work with them (Nakonečný, 1997).

One of the fundamental theoretical approaches is a conception of motivation based on humanistic hypotheses (see model 3 above), whose main representative is Maslow and his so-called *Maslow's pyramid hierarchical model of needs* (Maslow; 2021; Nakonečný, 1997; Robbins, Decenzo, 2001). Needs are arranged according to the urgency of their satisfaction, that is, the degree with which their internal pressures to act and be acted upon are experienced.

In this model, in the first large group, we talk about so-called “deficient needs”. Meeting these needs is related to maintaining overall physical and mental balance. We divide these needs into A. **Basic needs:** physiological needs (satisfaction of hunger, thirst, instincts) and the need for security (acting in situations causing loss of a sense of security, in situations of danger, economic failure) B. **Psychological needs:** the need for belonging and love (to be loved by others, to be accepted and belong to someone) and the need for recognition (the need for performance, competence, respect, trust, gaining approval). In the category of so-called “growth needs” we speak of such needs when their satisfaction does not lead to a reduction in the intensity of internal pressures to act. On the contrary, it leads to their increase. C. **Self-actualization needs:** needs to realize one's abilities (one's mental potential, i.e. “to be who I can be”), personal growth, including cognitive and aesthetic needs (needs to discover, create, organize) (Maslow, 2021; Nakonečný, 1997; Mayerová, 1997; Georgie, Jones, 2002; Robbins, Decenzo, 2001).

Bouček (2006) analyses needs through Maslow's hierarchy of needs in the context of the importance of work for the individual. Bouček (2006) states that every occupation provides a person with the financial means to satisfy their basic biological needs, including the need for security. Work also enables the satisfaction of belonging needs, especially the need for a stable place within a work collective or other social group. A profes-

sion also enables us to satisfy the need for self-esteem, a sense of dignity, the importance of one's own person, and social and professional prestige. The exercise of a profession may also contain the basic prerequisites for achieving the highest need in the hierarchy, which is self-actualisation or self-fulfilment.

Within the framework of the need for self-actualisation, a person wants to prove something, to confirm his competences and to assert himself socially. The means of assertion can be either a career as symbolic social value or earnings as a material value.

According to Maslow (2021), self-actualizing people are committed to something, working on something they hold dear, feeling called to something. Among other things, they are also capable of deep relationships, they can also be independent, tolerant, creative, and can take joy in the small things around them. Hall et al. (1997) and Hall and Goetz (2013) describe the characteristics of self-actualizing people as follows: they have a realist orientation; they accept themselves, others, and the natural world as it is; they are spontaneous; they are problem-oriented rather than self-oriented; there is an atmosphere of impartiality around them and they have a need for privacy; they are autonomous and independent; they evaluate people and things in novel rather than stereotypical ways; they have spiritual experiences but not necessarily religious ones; identify with the human race; tend to have deep relationships with a few especially loving people, less so with many people in superficial relationships; have democratic values and attitudes; do not conflate means and ends; have a philosophical rather than hostile sense of humor; are very creative; resist conformity and change rather than just cope with the environment in a non-intersecting series.

3. Methodology

The study was conducted at both a private and a public university in the Czech Republic. The re-



search sample was selected using a purposive sampling method and the rule of theoretical replication in the case studies. A semi-structured interview that included 8 open-ended questions was prepared (Luo and Wildemuth, 2009). Participants of target group consisting of Generation Z students from economics and management programs were approached in class or sent an e-mail that described the nature of the study. When they were interested in participating, the interview meeting was set up. In total, 6 respondents participated in the study, 3 students from *Group 1* (public university students) and 3 students from *Group 2* (private university students), considering achieving data saturation. The interviews were conducted during January and February 2023, and the authors conducted the interviews with the respondents in person at their places of study or online using Google Meet. The length of the interviews ranged from 45 minutes to 1,5 hours. The interview structure included the following 8 questions. For each question, sub-questions were prepared according to the answers of the respondents:

- What made you consider going to a higher education institution?
- What did you expect from studying at a private/public higher education institution?
- Did your initial expectations about your studies come true?
- Have your expectations changed during your studies?
- What advantages do you see in studying at a private/public higher education institution?
- What disadvantages do you see in studying at a private/public higher education institution?
- Would you recommend studying at a private/public higher education institution to friends?
- Anything else, not mentioned, you would like to add, in relation to your decision to study at a higher education institution?

For each interview, we also recorded the respondent's identification criteria as features. Namely: gender, age range, school studied — private/public, whether it is a bachelor or master degree,

year, study form — full-time/combined and place of study. Data were recorded and transcript into a form suitable for analytical work. A semi-structured interview protocol was used. To achieve a data systematization for qualitative analysis, the resulting text was open-coded (Campbell et al, 2013). This is part of an analysis addressing the concept of labeling and classification by carefully studying the collected data (Valentine, 2013).

4. Motives for studying at university and expectations related to studying

The sample consisted of 3 females and 3 males in the age range of 21–30 years. 4 respondents were students of Bachelor's degree program and 2 were studying for a Master's degree.

Motives for studying at university were explored in the first interview question: what made you consider studying at university? The answers regarding the motives for studying at university in the Czech Republic for *group 1* (public university student) were mainly related to personal development of professional competences that will bring a competitive advantage on the labour market. Respondents stated that after studying at a grammar school they wanted to continue their studies in a specialised economic and managerial field. One respondent stressed the importance of obtaining a diploma for the possibility of pursuing a job in which he is interested.

For *group 2* (students of private university) the answers differed and were in two categories. Similarly to *group 1*, two respondents mentioned the motive from the category of improving the position on the labour market and increasing the chances to get a “dream job”; and one respondent expressed the main motive for studying as gaining an overview in the economic and managerial field, as they studied a narrowly focused field of technical specialization in high school. While one respondent mentioned the importance of obtaining a diploma of higher education.

Questions 7 to 9 were related to *identifying ex-*

expectations of higher education study, their fulfilment, and possible changes. *Group 1* expected more demanding studies than at the upper secondary school, but with more freedom in the organization of studies and in the choice of courses. Furthermore, they also expected to develop their knowledge in the field of study. All these expectations were met and were not changed during the course of the study. Only one expectation was not fulfilled, namely that the respondents expected more practice in their studies. For *group 2*, the expectations about studying were related to the development of a general overview, the personal approach of the lecturers and the friendly atmosphere at the university. Two respondents emphasized that the expectations were also related to being part of the community of students. Students' expectations are being met and have not yet been changed.

5. Discussion

The emphasis on the higher education institutions' quality is growing which goes in hand with students' motivation and fulfilling their expectations. Findings of presented study show that although students at public and private higher education institutions share certain characteristics, there are tendency differences that can be observed. Interviews with two groups of students yielded the following responses to our research questions:

(1) *What is the main motive in deciding to study at university?*

The main motive for students from *Group 1* development of competences and through university education and obtaining the diploma to be able to have better position in the labor market. This motive was common for respondents from *Group 2*. Another important motive was getting field specialization. The perspectives slightly differed between *Group 1* and *Group 2* due to the study programs of respondents.

Higher education institutions should focus their efforts on evaluating the percentage of their majority students based on the type of secondary school previously attended as this study confirmed resulting differences in the motivations for enrolling at the particular institution.

(2) *What are the students' expectations regarding university studies?*

The interviewed groups differed in their study expectations. Namely, *Group 1's* expectations related more to the organization and implementation of the study plan. Moreover, developing expertise, beyond the general overview, had been an aspect shared by both groups of students. In contrast, *Group 2's* expectations covered rather personal satisfaction and development, i.e. friendly approach of the teachers, being part of the students' community with similar mindset. This means that most students besides financial investment into their education, students expect also emotional involvement.

Overall results conclude that students have realistic expectations of university which supports the findings of previous studies stating that a uni-

Table 1 » Overview of differences between applicants to public and private universities

	Motive to study	Study expectations
Group 1	Development of competences Better position in the labor market Corporate economy specialization	More demanding studies Field of study expertise Practice
Group 2	Better position in the labor market Business management specialization Getting a university degree	Extension of the general overview Friendly approach of the teachers Community

Source: Own proceedings



There is no single, universally accepted theory describing motivation, and it cannot be expected to be achieved any time soon. Nevertheless, the concept of motivation is indispensable, as only through it are we able to understand the psychological reasons for human behaviour and to some extent work with them.

Findings show similar motives of students from public and private universities; namely, development of competences, specialization, increased opportunity for better position on job market. In terms of expectations of university, students from Group 1 based their expectations on previous experience from secondary schools. It means that their idea was having more freedom in the organization of studies and in the choice of courses. Group 2's students related their expectations to being part of students' community. The same expectations within respondents were related to developing the expertise in their chosen field of study.

versity education will enhance both academic and vocational prospects of students while providing opportunities to become more independent as well as to enjoy themselves (Kandinko and Mawer, 2013).

(3) *What are the differences between students who prefer a private university compared to public university students in terms of motivation to study?*

Despite observing two groups of respondents according to type of their university (public vs. private) separately, in terms of motives to study, very similar aspects of motivation can be found within all respondents. Table 1 displays the key differences between respondents from Group 1 and 2 based on the motives to study and study expectations.

6. Conclusions

The purpose of this study was to identify the main motivation of students of public and private universities of economic and management orientation to study at a university and their expectations of university education. By entering higher education, students are getting into an extremely important stage of life. Students' goals, motives and ex-

pectations have an impact on how students approach their coursework and university activities, which in turn influences how well they perform, how they meet the learning objectives and overall satisfaction and experience.

A literature review focused on motivation theories. The research methodology was based on semi-structured, in-depth personal interviews with final sample of six respondents. Transcript texts were open coded to enable data organization for qualitative analysis.

Findings show similar motives of students from public and private universities; namely, development of competences, specialization, increased opportunity for better position on job market. In terms of expectations of university, students from Group 1 based their expectations on previous experience from secondary schools. It means that their idea was having more freedom in the organization of studies and in the choice of courses. Group 2's students related their expectations to being part of students' community. The same expectations within respondents were related to developing the expertise in their chosen field of study.

As part of further research, it is worthwhile to find out what are the perspectives of parents in terms of expectations of public and private universities for their children study. According to previ-

ous studies (Thomas, 2003), parents are key influencers and advisers when it comes to helping their children make important educational and career decisions.

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Motivation to study at universities in the Czech Republic

ABSTRACT

The objective is to identify the motives behind any potential differences between the students who favor of private versus public higher education institutions. Students at public and private higher education institutions in the Czech Republic participated in the research from 2022 to 2023. The focus of the literature review, →

→ in accordance with Maslow's Pyramid of Needs, is on students' motivation to study. Face-to-face semi-structured interviews form the foundation of the qualitative research investigation's approach. Purposive sampling was used to choose the research sample. Open coding was implemented to create data systematization for qualitative analysis. The results demonstrate differences in study motives of students attending public and private universities. Additionally, differences between respondents in the same group of public and private university students were found. A few components also show up in multiple categories. In order to continue the research in the longitudinal perspective and to discover changes in the elements investigated over a longer length of time, it builds on the research of the previous period 2021–2022, with concentration on the same topics.

KEYWORDS

Motivation; Study Expectations; Maslow Pyramid of Needs; Qualitative Research

JEL CLASSIFICATION

J24; I23



Psychological aspects of career development and employees' ideas about the end of their working career

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* 1. Introduction

A career is usually understood as a progression in employment over time. It is a path through life, especially a professional one, on which a person gains new experiences and realizes his personal potential (Bělohávek, 1994). A career can be viewed from two points of view. From the point of view of the employer's organization, we can talk about an external career, which represents concrete steps that must be taken so that the worker can work in the given company and progress forward (Schein, 1990). In order to achieve a certain post, it is then necessary to first complete a certain type and level of education and have the required experience. If we focus on the given individual, on how his professional life develops and how he himself perceives it, then it is an internal career. Every worker has certain ideas about his work and the role he plays in his professional life. It is therefore a subjective matter affecting the attitudes and experiences of the given individual (Bělohávek, 1994, Schein, 1990).

This subjective level is the basis of the concept of career anchors by E.H. Schein (1996). In his longitudinal study, he found that most people develop a very strong self-concept during their working

life, the so-called career anchor, which ensures the homogeneity of their inner career, despite the great changes in their outer career. A career anchor is a set of subjectively perceived own talent and motives and values. It serves to direct, stabilize and integrate a personal career. A person can be anchored in several areas, but for most people it is possible to discover one main anchor, which is the most important factor guiding an individual's working life (Schein, 1990). If the occupation performed is not in accordance with the career anchor, people experience feelings of dissatisfaction with their work career. On the contrary, compliance has a positive effect mainly on higher worker performance, loyalty to the current job and job satisfaction (Feldman, Bolino, 1996).

Schein (1996, in Lemrová, 2007) describes 8 career anchors as follows:

- 1) Anchor technical-functional competence: People anchored in this anchor have a need to develop and apply their skills in the given field, their primary interest is the content of the work performed. They plan their careers mainly within their expertise.
- 2) Anchor managerial competence (general managerial competence): This anchor is typical of individuals who are interested in managing, lead-



- ing and influencing people to achieve common goals (Ullrich et al., 2018). The management function brings more satisfaction to these people than the development of professional potential.
- 3) Anchor certainty (stability): Individuals with this anchor have the need for secure employment, decent income, employee benefits. For a sense of security, they are willing to adapt to the values and norms of the organization. They don't tend to have big ambitions, security is more important to them.
 - 4) Anchor creativity (entrepreneurial creativity, entrepreneurship): This anchor reflects the need to create something new based on one's own project, the primary motivation is creation and only then financial gain. People with this anchor may show a lower level of responsibility, which is problematic for a managerial function.
 - 5) Autonomy anchor (autonomy and independence): People with this anchor look for work opportunities that give them maximum independence from organizational constraints and allow them to organize their own schedule and pace of work. These people tend not to accept the rules and demands of the organization, which they perceive as too binding.
 - 6) Anchor service (devotion to a cause): Associated with this anchor is the need to organize work activities in accordance with personal values and the benefit of society, the effort to achieve something beneficial and valuable for others. People with this anchor prefer work that is more in line with their values. Their career choices express a desire to "improve the world" in some way.
 - 7) Anchor challenge (competition): The motivation for people with this anchor is overcoming difficult obstacles and succeeding in tough competition. It is typical for them to focus on only one goal – to win.
 - 8) Anchor lifestyle (life balance): This anchor expresses the need to combine a working career

with an overall lifestyle, finding a balance between personal, family and work priorities. It is an effort to integrate the needs of the individual, family and career, whereby personal and family needs tend to be prioritized over career growth.

In older adulthood, defined by the age of approximately 50 to 60 years, people are usually at the peak of their career and it gradually decreases. The first thoughts about retirement appear, which are positive for somebody and negative for others. Dvořáková (2012) states that this period is not easy for many people, as it is obvious that further progress in their career is no longer waiting for them. A person at this age begins to experience biological and psychological aging and its performance may be reduced. According to Cimbálníková et al. (2012), however, age over 50 years + does not necessarily mean a reduction in the quality of work, only the quantity of work done. However, if the tasks are clearly structured, the difference between a senior and a junior colleague is minimal. However, the professional career is gradually coming to an end, and a change of profession or investment in a career is no longer expected. Losing a job at this age is a big burden (Vágnerová, 2007).

So-called ageism, i.e. contempt and prejudice towards older people, affects older workers very negatively. The stereotypical image of older people can negatively affect their self-concept, reduce work motivation and increase bad psychological mood. Stereotyping makes it more difficult for older people in their labor market situation and is also likely to lead to earlier retirement (Buyens et al., 2009). According to Vidovičová (2008), ageism is the most significant factor of age discrimination and can be viewed similarly to racism.

In the labor market, a person aged 50–55 years and older is usually considered an older worker. At the same time, it is known that the population is aging, there are many more elderly people in Czech society than newly born people. According to Cimbálníková et al. (2012) the number of people actively working is expected to drop by 40% by

2050. Therefore, according to Ulrich and Brott (2005, in Buyens et al., 2009), it is necessary to ensure that older people do not retire earlier, but that they remain on the labor market as long as possible. In connection with the aging of the population, there is an effort to apply the so-called age management strategy, which strives for equality of working conditions across individual age groups. The principle is management based on taking into account the older age of employees and understanding their individuality. According to Farková (2009), there is a difference in experiencing the end of a career between men and women. Women usually come to terms with the end of their career better, while men may experience feelings of inferiority several months before retirement. Men may feel that their younger colleagues do not take them seriously or that their abilities are being taken advantage of. It is then up to superiors to try to prevent this negative behavior in the organization and thus prevent the loss of self-esteem and self-confidence among older workers.

2. Research

2.1 Research objective and method

The aim of the research was to find out the view of the selected employees of the researched organization on the development of their working career and its termination, and how their working career reflects their preferred career anchors.

In research, we sought answers to the following three research questions:

RQ1: How do employees of an engineering company in the position of technical and economic workers evaluate the progress of their work career so far?

RQ2: Do the employees of the engineering company in the position of technical and economic workers want to remain in their position even after reaching retirement age?

RQ3: Do technical and economic workers feel fear of the end of life and death at the end of their working career?

2.2 Research sample

The research was carried out in a medium-sized engineering company whose business is the production of steel structures. The company has a total of 67 employees, of which 17 are technical and economic workers and 50 employees in production. The owners of the company hold the positions of company director and production director. A functional organizational structure is applied in the company. There are several departments where employees work on common tasks. All workers are subordinate to the company director, who coordinates their work. The company's management is fully integrated into the production process and constantly strives to build its brand and good reputation in the market. The research sample consisted of six technical and economic workers of

Table 1 » Respondents included in the research

	Information about respondents
Respondent No. 1	male, 61 years old, married, company director and chairman of the board
Respondent No. 2	female, 60 years old, divorced, payroll accountant
Respondent No. 3	male, 51 years old, married, business manager
Respondent No. 4	male, 53 years old, married, personnel manager
Respondent No. 5	male, 49 years old, married, business manager
Respondent No. 6	male, 49 years old, married, dispatcher



this company, five of whom were men and one woman, their age ranged from 49 to 61 years.

2.3 Research methods

Two research instruments were used for data collection. The first tool was the Career Anchor questionnaire by E.H. Schein (1996), which makes it possible to determine the intensity of representation of individual career anchors based on a self-assessment of one's own needs. The possible point range of scores for individual anchors is 8 to 64 points – the higher the number of points, the more the respective anchor is represented in a given person.

The second method was a semi-structured interview. Interviews were conducted with respondents individually at the workplace at an agreed time. The basis for the interviews was a prepared set of 10 questions, which were handled freely in accordance with the principles of a semi-structured interview. The aim of the interviews was to find out how workers perceive their career so far and what are their ideas about its end. Statements from the interviews were processed by content analysis.

3. Results

Table 2 shows the preference of individual career anchors for all six respondents. As the primary (most important) anchor, the respondents mentioned Lifestyle (2x), followed by the anchors Security, Creativity, Autonomy and Service. Overall, however, there were no significant differences among individual anchors in the order of their preferences.

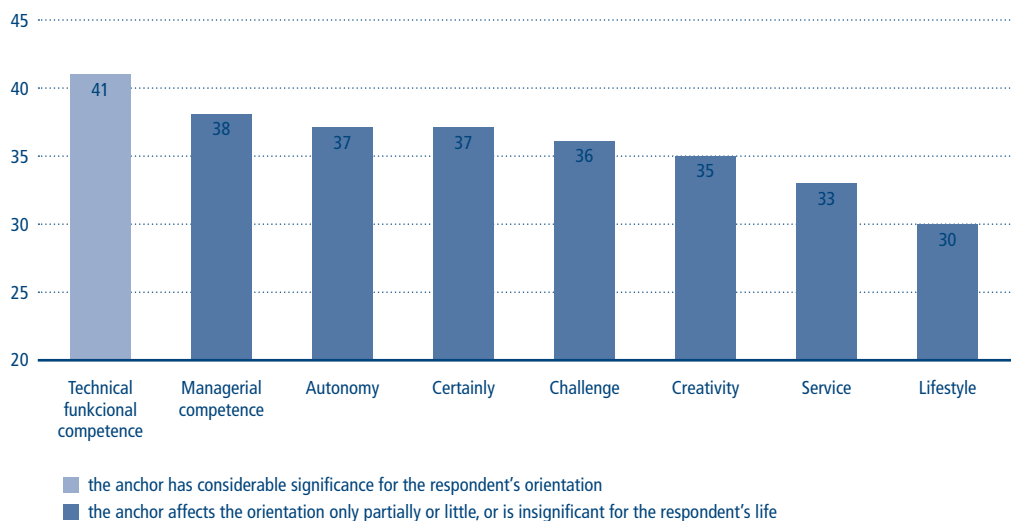
Graph 1 shows the average values for individual anchors for all six respondents, the possible range of scores was 8 to 64 points. According to the intensity of representation, the anchor of technical-functional competence emerged as the most important, which most significantly affects the work focus of the respondents. It is understandable, because the production focus of the given organization is specific and requires expertise. In second place according to the intensity of representation is the anchor of managerial competence, which corresponds to the job position of the respondents at the middle management level

The career anchors of respondent No. 1 are mainly life balance, managerial competence and creativity. These are suitable anchors for the position that he holds in the organization, i.e. the position of company director. The information from the interview shows that the fact that he is in a

Table 2 » Preferences of individual career anchors (N=6 respondents)

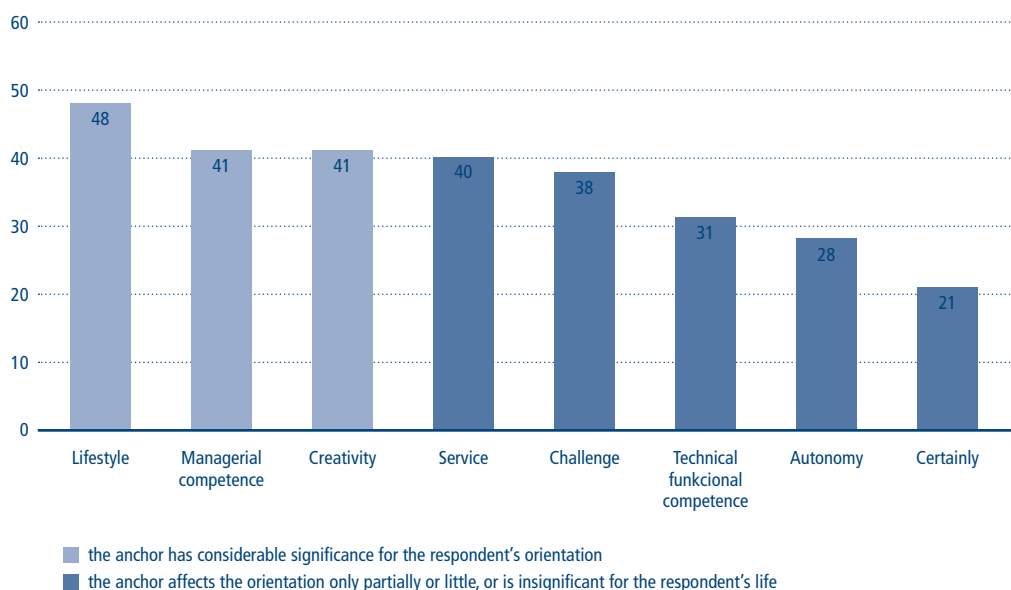
Order of preference:	1.	2.	3.	4.	5.	6.	7.	8.
Technical-functional competence			1			2	1	2
Managerial competence		2			1	1		2
Certainty	1	1	1				2	1
Creativity	1	1	1	1	1			1
Autonomy	1			1	1		3	
Service	1	1	1	2		1		
Challenge		1			3	2		
Lifestyle	2		2	2				
N=	6	6	6	6	6	6	6	6

Graph 1 » Intensity of career anchors together for all respondents (N=6)



For illustration, here are the results from the Career Anchors questionnaire for respondent No. 1 (see Graph 2).

Graph 2 » Intensity of career anchors for respondent No. 1



→ leadership role and at the same time responsible for the company's results means the greatest career success for him. Only in exceptional cases does he stay at work overtime, which is a consequence of a life balance anchor. This is a person who has passed through several positions. His entrepreneurial creativity may have been the reason why he embarked on his own project and founded an organization. He has been in the highest position for about ten years. He would definitely like to work even in retirement, he would not want to lead a monotonous life. He wants to continue to be needed and wants to help his children in passing on the company.

He has no prejudices against older people, on the contrary, he respects them because they have a lot of experience, contacts and have interesting opinions. However, he is aware of the fact that older people can be less flexible. He sees his retirement as unpleasant for himself.

For all respondents, we gradually analyzed the results from the questionnaire in relation to the statements in the interview and further summarized the results for all respondents together. In summary, we present answers to our research questions for all respondents together.

RQ1: How do employees of an engineering company in the position of technical and economic workers evaluate the progress of their work career so far?

The results for the six respondents show that they influence the course of their careers values like family, friendship that are important to them. These are not careerists who would give up these values at the expense of work. They do not want their work performance and effort negatively affected their family well-being. Fairness is important to them appraisals and rewards and benefits are reassurances to them that they are doing their job well. Since most of the respondents are managers, they strive to fulfill the organization's goals.

RQ2: Do the employees of the engineering company in the position of technical and economic workers want to remain in their position even after reaching retirement age?

The research showed that almost all respondents strive for a balance between work and family well-being. They are looking forward to their retirement as they will have plenty of time for their hobbies and family. On the other hand, they see their retirement as a possible lack of events around them, a loss of contacts and a feeling of inferiority. In case of interest from the organization, they would like to return to it in their retirement age and help it.

RQ3: Do technical and economic workers feel fear of the end of life and death at the end of their working career?

Based on the interviews, it was found that many individuals are not aware of the end of their career and do not accept this possibility until late in life. One respondent stated that what is older, so he is more aware of death than in his youth. All respondents further agreed that they are most afraid of illnesses, as a result of which they will not be able to continue working. Therefore, they want to take care of their health and lead a healthier way of life and thus prevent health problems. They do not see the end of their working career as the end of an active life.

4. Discussion

We found that the career paths of our respondents are diverse. Most of them changed jobs before settling in the current organization. With the exception of respondent #1, a director of an organization with a university degree, these were middle management individuals with a high school education who do not have extreme career ambitions. A horizontal career is typical for them and they do not advance in their careers. However, it would be appropriate for the organization to create new challenges for them that would allow them to realize

In older adulthood, defined by the age of approximately 50 to 60 years, people are usually at the peak of their career and it gradually decreases. The first thoughts about retirement appear, which are positive for somebody and negative for others. Dvořáková (2012) states that this period is not easy for many people, as it is obvious that further progress in their career is no longer waiting for them. A person at this age begins to experience biological and psychological aging and its performance may be reduced.

The strongest representation of the technical-functional competence anchor among the surveyed workers corresponds to today's technological progress. Today's workers must continuously renew their knowledge and skills and strive to keep their expertise relevant to current requirements. This is also characteristic of the respondents from our research, as the nature of their work requires constant development of expertise.

themselves, be creative and recognized not only in the eyes of their younger colleagues. According to Kirovová (2007, 2011), recognition and success create a satisfied employee who does a great job. All respondents accepted that one day their careers will end. Some even looked forward to having more time for themselves and their hobbies. After retirement, they no longer plan to develop their careers.

The strongest representation of the technical-functional competence anchor among the surveyed workers corresponds to today's technological progress. Today's workers must continuously renew their knowledge and skills and strive to keep their expertise relevant to current requirements. This is also characteristic of the respondents from our research, as the nature of their work requires constant development of expertise. According to the intensity, the anchor of managerial competence was represented by the respondents in the second place. It is an important competence, and it can be argued that for workers in any position today, it is not enough just to have the knowledge and technical skills to do their job. It is obvious that the need for workers with managerial competences is still growing, even at lower positions in organizational hierarchies. Managerial skills, the

art of leading others and coordinating the work of others are increasingly required of employees (Evans, 1996 in Lemrová, 2007).

An important factor that affects the termination of a working career is the form of the working relationship with the organization. As almost all respondents were employed, they are likely to retire earlier than if they were self-employed, who are expected to gradually pass on know-how to their successor. The only exception is respondent no. 1, the director of the company and the owner of the company, who could be considered a person who has to earn on his own, since he ensures the running of the company and is responsible for its future. He stated in the interview that he will retire later, as he will have to hand over the company to his children.

It is also necessary to take into account that the organization in which the research was carried out does not have its own product. It is therefore dependent on production organizations that order components from it for its own product and in whose production it thus participates. At the same time, the working contacts of older employees with persons working in production organizations are valuable and successful business is carried out through them. Therefore, the organization should



try to take care of these older employees, prevent the spread of stereotypes and help them retire with dignity.

4. Conclusion

Research into the career paths of technical and economic employees of an engineering firm aged 49–61 showed that this is a specific group of people characterized by a strong life balance, which is additionally supported by friendship and perceived strong job security. These are individuals who perceive their working career as important, but would not want to jeopardize their personal life. This group is primarily motivated by a friendly work team, an informal atmosphere, and thus a successfully completed job. They are experts who are

characterized by technical expertise and at the same time managerial competence. This ensures that they can carry out their work without any problems. The conducted research also showed that individual respondents are aware of their age-disadvantaged position on the labor market and are aware that others may have certain prejudices towards them. On the other hand, however, they evaluate themselves as indispensable members of the team, because they have many old contacts, which is irreplaceable nowadays. Since in approximately five to ten years there will be a large part of the adult population of individuals in this age category in society, measures must be taken to allow these people to feel comfortable and to end their working careers with dignity.

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Psychological aspects of career development and employees' ideas about the end of their working career

ABSTRACT

The aim of the contribution is a theoretical analysis and empirical research of the issue of the career path of employees with an emphasis on their ideas about the end of their career. The text defines the concept of career and the importance of so-called career anchors for directing and shaping the working career, and the connections between the end of the career and retirement are clarified. the paper presents the results of a research survey of the employees of the selected organization in middle management positions, which was carried out using a quantitative and qualitative methodology. The Career Anchors questionnaire and a semi-structured interview were used for the research. The results show that the mentioned workers are experts who are characterized by technical expertise and at the same time managerial competence. At the same time, they are characterized by a strong life balance, which is supported by friendship and a perceived strong job security. The research also showed that individual respondents are aware of their age-disadvantaged position on the labor market and are aware that others may be prejudiced against them. On the other hand, however, they rate themselves as important members of the team, as they have many long-standing contacts, which is irreplaceable nowadays

KEYWORDS

Career path; End of career; Retirement; Old age; Employees

JEL CLASSIFICATION

A 13; I31; M54



The impact of the post-covid era on people management in the catering sector

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* 1. Introduction

The novel coronavirus that causes the disease Covid-19 appeared in early 2020 and has significantly changed global society (Parnell et al., 2020). Some sectors of the global economy were most affected by the restrictions particularly the tourism and hospitality industries which are reliant on close contact between individuals as part of their business model. The rapid and continual growth in international travel stopped due to travel restrictions put in place and borders closing. This de-globalization strategy resulted in individual countries closing their borders, in an unprecedented move. This contrasted significantly to past promotions of open borders and free global movement. Due to an increased reliance on international travel with many individuals living between countries, this has had a tremendous effect.

Tourism expansion is the core factor for hospitality and tourism earnings (Chen and Kim, 2010; Dube et al., 2021; Tsoi, 2020). The pandemic is expected to have a negative effect on retail, services, recreational, sports and culture activities, and tourism in the first half of the year of 2021. Except for tourism and accommodation, the covid pandemic especially impacted sectors such as catering

and mobility, too. These contact-intensive services declined 25% from pre-covid-19 activity, although they are normally relatively intensive to recessions. Businesses relying on close physical interactions have been forced to shut down, limit or change the nature of their operations (European Commission, 2021). The pandemic accelerated the shift toward digital entrepreneurship, while simultaneously harming many businesses that previously relied on traditional face-to-face service. Widespread lock-downs with strict governmental interventions would probably be labelled as a pathological cause of recession (Greene and Rosiello, 2020).

According to Berry et al. (2020), service firms have responded to physical and emotional threats in innovative ways. They adopted contamination control strategies such as emptying waiting rooms, requiring temperature scans, installing medical-grade air filters, developing paperless forms, investing in contactless payment and introducing virtual consultations.

While crisis such as conflict situations have been found to impact negatively on entrepreneurial intentions (Bullough and Renko, 2013), in some ways they can lead to resource voids that create opportunities for starting or changing business. Both

management and employees have come together to craft ways for the business to survive during this long-lasting pandemic. During this crisis, companies found creative ways to utilize their core competences, stretch the boundaries of their established business models, change the ways human capital relies on and utilizes digital communication methods. Windows of opportunities that firms may use for innovating are opened by new basic technologies, such as digitalization, a new type of demand or a major shake-up of existing demand and opportunities created by public intervention (Dannenberg et al., 2020; Lee and Malerba, 2017). E.g. according to Dannenberg et al. (2020), the lockdown policy in Germany opened a window of opportunity for grocery e-commerce to disseminate, driven by public demand and the closure of restaurants. In Ireland, pubs reacted to the pandemic by increasing the consumption of local products, introducing new marketing strategies and restructuring employment (Portuguez Castro and Gómez Zermelo, 2020).

The Czechs announced the largest entrepreneurial support program in Europe. They offered direct aid to entrepreneurs, loan guarantees, interest-free loans and wage subsidies for employees that were forced to reduce their work. In addition, a tax break package was introduced there. The second wave of the coronavirus pandemic hit the Czech Republic during the autumn 2020, halting the economy's recovery from the first wave in the summer. The Czech government reintroduced shutdowns in retail and services. The vaccination effort offers a hope that the economy can return to normal functioning and mobility and social contact in 2022.

However, crisis are also opportunities, where some firms react by exploiting changing market requirements; it can also be seen as something positive, as it can be used to increase a firm's adaptability to generate new knowledge and competencies to gain a competitive advantage and thus to sustain in the long run in its industry and markets (Osievsky et al., 2020). They can provide the impe-

tus for developing new opportunities and resource gains and can further promote ingenuity and the development of alternative products and services or even fuel business expansion (Doern et al., 2019). With the pandemic in the making for a year, it is likely that many of the changes that rely on digitalization will impact the way firms do business in the future.

2. The impact of Covid-19 on gastronomy business in the Czech Republic

The WHO declared a public health emergency on 30 January 2020. In the Czech and Slovak Republics, the first cases of the disease were recorded at the beginning of March 2020. These were people who became infected abroad. Since then, the number of infected people has been increasing and the government declared a state of emergency the same month. In the Czech Republic, 4 602 994 people were infected with coronavirus from the beginning of March 2020 to the end of January 2023 (Ministry of Health of the Czech Republic, 2023).

Since 12 March 2020, a state of emergency has been declared in the Czech Republic, a total of 3 times, in accordance with Article 5 and 6 of the Constitutional Law on Security of the Czech Republic in order to slow down the spread of the disease (Keisler et al., 2020). During its period of validity, the government restricted some rights and freedoms after 10 pm, closure of catering establishments, and the obligation to wear mouth and nose protection in indoor and outdoor areas. The last state of emergency lasted until 25 December 2021 (iDNES.cz/WIKI, 2022). The situation with declaring a state of emergency was similar in Slovakia, in some cases even much stricter.

2.1 The course and consequences of the state of emergency for the catering sector in the Czech Republic

In the Czech Republic, the first state of emergency was declared on 12 March 2020 and from 13 March



→ 2020 restrictions on opening hours were in force. Restaurants and other catering establishments could only be open from 6 am to 8 pm. Many businesses, mainly bars and pubs, either closed down or looked for other alternatives to avoid losing their profits, which mostly led to diversification of their business activities in another sector that was not affected at all or at least minimally by the pandemic. Some bars started selling bottled drinks that customers could come to the window to buy or have delivered and consume in the comfort of their own homes. The next wave brought a ban on the public in food service establishments, except for establishments that do not serve the public, i. e., corporate, hospital, welfare, and prison food service establishments. The ban did not apply to establishments providing food through a take-out window or takeaway without customer entry (Keisler et al., 2020). Thereafter, only outdoor areas and gardens were open to customers. This too entailed certain rules, such as spacing tables a minimum of 1.5m apart, disinfecting regularly and ensuring that an employee who had a raised temperature left the workplace immediately. Thus, in total, the catering facilities were completely closed for 58 days and their indoor areas for 72 days (Moravek, 2021).

The second wave of coronavirus began in the summer and the first measure occurred on 9 September 2020, which again limited the opening of the house from 6 am to midnight. Later, as the number of infections continued to increase, the government decided to take a more drastic approach. It limited the opening hours of catering establishments to 10 pm and with it the reintroduction of a minimum 1.5 m table spacing. The second state of emergency brought a measure mandating the number of people at a table to 6. 4 days later this number was reduced to 4 and businesses could only be open until 8pm. As of October 14, 2020, a complete ban on the public in restaurants, pubs, bars and other eating establishments began, so businesses reverted to selling food and drink to go. Catering businesses were completely closed

until 3 December 2020, a total of 50 days. From that date they could only be open from 6am to 10pm.

The third and fourth waves of the Covid-19 pandemic included 150 days when restaurants and other establishments were mandatorily closed. At the beginning of the third wave, opening hours were again restricted from 6 am to 8 pm starting on December 9, 2020, and the complete closure to the public came by regulation on December 18, 2020. Businesses were required to remain closed until May 17, 2021, even then, only the garden bars could open to the public with the now classic table spacing. The new measure introduced only allowing a customer to enter a restaurant if they have recently contracted covid-19, have been vaccinated or have a negative PCR or antigen test with them. However, staff were not required to check this with customers. Indoor foodservice establishments also opened at the end of May 2021 with no limit on hours of operation. The conditions changed in the fifth and final covid wave when, from 1 November 2021, restaurant employees had to check a receipt before serving a customer that they did not have covid-19. 21 days later, even those who had a negative test could not enter the restaurant. A month later, the restriction on operating hours was lifted, but the need for vaccination, past illness, or a maximum of 6 people at a table remained (Moravek, 2021).

The end of the Ministry of Health's coronavirus measures came on 11 April 2022. Only partial measures for social care and health remained in force (Government CZE, 2022).

In order to limit the spread of the disease, a "Smart Quarantine" program was developed to route contacts of the infected. People who had this app downloaded and had location turned on received an alert when they encountered an infected person. The goal of the app was to quickly isolate potentially infected people with the assumption of public cooperation (COVID19CZ, 2022).

2.2 Government support for catering businesses

The main instruments and measures belonging to the government's support for businesses in the catering sector in the Czech Republic were Kurzarbeit, Antivirus programme and Compensation bonus. Kurzarbeit refers to the partial unemployment to which some companies were forced to resort during the pandemic and is regulated by Section 209(1) of the Labour Code. It states that an employer's obstacle to the assignment of work to an employee occurs when sales or demand for the company's products have been temporarily restricted.

The Antivirus programme was introduced to protect employment. It was a programme of the Ministry of Labour and Social Affairs (2022): It was a subsidy for employers to pay wages to employees (Jouza, 2020). The programme included two types – Antivirus A and Antivirus B. Antivirus A offered 80% of average monthly wage compensation with a maximum of CZK 39,000 incl. deductions per employee/month and Antivirus B meant 60% compensation of average monthly earnings with a maximum of CZK 29,000 incl. deductions per employee/month.

Antivirus A was used for cases where an employee was ordered to be quarantined due to infection with covid-19. The employee received 60% of the average wage replacement.

Antivirus B was targeted at companies that had a larger number of employees in quarantine, had a limited number of inputs needed to operate, or had reduced demand for their products due to the pandemic. For employees, this resulted in 3 options:

- (a) The employee received 100% of average monthly earnings if there was an impediment on the employer's side involving a large number of employees in ordered quarantine or isolation;
- (b) The employee received 80% of the average monthly earnings if there was a limited number of inputs needed to carry out the activity;
- (c) the employee received 60% of average monthly earnings if there was limited demand for the

firm's products due to a pandemic (Department of Labor and Human Services, 2022).

In light of the impact of the coronavirus crisis on entrepreneurs, the government passed a compensation law to help self-employed persons maintain their businesses. The bonus period provided entrepreneurs with a certain amount for each day of the bonus period, of which there were four in total. In 2020 it was CZK 500 for each day and from 2021 it was CZK 1,000. In the area of work, self-employed persons, partners in LLCs and persons working outside the employment relationship, i.e. under an agreement on work activity and work performance, were entitled to compensation. The conditions for obtaining compensation bonuses changed almost every period, as it was only over time that it became apparent where the government needed to contribute more in order for entrepreneurs to maintain their business activities, and under what conditions the bonus could be obtained (Financial Administration, 2022). The application for the compensation bonus was submitted to the tax office electronically or in paper form under strict compliance with their specified content conditions (Financial Administration, 2020).

2.3 Post-covid period for catering entrepreneurs

The pandemic was a great unknown for everyone. It was a disease that no one had ever encountered and, as usual, there was a fear of the unknown. Employees who were in contact with customers every day needed to be provided with an environment that minimised the risk of infection. The wearing of respirators or face shields, regular antigen tests, hand sanitizers and regular disinfection of surfaces and in some places Plexiglas between the operator and the employee were made mandatory. Some measures, such as workplace disinfection or Plexiglas, have been retained by employers to this day for safety reasons.

In the post-covid period, employers are advised to focus intensively on the issue of employee satis-



→ faction, its analysis and subsequent adjustment of working conditions in order to achieve a wellbeing status. The support in this process should be listening, counselling, mental health and acceptance of change.

3. Methodology

The impact of the post-covid era on people management in catering sector survey was conducted simultaneously in the Czech Republic and Slovakia between October 2022 and January 2023. The questionnaire consisted of three main parts – (1) identification data (year of establishment of the company, number of employees and its operation in the Czech Republic or Slovakia), (2) socio-economic characteristics of the respondent and (3) a part concerning the influence of the post-covid era on human resource management in companies in the field of gastronomy.

The original data contained 317 companies, but not all files could be opened, so in the end, 303 companies were analysed, of which 274 were from the Czech Republic and 29 from the Slovak Republic. The socio-economic factors in the questionnaire included the type of gastronomic establishment and a job position. As part of the research, the following types of gastronomic establishments were mainly monitored: restaurants, pubs, cafes,

hotel premises, bars and bistros, and the possibility of others was also included here. Regarding job title, the options were: a member of top management, line manager, responsible representative, human resource manager and “cumulative job position”.

4. Results

The youngest company which was interviewed had only one year of existence, and the oldest company has been operating on the market for 63 years. The companies’ age mode was eight years, the median value was ten years, and the average was 12.6 years. The number of employees in the companies ranged from 1 to 315 employees. The median number of employees was 11, the modal value was 10, and the average number was 19.8, i.e. 20) employees per company. In the Czech Republic, most responders came from restaurants (39%), cafés (22%), pubs (10 %), then bistros (8%), bars and other catering establishments (each 7%) and hotel premises (5%) as shown in Table 1.

In Slovakia, we interviewed mostly restaurants (45%), cafés and bars (17% each), bistros (10%), hotels and pubs (4% each). In the Czech Republic, members of top management and responsible representatives (each 33%), line managers (13%), “cumulative job positions” (11%) and HR managers

Table 1 » Types of Gastronomic Establishments — Czech Republic

Type of establishment	Percentage
Restaurants	39
Cafés	22
Pubs	10
Bistro	8
Bars	7
Others	7
Hotels	5
No answer	2

Source: own findings (2023), N = 274

Table 2 » Job position of respondents in Gastronomic Establishments — Czech Republic

Type of job position	Percentage
Member of top management	33
Responsible representative	33
Line manager	13
Cummulative job position	11
HR manager	7
No answer	3

Source: own findings (2023), N = 274

(7%) were most questioned as shown in Table 2. In Slovakia, most responders worked in a position of top management (38%), responsible representatives (31%), line managers and “cumulative job positions” (each 10%) and HR managers (7%).

As for the selected core results of the questionnaire, they are as follows — first, we will focus on the activities of activities that, according to the interviewed companies, were most affected by the covid-19 pandemic (multiple answers possible), as follows:

- More than 80% of Czech companies stated daily sales (for Slovak companies, it was almost 80%).
- More than 70% of Czech companies stated that the company's operation (for Slovak companies, it was almost 70%).
- More than 40% of Czech companies stated that daily adaptation of plans to the current situation (for Slovak companies, it was more than 60%).
- More than 30% of Czech companies stated that the effort to retain employees and talents (it was similar for Slovak companies), then also employee remuneration (for Slovak companies it was more than 40%) and planning (for Slovak companies it was almost 60%).
- 28% of Czech companies indicated the motivation factor (for Slovak companies, it was more than 55%).
- The aspect of risk management was indicated

by only more than 11% of Czech companies (for Slovak companies, it was almost 25%).

- Among the factors identified by less than 10% of Czech and Slovak companies were implementing online or telephone recruitment, an online adaptation of employees, online evaluation of employees, creating and managing a crisis team, and coaching and mentoring.
- Less than 10% of Czech companies indicated the factor of control of working hours (for Slovak companies, it was more than 24%).

It is interesting to compare the results of the negative vs positive impacts of the impact of Covid-19 on people management (multiple answers possible):

- Negative impacts:
 - More than 30% of Czech companies stated that they had a general lack of employees (the situation was similar for Slovak companies) and that they were forced to combine some job positions (more than 40% of Slovak companies were also forced to use flexible forms of employment (for Slovak companies it was more than 40%).
 - More than 27% of Czech companies lost crucial and talented employees (for Slovak companies, it was almost 14%), and the same percentage of Czech companies reported that the productivity of their employees had worsened (for Slovak companies, it was nearly 50% of companies).



- - 27% of interviewed Czech and Slovak companies had to resort to employee benefits.
 - Almost 27% of Czech companies reported that their employees' performance had decreased (for Slovak companies, it was more than 27%).
 - Less than 10% of Czech companies reported that their problems with foreign workers had intensified (for Slovak companies, this was not the case), further, that they were afraid of new employees from current employees as potential carriers of viruses (for Slovak companies it was about slightly more than 10%).
- Positive impacts:
 - More than 50% of Czech companies stated that they checked the loyalty and loyalty of clients (for Slovak companies, it was almost 45%).
 - More than 40% of Czech companies took the pandemic as a challenge (for Slovak companies, it was more than 50%), also started to use information technology more (Slovak companies it was almost 38%) and found out how they are doing with the loyalty of their employees towards companies (for Slovak companies it was more than 41%).
 - Less than 5% of Czech companies stated that they managed to reach and attract talent (for Slovak companies, it was more than 17%).

Regarding the overall assessment of the impact of the Covid-19 pandemic crisis on the business of the companies approached, as follows:

- 27% of Czech companies evaluate it very negatively (for Slovak companies, it is almost 14%).
- More than 51% of Czech companies rate it negatively (almost 45% of Slovak companies).
- Almost 9% of Czech companies could not express themselves clearly (for Slovak companies, it was almost 14%).
- Almost 10% of Czech companies rate it positively (more than 17% for Slovak companies).
- Almost 3% of Czech companies rate it very positively (more than 10% of Slovak companies).

Regarding the situation that has changed for them in human resources compared to the case before the covid pandemic, the companies evaluated the following:

- Almost 45% of Czech companies felt that applicants were not interested in working in the gastro sector, considering that it is risky for them (for Slovak companies, it was more than 55%).
- More than 30% of Czech companies stated that there were no significant changes (for Slovak companies, it was more than 41% of companies).
- More than 17% of Czech companies stated that they had problems filling some key positions (they felt that their business was at risk); for Slovak companies, it was more than 3%.
- More than 6% of companies stated that they could not respond flexibly to the need to cover vacancies themselves (that is why they turn to agencies); this was not the case for Slovak companies.

5. Discussion and conclusion

The service-sector including tourism and hospitality organizations is one of the most affected industries as the essential elements of these businesses (e.g. travel, personal interactions) are impeded due to the mandatory measures (e.g. lockdown, social distancing, travel bans) that are undertaken by the relevant authorities to prevent the spread of this virus.

Thus, there is no consistent or right way to respond to a crisis as it depends on the circumstances. Some parts of society especially government and big business can respond to crises more effectively due to the resources at their disposal. However, there is some debate about this as small business can adapt quickly to crises due to their size. Therefore, to manage a crisis properly there needs to be a dedicated team monitoring its progress. This means that the main elements of entrepreneurship required to handle the Covid-19 crisis including innovation, risk-taking, and being practice

in the marketplace. Increasingly, more individuals and enterprises are wanting to be seen as being entrepreneurial but also engaged in cultural and social pursuits. This means a more contemporary view of entrepreneurial orientation needs to incorporate cultural, social, and lifestyle elements.

Our survey which was done in conditions of 303 Czech and Slovak catering companies mainly of a small character (the average number was 20 employees per company) showed that in more than 80% of the Czech companies, pandemic affected their daily sales, then company's operation, daily adaption of plans to the current situation. Less than 10% of Czech companies indicated the factor of control of working hours. The most negative impacts of Covid-19 on people management more than 30% of Czech catering companies had in a general lack of employees, so they were forced to combine some job positions. In Slovak companies it was more than 40%. More than 27 % of Czech companies lost crucial and talented employees; for Slovak ones it was almost 14 %. The same percentage of Czech companies reported the worsened productivity of their employees. In Slovakia, it was nearly 50% of companies! This shows that the more stringent measures were introduced, the

more productivity declined. In terms of performance reduction, both countries were equally affected, with 27%. In the same percentage of companies, they were forced to cut employee benefits in Czechia, as well as in Slovakia. Moreover, in 10% of Czech companies their problems with foreign workers had intensified. On the other hand, almost half of Czech and Slovak companies checked the loyalty of their employees and clients and the same number took the pandemic as a challenge what lead to more frequent usage of information technologies. In more than 17% of Slovak companies they managed to reach and attract talents; in Czech companies it was only in case of 5%.

More than 51% of Czech catering companies rate the pandemic crisis negatively; almost 45% of Slovak companies do the same. A positive perception of the crisis has almost 10% of Czech companies and 17% of Slovak one.

As for the situation that has changed for the catering companies in their human resources compared to the situation before the pandemic, 45% of Czech companies felt that applicants were not interested in working in the catering sector, considering that it is risky for them. In case of Slovak companies, it was more than 55%. For almost one third

The pandemic is expected to have a negative effect on retail, services, recreational, sports and culture activities, and tourism in the first half of the year of 2021. Except for tourism and accommodation, the covid pandemic especially impacted sectors such as catering and mobility, too. These contact-intensive services declined 25% from pre-covid-19 activity, although they are normally relatively intensive to recessions. Businesses relying on close physical interactions have been forced to shut down, limit or change the nature of their operations.

The service-sector including tourism and hospitality organizations is one of the most affected industries as the essential elements of these businesses (e.g. travel, personal interactions) are impeded due to the mandatory measures (e.g. lockdown, social distancing, travel bans) that are undertaken by the relevant authorities to prevent the spread of this virus.



of the Czech companies there were no significant changes; for Slovak ones there were no changes in more than 41% of companies. Also Czech companies (more than 17%) had problems to fill some key positions what caused the fact that in 6% of the companies they could not respond flexibly to the need to cover vacancies themselves and so they turn to agencies. This was not the case of Slovak companies as only 3% of them had a problem with filling the key positions. To talk about post-covid era, the special attention should be paid to understanding what social distancing is and how this measure affects the wellbeing of customers as well as their attitudes and behaviours which affect the

wellbeing of service organizations, manifested in business growth and profitability. Approaching from organizational wellbeing, there must be innovative strategies for business to be resilient and sustainable. The stakeholders must collaborate to combat the pandemic, not only to achieve synergy for business growth but also enhancing human wellbeing and a functional ecosystem.

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The impact of the post-covid era on people management in the catering sector

ABSTRACT

The impact of the Covid-19 pandemic has demonstrably hit the catering sector the most, suffering a significant outflow of workflow to 'less risky' sectors. For many prospective employees the catering sector has become unattractive, at the expense of other, more stable sectors and has become unattractive even for those who had been working in the sector for a long time. This paper examines the impact of the post-Covidian era on people management in the gastro sector, with the aim of analysing the activities, tools and competencies that were most affected by the Covid-19 pandemic, identifying the negative and positive impacts of the pandemic on people management in the context of the overall impact of the pandemic on business in this sector within the Czech and Slovak Republics, and comparing the post-Covidian situation in gastro businesses in terms of people management with the situation before the Covid pandemic. The paper is based on the statistical processing of the results of a survey of the most competent persons responsible for people management in a sample of gastro enterprises of different size and nature throughout the Czech and Slovak Republic.

KEYWORDS

COVID-19 Pandemic; Post-covid Era; People Management; Catering Sector





JEL CLASSIFICATION

J24; L83; M12; O15



New options for responsible, sustainable and ecological public procurement in relation to new business opportunities and the circular economy

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* 1. Introduction

A strategic approach to the awarding of public contracts is already being developed in the Czech Republic by a number of contracting authorities who apply responsible public procurement in their practice. With their orders, they not only procure the necessary goods, services and construction work, but also take into account related social, environmental and wider economic aspects (Rosell, 2021).

On January 1, 2021, an amendment to Act No. 134/2016 Coll., on public procurement (hereinafter referred to as the "Amendment") entered into force, which, among other things, defined one (old) new principle, namely the principle of responsible procurement (Act – Public Procurement Law, 2016).

In this article, we will first analyze the basic institutions of public procurement, and then we will take a closer look at the above-mentioned principle of responsible procurement, including practical examples and instructions for contracting authorities on how to approach the issue of responsible procurement (Hájek, et al., 2019).

2. Material and methods

Based on the method of analysis, the author presented valid legal regulation of the public procurement law and its comparison with the proposed amendment in relation to the business. The amendment brings opportunities to apply conditions for sustainable public procurement beyond the normal legal framework. Following the options provided by the legislation, the article deals with some options and ways to apply the principle of responsible public procurement (Lundberg, et al., 2015).

3. Results and Discussion

3.1 What is the essence of responsible procurement?

The principle of responsible procurement is a new principle in the Act, which in its essence places emphasis on the contracting authority that, when awarding a public contract (Alhola, Ryding, Salmenperä, 2018):



- They obtained maximum value for money by creating benefit for society and the economy; and
- They minimized the negative impact on the environment.
- The difference from other principles of responsible procurement is that contracting authorities must always justify (e.g. in the text of the call for tenders) that they have dealt with this issue and how.

The essence, or rather the goal, of the principle of responsible procurement is the effort to rationally use the influence that public contracting authorities can exercise on the market with their market power (Gelderman, Semeijn, Bouma, 2015).

This is because, through strategic and smart purchases, by supporting innovation and aspects of the circular economy, public contractors can help solve problems that they would have to solve anyway and would spend additional funds on them (Jurčík, 2016).

Examples:

Through responsible contracting, contracting authorities can, for example, solve the following (potential) problems: For example, contracting authorities can increase the employment (employment on the labor market) of persons disadvantaged on the labor market, whether they are persons with disabilities, the long-term unemployed, young people or graduates without experience, persons on parental leave, persons over the age of 55, persons without qualifications or with low qualifications, persons from socially excluded locations, etc.

However, it is also possible to direct the development of one's region through responsible public procurement, especially if the contracting entity is a local self-government entity, it can, for example, encourage local businesses to adopt greener technologies, etc.

The contracting authority must respect the principle of responsible procurement already when creating tender conditions, evaluating offers and also selecting a supplier, provided that this is

possible due to the nature and purpose of the contract. The contracting authorities are then obliged to properly justify their procedure in relation to responsible contracting.

3.2 Areas of responsible and suitable procurement

There are basically three areas of responsible procurement, namely:

- The principle of socially responsible procurement;
- Principle of environmentally responsible procurement;
- The principle of using innovations.

The legislation on public procurement does not prescribe specific examples of how to fulfill the principles of responsible procurement. It gives the contracting authority the possibility to innovatively set the specific conditions of responsible public procurement, taking into account its needs (Hahn et al., 2010).

3.3 Socially responsible procurement and examples of good practice

A procedure in which the contracting authority is obliged to take into account, for example, employment opportunities, social inclusion, decent working conditions and other socially relevant aspects associated with a public contract (Ladi, Tsarouhas, 2017).

The basic goals of socially responsible procurement are:

- Employment support for the disadvantaged on the labor market;
- Support for education, practice and retraining;
- Promotion of decent working conditions;
- Ethical shopping;
- Promoting the participation of social enterprises;
- Supporting the access of small and medium-sized enterprises;
- Fair supplier relations.

How can the contracting authority achieve employment support for the disadvantaged on the labor market?

In public contracts where new jobs are expected to be created, the contracting authority may require the supplier to involve a certain number or percentage of people disadvantaged on the labor market or generally long-term unemployed in the performance of the public contract.

At the same time, there is a wide range of groups of people disadvantaged in the labor market (e.g. people with disabilities, long-term unemployed, unqualified or low-skilled people, people over 60 years old, graduates, people after release from prison and others).

In this way, the contracting authority can help people who are otherwise outside the labor market to participate in the performance of the public contract and thus activate people from selected social-vulnerable target groups.

Examples:

For example, the contracting authority may reserve that at least X % of the total number of employees of the selected bidder who will participate in the performance of the public contract shall come from the ranks of persons with disabilities. In addition, the contracting authority can, for example, reserve that, for example, when providing security services in the building belonging to the contracting authority, persons over 55 years of age will be employed.

3.4 Ecological procurement and examples

A procedure in which the contracting authority is obliged to take into account, for example, the impact on the environment, sustainable development, the life cycle of the supply, service or construction work and other environmentally relevant aspects associated with the public contract (Iossa, Waterson, 2019). The basic goals of socially responsible procurement are:

- for environmentally friendly solutions;
- Support for the circular economy.

How can the contracting authority ensure environmentally friendly solutions within the framework of a public contract?

In public contracts, the contracting authority can take into account the environmental impact of the delivery, service or construction work. In this way, it is possible to reduce direct negative impacts on the environment, reduce the amount of waste, limit the production of pollutants released into the air, water and soil, limit the consumption of energy or generally the consumption of raw materials, limit the consumption of water and further use rainwater or so-called grey water (wastewater in particular from bathroom sinks and showers). The focus can be on reducing the carbon footprint, and consideration of life cycle costs will also have environmentally beneficial effects.

Examples:

For example, the client may require that the contract for gardening work be carried out in an environmentally friendly manner, in particular by mulching, composting, weeding with hot water, or ecological cleaning of facades. Furthermore, for example, when awarding a public contract for the provision of payroll services, the contracting authority may require that all communication and all documentation be done exclusively electronically, thereby minimizing the consumption of paper.

3.4 The circular economy

Circular public procurement is part of environmentally friendly solutions;

The principle of circular public procurement is the closing of material and energy cycles, it can thus be used in relation to waste management, in the selection of renewable and sustainable resources needed for the production and provision of services, the extension of the life of products and the management of the product after its end of life, →

→ in the case of deviation from the proprietary principle and instead use renting or sharing (Chiu, Wilson. 2019).

Examples:

At the event organized by the client, the client can replace single-use plastic dishes with reusable ones, bottled tap water in jugs and carafes, individual packages of coffee cream, sugar, etc., with larger packages and thus reduce unwanted, especially plastic, waste.

3.5 The principle of using innovations

The principle of using innovation is essentially the implementation of a new or significantly improved product, service or procedure related to the subject of a public contract.

An innovative solution is usually not acquired primarily for its innovative nature. It tends to be interesting for the contracting authority if it gives him the same or better results than existing solutions available on the market, but at lower costs. In such a case, however, innovative solutions should be supported.

Examples:

The customer can request the delivery of goods exclusively without harmful substances that are commonly used in the given area. With this pressure, the contracting authority can ensure that the suppliers come up with a new innovative solution

4. Conclusion

Public contracts are a specific type of business relationship in which the principles of responsible procurement are increasingly being enforced. services and construction works. It is a matter of modernizing the concept of commercial relations, which takes into account secondary aspects with the aim of environmental protection and responsibility towards society.

This article is intended to help educate in this area and how to fulfill these fashionable principles of responsible public procurement.

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The contracting authority must respect the principle of responsible procurement already when creating tender conditions, evaluating offers and also selecting a supplier, provided that this is possible due to the nature and purpose of the contract. The contracting authorities are then obliged to properly justify their procedure in relation to responsible contracting.

A procedure in which the contracting authority is obliged to take into account, for example, the impact on the environment, sustainable development, the life cycle of the supply, service or construction work and other environmentally relevant aspects associated with the public contract.

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New options for responsible, sustainable and ecological public procurement in relation to new business opportunities and the circular economy

ABSTRACT

The concept of “responsible public procurement” is now (from 1. 1. 2021) defined in legislation. It is an institution that is becoming increasingly important in public procurement. The given institute can be defined as a set of activities and procedures of the contracting authority, by which the contracting authority increases the benefit of the spent funds through a well-thought-out procedure, especially by purposefully supporting socially and environmentally beneficial areas. The subject of this paper is to introduce the purpose of the institute of socially responsible public procurement, a summary of the content of relevant provisions of legislation and a proposal of options for how to apply the institute and related procedures in practice.

KEYWORDS

Responsible public procurement; social responsibility; ecology; circular ecology; innovation; sustainability; business

JEL CLASSIFICATION

K20; K22

Circular economy as an indicator of the implementation of new rules in the business environment

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* 1. Introduction

At the end of November 2022, the Council of the European Union approved the Corporate Sustainability Reporting Directive (CSRD). The CSRD concerns corporate sustainability reporting and its rules will be applied in three phases. The first phase corresponds to the active collection of data in 2024, and its mandatory reporting in 2025. The mandatory subjects of the first phase are companies already subject to statutory non-financial reporting. The second phase extends the range of obliged entities to include large companies that have not been subject to non-financial reporting so far. The start of the second phase is linked to data collection in 2025, with subsequent reporting in 2026. The third, and therefore final, phase closes the range of obliged entities with listed small and medium-sized enterprises (SMEs). The last phase sets the start of the data collection obligation for 2026 for these companies, followed by the reporting of these data in 2027 (Vácha, 2022). Applying the substance of the Directive should lead to better reporting of non-financial information. This means clearer, more accessible and more comparable reporting (not only by external parties), with an em-

phasis on reporting only relevant information for a given area. Non-financial information can be divided into three areas, namely environmental, social and governance. These three areas are also known as ESG. The environmental pillar includes, among others, the circular economy (Vácha, 2022).

The circular economy area can be linked to the raw material and waste consumption indicator, according to which organisations will fulfil the reporting of non-financial information. The essence of the circular economy concept is often simplified to the waste-resource issue (i.e. how to use resources efficiently, how to minimize the use of primary resources). It should be noted that due to the possible definition of the concept, its content cannot be simplified only to resources. This paper, through the theoretical definition of the concept of circular economy, waste in agriculture, its possible uses and its subsequent specification for the field of viticulture, gets to the analysis of the use of waste in the practice of a particular winery. The agricultural sector, of which viticulture is a part, processes natural resources. The waste material produced in connection with the activity is also natural in nature, which determines the possibilities for its further use. The practice of the analysed

winery is considered in terms of three areas of aspects that the circular economy takes into account: economic, environmental and social aspects. Subsequently, a comparison is made with comparable wineries in the area of waste management, which results in a comprehensive view of the issue under study.

2. Research objective and methodology

The aim of the paper is to introduce and (re)define the concept of circular economy, and then to identify and evaluate the practice of a specific company in accordance with this concept. The research questions leading to the solution of the research problem are as follows: What is the circular economy and what is the connection between this concept and waste? What kind of waste is generated in connection with the activities of a wine enterprise? What are the possibilities of using this type of waste? What is the awareness of waste recovery options in wineries? Which of the possible uses are applied in the practice of a specific enterprise? Can elements of the circular economy be observed in the applied uses of waste? The research is based on the hypothesis that the waste has the potential to be reused. The paper is related to the activity of a viticulture enterprise, so it is assumed that there is a potential for further use of the waste generated by the activity. The processing was based on theoretical and empirical procedures. The following methods were used: description, comparison, analysis and identification, synthesis and explanation. Data collection was carried out by qualitative method in the form of semi-structured interviews and quantitative method in the form of a questionnaire. The primary objective of the questionnaire was to determine whether there is awareness in the industry of the various options of using waste, which is generated in relation to their activities. The secondary objective was to find out the ways in which wineries actually deal with the waste generated. The findings from the questionnaire were instrumental in completing a comprehensive view

of the analysed winery. For this research was selected a winery that further exploit the potential of waste. Specifically, the cooperation was with a company where there is a wide range of other waste recovery options used and thus the largest number of them can be analysed in the practice of one company. In order to assess the possibilities of using the waste generated by the activity of the wine company in accordance with the concept of circular economy, three areas of aspects were set in line with the theory. These are the economic, environmental and social aspects. Finally, the motives that lead the winery to use waste in accordance with the examined essence of circular economy were presented.

3. From a linear economy to a circular economy

The fact that primary resources are increasingly consumed and their valuable components are rarely put back into circulation can be considered the most significant problem falling under the concept of linear economy. According to the 2022 Circular Gap Report, 91.4% of today's economy is linear, i.e. based on the "take-make-sell-consume-dispose" principle. Only 8.6% of materials are returned to circulation (Circle Economy, 2022). Primary resources are limited and in the practice of the linear economy their potential is not fully exploited. This results in the loss of valuable materials that could be further exploited and not wasted. We draw from nature far more than it is able to provide for us naturally and give back only a fraction of it (Braungart, McDonough, 2002). Consumption alone is not the problem, the problem arises when the wider context is not taken into account. Failure to consider the wider context when resources are limited is fundamental to changing linear behaviour.

In a linear economy, the performance of national economies is often compared using an economic level indicator. On the one hand, GDP growth can occur even when, on the other hand, there is a decline in the quality of goods and services. The-



→ matically with the environment, GDP growth can also occur in a situation of increased spending on environmental protection. In fact, the main objective of environmental protection investments is defined as “[...] *the reduction, prevention or elimination of pollutants or any environmental damage resulting from business activities*” (Tůmová, 2012). This implies that increased economic activity related to the regulation and minimization of damage caused to a given area, paradoxically increases the GDP indicator. As a result of this fact, there is an indicator of net economic welfare in economic theory that takes these shortcomings into account. However, as will be discussed below, looking at a society’s performance from a perspective other than that of its economic output is no less desirable.

A different model of the economy than the linear one mentioned above is called the circular economy, in which the problem of input price fluctuations and supply risk, as an undesirable effect amplified by the linear economy, is separate from revenue (MacArthur, 2013). The lack of welfare measurement in a linear economy, where GDP growth occurs simultaneously in the face of natural resource depletion and negative social and natural effects, is replaced in a circular economy by a focus on increasing efficiency or reducing negative externalities, as mentioned by Jonášová (2016). Ad Lansink, the founder of the waste hierarchy, has a pragmatic view on the issue, as he considers GDP to be an important indicator, even in the context of the circular economy, but also adds that other values must be taken into account in the transition to the circular economy. He mentions social values such as employment opportunities, health, safety and well-being. And environmental values, indicating biodiversity and sustainability (Lansink, 2018). It follows that these are social and environmental values as well as economic ones. Braungart and McDonough (2002) defend linear behaviour by saying that the current patterns of production and consumption are not about us doing bad things as a society, they see that as a natural part of

evolution, but it is important not to overlook the problem, realise the limits and move behaviour on. The behavioural shift that falls under the concept of circular economy can be associated in a simplified form with a change in the system whose primary incentive **is not** lower costs, higher profitability, time savings or utility growth on the part of the consumer (i.e. the selfish purpose of the individual actor). The circular economy ideally contributes to a shift that leads to system-wide utility.

Think of a circular economy as a closed circle – in the case of a perimeter line, there is no beginning or end – it is a homogeneous, interdependent, and therefore mutually influencing, system. The content of the circle is a bounded entity in which an individual’s stimulus affects another, causing the whole system to react. On the other hand, the system of a linear economy can be defined by analogizing it to a line segment. The beginning of the line segment and its end are in completely different places – they do not build on each other. An individual’s behaviour, which triggers a stimulus at the beginning, results in a final reaction without control, quite elsewhere. It is a system where the actors tend not to take responsibility for what the behaviour at the beginning causes at the end (for example, how the material ends up). The circular economy cannot just be seen as a “better” approach regulating negative impacts. Braungart and McDonough (2002) take a position in which the notion of regulation primarily evokes that something is wrong. Thus, it is not a desirable move (change), but the same system that is still harmful, just slower. Regulation is a behaviour induced by a system in which a distinction can be made between the beginning and the end, as it is essentially about minimising the undesirable response that the behaviour at the beginning of the system has induced. The essence of circular economics is to solve the cause, not the created problem. The correct philosophy at the beginning circulates subsequently through the whole system. Cajthaml (Wehle, 2021) comments on the issue and mentions that the approach where the cause of

the problem is solved by an absolute change is unrealistic from a practical point of view. The circular economy is a system that is inherently capable of renewal. It departs from the concept of end of life and minimizes the use of toxic substances. (MacArthur, 2013). The cornerstone is the elimination of waste, in the extreme it can be said that waste does not exist. The non-existence of waste can be helped by a change of perspective, since, as Waldbaum says: “One of the definitions of waste is that nobody is interested in it,” and he adds optimistically that “[t]he principles of the circular economy will start to work so well that much of the waste will cease to be called waste.” (Pospíchalová, 2021). In contrast, the output of a linear economy is a reflection of the consumption behaviour on which it is based, with waste arising in parallel. The circular economy operates on the basis of an awareness of the difference in impacts in terms of the existence of consumable and durable output. The circular economy aims at the long-term durability of behaviour and at the same time targets the composition of consumer products in terms of the content of biological components or nutrients that are at least non-toxic to the environment. In some cases, the consumption of such a product can also lead to the generation of benefits at the same time. Also, by their biological composition, they can subsequently be returned to nature. The circular system in its ideal form operates on renewable energy sources (MacArthur, 2013).

3.1 Principles of the circular economy

The application of circular economy principles in practice should ideally be reflected in the areas of environmental, social and economic (Vrána, Holba, 2019).

Principles according to the Ellen MacArthur Foundation (EMF). The most appropriate formulation of the principles will be based on the EMF publication. In principles, is reflected the concept of a circular economy as such, which “[...] denotes an industrial economy that is inherently regenera-

tive; strives to use renewable energy sources; minimizes the footprint of toxic substances also eliminates their use; and eliminates waste through careful product design.” (MacArthur, 2013). The first principle is the elimination of waste. The Circular Czech Republic 3 study (JIC et al., 2020) enriches the principles with possible ways to achieve this. It does not limit itself to the absolute elimination of waste, but makes room for efforts to minimise it. For example, the study states that “[...] we are classifying many materials as waste quite incorrectly.” This can be seen as a consequence of the lack of awareness of market operators. It also notes that the desired outcomes can be helped by an interest in where our waste actually ends up, which is linked to the choice of partner, which, as the study states, “[...] creates a production opportunity from the material and perceives it as a valuable material.” The study also touches on the area of recycling in the waste area, where there is a need to separate the waste generated into components that can be recycled. Here it is essential to note, as Braungart and McDonough (2002) mention, that if the material was not initially specified for recycling, then if it is recycled, the quality of the material is reduced and at the same time more additives are needed. With proper recycling, the own waste can be used as a subsequent feedstock for production (JIC et al., 2020). The second principle is building resilience through diversity. This is also touched upon by Braungart and McDonough (2002) by describing the threat of using a one-size-fits-all solution. When the condition for a product to be effective in all possible conditions is that it needs to be designed in accordance with the worst-case conditions. This is not ideal in cases where a given situation does not require the ‘hardest’ solution and can be handled more favourably. The third principle is renewable energy production. The fourth principle is called system thinking. This principle emphasizes “[...] understanding how the parts within a system interact with each other and at the same time what is the relationship of the whole to the parts.” (MacArthur, 2013). Waste to



→ source is the fifth and final principle. The flow of materials (resources) is divided into two categories, namely the biological and industrial categories. These two should ideally not be mixed. Biological waste can be a source of valuable nutrients in the biosphere, while industrial waste has nutrients of a technical nature that can be circulated as a resource in the industrial sphere (Braungart, McDonough, 2002).

4R Principles: reduce, reuse, recycle, regulate. The most common principles are the 3Rs, where the list of principles is as follows: reduce, reuse and recycle (Jonášová, 2016). The mentioned 3R principles are expanded by Braungart and McDonough (2002) by a fourth “R”, regulation, which is also linked to the circular economy. In contrast to the author Jonášová, they also show the negative side of these principles. When reduction “[...] does not stop exhaustion and destruction – it only slows them down.” (Braungart, McDonough, 2002). Reuse, where markets for reusable products operate, may not always be ideal as it may simply be a matter of moving waste and its toxic substances to another location. This is further commented on by Associate Professor Tojo (Peck et al., 2020) IIIIEE Lund University, who highlights the risk of used products ending up in a country without functioning recycling systems. Thus, it will lead to their being thrown away, without any control of the environmental impact. As far as recycling is concerned, according to the authors, if the product is not designed in advance for subsequent recycling, then downcycling occurs, which means that the quality of the material deteriorates over time. In addition, in order for such material to remain usable, more artificial substances need to be added. It follows that “*Downcycling may even increase contamination of the biosphere.*” (Braungart, McDonough, 2002). Regulation is linked to the license to harm. Regulation evokes failure in the first place. Since “[...] good design requires no regulation.” (Braungart, McDonough, 2002).

3.2 Waste management and its application in agriculture

As can be seen from the previous chapter, linear economics views waste quite differently from circular economics. This change of perspective gives a whole new dimension to waste. Waste management is an important component in the implementation of the circular economy. According to Article 3(1) of Act No. 541/2020 Coll., on waste, “*waste management means activities aimed at the prevention of waste, the management of waste, the subsequent care of the place where waste is permanently disposed of, the mediation of waste management and the control of these activities*”. Waste management is based on a hierarchy, with waste prevention itself at the top. If waste avoidance cannot be achieved, it is best to target reuse, recycling or energy recovery. If neither can be achieved, then eliminate it. (Ministerstvo životního prostředí, 2021). The **European Commission’s new Circular Economy Action Plan (2020)** includes interlinked initiatives that can achieve just waste prevention, i.e. no waste will be generated. This will be done by creating new standards for consumption patterns and business models. The projection of waste production corresponds to an increase of 70 % by 2050.

The **waste hierarchy** is considered by its founder, van Lansink, to be a fundamental tool for the circular economy (Lansink, 2018). He concluded that incineration with energy recovery is more sensible than landfilling of combustible material, reuse of products is better than recycling, but waste prevention itself is the most appropriate. The considerations led to the creation of three categories within the so-called Lansink ranking. The first and highest category is prevention and reuse. The second category is recycling and quality energy production (Recycling.nl, [b.r.]). The least suitable category is incineration or landfilling (Recycling.nl, [b.r.]). In 2008, Lansink’s ranking was included in the European Waste Framework Directive (Lansink, 2020). The European Commission’s Action

Plan (Evropská komise, 2020) shows that streamlining the sorting of waste collection is essential for proper recyclability.

The European Commission's 2008 Green Paper on **the management of bio-waste** in the European Union sets out options for the management of bio-waste. There is a collection option, either together with mixed waste or separately. There is also the option of composting and anaerobic digestion, which produces organic fertiliser (Ministerstvo životního prostředí, 2008–2020) and also purified biogas, which can then be converted into electricity and heat (Doležal et al., 2015). Lastly, incineration and landfilling are options. Landfilling of bio-waste can be considered the least appropriate method and should be targeted to minimise it. Landfilling generates methane emissions, waste water and the area required is larger than for other waste management methods. The difference between the linear and circular economy can be well illustrated by the landfill solution. The linear consumption-oriented economy is, in the practice of enterprises, as follows – after the production of a product and its sale to the consumer, the life cycle phase of the product is over for enterprises and the question of what happens next with the product or its components is not addressed at their level. All further action is in the hands of the consumer. Thus, landfilling waste as the cheapest way of getting rid of it is, by the nature of the linear economy, ideal. The opposite is the case in a circular economy. By its essence, which is not primarily aimed at consumption, landfilling is a solution where there is both an irreversible impact on the environment and a loss of valuable materials. Thus, in the practice of the circular economy, the cheapest solution is not equal to the best solution. Incineration is an option to reduce the amount of waste going to landfill and occurs mainly when bio-waste is not separated and mixed as part of mixed municipal waste. There is a limit to when it can be considered an energy recovery option and when it is waste disposal (loss of the possibility of its further use). The potential for energy recovery is reduced by wet bi-

ological waste and also biological waste is easily contaminated during mixed waste collection. This leads to the presence of hazardous substances in the soil and plants. Thus, it may be considered more advantageous to remove biowaste from municipal waste and manage it in the context of a biological treatment option related to composting, anaerobic digestion or mechanical biological treatment (Evropská komise, 2008).

Anaerobic digestion is best suited for processing undried biological waste and composting is best suited for green waste or wood material. Recycling can only be spoke if the compost is subsequently used on land or for the production of growing media. The use of compost as an auxiliary soil substance and fertiliser leads to benefits such as improved soil structure, moisture infiltration, the supply of soil micro-organisms, nutrients and increased water holding capacity. Increased water holding capacity leads to reduced energy consumption during ploughing, reduced soil drying and avoidance of flooding. These benefits make the use of bio-waste particularly beneficial in the agricultural sector. Anaerobic digestion leads to the generation of usable energy. Separate collection of biodegradable waste leads, like incineration, to a reduction in landfill. It also leads to the possibility of producing high quality compost and facilitates biogas production. Hierarchically, this can be ordered from “[...] *landfilling and incineration with low or no energy recovery to incineration with high energy recovery, followed by anaerobic digestion with biogas production and recycling of bio-waste.*” (Evropská komise, 2008). Biomass **processing**, according to Stonawská (2021), can be carried out by: production of solid shaped fuels (e.g. pellets or briquettes), direct combustion of biomass (e.g. wood chips or straw), production of liquid biofuels from plant agricultural commodities or anaerobic fermentation.

The author Slejška in the article by Vobořil (2017) graphically displays the use of biomass in energy services such as heat or electricity and in the field of biofuels such as the creation of biogas, →

→ briquettes, biodiesel and others. There are different types of biomass treatments related to its subsequent processing. For agricultural biomass purposes, mechanical treatments will be mentioned here. These lead to the subsequent use of biomass for energy production. These include cutting, crushing (a precursor to pellet or briquette production), chipping and pellet (briquette) pressing. The mechanical treatment of pellet pressing is mainly used to generate heat and electricity (thus in energy services). Oil pressing is another mechanical treatment option. (Vobořil, 2017).

ČEZ Group (2021) points out the importance of energy-potential biomass as a renewable energy source. Energy-potential biomass is mainly considered to be plants that have accumulated solar energy, such as grasses, cereals and others. Furthermore, wood is one of the most well-known ones, such as wood chips or fast-growing woody plants (Profi press, 2022). Another renewable energy source is waste biomass. Here it is possible to include waste biomass from crop production – these are residues from agricultural primary production and landscape maintenance, waste from orchards, vineyards and, last but not least, other waste and residues from bush disposal (Vobořil, 2017). Another type of waste biomass can be obtained, for example, from logging, wood processing and forest waste (branches, trimmings) or from biodegradable municipal waste (food residues).

3.3 Viticulture and waste groups

For the purposes of this paper, waste arising from the activities of the viticulture enterprise will be divided into two groups, namely: 1. waste arising from the processing of grapes, 2. vineyard waste.

3.3.1 Waste arising from the processing of grapes

This type of waste is specific to the activities of wine businesses. The processing of grapes produces waste which can be described as waste intermediate products. Cviner et al. (2016) highlight the

fact that waste intermediates generated in connection with the processing of wine grapes contain important antioxidants. The intermediate products will be divided into three groups: 1. **matolins**, 2. **wine lees**, 3. **grape stems**. All three of these types have in common a possible further use in the form of organic matter, i.e. nutrients for the soil.

The term **matolina** includes and will be divided into the following groups: seeds, stalks and remnants of the stems, husks and pulp (Sedláček, 2006 2021). Matolins make up the largest part of the intermediate products generated in the processing of grapes. *“From a waste management point of view, matolina is a secondary biotic waste produced by the Food-Drink-Milk sector that cannot be disposed of in municipal landfills.”* (Environment Protection Authority, 2001, cited by Burg, 2013). Matolins have quite a wide range of ways in which they can be further useful. For example: production of matoline wine, production of animal feed, the aforementioned composting (Schieber et al., 2001, cit by Burg, 2013) or use for energy purposes (Freppaz et al., 2004, cit. by Ludín, Burg, 2016). A relatively actual application is *“[...] the possibility of seed separation for subsequent oil pressing.”* (Schieber et al., 2001, cit by Burg, 2013). An equally relevant, but not as widespread use in the Czech Republic is the production of grape flour. In the seed part of the matolins have been found to have higher antioxidant effects than vitamins C, E or beta-carotene (Řádek, 2017 2021). The processing of the seeds can lead to the pressing of grape seed oil. Grape seed oil finds applications in gastronomy, medicine and cosmetics. The seeds are also a good nutritional supplement. The seed part of the matolin thus has the potential to be a source of the creation of secondary products. The stalks and remnants of stems, as another part of the matolins obtained by separation, are not significant in terms of quantity and use. The husks and pulp can be, in addition to the so-called vermicomposting, added to the pressing stage with wood chips. Together they form pellets or solid shaped fuel. Their further use is therefore in the di-

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rection of fertiliser or as a source of renewable energy. **Grape stems** can be processed through the composting process (where they are returned to the vineyard or composted) or as animal feed. The use of grape stems for the prevention of certain diseases can also be considered, due to their fibre content (Cviner et al., 2016). According to Cviner et al. (2016), grape stems extract is a promising alternative to sulphur dioxide, which is used in wine sulphurisation. Some elimination of sulphur dioxide may be desirable due to its association with the occurrence of certain diseases. In relation to wine-making practice, the complete elimination of sulphur dioxide cannot be discussed because of its effect on the resulting taste of the wine (Bureš, 2022). The last waste intermediate mentioned is **wine lees**. By lees we mean the waste in the form of sediment which is formed by dead yeasts after they have fulfilled their function. Their function is fermentation and thus the formation of alcohol. The treatment of wine lees by ploughing them into the ground can undesirably acidify the soil in the vineyard. *“The high phenolic content and low nutritional value make it impossible to use wine lees for feed purposes.”* (Cviner et al, 2016). This intermediate product can be used to obtain tartaric

acid, which can find applications in the pharmaceutical, food, and wine industry itself.

3.3.2 Vineyard waste

This type of waste, due to its characteristics, has the potential to be used for energy recovery. We are going to talk about biomass of the wood type, specifically wood chips, and waste biomass, which is waste from orchards and vineyards. All the biomass mentioned can be used as organic fertiliser, as a source of nutrients for the soil. In this case, this type of waste is left in the vineyard and then ploughed back into the soil. Wood chips can be burned directly to create a clean and renewable energy source (Stupavský, Holý, 2010). When wood chips are burned, the ash is produced and can be ploughed into the soil together with humus to provide the necessary nutrients. It can also be used for energy by processing and creating solid shaped fuels. This is done through a stage of crushing, drying and final compression of the wood chips. In the compression phase is also possible to incorporate and use the husks and pulp separated from the matolins.



4. Research results and economic aspects

4.1 Use of vineyard waste

The analysed winery works with agricultural biomass that is generated on the vineyard as waste from the activity. We will talk specifically about wood chips, which is a key vineyard waste that is further processed and used. Vineyard activities always lead to the crushing of wood chips. The company uses three ways to process wood chips. These are illustrated in the following figure (Figure 1).

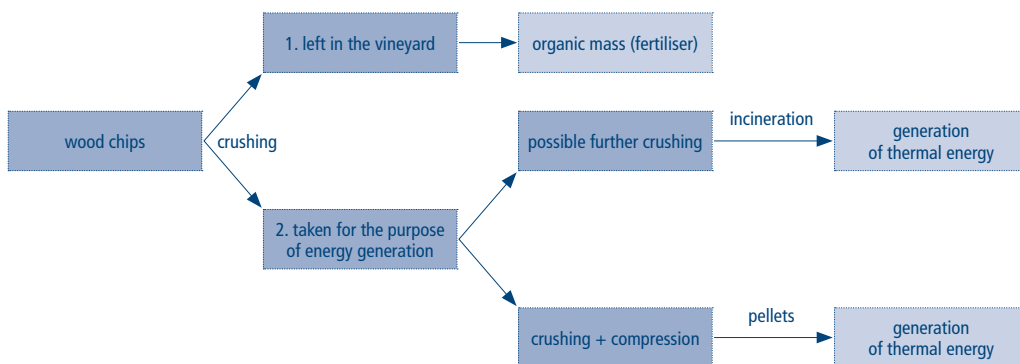
The amount of thermal energy demand, in the winery, corresponds to the interval of 72–90 MWh for the heating season. As regards the own provision of renewable energy, the area of the vineyard from which the winery collects wood chips is 45 ha. The quantity of wood chips obtained is on average 2.3 m³/ha. The natural conditions of a given year or a particular wine variety play a role here. The winery thus obtains an average of 103.5 m³ of wood chips from its own vineyard. However, in the context of their management, there is a decision to be made as to how much will be left for the soil needs of the vineyard and how much will be taken away to generate energy. The fact that the company is also able to buy wood chips from other vineyards is also a factor. The use of wood chips for pel-

leting and heat generation is practically non-existent in the other vineyards in the vicinity.

The weight of wood chips in kilograms that are suitable for heating depends on the proportion of water they contain, given the conditions. The range is roughly 170–260 kg/prms, with a corresponding water content in the range of 10–50% (Novák, 2001–2022). Under the winery's terms, we receive a range of 13 455 kg to 15 836 kg of dry wood chips.

If we take into account that "[e]ach kilogram of dry wood contains about 4.5 kWh of energy [...]" (Ohrievacia technika, 2022), the amount of energy that wood chips can provide in this case ranges from 61 MWh to 71 MWh. Under conditions where "[...] the equivalent of 1 m³ of natural gas is 2 kg of pellets." (Ohrievacia technika, 2022), the amount of energy obtained from wood chips is in the range of 72–85 MWh. Utilizing all the wood chips from its own vineyard, in the form of a renewable source of thermal energy, can cover 100 % of the company's energy needs (72–90 MWh) under certain conditions.

Figure 1 » The use of vineyard waste (wood stocks) in the analysed winery



Source: Author's own processing

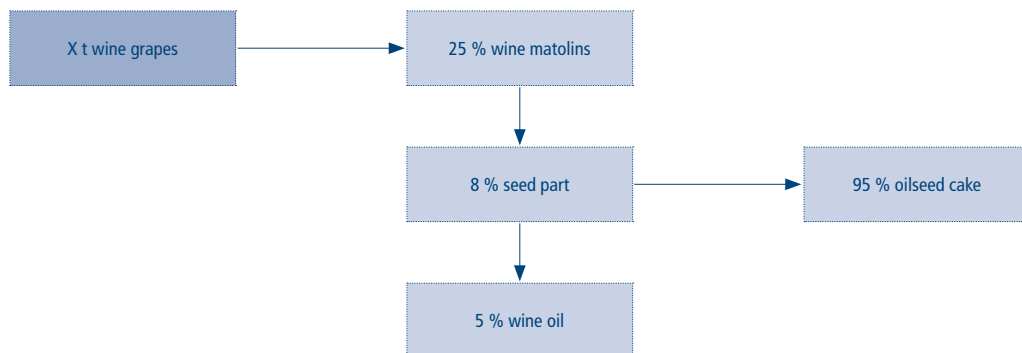
4.2 Use of waste arising from the processing of grapes

The normal activity of wineries produces, as waste material, the aforementioned matolins, grape stems and wine lees. The process of **utilising the matolins** begins with the separation of the individual parts of the matolins, namely the seeds and the husk and pulp. In the case of **the seed part**, grape seed oil is produced. In parallel with the production of grape seed oil, waste is produced, which is also recovered by the company. This waste is inedible as such, “[...] and was therefore first added by the company to cattle feed” (Polák, 2019). Because of their vision of trying to reuse all the waste, the company had Mendel University analyze the resulting oilseed cake. As a result, this waste was processed to the required granulation, thus creating so-called grape flour. “What’s more, scientists have found that it is not only tasty, but also regenerates, strengthens blood vessels and lowers blood cholesterol.” (Polák, 2019). Thus, as the output of successive processing, the seed part of the matolins leads to the formation of secondary products. In the case of **the husk and pulp**, obtained by separation, we can speak of output in the form of organic matter or heat energy. Organic mass is obtained by the process of vermicomposting. “During

the composting process, the bio-waste becomes a material containing humus, which binds organic and mineral matter and water [...]. The finished compost is a high-quality fertiliser.” (Envipartner, 2020). The thermal energy is not generated as an output of the separate processing of the husk and pulp. The husks and pulp are added to the pressing stage in the formation of the pellets. Therefore, they can be considered as part of the company’s thermal energy source.

There are no additional costs incurred in connection with the subsequent treatment of the waste until the stage of the generation of the matolins, grape stems and wine lees. The initial costs, which are already linked to the use of the waste, begin with the necessary separation to obtain the individual parts of the matolins, followed by the drying of the seed part and the pressing of the grape oil. The company, for the purpose of separating the seeds, has come to use an old grain machine. As regards the drying of this type of material, this normally takes place, for example, in chamber dryers. The company has decided to build its own mechanism whereby the seeds are dried by the residual heat from the compressor. The compressor is primarily run for cooling purposes from one side and the heat mentioned above comes out from the other side and is used for this

Figure 2 » Grape seed oil production in the analysed winery



Source: Hugh, 1999, cit. by Zemánek, Burg, 2011; Sedláček, 2006-2021, Author’s own processing



Table 1 » Maximum quantity of secondary products in the analysed winery

Secondary products	Quantity produced	Quantity per pack	Number of packages	Sale price per pack
Grape seed oil	160 l	100 ml	1 600 pc	127 CZK
Grape flour	3 040 kg	500 g	6 080 pc	60 CZK
Total			7 680 pc	

Source: Author's own processing

purpose. The formation of secondary products (i.e. grape seed oil and grape flour) does not take place on a regular basis and in regular quantities. As these are by-products, both the pressing of the grape oil and the milling of the oilseed cake into grape flour take place as and when required. There is no production of large quantities at once that would need to be stored.

The use of husks and pulp does not represent any extra cost in the company's activities. The reason is that they are dealt with by storing them in compost or adding them to the pellets formation.

We will now draw on the data illustrated in the previous graph (Figure 2). The company had a grape production of 160 tonnes in 2021 (the value corresponding to the average of each year). By maximizing the potential resources, up to 160 litres of grape oil could be obtained. This is preceded by an assumed maximum quantity of 3 200 kg of seeds that we are able to obtain. The data were based on a hypothetical maximum quantity of grape oil production based on an average annual processing of 160 t of grapes. This directly affects the calculation of the quantity of oilseed cake further processed into grape flour, which is also the maximum in this context. By processing 3 200 kg of seeds, we are able to obtain not only 160 l of grape oil, but also 3 040 kg of oilseed cake. Since the production of grape seed oil and the production of cake are parallel outputs of the same treatment process, a reduction in the production of oil as the main output will lead to a reduction in the production of cake and thus in the resources for the production of grape flour.

The total investment, specific to the conditions of the winery, would have been covered by the sale of 1 429 bottles of grape seed oil, simply by producing wine oil and not processing the waste that arises in parallel, the oilseed cake to grape flour. The processing of 2 858 kg of seeds would be required to cover the investment, and at the same time the opportunity cost of not using the resulting oilseed cake can be discussed. Simply put, since the production of grape seed oil goes hand in hand with the production of grape flour, the investment can be covered by combining the sale of these two secondary products. The sale of 566 bottles of grape seed oil would cover 40 % of the investment. We are able to obtain this quantity from 1 132 kg of seeds with a 5 % yield. Processing all the waste generated by the recovery of the 1 132 kg of seeds and the production of 56,6 litres of grape oil would result in a quantity of 2 150 packages of grape flour, whose complete sale would cover the rest of the investment (Vino Sýkora, b.r.).

Grape stems, like matolins, are produced as waste material after the pressing of grapes. In any case, the winery uses this waste as a source of organic mass (fertiliser). The organic matter is obtained either by storing the wine stems in the vineyard or by composting them. The company does not incur any additional costs that could be associated with the use of the wine stems. The last defined waste type is **wine lees**. The wine lees are deposited on compost, which is then supplied as organic mass to the vineyard. The wine lees can undesirably acidify the soil in the vineyard, which would be the case if the lees were applied to the

vineyard separately. In the case of the analysed winery, the wine lees go on the compost heap, where: their share in the total compost is minimal and at the same time the ash from the burning of wood chips is also deposited, thus achieving the ideal combination and the desired nutrients when mixed.

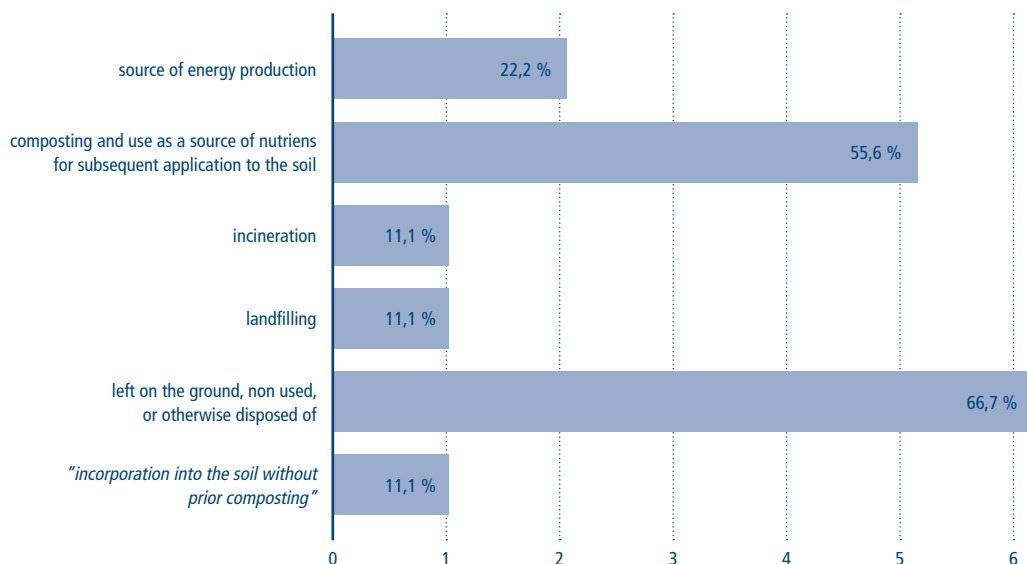
5. Setting the winery in context

In this part of the paper the results of the questionnaire survey will be evaluated. One of the questions asked in the questionnaire was whether wineries are aware of other waste management options instead of: leaving waste on site, incineration or landfill. Given that our analysed winery is practically at the maximum level of waste recovery in its approach to waste and has been trying to follow this path from the very beginning, it is proof that awareness of further waste recovery is circulating in certain parts of society. The 21st century is also bringing increasing pressure to be environmental-

ly friendly and to reduce the waste of potential resources. For these reasons, it was interesting to find that 22 % of respondents had no awareness.

However, this observation will now be put in the context of a question that illustrates the situation. The question was directed at identifying a reason or writing one of their own that does not lead a winery to further use the waste – if they are in a situation where they do not use any other way than leaving the waste on site, incineration or landfill. One would expect a certain percentage of respondents to give as a justification that they have no knowledge of other waste management. However, three types of answers were given, among which ‘unaware’ was not present. 44.4 % of respondents answered the question in the context of using options other than incineration, landfilling or leaving on site. The same percentage of representation has the reason that it is not worthwhile for the company in question. One respondent wrote in their own justification: *“We don’t have time to do anything with it, but I would like to press*

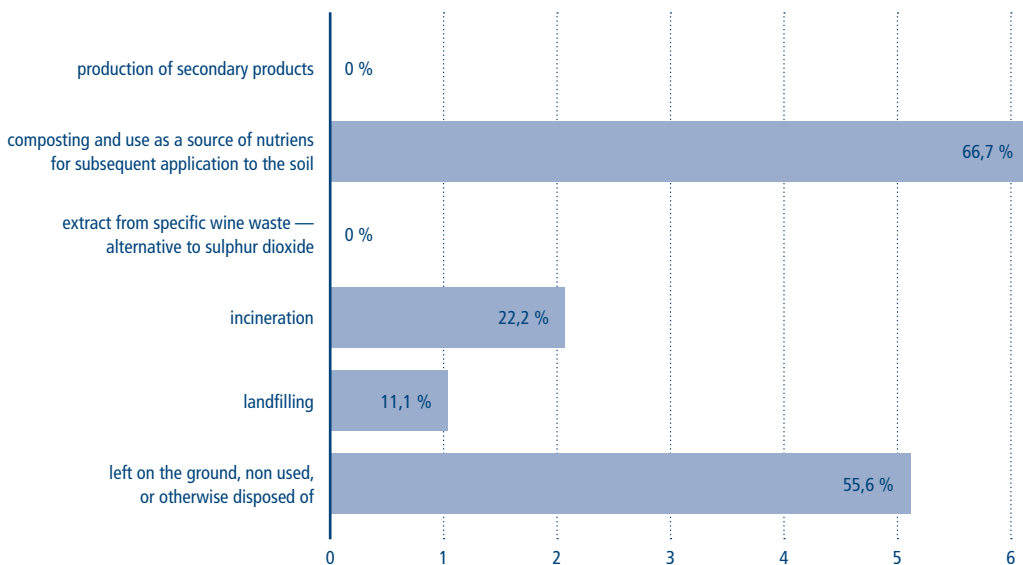
Graph 3 » Representation of the different options for vineyard waste management



Source: Author's own processing



→ **Graph 4 » Representation of the different options for the management of waste arising from the processing of wine grapes**



Source: Author's own processing

the oil.” So it can be said that the awareness is there and the barrier to further waste recovery is not: neither the reluctance to change the system nor the unimportance of the topic for the society in question, but the lack of time the change requires for its application compared to the economic prospects.

As we know from the analysed winery's practice, waste management methods can be combined. Therefore, the questionnaire contained two questions aimed at determining the overall percentage of management of a waste falling into one of the two groups (see 3.3).

As can be seen from the following graph (Figure 3), which relates to the options for the management of vineyard waste, the options with the highest representation are: the waste is left on site (a situation where wood chips are left in the vineyard), which was chosen by 66.7 % of the respondents; the waste is composted, thus generating organic mass, which is further used as a source for subsequent application to the soil, which was cho-

sen by 55.6 % of the respondents. The figure of 22.2 % for the possibility of using waste as a source of energy is also promising.

The following graph (Figure 4) relates to the options for the management of waste arising from the processing of grapes. Here, as in the previous graph, the largest percentages also correspond to the options of leaving the waste on site and composting. They differ only in the level of the percentage.

The analysed winery is unique in terms of the creation of secondary products.

6. Assessment of environmental and social aspects

6.1 Environmental aspects

The environmental level of outputs is also considered in the circular economy, since, as mentioned, it is not just about tracking economic values The environmental aspects of the winery's own man-

agement start with **the care of the vineyard**. The reflection of the activity in relation to the environment and the targeted care of the environment, with which as a winery they cooperate on a daily basis, is related not only to the supply of the necessary nutrients to the vineyard (which they draw from it through their activity), but also to the method of supply, which is related to the origin of this organic mass. The circular economy looks differently at the source of fertiliser from suppliers (commercial) and at the supply of these nutrients through own farming, when the residues (waste) of own production are used for this source.

The winery's overall analysis shows that the amount of nutrients that can be extracted from waste as part of their management is practically maximum. to some extent. For example, the way of dealing with wood chips by leaving them in the vineyard is a form of supplying valuable nutrients to the soil as a natural resource. Leaving wood chips in the vineyard thus has an impact on its prosperity. In the context of the energy use of wood chips, the ash produced can be used for the benefit of the vineyard. The winery uses the ash in combination with wine lees as a form of return of valuable nutrients to the soil. This requires considerable knowledge of the characteristics of the vineyard and thoughtful application, otherwise an undesirable change in soil pH may occur.

In order to maintain or increase the humus content of the soil, it is necessary to return as much organic mass to the soil as possible. *"Ideally, this should work so that what is taken out of the vineyard should also be returned there in organic form."* (Bureš, 2021). Fertilization and overall vineyard care is an individual matter for each vineyard owner. A number of factors influence the amount of fertiliser applied, ranging from soil type to the natural conditions of a given year, to subjective judgement. The company calculates approximately 4–5 tonnes of compost per hectare.

Other environmental aspects of management relate to **the elimination of the production of unwanted substances in the environment**. For ex-

ample, landfilling has been linked to the production of methane, which has a greenhouse effect many times higher than carbon dioxide. The winery always tries to find another way for their produced waste. The use of wood chips for energy purposes also helps to eliminate the undesirable impact on the environment. Wood chips *"[...] are CO₂ -neutral compared to fossil fuels (coal, oil, natural gas), as only as much CO₂ is released as the plant takes in during its growth. This means that the use of biomass for energy purposes does not have an impact on the greenhouse effect."* (Ohrievacia technika, 2022).

Kašinský (2019) mentions that the criterion of environmental friendliness is closely related to **the efficiency of the use of the primary resource**. Kašinský (2019) refers to solar radiation itself as the primary source. Simplifying for better illustration, the designation of primary source can be applied to carriers of accumulated solar energy, under which also wood chips or other waste from orchards and vineyards fall. The circular economy is no longer just about the efficient use of a primary resource. Moreover, it seeks to limit the consumption of primary resources and to target more frequent use of secondary resources. Therefore, if we were to stick to the concept of wood chips as a primary resource, their use might not be satisfactory from a circular economy perspective. Firstly, it would still be a consumption of a primary resource and secondly: *"To obtain a sufficient amount of energy, a large area would be required and the efficiency of the use of the resource – sunlight – is poor to say the least."* (Kašinský, 2019). Thus, the efficiency of the use of the primary resource cannot be fully discussed either. As a primary source, and therefore consumption of a primary source, this can be referred to in connection with actors who purposefully grow energy-using biomass (maybe as their main activity). This means that it is not waste or residues from production; and a winery is a business whose main activity is the production of wine. This activity generates production residues, which include wood chips. The subsequent use of



→ wood chips and other waste from orchards and vineyards therefore corresponds to the use and consumption of a secondary resource. In fact, they were not primarily cultivated for these purposes. Whether or not the use of this secondary resource (from the perspective of viticultural practice), in the context of obtaining 'sufficient energy', is effective or not, may be perceived differently by each individual. In the case of the analysed company, the land in question is a 45 ha plot from which wood chips are extracted to generate energy, which, under certain conditions, is able to cover 100 % of the total thermal energy needs.

6.2 Social aspects

Social values are also an area that the circular economy is trying to give more space to. It is about reflecting the social impacts that situations and behaviours generate. It is desirable to maximize, under given conditions, the benefits to society while minimizing the adverse socio-economic impacts. With the analysed company and their application of circular elements, the social aspect can be linked as: **the creation of new cooperation and the creation of new jobs**. The question of how to deal with the last part of the waste, the so-called oilseed cake, led the winemakers of the analysed company to cooperate with Mendel University. The desire to make use of all the waste thus led to the formation of a new scientific-wine cooperation. With reference to the principles of the circular economy, interest in where our waste actually ends up is desirable in terms of its treatment and may, for example, be linked to the choice of a partner who sees the waste as a valuable material. The company's practice is an ideal example, when the waste produced is taken to a nearby mill for milling to produce grape flour. It is another, but not the last, partnership that has been formed. Relationships were also established in the need to pack flour into bags (Kloudová, 2019). New and historically formed relationships are perceived very positively by the company. The winery's approach to the recovery

of waste products, has led to the creation of new jobs. The creation of new jobs also leads to new social ties. Their activities in this respect can be considered favourable from a socio-economic point of view.

7. Conclusion

The involvement of the circular economy concept in the company has been confirmed. In line with the theory, it is possible to link a certain reduction in input costs, the involvement of renewable energy sources, the elimination of negative environmental impacts, the efficient use of the primary resource, the creation of new jobs and the establishment of new partnerships. This is mainly due to the Company's perception of the potential of waste products, with management thinking in a circular way, rather than a linear "take-make-dispose" way. Specifically, this can be related to the circular economy principles identified as: waste elimination, waste to resource, renewable energy production, systems thinking and recycling. On the other hand, there were also identified possible shifts in action that could lead to the spread of circular behaviour in the company. These include, for example, the packaging-free sale of secondary products or the involvement of the sharing economy in the issue of necessary technology.

7.1 Conclusion with regard to the recovery of vineyard waste

In its ideal form, the circular system runs on renewable energy sources. In accordance with the theory, the company uses its own vineyard waste as a renewable energy source. Processing wood chips from their own vineyard can, under certain conditions, provide up to 100 % of the thermal energy required. The use of agricultural waste from the vineyard makes sense, not only in economic terms, but also in terms of the environmental benefits that the circular economy is also concerned about. The processing of wood chips also exploits

its potential to be used for energy. This eliminates the waste of a resource that can be further beneficial, which is consistent with the concept of a circular economy. It should be noted that the above refers to waste, not to purpose-grown biomass. The issue of using bio-waste as a renewable energy source is a currently discussed topic. In particular, during 2022, the risk of slowing down the gas supply and its significant limitation has started to escalate. The situation has also had an impact in high inflation and has been reflected not only in a significant increase in energy prices such as fuel, electricity and others. It is the practice of self-supply that can mitigate the risk of non-delivery or undesirable fluctuations in resource prices.

7.2 Conclusion with regard to the recovery of waste arising from grape processing

Utilising the potential of waste creates a unique offer for the company compared to its competitors. This is the offer of secondary products in the form of grape oil and grape flour. The grape flour is particularly unique, as it is produced by using the last of the waste produced. However, there is no question of the profitability of offering secondary products made from waste material. The company itself is working with this and is therefore adapting the quantities produced to current needs. This does not create a surplus production worthy of storage space. The necessary mechanisms to process and thus recover this waste have been provided by the company mainly on its own initiative. Neither the financial requirements nor the time required to cover the investment need be great. The difficulty can be linked in particular to the time invested in finding possible ways of treating the waste and the

most appropriate options. Such time can be considered as the largest investment and is associated with any innovation in production. While, in wood chips recovery, the potential of the economic aspects is considerable, the social and environmental aspects and benefits are more significant for the recovery of waste arising from the pressing of grapes. Social benefits can be, for example, new partnerships that have been established or the company's position in the public eye. Environmental benefits can be the recovery of waste and the valuable materials it contains in general (which eliminates waste) or, more specifically, recovery in the form of organic mass (which returns the necessary substances back to the vineyard). It is clear from the character of the benefits that these actions are based primarily on the company's philosophy. Certain positive economic aspects can also be identified, namely that the circular flow of resources (in this case natural resources) can reduce input costs. Input costs can be incurred by providing fertiliser for the vineyard in a commercial way. By depositing the waste on compost and then applying it as organic mass to the vineyard, it will supply a certain amount of the fertiliser requirement. In addition, not only with expensive fuels but also with fertilizers the agricultural sector is struggling. Thus, there is considerable economic potential for the use of such waste precisely by creating its own organic mass, the source for the creation being the residues of its own production.

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Circular economy as an indicator of the implementation of new rules in the business environment

ABSTRACT

The circular economy is one of the fundamental issues in the context of corporate social responsibility and possible innovations in business. The aim of this paper is to introduce and define the concept of circular economy, and then identify and assess the practice of a specific company in accordance with this concept. For the purpose of defining the circular economy, the concept of linear economy is defined, which is the starting point of the explanation and at the same time the comparison of the two concepts. Despite the multiple principles falling under the concept of circular economy, the paper focuses on the area of waste. The area of waste is explored and illustrated in the agricultural sector, specifically in the wine industry. The research questions, formulated in the paper, are focused on the significance of waste in the circular economy, its connections to it and the aspect of its subsequent use. It is based on the hypothesis that waste has the potential to be further used. The work is related to the activity of a wine enterprise, so the assumption is the existence of possibilities for further use of waste generated by the activity. In order to relate the topic of circular economy to the practice of a specific enterprise, it was necessary to analyse the possibilities of selecting such an enterprise where certain elements of circular economy could be found at first sight. The evaluation was carried out using both theoretical and empirical procedures. Semi-structured interview and questionnaire survey techniques were used. The questionnaire survey was conducted among comparable enterprises by sector, in order to put the practices of a specific winery in the context of other wineries. An evaluation of the practice under study is made in the context of the elements of the circular concept. In conclusion, the use of vineyard waste appears, under certain conditions, to be a promising alternative source of thermal energy. At the same time, the research shows that the impulse for behaviour that would fulfil the elements of the circular economy concept is often based on non-economic objectives that are based on the social paradigm and shared values of a particular society.

KEYWORDS

circular economy, waste as a resource, waste potential, agriculture, viticulture, winery activity, non-financial reporting, CSRD, ESG

JEL CLASSIFICATION

F64, M48, O13, P28, Q01

Development of Human Capital and its impact on Creative Industries in Slovakia

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* 1. Introduction

Human capital, according to the viewpoint of Becker, one of the creators of the theory of human capital, is storage of knowledge, skills and motivation available to everyone (Becker, 1964). The required amount of effective human capital is a key source of scientific and technological progress and the transition to a new model of technological development in the country (Diebolt and Hippe, 2019). According to the viewpoint of Florida (2002), the founder of the “creative class” theory, creativity depends on the environment that supports it, as well as on a wide range of social, cultural and economic factors. Creative class helps attract new principles both to work and to everyday life. Members of this class uphold the new values of the younger generation. Representatives of the creative class are distinguished by mobility, flexibility, selfeducation, “new” workplace, and leisure as work, social participation, active recreation and interest in street culture (Florida, 2002). Throsby draws attention to the fact that along with assessing the contribution of the creative class to the development of the creative economy, the issue aris-

es of determining the contribution of creative industries to GDP (Throsby, 2014).

2. Literature review

One of the central aspects of human capital formation is the idea that human capital (including natural talent) is developed through conscious investment. Londar et al. (2020) proposed basic directions for human capital investment in the creative economy. Human capital is positively correlated to output in the production process and economic growth (Jílková, 2021; Henry, 2007). The human capital theory maintains that knowledge provides individuals with increases in their cognitive abilities, leading to more efficient potential activity. Human capital could be classified as the economic value of an employee's intelligence, skill sets, ideas, education and training, and individuals' health. However, many argue that the role of knowledge spillovers, spin-offs, and knowledge transfer in general, should not be underestimated as they enrich the regional context, foster innovation (Abdelkhalek and Boccannuso, 2022; Friderichs et al., 2022) and economic benefits fol-

low (Comunian et al., 2014; Abreu and Grinevich, 2014).

Thus, scientists have confirmed the thesis that the development and preservation of human capital in the creative economy is based on investing in education and health care, mobility and access to information. The analysis of scientific sources confirms the hypothesis of the interrelationship between investing in human capital and the development of the creative class and the creative economy, which in general leads to economic advance. However, the issues of development and preservation of human capital in the creative economy have remained insufficiently disclosed in scientific investigations (Chani et al., 2014; Greco et al., 2019).

3. Data and methodology

In order to analyse the basic aspects of the development and preservation of human capital in a creative economy, the European Union was chosen as the basis for the study, since the experience of the development of this sector in the EU countries is exemplary and among the most successful in the world.

The aim of the research paper is to study the features of the process of intellectualization, the role of human capital and its creative functions in a new type of economy based on intellectual activity.

The research was conducted on the basis of indicators published on the Eurostat website (2023),

namely: the number of companies in the creative sector of the economy, the number of employees in the creative sector of the economy, the life expectancy of the population, the level of GDP per capita for the period 2014–2020. Statistical methods were used for data analysis, from the simplest (descriptive statistics) to regression analysis, which allowed to determine the impact of creative industries on the development and preservation of human capital. The regression analysis was performed on the basis of the constructed regression equation, which allowed to determine the influence of each independent variable on the change of the studied dependent variable. Overall, the regression analysis included the following steps: Selecting the linear regression model and forming the initial data; performing the regression analysis provided by Jamovi software; obtaining the results and analysing them.

The conceived hypotheses were following:

H₁: There is a statistically significant relationship between GDP per capita and the life expectancy of the population in Slovakia.

H₀: There is no statistically significant relationship between the two nominal variables.

4. Results and discussion

Diagnostics of the development and preservation of human capital in the conditions of the creative

Table 1 » Descriptive Statistics

Year	GDP per capita	Number of enterprises in the creative sector of the economy, units (x1)	Employment of the population in the creative sector of the economy, thousands pers. (x2)	Life expectancy of the population, years (x3)
2014	13640	10738	62.1	77.0
2015	14340	11690	61.0	76.7
2016	14590	12766	62.1	77.3
2017	15000	13615	72.6	77.3
2018	15580	14562	71.6	77.4
2019	15960	15720	73.8	77.8
2020	15400	15470	71.4	77.0

Source: Eurostat (2023)



→ **Table 2 » Results of regression analysis**

	Model	R	R ²	Adjusted R ²	Overall Model Test			
					F	df1	df2	p
Model Fit Measures	1	0.976	0.952	0.904	19.9	3	3	0.018

Predictor	Estimate	SE	95 % confidence interval			
			Lower	Upper	t	p
Intercept	-13030.100	28947.388	105153.60860	79093.408	-0.4501	0.683
Number of enterprises in the creative sector of the economy, units (x_1)	0.371	0.114	0.00829	0.733	3.2552	0.047
Employment of the population in the creative sector of the economy, thousands pers. (x_2)	1.851	38.728	-121.39936	125.102	0.0478	0.965
Life expectancy of the population, years (x_3)	295.610	387.091	-936.28680	1527.507	0.7637	0.501

Source: own processing

industries should be based on the study of the basic trends in the functioning of the creative industries and an analysis of the characteristics of human capital in the EU countries. In order to study the dependence between the creative economy and the development of human capital, it is advisable to conduct an appropriate regression analysis (see Tables 1 and Table 2).

From the results of the regression analysis, we can say that there is a statistically significant model consisting of the selected variables ($R^2=0.952$, $df=3$, $p=0.018$). It is evidenced by the coefficient R-value, denoting multiple correlations. 95.2 % shows the reliability of the nominal values, and the rest 4.8 % – on other factors. The equation of regression of linear type will have the following form:

$$Y = -13030.1 + 0.371 \times x_1 + 1.851 \times x_2 + 295.61 \times x_3$$

5. Conclusion

Based on the results, we can state that there is a statistically significant dependence between the GDP per capita and the number of businesses operating in the creative industry, the number of people working in the creative economy sector and life expectancy of the population.

The null hypothesis was rejected. Model formula is:

$$Y = -13030.1 + 0.371 \times x_1 + 1.851 \times x_2 + 295.61 \times x_3$$

In addition, the creative economy is one of the promising areas of economic activity. It is based on human capital, which is an inexhaustible resource. The country's economy largely depends on the development of the creative industry. It contributes to reducing unemployment and opens up new opportunities for employment, which can be used by all people, regardless of sex and age. As we know,

in recent years, the growth of unemployment in many European countries was caused by the Covid-19 pandemic. However, in addition to negative social phenomena, Jílková (2021) notes some positive aspects. We are talking about flexible work benefits for many people, such as the ability to work remotely and on a convenient schedule. It has had a positive impact on human capital. In this regard, the issues of its development and preservation are relevant and need further study. Cultures of different countries are constantly developing

and interacting with each other. In our opinion, borrowing cultures contribute to their development and improvement.

Acknowledgement

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Development of Human Capital and its impact on Creative Industries in Slovakia

ABSTRACT

The transformation of the world economy is characterized by a change of emphasis from an industrial society to a society of knowledge and intelligence. This leads to the emergence of a new segment of the economy – the Creative industries, which are essentially a symbiosis of culture, art and economy and they are based on creative human capital. The aim of the research paper is to study the features of the process of intellectualization, the role of human capital and its creative functions in a new type of economy based on intellectual activity. The basic research methods used in the paper are following: statistical analysis; index and analytical methods; methods for estimating structural dynamic shifts; the method of comparisons. Along with this, the generally accepted methods of economic research have been also used, namely: the economic and statistical method and the method of economic and mathematical modelling (regression analysis) (in order to determine the impact of indicators characterizing the development of the creative industries on the level of GDP per capita), etc. The importance of the Creative industries in the development of the European countries and the role of human capital in the context of the formation of these industries has been updated. The basic features of human capital development in European countries through the dynamics of the following indicators have been illustrated, namely: the coefficient of age dependence, life expectancy of the population, the risk of poverty, fully representing the social standards of the EU member states. In order to study the mutual interaction of the creative economy and human capital, a regression analysis has been performed.

KEYWORDS

Creative Industries; Human Capital Index; Slovakia

JEL CLASSIFICATION

Z10; Z18; Z19



Specifics of coaching

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* 1. Introduction

In today's fast-paced times, positive perception of coaching has been growing among the lay and professional public, concerning both individuals and organizations. This has happened for a number of reasons, especially because of the challenges which current society must face. A number of factors cause an individual to face the increased pressure of "fast time" and is expected to react correctly. Compared to the past, workers must always achieve better and better results under more pressure, employers must invest in the individual development of their employees, and traditional forms of management approach in organizations no longer work as they should. Managers are aware of the fact that people are more open to take responsibility for their lives and lifestyles, etc. We believe that coaching is a suitable means for goal definition, understanding context, searching for resources and getting a clear idea of the result. The advantage of coaching is that it is a meaningful tool for discovering the way to achieve the desired result with insight and ease.

2. What is coaching

At the beginning, it is necessary to define some basic concepts we will work with in this article. The International Coaching Community (ICC, 2022)

defines coaching in various ways. For example, coaching is a way of supporting the development of skills and abilities of individuals and groups, employees and managers. The essence of coaching carries the following basic features:

- helps a person to change their behaviour in the way they want and helps them move in the desired direction;
- helps a person at every stage to become who they want to be;
- builds awareness, gives choice and leads to change;
- uncovers a person's potential in order to maximize performance;
- rather helps people to learn, does not give any strict instructions and does not teach.

In this part of the article, it is also necessary to distinguish coaching from other activities such as mentoring, counselling, therapy, training, learning and consultation. It is also important to define coaching types, explain the difference between individual, group and team coaching, plus point out some advantages and disadvantages of using coaching in practice. Considering the topic, it is also necessary to deal with a person's mental health, burnout syndrome and other basic attributes (Brennan, 2008; Wildflower, 2015). Coaching has been gaining recognition as an emerging profession because it works. While individual coaching continues to be important for personal and pro-



→ fessional focus, team coaching has increasingly been used in organizations. Coaching with teams creates an opportunity for broader organizational impact and performance. The International Coaching Community (ICC, 2022) defines mentoring as a situation where an older colleague, considered more experienced and wiser, advises and provides a role model. Mentoring involves extensive discussions that may not be limited to a work context. A mentor is a sponsor with extensive professional experience in the client's field of work. Mentoring and coaching are mainly concerned with present and future achievements. The basic difference between coaching and mentoring is that the coach only guides the client to find a solution and is not responsible for his decision. In contrast, the mentor acts as a teacher, who also provides instructions for the given problem and thus automatically takes partial responsibility for the client's decision (Atkinson, Choís, 2009; Petrášová, Prausová, Štěpánek, 2014).

Counselling is working with a client who feels uncomfortable or dissatisfied with their life. The consultant's work is to search for advice and correct the client's problems. Therapy focuses on the client's mental health. Therapy is working with a client seeking relief from psychological or physical symptoms. Training is the process of acquiring knowledge, skills or abilities by study, experience or instruction. A consultant provides expertise and solves business problems or develops the business as a whole (Kolman et al., 2012). The consultant deals with the overall organization or its specific parts and not with individuals within it. The consultant influences individuals only indirectly. Teaching transfers knowledge from teachers to students. The teacher knows something that the student does not. In coaching, it is exactly the opposite. The client is the expert and they are the one, who provides answers, not the coach. According to the Slovak Association of Coaches (SAKO, 2017), coaching is one of the ways that leads people to improve what they do and achieve their goals. The coach guides the client and helps them discover

their potential by creating an environment that supports the client's openness to themselves, creative thinking and search for solutions. Concerning the relationship with client, the coach works on:

- finding out, clarification of what the client wants to achieve or could achieve;
- supporting the client in realizing their own potential;
- process of discovering possible solutions and strategies to achieve the client's goal;
- awareness of client's own responsibility for making the change.

According to communication method, we distinguish personal coaching, telephone or online coaching (for example Skype), written coaching, etc. The Slovak Association of Coaches (SAKO, 2017) distinguishes several other types of coaching based on several factors. According to the number of coaches, it distinguishes between individual, team coaching (deals with a common topic) and group coaching (each member works on his own topic). According to the thematic classification in practice (Křivánek, 2019; Beilfuss, 2012): managerial coaching, leadership coaching, performance coaching, creative coaching, life coaching, career and business coaching, outplacement coaching, challenge coaching, etc. According to the organizational affiliation of the coach and coachee, internal (the coach is an employee of organization, which he conducts coaching for) and external coaching (the coach is not an organization employee) can be distinguished.

3. Mental health and burnout syndrome

As mentioned above, there is currently a lot of pressure on employees, mainly because of the challenges facing current companies. Prompt and accurate responses are expected, emphasis is placed on performance and not people and their mental health. Inter alia, WHO – the World Health Organization, deals with human mental health and related burnout syndrome. According to WHO (Fraga, 2022), burnout syndrome is classified as a

stress syndrome, but it has been modified. Currently, WHO defines this term as a syndrome conceived as a result of chronic workplace stress that has not been successfully managed. This definition appears in the diagnostic manual of the organization concerning the International Classification of Diseases. Three symptoms included in the list are: feelings of energy depletion, increased mental distance from work or negative feelings about one's career and decreased professional productivity (Chropeňová, 2014). According to the WHO's ICD framework, burnout syndrome is included in an additional category and is therefore not classified as a disease. This puts patients at a considerable disadvantage, because they are not considered sick. In the initial phase of this syndrome, it is very difficult to distinguish it from classical stress (Toh et al., 2022; Mohauptová, 2013).

We believe that ten symptoms according to Freudenberg describe its essence and help distinguish the development of this syndrome from other diseases. These ten factors according to Freudenberg include – exhaustion, alienation and isolation, emptiness and cynicism, impatience and irritability, impression of extraordinary abilities, mistrust, paranoia, loss of purpose, psychosomatic phenomena and depression with many aspects. A number of other definitions can be found in literature, but they all essentially say the same thing. It is essential for individuals and employers not to underestimate these symptoms and to respond in an appropriate manner.

As far as practice is concerned, we consider the thoughts and approach of the psychiatrist, writer, pedagogue, Greek Catholic priest and esperantist Max Kašparů, who deals with this phenomenon in his clinical practice, to be very stimulating. According to him, it is important to build 6 walls that serve as prevention against burnout syndrome. The first is the wall of future, i.e. there must be something in front of us to look forward to, the back wall is represented by people we can lean on, closer to our heart, on our left, there is the wall of our friends, the right wall represents our col-

leagues, the floor should be solid and ceiling represents the values that make us exceed i.e. spiritual values such as culture, religion, love, hope and faith. The author also recommends a return to ordinary human decency.

3.1 Global view

People all over the world are exhausted, burned out and struggling with depression. There are many solutions for employees and leaders in the form of rethinking transformation of their organizations, but it is important to be aware of the problem and then to grasp it in the right way (Bohoňková, 2022).

A study on the company Asana is inciting in this area. It focused on more than 10,000 workers in seven countries. The output of this study found that 70% of people experienced burnout in 2021. We believe that this fact was also caused by the situation in the world regarding COVID-19 and the war in Ukraine. However, the percentage is critically high. Additionally, research by Deloitte and Workplace Intelligence across four countries found that workers experience different types of burnout-related issues:

- 43% of workers said that they are always or often exhausted;
- 42% admitted stress;
- 35% percent were overloaded;
- 23% percent said they were depressed (Fraga, 2022).

It follows that it is necessary for companies to become more interested in people and not only in their performance. If the company realizes this early enough, it will prevent various significant misunderstandings and retain high-quality employees. It can be assumed that burnt-out workers will have lower work morale, will be less engaged, make more mistakes, and communication with them will be more difficult. They are also more likely to leave the company. According to research by Deloitte Workplace Intelligence, 47% of employees have left in the past when work negatively af-



→ fected their well-being and 57% are considering leaving their current occupation to find a place that better supports their well-being (Fraga, 2022). Factors that have a significant effect on organizational change are, for example, meaningfulness, belonging, the organization leader, support and change of perspective. At this stage, it is necessary for the company to consider some cooperation possibilities with quality coaches. Regarding Slovakia, quality in this area is guaranteed by Slovak Coaches Association (SAKO, 2017) and professionals such as Dalibor Bednařík and Zuzana Valábková.

4. Case study

The following case study shows the appropriate choice of team and individual coaching in practice. Regarding company coaching, there are often situations where one of these techniques is more appropriate. Team coaching order in an unnamed company appeared about only after a longer period of cooperation with the coach. Individual coaching of workers from two groups took place in the company and occasionally, during the individual meetings, a topic appeared that concerned the entire group. As the situation created in this way offered space for team coaching, it still seemed as if there was no will and energy on the part of the employees to start with team coaching. The reason was also the fact that it was about the company, where individual responsibility for work was required, because the clients had high demands. People were very critical of each other, mistakes were not allowed. The employees did not have time; they were satisfied with individual coaching and were also worried about revealing too much to others. Concerning individual meetings, topics that went beyond the influence of the individuals appeared more frequently. Attention was mainly focused on dysfunctional cooperation between two departments, which were connected to each other. Each of them contained approximately 5–8 people, they were quite dependent on each other, but their work style was markedly different. One depart-

ment was more planning-oriented, systematic and precise, the other more communicative, hectic, creative and unpredictable. The situation turned out to be critical and it was becoming a question of whether to stop behaving fairly and to pass the mistake to the other team in order to protect the department from criticism. Some topics were related to work situations and internal departmental problems. Thanks to coaching, some workers from the first department found that they were dealing with similar topics to the second department and that it would be good to assess the situation together. They then agreed together on team coaching and resolved the situation over time. The coach's role in persuading them to start with team coaching was minimal at this stage, as people understood the essence of the problem and showed the will to change something for the better together.

In the next part, our goal is to describe the given situation and coaching progress in more detail. Concerning a practical point of view, the first group will be called planning and the second creative. The planning team coaching went very smoothly, the group was very practical, people chose some key topics and implemented them thereafter. However, the problem for them was to look for new ways and approaches plus to let their imagination run wild. Finally, the group managed to gain success in this area as well and looked at the topic from a new perspective. Bad atmosphere among people was one of the key topics, as well as finding ways to change it. Of course, the planning team members looked for a culprit and spent about 15 minutes saying that THEY (the creative department) were to blame. At this stage, the coach's task was to point out whether the problem of complaining and bad relationships is not exactly looking for the culprit and whether that is not what bothers them about other people. The coach drew attention to the fact that if they want to change something in the given situation and thus use their energy in a creative way, they should not just identify the culprit and complain. This view excited them and filled them with energy, they started looking

for new solutions, i.e. the therapist managed to transform their complaints into creative thinking and released their energy. This represented an experience for the coach himself and next meeting also produced a change in practice. The next step was organizing a joint meeting between both teams. It turned out that both departments were not able to communicate creatively with each other, the outputs were only minimal. These two departments were not able to get very close to each other. The next meeting took place separately and its goal was to prepare another joint meeting. This meeting was preceded by the preparation of an emotional map about the second department, which took about half an hour for each team. In the end, the employees found that they had many hypotheses and ideas about the second department, which, however, were not proven in practice.

The ice was broken only at the next joint meeting. In practice, the meeting took place in such a way that they answered the questions which arose during the separate meetings and each group provided some suggestions concerning the next steps. People discovered striking differences in the work style – system versus creativity or between the approaches fire and water. They understood that people in other departments work differently, because it is necessary for the nature of their work. They mutually recognized that others are really good at what they do, being troubled by mutual problems and, above all, both groups have the same goal. Both groups came up with some real outcomes, their relationship changed and they started working together. The black sheep of the whole process was one colleague, who was not able to adapt to such radical changes subsequently, even during individual coaching and did not adapt to the new attitude of both groups.

5. Methodology and results of pilot survey

Concerning the theoretical part of presented article, we focused on the study of professional literature, worked with the scientific articles from on-

line academic databases and monographs, other Internet sources and, of course, primary sources, which were obtained from the questionnaire referred to in the practical section.

Concerning the object of our search in the practical section, the teaching staff of FMK UCM in Trnava were chosen. We undertook a pilot survey, in the form of an online questionnaire, which was distributed to 71 teachers during the period 16. 9. 2022 – 30. 9. 2022 and quantitatively evaluated afterwards. The return rate of our – questionnaire was 24 responses.

The questionnaire consisted of 6 demographic data items, 16 questions and 1 open question at the end, – where respondents could express their opinion verbally. The questions were focused on two main areas, the first was area of satisfaction with work and personal environment and the second was focused mainly on the factors of burnout syndrome. We believe that for the purposes of this part of article, we mainly focused on the possible occurrence of fatigue and burnout factors and their subsequent minimization by coaching concerning the proposals of this work.

Our effort for the future is to continue the research on the given topic at FMK UCM in Trnava in cooperation with the Mysliteľna center in Trnava. We believe that the obtained data will currently serve as a basis for editing some standardized questionnaires, discussing the topic and emphasizing the necessity to implement coaching and its techniques not only in companies, but also in the field of higher education in Slovakia.

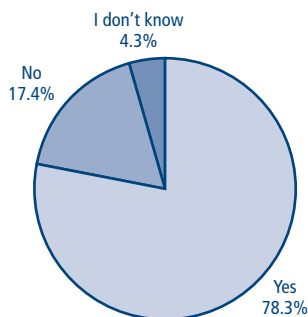
The presented charts show some essential data from the questionnaire, mostly those, which overlap with the topic being discussed. We contacted teaching staff at all six faculties of FMK UCM in Trnava. All reported working full-time, both women and men. Most of the respondents have a PhD degree (75%). The highest number of respondents were from the Department of Marketing Communication (29.2%), followed by the Department of Language Communication (25%), and the least from the Department of Media Education.



The figure 1 focused on job satisfaction and the demands placed on the respondent, as well as increased fatigue during the last academic year. A relatively high percentage of 78.3% is satisfied with the employer's requirements. Only 17.4% expressed their dissatisfaction. Some respondents could not answer. The chart also demonstrates the fact that teaching staff experienced significant fatigue during the last academic year. As many as 87.5% of respondents answered yes, I feel increased fatigue.

The factors of burnout syndrome among employees were manifested in high numbers by figure 2. Up to 50% of respondents feel cognitive exhaustion, which is not surprising in our opinion, concerning the intellectual nature of the work, even if the percentage is quite high. Subsequently, the respondents said they neglected themselves (29.2%) and 8.3% of the respondents pointed to decline of working relationships at the workplace. The feeling of reduced performance is also worth mentioning, as well as personal relationships worsening.

Figure 1 » Satisfaction with the job requirements placed on the respondent and feeling increased fatigue during the last academic year



Source: Own processing (2022)

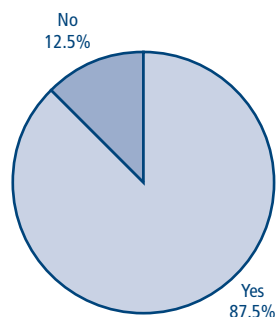
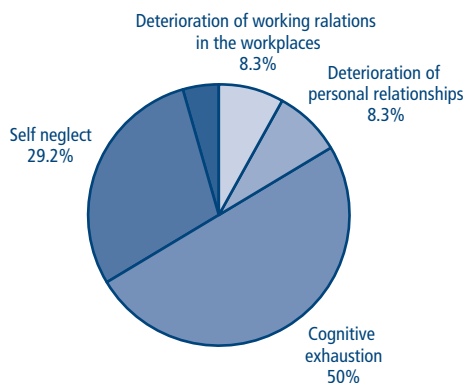
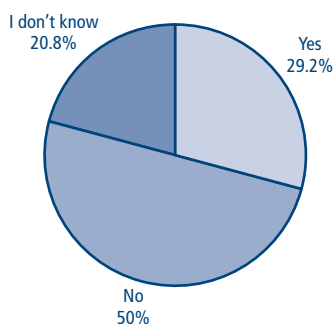


Figure 2 » Experiencing symptoms of burnout



Source: Own processing (2022)

Figure 3 » Work-life balance



Source: Own processing (2022)

It is also important to define coaching types, explain the difference between individual, group and team coaching, plus point out some advantages and disadvantages of using coaching in practice. Considering the topic, it is also necessary to deal with a person's mental health, burnout syndrome and other basic attributes.

We believe that ten symptoms according to Freudenberg describe its essence and help distinguish the development of this syndrome from other diseases. These ten factors according to Freudenberg include — exhaustion, alienation and isolation, emptiness and cynicism, impatience and irritability, impression of extraordinary abilities, mistrust, paranoia, loss of purpose, psychosomatic phenomena and depression with many aspects.

As figure 3 shows, 50% of respondents do not consider their personal and work lives to be balanced, 29.2% answered the given question positively and 20.8% could not answer.

6. Conclusion

As part of processing the given topic, our effort was to point out this phenomenon of today's time, which is the constant effort to achieve performance, regardless of the consequences. These tendencies are manifested not only in the international context, but also in domestic institutions. The findings from the theoretical field are considered stimulating, but our sub-goal was also to focus on the practical processing of the given topic. As we expected, the pilot survey confirmed that in Slovakia, specifically in the field of higher education, there is room for the introduction of coaching to practice, as the employees of FMK UCM have experienced tiredness, exhaustion, as well as some burnout symptoms in the last academic year. Introduction of coaching into the work process is considered as a preventive measure to some extent, which could prevent more serious consequences. The cause of the increased pressure on employees is of course the overall situation regarding higher education in Slovakia, as well as the quality of per-

sonal life. In this context, it is also appropriate to mention the necessity of high-quality management and communication skills within the selected entity. We will deal with those in future work.

Our efforts in the future will be on looking for methods and solutions to finance the field of coaching at FMK UCM in Trnava, organize workshops for employees and management of the faculty/university, organize inter-departmental meetings, test employees, implement individual as well as team coaching in order to improve mutual communication, the working environment and employee satisfaction. Our tendency for the future is also to actively participate in the presentation of practical outputs in public, cooperate with other subjects in Trnava, for example by actively participating in the event Učiaca sa Trnava, cooperate with the civic association Lifestarter, which focuses on development and growth in the field of education. It is also necessary to mention our cooperation with the Mysliteľna centre in Trnava.

The issue of prevention and related implementation of coaching to the work flow in a company (or another entity) has considerable justification at the present. If a modern university wants to maintain its place and quality in the market, it must adapt to changes and react dynamically. The state's demands on scientific activity have constantly



→ been increasing, which has the effect that pedagogic competences take a back seat, to say nothing of academic freedoms. We believe that the role of management and its competences is crucial. The quality of managerial tasks required from subordinates is directly related to the quality of outputs, which will ultimately be reflected in the quality of entire university education. In addition to management skills, the communication skills of management and employees of individual departments is considered to be a key factor.

In our opinion, creating a coaching centre in a university environment is currently desirable, if not necessary. Our effort for the future is, in cooperation with the external environment, to create the conditions for the creation of such a centre at FMK UCM in Trnava, for the purpose of burn out prevention, improvement of communication and subsequent increase in the quality of work output.

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Specifics of coaching

ABSTRACT

The main goal of this paper is to point out the necessity of using coaching in practice, while emphasizing the improvement of employees mental health and their satisfaction at work. Subsequently, the partial goal of the paper is to increase the performance of employees and also prevent their burnout. The paper will consist of theoretical as well as practical parts. Regarding the theoretical part, it will deal with some specifics of individual as well as team coaching, its basic characteristics, mental health and burn out syndrome. The

practical part will focus mostly on a pilot survey in chosen institutions to get the overall picture concerning the current state or “Where we are now.” It will take into consideration the following areas: identification with the company, motivation, communication, atmosphere of interpersonal relationships, efficiency, superior approach, work tasks, working pressure etc. All the received information will serve as a background for an implementation phase and a short proposal on “Where we want to get to.”

KEYWORDS

Coaching; Individual coaching; Team coaching; Mental – health; Burnout syndrome; Prevention

JEL CLASSIFICATION

K20; K22; M14; M20



The Evolving Role of Emotion AI in Marketing: An Analysis of Technological Tools and Benefits

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* *Introduction*

The term artificial intelligence has recently become a household name. Artificial intelligence was already here in the last century while the year 1956 is considered to be the date of its creation. It was in that year when this term started to be used in developing computers, which, thanks to advanced algorithms, could solve various, mostly difficult tasks. Artificial intelligence took up in various fields. Marketing not excluded. Even if it seems that people working in marketing, which is such a creative industry, cannot be replaced by artificial intelligence at all, the opposite may soon be the reality. Therefore, it is important to consider how we will adapt to technical progress which is irreversible. The current situation gives us room to make the most of the available technical possibilities, use artificial intelligence as help and not as a threat. The subcategory of artificial intelligence is the so-called Emotion AI, or affective computing. It is a specific field dealing with reading human emotions which are a very important part of marketing. They help us determine whether the ad we have created really produces the feeling we have been

trying to achieve in people. Emotion AI is not only exclusively used in marketing. On the contrary, it also has great potential in health care, the gaming industry or, for example, in education. In the article, we present individual possibilities of using affective computing, its benefits in marketing, as well as available technologies allowing marketers to use Emotion AI in their work.

1. Using emotions in marketing communication

Using emotions in marketing is not a new thing. According to Horňák et al. (2015), using emotional appeals in marketing communication has turned into a new trend and the authors consider them to be a brand-new part of contemporary marketing practice. Importance of using emotions in marketing is also emphasized in the studies by Murray (2013) who assumes that emotions affect our buying decisions. Moreover, they are also an inseparable part of all decisions we make, not only those relating to purchase. In their study, the author found out that when evaluating brands, consumers prefer using emotions (personal or other) to information

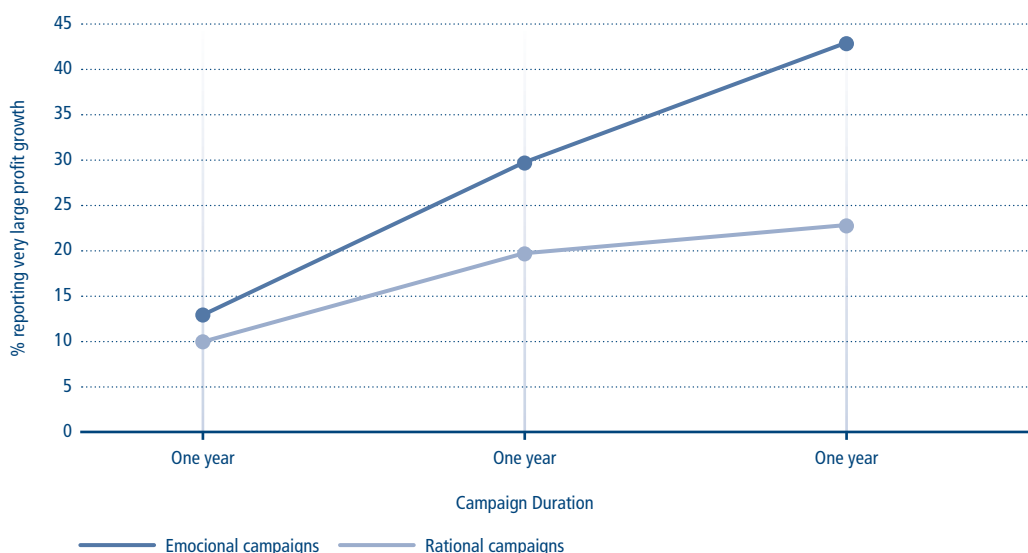
consisting of data and facts (Murray, 2013). The research by Damasio (1998) confirm that in their decision-making, people use the only criterium: “How will I feel when I do it”. According to Sedlák, Lančarič and Pribila (2020), advertising has many functions. Among the most basal of these is the emotional and informative function. Various types of research have also confirmed that the advertising triggering an emotion is much easier to remember. Besides that, emotions also influence the effectivity of the campaign itself. The Figure 1 depicts how the advertising focused on emotions help brands connect with their target audience and increase their profits in the long term. The research was done in 2013 by Incorporated by Royal Charter (IPA, 2013).

However, different emotions used in advertisements trigger different reactions in people. Brands should therefore make sure that they have sufficient knowledge in this field. Choosing the wrong emotion can do more harm than good to the brand. This is also why it is important to clearly define

what we want to achieve through advertising and towards what behaviour we want to motivate our customers. Bergen, the marketing professor at the University of Pennsylvania’s Wharton School, analyzed nearly 70,000 articles in the New York Times. He found that the more positive an article was, the more likely it would go viral (Seiter, 2014). This topic is also addressed by Horňák (2015), who claims that marketers should focus more on applying positive emotions in the marketing space in order to support sales. Negative emotions should only be used for the purpose of enhancing our memory or pointing out to a social problem.

It is very important for the brands to try to emotionally connect with their customers. Magids, Zorfas and Leemon (2015) defined the so-called “emotional motivators” in their article. Based on the survey of hundreds of brands in various categories, he showed that it is possible to strategically target feelings that subsequently influence our customers and motivate them to take certain ac-

Figure 1 » Emotional advertising is more effective — especially over the long-term



Source: IPA, 2013



Figure 2 » High-Impact Motivators

I am inspired by a desire to:	Brands can leverage this mitivator by helping customers:
Stand out from the crowd	Project a unique social identity; be seen as special
Have confidence in the future	Perceive the future as better than the past; have a positive mental picture of what's to come
Enjoy a sense of well-being	Feel that life measures up to expectations and that balance has been achieved; seek a stress-free state without conflicts or threats
Feel a sense of freedom	Act independently, without obligartions or restrictions
Feel a sense of thrill	Experience visceral, overwhelming pleasure and excitement; participate in exciting, fun events
Feel a sense of belongin	Have an affiliation with people they relate to or aspire to be like; feel part of a group
Protect the environment	Sustain the belief that the environment is scared; take action to improve their surroundings
Be the person I want to be	Fulfill a desire for ongoing self-improvement; live up to their ideal self-image
Feel secure	Believe that what they have today will be there tomorrow; pursue goals and dreams without worry
Succeed in life	Feel that they lead meaning lives; find worth that goes beyond financial or socioeconomics measure

Source: Magids et al., 2015

tions. The Figure 2 shows 10 of them that can significantly influence customers.

Such a categorization and a closer description of individual motivators can help in formulating an advertising message for many brands so that the advertisement is in line with the values and life attitudes of the selected target group. For the company, it is necessary to clearly define how its customers are motivated and what ideas its customers identify with. It is this information that enables brands to better communicate their products and services in order to create an emotional connection with their customers. Fašiang (2016) wrote that we can interpret this relationship on dependency principle – if the scale of satisfaction is increasing, the perceived brand value and income is growing as well.

Emotions affect not only the perception of individual advertising messages, but also person's at-

tention, memory and their decision-making process. All the above aspects are closely related to the human brain. As stated in their study by Brosch et al. (2013), "In our everyday environment, we are constantly confronted with large amounts of incoming sensory information. As the capacity of our brain is limited, we cannot process all information entering our senses thoroughly, but we have to select a subset to prioritize its processing at the cost of other information." This is something that marketers should take into account when creating advertising campaigns. The world is evolving, human attention spans are shrinking, and brands are competing to capture as much of their target audience as possible. Although many companies already understand the importance of using emotions in advertising, the world is constantly changing and we can increasingly see how brands use artificial intelligence in their communication. At

first, brands used artificial intelligence as a tool to engage their target audience, differentiate themselves from the competition, or increase profits. They used artificial intelligence to optimize their advertising campaigns to offer customers the product they need. Or they used artificial intelligence in designing their customer programs. In his article, Cardenas (2021) refers Starbucks as a textbook example. “Starbucks captures its prospects’ data through the use of AI in their Rewards Program and Mobile App. In fact, Starbucks has successfully built its relationships with customers through this Rewards Program. Through this AI-powered tool, Starbucks acquires your buying history and gives you recommendations they know you will enjoy after considering the date of purchase, the time of order, and the location.” Nowadays, however, brands are increasingly connecting artificial intelligence with the emotions of their customers. It is this connection that allows them to communicate their advertising campaigns even more effectively and adapt them to the current emotional state of their customers. Although Emotion AI is primarily used in medicine, for example when communicating with patients who suffer from various mental disorders or autism, brands are also starting to use it in their marketing activities.

2. Emotion AI in Marketing

Emotion AI is a new area of the artificial intelligence, also known as the affective conduct, often used in healthcare, advertising and customer service. According to Kaur and Sharma (2021) this refers to the technology which deals with observing non-verbal human signs, such as facial expressions, gestures, attitudes, body language, voice tone and voice pitch with the aim of analyzing user’s emotional state. As we mentioned at the beginning of the article, Emotion AI finds its use in various fields, nowadays mostly in marketing and business. The basic principle is the ability to respond to human emotions. This kind of reaction is especially appreciated when creating personalized

campaigns or other marketing activities. It is important to note that emotion AI has nothing to do with human empathy, even though it may appear that way at first glance. Since this is artificial intelligence, we are still only talking about a set of computer algorithms that were pre-specified and on which the artificial intelligence was trained. However, thanks to the amount of information, Emotion AI can very accurately detect what emotion the user or viewer is currently feeling. For this, it uses a set of information about facial expressions. Their combinations are characteristic for individual human emotions.

Humans may produce thousands of slightly different facial expressions, according to IMotions, a company that analyzes human behaviour through various forms of software. However, there is a small set of distinctive facial configurations that almost everyone associates with certain emotions, regardless of gender, age, or cultural background. These basic categories of emotions are: joy, anger, surprise, fear, sadness, disdain and disgust (Farnsworth, 2022).

It is precisely thanks to the clear definition of individual categories of emotions and signs, or facial expressions that are typical for each category, that we are able to enable machines to read human emotions. They are sometimes even more accurate in reading our emotions than we are. This is also confirmed by Somers (2019) in the article named Emotion AI explained. Erik Brynjolfsson (in Somers, 2019), MIT Sloan professor, adds that machines are very good at analyzing large amounts of data. Thanks to this, they are able to communicate with us in the language of emotions. Thanks to this, they will be able to interact better with people. What would have seemed impossible 20 years ago is here today.

It is precisely such rapid technological progress that gives us room to start creating more effective marketing activities. We no longer have to limit ourselves to traditional methods that were once used in marketing. On the contrary, the wide availability of various software allows us to create more



effective campaigns today. There are several ways in which Emotion AI can be used by marketers. Smart chatbots will probably be the most used method in the near future. They will be able to identify different types of customers and their behaviour. Thanks to this, they will be able to give customers personalized product recommendations.

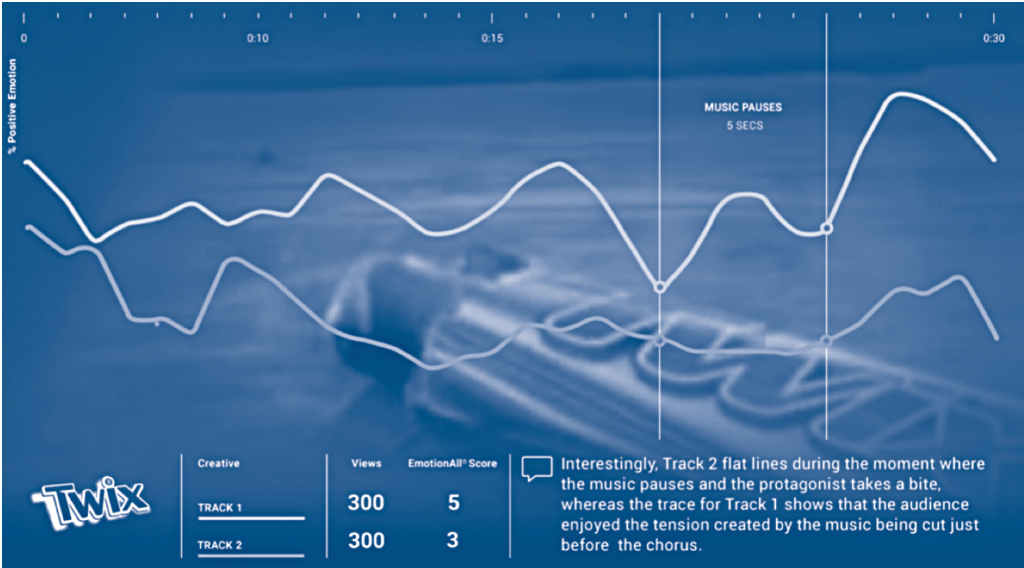
The integration of Emotion AI with common technological means that we use every day might be a more complex question. Thanks to this, companies will be able to identify more accurately the reactions of their customers to individual products or prices, and therefore will subsequently be able to make the necessary adjustments to make their marketing communication more effective.

For now, however, such extensive use of emotional artificial intelligence is rather a question of the future. Today, however, we already know how to use various software and test on a selected sample of people what emotions, for example, an advertisement they see on television or on the Internet will trigger in them.

The program called Real eyes, which is a programme for measuring human attention and emotions, is used by Mars, for example, in its campaigns. It tested two different songs used in one and the same advertisement for the Twix bar. Thanks to the measurements, they found that the number 1 song (Happy Together by the American group The Turtles) caused more tension in people during the 5-second break, and at the same time, during the entire duration of the 30-second commercial, it induced a higher level of happiness in the audience. The track number 1 scored up to 66.6% higher than the track number two, better supporting viewer brand preference (Real Eyes, 2022).

Examining the emotions that people experience during individual advertising campaigns and their influence on the overall attitudes or decisions of viewers can be very useful. Thanks to the acquired knowledge, marketers can more effectively communicate their ideas to the public. These are not only purely sales advertisements, but also, for example, campaigns that aim to highlight some so-

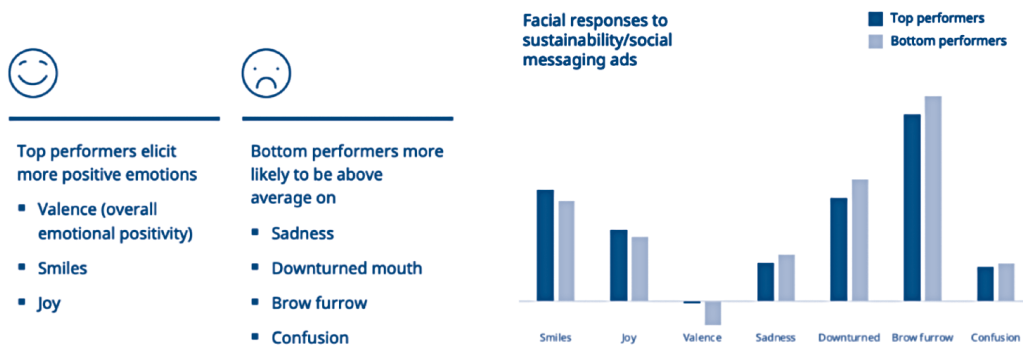
Figure 3 » Rate of positive emotions in particular songs being tested



Source: Somers, 2019

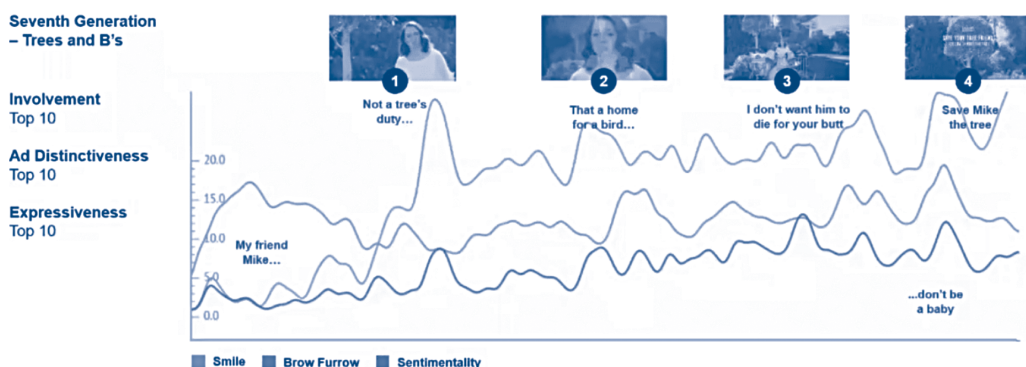
Figure 4 » Top performing ads with sustainable or social messaging have a more emotionally positive tone

Top performing ads with sustainable or social messaging have a more emotionally positive and uplifting tone



Source: Pang, 2022

Figure 5 » Showing the emotions the viewers experience in particular ad sequences focusing on sustainability



Source: Pang, 2022

cially important topic. The consulting company Kantar has compiled an extensive database of advertisements that address social and environmental issues. Since 2016, the number of such advertisements has tripled, but consumers themselves are often not convinced of the credibility of a given advertisement. Up to 64% of people are convinced that brands engage in these topics only for their

profit (Kantar, 2022). In collaboration with Emotion AI company Affectiva, they conducted research that provided a holistic view of consumer responses to the topic of sustainability. They compared successful ads that addressed various environmental issues with unsuccessful ones. The less successful ones are often more concerned with describing the problem than solving it. However, due



to research on emotions when viewing advertising, it was discovered that the more effective ads were those that triggered more positive emotions in people. Although they also contained an urgent need to address an environmental issue, these ads symbolised a more optimistic call to an action. This is to say that advertisers should consider incorporating humour and optimism into their work (Pang, 2022).

2.1 Technological tools of Emotional AI

We differentiate the basic three types of Emotional AI:

- Text AI – it analyzes the written word, for example from forms or online comments. It can thus evaluate whether the content of the message is positive or rather negative.
- Audio and Voice Emotion AI – it analyzes human speech. It is most often used in call centres when communicating with customers. Based on evaluating the emotional state of the caller, it can recommend further steps (for example, choosing a more experienced operator who will be able to respond adequately even to an upset customer).
- Video Emotion AI – it observes eye movements and body language by tracking the user. Based on the analysis of facial muscles and their movements, it can, for example, evaluate with great accuracy what emotion a person is currently experiencing.

Currently, we can find various types of software working with artificial intelligence, which are normally accessible to absolutely everyone with the Internet connection. This is also the reason why artificial intelligence started to be discussed so much. Everyone can try it. It can quickly create texts, generate images, translate text and much more. Emotional AI is only one category of artificial intelligence. Although technological progress has made artificial intelligence accessible to everyone, with Emotional AI we have at our disposal only limited software working in this area. Moreo-

ver, due to its advanced features, it is not freely accessible. However, you can purchase software that, thanks to a rich database of facial movements, can easily determine what emotion a person communicating with artificial intelligence is currently experiencing. So far, such systems are mostly used for research, but it is only a matter of time when Emotional AI will become a household name for many companies. But why should we expect robots to perceive or even reflect human feelings? It is this ability that gives them an added value in overall communication with people. As today various sophisticated chatbots are able to react to customer's emotions, they naturally become more trustworthy for us. This is one of the qualities that are highly valued in marketing communication.

As with other branches of artificial intelligence, with Emotional AI we have the opportunity to choose from a wide range of software from different companies. Software that deals with emotional artificial intelligence includes, for example:

- Affective
- Hume AI
- SourceForge
- MorphCast
- UneeQ – Digital Humanism

Each of the above software carries certain advantages as well as disadvantages. High-quality software that can bring really complex findings in the field of human emotions combines face detection, voice detection (such as tone of voice, intensity, vibration, etc.) and the context in which the user currently finds himself. Perhaps the most famous software available on the market is Affectiva founded by Rana el Kaliouby. At the same time, it also popularizes the topic of Emotion AI, which dispels myths about possible abuses, but also points to important aspects and possibilities of using Emotion AI for the benefit of the whole society.

2.2 Benefits of Emotion AI in Marketing

In addition to the challenges of something still relatively unknown, Emotion AI brings about a num-

Figure 6 » *Example of detection of a driver's capability by Affectiva*



Source: Pang, 2022

ber of benefits that different areas of our society can benefit from. Although we primarily focus on the marketing field in our paper, we will at least briefly mention that Emotion AI can help, for example, in improving the quality of children's education during online classes, more effective diagnosis of mental disorders, increasing road safety thanks to estimating the driver's competence and emotional state, or for example in ensuring better workplace health and safety. However, since the article primarily focuses on marketing, it is noteworthy to mention the examples of Emotion AI being used in the advertising environment or in marketing activities.

In the retail environment, thanks to the installation of computer vision, sellers can capture how their visitors reacted and what their mood was like. A similar advantage draws from using affective counting in the optimization of advertisements, when marketers can better evaluate what a given advertisement triggered in people and how they reacted to it. We can also use this type of artificial intelligence in call centres, for example. Artificial intelligence is able to detect an upset customer right

from the start and thus assign him to a more experienced telephone agent who is able to handle the necessary reactions better. However, affective counting can also be used, for example, in online interviews, when it can confirm or reject the candidate's credibility directly during the interview (Moore, 2018).

The above refers to the use of Emotion AI in marketing, which is likely to be available in the coming years. However, if we do mention it in the article, there is no doubt that the near future will open the door for new possibilities showing us how, thanks to Emotion AI, to improve not only marketing as such, but also other areas of our company. However, we must not forget about possible risks involved, especially in terms of ethics and consumer protection. Thanks to further research and work in this area, we know how to adequately prepare for or eventually prevent possible risks.

3. Methodology

The main goal of our paper was to analyze the importance of using emotions in marketing and not



Emotions affect not only the perception of individual advertising messages, but also person's attention, memory and their decision-making process. All the above aspects are closely related to the human brain.

It is important to note that emotion AI has nothing to do with human empathy, even though it may appear that way at first glance. Since this is artificial intelligence, we are still only talking about a set of computer algorithms that were pre-specified and on which the artificial intelligence was trained. However, thanks to the amount of information, Emotion AI can very accurately detect what emotion the user or viewer is currently feeling. For this, it uses a set of information about facial expressions. Their combinations are characteristic for individual human emotions.

only in the standard form, when emotions can be used by brands when designing advertising campaigns. In the context of modern technologies and the continuous advancement of artificial intelligence, we have mapped the available opportunities for brands when it comes to use of affective computing, also referred to as Emotion Artificial Intelligence. Secondary research consists of the analysis of data that had been collected for other purposes earlier. The data that we mentioned in this paper were obtained mainly from research that was carried out abroad, notably in the United States, as various American universities, such as the Harvard or the Massachusetts Institute of Technology, which largely deal with this topic as they have their own laboratories specialising in emotional artificial intelligence. This gave us the opportunity to look at the current situation from a broader perspective. We did not limit ourselves to data that was obtained in Slovakia, as the field of Emotion AI is much more used abroad. Based on the description and subsequent analysis of the individual tools, we were able to determine the advantages, but also the weaknesses, which we can encounter when using Emotion AI in the marketing communication of brands. We drew data not only from foreign written sources, but also through professional lectures and interviews with people

who are dedicated to this field and were able to provide us with valuable information for the purpose of improving the quality of our work. By summarizing the data obtained from the qualitative content analysis, we arrived at the possibilities of using Emotion AI, which today can be considered rather unrealistic, but based on deduction, we assume that in the context of the swift development of modern technologies, they will be a regular part of the production of the company's marketing activities in a couple of years. As part of the qualitative content analysis, we focus on establishing connections between marketing and emotional artificial intelligence.

The disadvantage of secondary data can be that it is not up to date. Especially in such a field as modern technology and artificial intelligence, it is very important to research current information. However, we tried to prevent this by obtaining information from as many up-to-date and relevant sources as possible. We supplemented them with our own knowledge from practice, which we acquired while researching the given topic or directly when working with individual tools for the possibility of detecting facial movements and subsequent analysis of human emotions. In this way, we wanted to bring readers closer to the current possibilities of using Emotional AI in the imple-

mentation of marketing activities. We also carried out the content analysis of the ways of using the individual tools of Emotion AI and by deduction we arrived at the conclusions set out herein.

4. Results and Discussion

Even though the topic of artificial intelligence has been very popular lately, not only among the general public, but also in the marketing environment, opinions on its use in some marketing activities differ. This is primarily due to a lack of information or incorrect information in this area. We will not stop development, nor should we try to. The constant rejection of modern technologies or resistance to the use of artificial intelligence prevents us from improving the quality of our lives. Emotion AI, which we discussed in our post, can help not only in the marketing environment, but also, for example, in the healthcare sector. It is already being used, for example, in improving the quality and efficiency of diagnosing mental disorders. It is necessary to constantly learn about new technological opportunities to be able to respond adequately to the needs of society. The need to involve emotions in advertising campaigns has been described in various studies. In the paper, we also mentioned several studies that discuss the need to use emotions in marketing. However, the constantly evolving world makes us think about the use of emotions in a different way, more in terms of technology. The activities of some foreign companies aims at defining how the technologies we use daily could respond empathetically to our current needs and emotions. Even if something like this might initially seem absurd or even dangerous, the greatest challenge is to learn to use artificial intelligence for the benefits of individuals and the society as a whole. Although the opinions of experts vary regarding the possibilities and benefits of Emotion AI, it is the incorporation of affective computing into marketing that brings many advantages over ordinary marketing activities. It is knowledge from emotional marketing that we can verify when im-

plementing marketing activities and when investigating consumer reactions with the help of using Emotion AI. These opportunities, which the modern era and development of artificial intelligence offer to an increasingly larger segment of the population, represent a great benefit for company owners, advertising and marketing agencies, but also for the whole academic community. This can result in more marketing messages being more effectively communicated towards consumers. At the same time, these technologies offer in the field of marketing the possibility to respond better to our target group, specifically at the level of communication with an individual. By adapting communication to our current emotional state, companies can choose not only the appropriate moment, but also the form of communication of their message. At the same time, we are fully aware of a rather unfavourable situation for the implementation of such a form of artificial intelligence into marketing. In addition to the financial and technical difficulties of involving Emotion AI in advertising communication, companies may also face categorical rejection of artificial intelligence or encounter various legislative problems in terms of data access.

5. Conclusion

Currently, artificial intelligence is being discussed more and more, also because it has become accessible to everyone with the Internet connection. Even ordinary people can try various text or image software for free, where artificial intelligence will generate the desired output. With this relatively rapid onset of artificial intelligence accessible to almost everyone, many questions do arise. The marketing field has to deal with how the production of various marketing activities will be replaced by artificial intelligence. However, as we mentioned in the article, this is not the only thing that marketers and society will need to face. Development is constantly progressing resulting in the extensive use of emotional artificial intelligence. Today it is implemented primarily in medicine, but we are con-



vinced that it is only a matter of time when this subcategory of artificial intelligence will also be a common part of our lives. It is only a matter of a few years when detecting human emotions at a distance will not be the privilege of only a small number of companies that can purchase expensive software. On the contrary, affective computing will be something that will be able to improve the lives of companies thanks to a better understanding of the consumer. This is the challenge that many companies wishing to adapt to modern technologies are currently facing. They should start looking for ways and uses of emotional intelligence that will build a closer relationship with their customers, help in optimizing marketing activities, and ensure higher profits in the long run. It is thanks to such tools that brands really know better how to communicate to their customers what they need. Thanks to the data they find, they can adapt their advertising activities in real time to the emotional state of their customers. This gives them the opportunity to optimize the advertising costs.

Although using such tools of emotional artificial intelligence is currently unimaginable for most companies, in the short term they will have to adapt to technological advances that will help them understand their customers much better. However, this progress also brings about certain

concerns, such as the misuse of emotional artificial intelligence. Here, the legislation should ensure that the data is always provided voluntarily, and the customer is thoroughly aware of what data he is providing and to which companies. However, this is already happening in many countries in terms of Internet data privacy, so we do not perceive any fundamental problems herein.

The paper provides a brief insight into the importance of emotions in marketing. However, it primarily deals with the topic of emotional artificial intelligence – its benefits, technological possibilities, but also the challenges involved therein. Since these are great benefits not only in marketing, but also in other fields, such as medicine, we need to be constantly engaged in researching and implementing new information in this field. It is understanding the customer's emotions that offers brands the opportunity to implement marketing activities in a more effective way.

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The Evolving Role of Emotion AI in Marketing: An Analysis of Technological Tools and Benefits

ABSTRACT

Emotion AI, also known as affective computing, is a subset of artificial intelligence that uses various technologies such as machine learning, natural language processing, and computer vision to recognize and respond to human emotions. These tools are designed to help businesses better understand their customers' emotions, preferences, and behavior. This paper explores the current state of the technology and its application in the marketing industry. Through a comprehensive review of existing literature and analysis, we will map the available technological tools in affective computing and evaluate their effectiveness in enhancing customer engagement and communication. The results of this study will contribute to a better understanding of the potential applications of Emotion AI in marketing. Additionally, in the paper we will assess the challenges and limitations of affective computing.



KEYWORDS

Affective computing; Artificial intelligence; Emotion AI; Emotions; Marketing

JEL CLASSIFICATION

M31; M32; M39



Why and how to make the first step towards leadership development in current dynamic environment

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* 1. Introduction

The position of a leader comes with many challenges and many different demands. Leaders face many situations in interpersonal relationships in the workplace, new knowledge and practices in their field, and encounter new and unforeseen situations. Their subordinates perceive their behaviour and approach to work as a role model for their own work. Lack of attention to leadership development results in poorer performance in the long term and can have major negative consequences for the team and the leader. Developing this area becomes a necessity for any modern leader who wants to achieve excellent long-term results in his/her position.

However, the willingness to devote time to leadership development alone is not enough. A leader may choose to focus on areas that are unimportant to them while neglecting the important ones. As a result, they bring little or no benefit to him/her. He must therefore choose appropriate development methods for his/her position, field and personality, give them sufficient attention and consult his/her development with competent persons. It is fur-

ther recommended to follow the principles of leadership development, the validity of which has been repeatedly proved.

2. Why it is necessary to develop leadership

Human resource management positively influences business performance by fostering followers' loyalty, satisfaction and trust in their leaders (Macky and Boxall, 2007; Messersmith et al., 2011). Leadership is seen as a skill that can be learned through appropriate development methods over time and experience (Hornsby et al., 2011). It is now being developed through human resource management at an unprecedented rate according to Ardichvili et al., (2016).

Leadership development is perceived as one of the essential activities of human resource management, which is particularly supported by the studies of Blakeley and Higgs (2014), Thakadipuram (2010) and Weinberger (2009). Developing leaders in a company requires a combination of diverse practices, activities and learning opportunities depending on the corporate culture, knowledge and natural talent of the leader making it a very chal-



lenging discipline (Choi et al, 2012; Olivares, 2011; Pinnington, 2011). Leader development can be characterized as the improvement of individual competencies i.e. knowledge of skills and attitudes that contribute to the mastery of the leadership role (Cumberland et al., 2016) and according to Jarošová et al. (2016) especially for those in formally constituted leadership roles. Xiu et al. (2017) also agree with this definition, adding that leaders should additionally be able to learn quickly and adapt their behaviour to different circumstances. Authors Turner et al. (2019) describe leader development in more detail as:

- Development of self-management competences (development of self-awareness and learning ability).
- Development of social competences (ability to build and maintain relationships, form effective teams, communication skills, competences needed to support co-workers).
- Development of other job competences (managerial competences, strategic thinking skills and competences for initiating and managing change).

Mumford et al. (2000) describe four specific areas that provide leaders with experiences crucial to their development. These are assignments to a new challenging task, mentoring, adequate training and practical problem solving experience. This list is also confirmed by Skipton and Lang (2010), adding that action learning is crucial to leader development. The stress importance of integrating learning and development at the individual level with the learning of the organization as a whole leadership development should not be based solely on the individual leader's development.

3. A comprehensive approach to leader development

Hanson (2013) stresses that by focusing solely on the individuality of the leader, we are only devel-

oping one part of the whole, and that it is important to consider and develop leaders and followers holistically within the context of the organization. According to Jarošová et al. (2016), targeted HRM interventions¹ aimed at developing leaders include:

- Learning from experience: challenging work, difficult situations, internships
- Self-learning: online courses, self-study
- Individual development interventions: coaching and mentoring
- Organizational career management activities: Identifying and developing followers for specific positions
- Activities aimed at providing feedback and setting development goals: implementation of 360° feedback, development centers, participation in non-traditional personal development programs, etc.
- Programmes aimed at developing individual leadership competences: tailor-made development programmes created in-house or provided by specialist companies or individuals.

In recent decades, leader development programs have been understood as a long-term process, involving a combination of different interventions that respect the individual characteristics and preferences of leaders (Elkington, 2017). Development interventions should be accompanied by providing opportunities to:

- Self-awareness, including self-reflection of the leader, understanding strengths and weaknesses, learned preferences, and understanding how the leader's behavior affects followers (Warhurst, 2012)
- Developing perceived personal efficacy, reflecting the leader's belief that he or she can successfully implement the behaviors needed to achieve specific goals. The significant impact of the development of perceived personal efficacy is mentioned by Holmberg et al. (2016) in their

¹ Interventions are defined as a planned effort to achieve a desired state (or to eliminate an undesired state). It is an ordered set of activities designed to develop a leader.

study of a 12-day leader development program, and based on a 2-month leader development program, Evans et al. (2017) also confirm their beliefs.

- Developing an individual's identity as a leader. The experience of performing the role of a leader is essential to the development of a leader's identity and plays a vital role in the development of the individual competencies needed to manage the role (Muir, 2014; McCauley-Smith et al., 2013). Through the experience gained, the leader strengthens the potential to acquire additional skills and their identity as a leader.

4. Developing soft and hard skills of leaders

As per the available literature and the research conducted, the training and development of industrial leaders can be defined along two basic lines on hard skills and competencies i.e. vocational competency and professional qualification. And further on soft skills and abilities i.e. the ability of effective leader behavior mainly focused on the relationship with his followers.

Leader development is specific in its focus on soft skills and competencies, however, given the design of the leader development model for medium-sized industrial enterprises, the development of professional competencies and qualifications can also be considered essential. The need to be proficient in both hard skills and soft skills is also mentioned by the primary research respondents as key to being successful in the role of a leader. Methods are suggested for developing proficiency that will enable the leader to develop competencies specific to the focus of the industry in which they operate. According to Elkington (2017), professional competence mainly includes technical knowledge in the leader's field of operation and knowledge of decision-making models and procedures.

In the following table no. 1, the methods of leader development are mapped and categorized with respect to the other two dimensions as per, Garavan et al (2015) – the structural and process dimensions. The structural dimension involves development at the individual level. The process dimension involves development at the level of the team.

Table 1 » Matrix of methods for developing hard and soft skills of a leader

	Development in a group	Individual development
Hard skills	Technical workshop Professional trainings, conferences and lectures Work rotation Inclusion in a project Shadowing Action learning Task assignments	Self-learning Homework assignments and exercises E-learning
Soft skills	Outdoor programmes Development centre Simulations and model situations Skills training Team case studies Team discussions Role-playing Creating coaching and mentoring partnerships Emotional intelligence training Networking and relationship development	Self-reflection Self-assessment inventories or questionnaires 360° feedback Case studies and their creation Personal identity development of the leader

Source: Elkington (2017); Hronik et al. (2008); Jarošová et al. (2016); Turner et al. (2018)



Methods for developing soft skills and abilities are mainly focused on the relationship between the leader and his/her followers. Action learning is complemented by leader-follower feedback techniques and reflective one-to-one feedback (Skipton and Lang, 2010; Waddill et al., 2010). Feedback is very important here and can be applied as multi-resource feedback or 360° feedback (Nesbit, 2012; Skipton and Lang, 2010; Geroy et al, 2005).

Mentoring is crucial in supporting the effectiveness and speed at which leaders can adapt within learning and training programs. It complements a particular worker's theoretical and practical development based on the mentor's experience. Thus, according to Goldman (2012), the mentoring mechanism helps the leader's reflective learning and prevents the formation of adverse reactions to difficult situations. Mentoring works effectively if the mentor does not take over the mentee's responsibility.

In the table 1 we see a list of feasible methods of leader development that are within the competence of human resource management training. These are practical and theoretical group exercises, including professional training, which can be conducted internally, but also externally and be complemented by e-learning courses and other forms of self-study.

Methods for developing soft skills and abilities are mainly focused on the relationship between the leader and his/her followers. Action learning is complemented by leader-follower feedback techniques and reflective one-to-one feedback (Skipton and Lang, 2010; Waddill et al., 2010). Feedback is very important here and can be applied as multi-resource feedback or 360° feedback (Nesbit, 2012; Skipton and Lang, 2010; Geroy et al, 2005). A leader development programme can be a combination of several approaches and can be enriched, for example, by developing the ability to learn itself (Waddill et al., 2010) or by elements of so-called action learning in which specific practical problems are solved.

Dugan et al, (2014) in their research emphasize the desirability of developing individual capacity as a leader before more complex group develop-

ment processes are implemented. According to the results of research on leaders, self-reflection (Waddill et al., 2010) is particularly important for the individual development of a leader, to which other development techniques are linked, see Table 1. With regard to the development of a leader, primarily methods that support the personal development of a leader (Nesbit, 2012) and the development of a leader's identity in the role of a leader (Muir, 2014) are mentioned. Coaching and mentoring in particular play an important role with regard to the development of the mentioned aspects.

5. Creating A Coaching And Mentoring Partnership

Coaching involves leaders consulting a coach to increase leadership effectiveness (Ely et al., 2010). It is characterized by the individual approach of the coach to the leader, i.e., as a service directly tailored to professional and personal development (Bono et al., 2009). Evaluating the effectiveness of coaching as a leadership development tool is problematic, and selecting appropriate metrics to measure effectiveness represents a current focus of leading researchers (Ladegard & Gjerde, 2014).

However, the significant impact of coaching is confirmed by Anthony (2017) and Ely et al. (2010), including the International Coaching Federation (ICF, 2009; ICF, 2013), as they consider it the most effective method of the leader's development. Sonesh et al., 2015 confirm that coaching enables the development of the leader's skills, performance, and approach to work. It contributes significantly to the growth of the leader's perceived personal effectiveness. According to Tooth et al. (2013), coaching results in the growth of the leader's self-esteem enabling an individual to behave desirably in the environment and thus apply the desired leadership style. The leader is more persuasive in communication, according to Anthony (2017), treats followers individually, and treats them as unique individuals, confirmed by Arnold and Loughlin (2010). Valcea (2011) states that the leader delegates more effectively and refrains from over-controlling followers.

Another effective option for the leader's development is the use of mentoring (see studies by Dzikowski, 2013; Lester et al., 2011), where a more experienced worker (mentor) plays a central role and passes on their knowledge to a less experienced worker (mentee). According to St-Jean and Audet (2012), this concept presents many advantages, as most of the problems faced by the mentee have been experienced by the mentor in the past and can provide support and wise advice. According to Bawany (2014), the mentor should support the leader, give them courage, and create an environment of healthy interpersonal relationships where confidential matters can be discussed openly.

In today's fast-paced times, where rapid innovation is often critical to an organization, employees need to adapt, learn and promptly apply the skills and knowledge they have acquired. According to Bawany (2014), mentors can use verbal persuasion strategies to help leaders explore and sometimes change their attitudes and beliefs (Radu Lefebvre, Collot, 2013). The mentors can also influence the leader's emotions and reduce the stress of uncertain future developments.

Mentoring is crucial in supporting the effectiveness and speed at which leaders can adapt within learning and training programs. It complements a particular worker's theoretical and practical development based on the mentor's experience (Norzailan, 2016). Thus, according to Goldman (2012), the mentoring mechanism helps the leader's reflective learning and prevents the formation of adverse reactions to difficult situations. Mentoring works effectively if the mentor does not take over the mentee's responsibility. The mentor's responsibility is mainly related to building a relationship with their mentee, as stated by Hamlin and Sage (2011), and providing appropriate advice while leaving all the agenda to the mentee.

There are other methods associated with the use of coaching and mentoring techniques that can be used for leadership development in creating coaching and mentoring partnerships (Muir, 2014). These include action-learning techniques Hanson (2013) and action-oriented activities: interpersonal skills development, and the use of scripted interventions.

If we consider other possible development methods, assistance can be mentioned, in which a trained employee is assigned as an experienced professional's assistant and helps perform the tasks. The method results in frequently used 'task assignment' and functional or geographical job rotation where the employees are assigned duties in different parts of the organization, workplaces, departments, and sections. Leaders with expanded areas of operation in their role can develop diverse skills and competencies, as confirmed by the authors' research (Beltran-Martin et al., 2008) while taking responsibility for a broader range of tasks.

The team and relationship-oriented competencies development includes feedback methods and multi-source feedback supplemented by leader self-reflection. Andreadis (2002) also mentions the critical role of conflict prevention and resolution methods. Subsequently, specific methods of development are applied, particularly team-building exercises and games, which may include improvisa-



tion games, storytelling (Gagnon et al., 2012), team development, and team cohesion development, including developing an understanding of the role and value of team leadership, the power of teamwork, and strengthening commitment to teamwork.

According to Turner et al. (2018), leadership skills training can be oriented toward developing leadership and relationships with followers. Decision-making techniques include action learning cycles, group coaching projects, or real-life problem solving, supplemented by group discussions and feedback, team building exercises, and games. Again, the leader's emotional intelligence can be developed through self-reflection and discussion coupled with feedback through emotional coaching and the use of Muiyia and Kacirek's (2009) Emotional Competence Questionnaire and Muir's (2014) Leader Identity Mentor Development. An important role is played by networking development through establishing partnerships, setting networking expectations and conditions, and collaboration among stakeholders, including coalition building, Andreadis (2002). Methods used outside the workplace include lectures, hands-on demonstrations of work practices, case studies, workshops, simulations, brainstorming, role-playing, and others (Turner et al., 2018).

However, we also encounter negatively perceived competencies, and in their case, development techniques are mainly aimed at reducing the negative impact of undesirable leader competencies. To assess whether leader competence is desirable or not, we use the studies by Northouse (2016) and Edwards et al. (2015), who cite incompetence, heartlessness, and corruption as universally valid behavioral attributes. Turner et al. (2019) add undesirable competencies with hypocritical behaviors, dismissive, performance-thwarting, manipulative, unsupportive, and lacking feedback. It also mentions the short-term and self-centered leader's

orientation exercising excessive risk-taking and creating gender power relations and barriers in the work environment.

6. Conclusion

The study aims to answer why and how to develop leaders according to modern knowledge. It looks at the areas where leaders can and should direct their development. It includes an overview matrix of methods for developing leadership skills. The plans are divided into four categories according to hard or soft skills and individual or group development. Development is brought about by the actual practice of the leader in their position. In addition, the leader can receive personal training and feedback from subordinates and supervisors and attend courses and programs for leaders.

Leaders are encouraged to work with a coach to help them improve their performance, skills, and approach to work. As part of the coaching process, they regularly consult with a coach about their development and the challenges they face professionally and personally. Mentoring is also a compelling development opportunity. The leader-mentee works with a more experienced colleague-mentor who has already achieved more significant progress and experience in the areas the mentee is working on. The mentor passes on their experience and gives recommendations for dealing with different situations. The study also mentions other methods of leader development marginally.

The results of this review study will support future research toward developing so-called competence models. These models are defined by organizations and companies as desirable and necessary competencies and address the areas to develop. They are widely used in human resource management and development, employee performance management, quality management team formation, and corporate strategic goals achievement.

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Why and how to make a first step towards the leadership development in current dynamic environment

ABSTRACT

This overview study builds up on the importance of leadership competencies and its development in managerial work. The aim of this overview study is to answer the question why and how to develop leaders according to recent research results. The authors summarize methods applicable to support leadership development. As a result, authors present matrix overview, where the leadership development methods are structured and divided in four categories based on the individual or team development and focus on hard/soft skills. One of the key aspects, strongly emphasized by the authors, is to approach leadership development with respect to sensitive balance and in all its complexity. As a next step this overview study should support further research to clearly define which leadership competencies should be developed based on the specific competency model.

KEYWORDS

leadership development; competencies; overview study

JEL CLASSIFICATION

M12; J24



Moral Competence in Military – Professional Contexts

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* 1. Introduction

The authors consider the topic “Moral Competence in Military – Professional Contexts” to be topical in relation to the current international situation, Czech society and the Armed Forces of the Czech Republic (AFCZ). The changing nature of Czech society and the current tense security situation expect educational institutions of all levels to play a significant role in the formation of moral qualities in addition to providing knowledge. At the level of primary and secondary education in relation to the fulfilment of the civic role, and at the level of tertiary education in relation to the professional role and professional competence.

In this sense, the military-professional environment, represented for the purposes of this text by the Army of the Czech Republic (CzA), faces not only the task of preparing and educating citizens living in the loose and unstable conditions of contemporary democratic society into disciplined members of the CzA, dedicated to the service of their country and their profession, but at the same time to prepare capable and responsible commanders who should be true leaders for their subordinates. In both dimensions, the irreplaceable role of moral competence and character formation

of individuals acting in various social and professional roles is evident.

The need to equip soldiers with the knowledge, but above all with the skills and ability to take value attitudes to solve moral dilemmas in the exercise of their profession, especially in stressful and non-standard situations associated with the conduct of military and combat activities, was personally convinced by one of the authors on missions in Kosovo (KFOR) and Afghanistan (SFOR), where he served as a military chaplain. Also, personal experience in command, professional and pedagogical functions has confirmed the authors that dealing with situations and problems with moral connotations is not an isolated phenomenon in the military profession, but a normal part of a soldier's proper conduct, an expected and required performance of a good commander – a military leader.

The civilian environment, however, does not allow for sufficient preparation for the possible specifics of the military profession, for coping with challenging situations related to the conduct of military activities and for professionally correct military conduct. It is therefore essential that the military environment and, in particular, its educational institutions pay due attention to the recogni-



tion and development of the desirable moral and voluntary qualities of the adult individual for the performance of the military profession. The importance of moral competence in the military-vocational environment of the CzA, in the light of these facts, has noticeably increased.

In connection with the requirement to shape and develop in commanders of all levels their disposition and abilities to lead people, since 2014, the University of Defence (UoD) has been running continuous five-year study programmes (SP 2014 and SP 2019), in which leadership education is part of the curriculum. In this context, if leadership can be seen as “a process of social influence through which a person can enlist the help and support of others in the performance of a common task” (Chemers, 1997), it is necessary to disentangle this “process of social influence” into the various sub-processes that shape the leadership process. One of these core sub-processes is the development of moral competence.

The results of a number of research studies, to which the authors of this article will refer, confirm that the current technologically advanced globalised society shapes human personality in a specific way, and therefore efforts to build and develop moral competence are essential for the armed forces. Thus, for the CzA environment, in order for the CzA to participate in the formation of the required moral social standard, to play its security role in defending the sovereignty and territorial integrity of the Czech Republic (CZ), and at the same time to fulfill its allied role within the North Atlantic Treaty Organization (NATO), its members must fulfill the requirement of the necessary moral minimum (Werner, 2002). This presupposes finding a form of development of moral competence that would link professional training, education and professional practice with the fulfilment of moral values of the military profession and also with the fulfilment of socially accepted moral values of the European civilisation context, taking into account the value specifics of Czech society (Vacek, 2006; 2008; 2010; 2013; Rabušic and Humanová, 2009;

Prudký, 2009; Hábl, 2015; Muchová, 2015; Anýzová, 2018).

It is necessary to ask repeatedly (Mikulka, 2014a; 2014b; 2015; Mikulka et. al, 2018; 2019; 2021) whether and how the CzA is prepared to build and develop moral competence and how such development should affect the system of training and education of members of the armed forces. The author's intention and goal is to provide an answer to the question by proposing a functional model for the development of moral competence of CzA members, using the collected knowledge and resources.

In their work, the authors drew on published findings on the development of moral competence and ethics education in the armed and defence forces environments of selected democratic countries, namely the United States of America, the United Kingdom, Canada, Australia, Norway, the Federal Republic of Germany, France, the Netherlands, Japan and Israel (Aronovitch, 2001; Huntley, 2003; Crossley, 2006; Mileham 2008; Wolfendale, 2008; Robinson et al, 2008; Kasher, 2008; Olsthoorn, 2008; Berntsen and Rolfsen, 2008; Cook, 2008; Fumio, 2008; Desjardins, 2008; Cullen, 2008; Hude, 2008).

Another source for the authors was their own selected published results (Mikulka, 2014a; 2014b; 2015; Nekvapilová and Mikulka, 2016; Nekvapilová et al. al, 2018; MacGillavry et al, 2022), obtained within the research projects “Development of social competences of the military leader” (LEADER DZRO K104), “Moral integrity of the personality of a member of the Army of the Czech Republic” (SV15-FVL-K104-06-MIK) “Leader development for NATO multinational military operations” (NATO HFM RTG 286), “Leading ground operations” (LANDOPS DZRO FVL), “The influence of group dynamics on solving moral dilemmas in the military environment” (SV20-FVL-K104-GIL) and “Moral decision-making in the military environment” (SV21-FVL-K104-MIK).

2. Definition of the objective, conceptual and methodological approach of the elaboration

For the review study “Moral Competence in Military-Professional Contexts” the authors set the main goal: “To define moral competence for the military-professional environment and to propose possibilities for its development”. This main objective was elaborated in the thesis through four sub-objectives:

- Sub-objective 1: “Defining the basis of moral competence in the military-occupational context”.
- Sub-objective 2: “Conducting an analysis of the current state of moral competence in the military-professional context”.
- Sub-objective 3: “Design of the process of building and developing moral competence in the military-professional context”.

The object of scientific interest of this review study is the members of the Ministry of Defence (MoD), specifically CZA, participants of basic, professional and career courses for men, NCOs and warrant officers, Junior Officers Courses (JOC) within the Training Command – Military Academy (TC-MA), full-time UoD students undergoing the ethics education and training system, participants in Senior Officers Courses (SOC) and General Staff Courses (GSC), and the current level of building and developing moral competence in the CZA. The subjects of the research were moral competence, military ethics and ethics education in the MoD and in the CZA.

In their work, the authors used basic scientific methods, which are mainly logical methods, and specific methods, namely content analysis of sources containing theoretical approaches and foundations of moral philosophy, sources containing historical knowledge about military ethics, sources describing models of ethical education and building moral competence, documents related to combat ethos, issues of military ethics and ethical education, and sources containing knowl-

edge about available standardized measurement tools for measuring value attitudes and moral reasoning and actions.

External strategic analysis tools were used to analyze the role of ethics education. Other methods used were the method of written inquiry; synthesis of available knowledge on the state of implementation of ethics education and ethics propeutics (Molnár, 2012).

In using content analysis of the analyzed sources and documents, the authors proceeded from the assumption that the purpose of examining sources and documents is to understand the content and its subsequent interpretation. Within the process of the analysis itself, the authors focused on the selection of the content elements of the document to determine their relevance in relation to the object of study, as well as their interrelationships. The final step of the process was the creation of a picture of the analysed source or document by converting the identified concepts – content elements into the form of a reduced text in natural language, i.e. in the form of a so-called content characteristic of the document, in relation to the object of research (Balíková, 2003).

The analysis of the current level of moral competence in the CZA environment was created using a combination of external strategic analysis tools: one heuristic and two analytical methods. The “Delphi” method (Delphi method), which is one of the most used methods of qualitative risk analysis and expert estimation (Grasseová et al., 2010), was used for data collection and formulation of the initial set of statements.

The obtained set of attitudes (assertions) was analyzed using the “problem tree” heuristic, which is used to refine and describe the problem in order to identify the key negative statement, its causes and consequences, and to indicate and visualize the interrelationships, allowing to understand the structure of the problem. From the collected set of expert attitudes (statements), negative attitudes (statements) were selected, the key negative statement was identified and the remaining ones were



divided into causes and consequences. Subsequently, this heuristic construct was visualized and correlations were added.

Following the “problem tree” heuristic, specifically the identification of the key statement, visualization and presentation of the problem structure, a stakeholder analysis was conducted using the stakeholder influence analysis method. The aim of using this method was to identify stakeholder groups and then individual stakeholders that are (can be) involved in the problem solution, formulating assumptions about these stakeholders (their interests and goals in relation to the problem to be solved).

Subsequently, a synthesis of the available knowledge was made, by which the authors mean a progression from the parts to the whole. In the case of this text, for example, the overall status of the implementation of the development of moral competence in CzA, created by linking the analysis of the knowledge obtained about the activities of the different actors involved in this process.

The results of the research used were based on a combination of the NEO Personality Inventory (NEO-PI-R), the Portrait Values Questionnaire (PVQ) and the Moral Competence Test (MCT). This combination of tests was developed in accordance with deontological assumptions, based on the principle of identifying the person being assessed, specifically the five observed dimensions of his/her personality defined using the five-factor model of personality (McCrae and Costa, 2000; Hřebíčková et al. 2002), with value attitudes defined using Shalom Schwartz’s theory of values (Schwartz and Bilsky, 1987; 1990; Schwartz, 1992; 2001; Schwartz et al, 2001), and also based on Lawrence Kohlberg’s theory of individual moral development (Kohlberg, 1964; Kohlberg, Hersh, 1977; Kohlberg et al., 1983) and the dual aspects theory of moral action (Slováčeková, 2001; Lind, 2004).

3. Defining the foundations of moral competence in military-professional contexts

The content of this chapter is the definition of theoretical sources for moral competence for the military – professional environment in the context of the European (Western) concept of moral philosophy and the definition of moral integrity as a key and overarching product of moral competence. The chapter also includes a neuro-ethical/neuro-physiological approach to the topic of morality from the position of the natural sciences and the basic societal underpinnings of moral competence for the military-professional environment.

3.1 Theoretical foundations of moral competence in the military – professional context

In European moral philosophy, we can encounter a varied and wide-ranging approach to ethical issues. Among the most prominent ethical concepts of antiquity and the Middle Ages were Plato’s Stoic virtue ethics, Aristotle’s ethics of the beatitude of mortal beings, Epicurean ethics, St. Augustine’s ethics of skepticism, St. Augustine’s ethics of love, and Thomas Aquinas’ ethics of natural law (Špinka et al., 2014).

The moral philosophy of modernity and modernism is associated with determinism and the ethical concepts that stem from it. These include David Hume’s ethics of human nature, Immanuel Kant’s ethics of moral law, Georg Wilhelm Friedrich Hegel’s practical philosophy of history, Søren Kierkegaard’s religious ethics of the individual’s dilemma, and John Stuart Mill’s utilitarianism, Franz Brentano’s ethics of the good and the rightness of emotions, Friedrich Nietzsche’s ethics of immoralism and power, Jean-Paul Sartre’s ethics of existentialism, and the hermeneutic (phenomenological) ethics of Martin Heidegger and Hans-Georg Gadamer (Čapek et al. 2015).

The modern, postmodern, and post-factual periods of European society gave rise to the situation

ethics of Paul Tillich and Joseph Fletcher, the discourse ethics of Jürgen Habermas, the virtue ethics of Peter Köck, and the ethics of the morality of words of Ludwig Wittgenstein, Stanley Cavell, and Cory Diamond, Emanuel Levinas's interpersonal ethics, Peter Singer's practical ethics, Bernard Williams's ethics of critical reflection on lived moral reality, Immanuel Kant's current interpretation of ethical and political theories, and the rediscovery of virtue ethics for postmodern and postfactual man. (Jirsa et al, 2016).

Also, intensively developing in this period is the pursuit of objective reflection on moral action, built on the intersection of moral philosophy and psychology, "...primarily associated with the concept of courage to moral action as a necessary factor shaping, together with moral feeling (moral sense) and thinking (moral mind), what we call the overarching concept of psychological theories of morality – the moral integrity of man" (Krámský, 2015, p. 10).

This is the concept of the psychology of morality, comprising psychological theories of moral development, especially Jean Piaget's developmental stages theory, Lawrence Kohlberg's theory of the development of moral judgments, Carol Gilligan's morality of care theory, and George Lind's dual aspects theory of moral action (Lind, 2004; Krámský, 2015).

However, across all of the above ethical concepts in the European cultural context, a basic distinction in the conception of morality can be highlighted: individualistic and altruistic. The individualistic (eudaimonistic) conception is based on the individual's moral responsibility for and to himself in the sense of doing what does not morally harm him and enables him to do good. In this sense, then, it is about a successful life (eudaimonia) whose building blocks are virtues (areté) and practical reason (phronesis). The individualistic conception is sometimes criticized for being too egoistic and oriented towards one's own ego and preference for one's own "happiness" (Hume 2009). The eudaimonistic approach to morality, the so-called

virtue ethics, has its roots primarily in the legacy of Plato and Aristotle (Špinka et al., 2014).

In contrast, the altruistic conception (morality of universal duty) is based on prosocial motivation related to helping others and serving society. In this conception, the value of relating to other people is preferred over one's own "happiness" and manifests itself as a tendency to "...enhance the overall well-being of another person, whereby the behaviour brings no apparent benefit to the actor, but often requires some sacrifice on the part of the actor" (Reichelová, Baranová, 1994). The altruistic ethic of duty is rooted primarily in the legacy of Immanuel Kant (Kant, 2005).

In the search for a theoretical basis for the moral competence of military professionals, there are essentially two possible approaches. An intuitivist approach (David Hume, Arthur Schopenhauer, Jonathan Haidt and others) based on emotion and intuition, which is critical of rational conceptions of morality. The second approach is the rationalist approach, represented mainly by deontology and utilitarianism (Krámský, 2015).

In the context of the demands and specifics associated with moral decision-making and action in the military profession and the conduct of military activities, one can clearly lean towards the rationalist approach, and specifically towards the deontological conception and utilitarianism, based on the following arguments. The first argument for this choice is based on the conclusion that both of these theoretical starting points allow "...the creation of a universal moral theory that would offer an objective criterion for the rightness or wrongness of any action" (Čapek et al. 2015, p. 179). Another argument is that the moral conceptions of deontology and utilitarianism share and are close to a view of morality that emphasises the cognitive-rational aspect, i.e. the ability to rationally judge the rightness and wrongness of actions in relation to a rationalised norm. The third argument is the possibilities of both conceptions. The deontological conception allows for the definition of theories of the development of moral reasoning, such as Law-



rence Kohlberg's level model (Kohlberg, 1964; Kohlbergm, Hersh, 1977; Kohlberg et al., 1983) and their practical applications allowing for the creation of tools to measure moral decision-making and action (Lind, 2004). Utilitarianism, based on eudaimonism and virtue ethics, is the basis of the theoretical concept of moral integrity (Krámský, 2015).

3.2 Neuro-ethical foundations of moral competence in a military-professional context

The topic of moral decision-making is also reflected in the field of neuro-ethical approach, based on natural sciences. The starting premise was the thesis that morality has its somatic address in the human organism. One of the earliest attempts was the research of Moriz Benedict (Verplaetse, 2004), who investigated the differences between the brains of normal people and those of people with a criminal record (Benedict, 1881). The best known and probably the most frequently cited study related to the neuroanatomy of moral decision making is the so-called Pineas Gage case. Using this case, neuropsychologist Antonio R. Damasio published a link between brain damage and the transformation of an individual's moral decision-making and actions, leading to a loss of empathy (Damasio, 1994; Hurtubise, 2012).

Following Antonio R. Damasio, a number of theories have emerged linking the social-emotional functions of a person's brain to their moral decision-making and actions. For example, the discrepancy in orientation between rational, cognitive ethics (Kant, Mill) and intuitionistic ethics (Hume, Schopenhauer, Haidt) has been interpreted by some authors (Greene, 2009; Greene et al., 2004) as a distinction between different neural systems and between patterns of neural activity. Based on the results of solved moral dilemmas, Joshua D. Greene (2015) concluded that there are neurobiological differences between emotional moral intuition (moral feeling) and rational moral judgment.

Moral intuition, according to the neurophysiological approach, is evolutionarily determined, automatic, emotionally influenced, and centered in the right cerebral hemisphere (Greene, 2015). In contrast to authors with a theological, philosophical, and psychological orientation, who emphasize religious, socio-cultural, and personality factors, the level of moral decision-making and action is "innate" according to the neurophysiological approach – it is the result of neuro-physiological factors (Mendez, 2009).

The tension between the socio-cultural and neuro-ethical approaches points to a new trend in the approach to morality and moral competence (Christensen, 2020). If the validity of a neuroethical basis for moral decision-making is confirmed, this would bring about a number of significant changes in the field of applied professional ethics, including the need for a change in the approach to developing moral competence through ethics education and leadership in military-professional settings.

3.3 The social basis of moral competence in a military-professional context

The authors using the approaches of Thomas Lickona and Hans-Joachim Werner interpreted the social foundations of moral competence. According to Lickona (1992, pp. 61–62), the doing of practical moral acts is a consequence of the congruence of moral knowledge, moral sentiments, and moral action. According to Hans-Joachim Werner (2002), moral action can be seen as a set of activities that promote the considerateness / sensitivity / attentiveness of the actor towards him / herself and towards the world around him / her (Werner, 2002, p. 45) in a Euro-Atlantic civilizational context. The role of the state in this sense is that of protector. The pluralistic state has the right to establish and require the fulfilment of a moral minimum so that individual freedom is not infringed and no one can threaten or injure the dignity of others. One of the few ways in which it is possible to influence a person's decision-making in terms of

fulfilling the moral minimum required by the state in a pluralistic society is through the purposeful construction and development of moral competence (Werner, 2002; Muchová, 2015)

For the armed forces and security forces of the state, in order to participate in the formation of the required moral social consensus, to play their role in the defence of the sovereignty and territorial integrity of the CZ, and at the same time to fulfil their allied role within the North Atlantic Treaty, the requirement of the necessary moral minimum must be fulfilled in their environment. The fulfilment of the required moral minimum in the environment of the Armed Forces of the CZ is at the same time an essential prerequisite enabling the fulfilment of the objectives and mission of the Armed Forces, which in this context is assigned to the Armed Forces of the CZ as a state security institution.

The environment of the Armed Forces can be characterised as a set of elements which, in mutual interaction, enable the provision of national defence. This system can be divided into internal and external parts. The external elements can include mainly the state's security policy, financial, recruitment, logistic and technological resources (Pokorný et al., 2013). The internal elements of the military environment can include sets of activities related primarily to the management of human resources, information and material inputs and outputs.

The military environment is very specific and at the same time very complex. In the area of internal elements, the specifics of the military environment are manifested primarily in the area of human resource management (HRM). The nature of contemporary military and non-military operations requires the extension of traditional managerial approaches to HRM in the military-professional environment to include leadership (Ullrich et al., 2017; 2018). Leadership for the military-professional environment is understood as a certain process of social influence leading to the achievement of common goals (Kaiser et al. 2012, pp. 119–135; Spendlove, 2007, pp. 407–417; Yukl, 2012. pp. 66–

85). Placing emphasis on the morality of the leader's actions and the leader's emphasis on the morality of the followers' actions in the leadership process allows for the implementation of moral competence in a specific way in the leadership process. The tool for building moral competence is ethical leadership, which enables the emergence of a moral-value professional environment (Brown et al., 2005; Brown and Treviño, 2006a; 2006b, Senge 2007) and the creation of conditions for the professional, personal moral development of individuals.

4. Analysis of the current state of development of moral competence in military-professional contexts

The relationship of professionals to the morality of conduct and ethical principles of the profession and, above all, the way in which moral competence is used in professional processes, speaks not only about their own value pattern of professional conduct, but also about the moral capacity of the organization. For the analysis of the readiness of the Czech military and professional environment to build and develop moral competence the following objectives were set:

- To evaluate the historical, normative and situational preconditions for the development of moral competence.
- To identify current problems related to the practical implementation of ethical education.
- To characterize the significant risks that may threaten the use of ethics education in the development of moral competence.

The analysis of the assumptions confirmed that the development of moral competence is determined by the existing historical continuity (Gottwald et al., 1981; Dvorský, 1991; Patočka, 1992; Vondrášek, 1993; Vondrášek et al., 1997; Hodný and Sarvaš, 1998; Nekvapilová, 2003), the quality of accepted and required standards (Abrahám et al., 2019; Rozkaz Ministra obrany č.6, 2013; Ministerstvo obrany ČR, 2019a; 2019b; Gerhát, 2019; Minis-



terstvo obrany ČR, 2021; Ministerstvo obrany ČR, 2017; 2020a; 2020b) and by fulfilling the necessary situational factors determining the quality of practical implementation of ethical education and elimination of risks that may threaten the development of moral competence.

The analysis of the historical development in the conditions of the Czechoslovak and Czech armed forces has demonstrated the effort to maintain historical and content continuity, which can be built upon. It also revealed risks related not only to its external (ideological) but also to its internal (professionally one-sided) disruption.

The analysis of the normative assumptions revealed that the basic normative assumptions for the development of moral competence are established in the conditions of the CzA, mainly protected by the Czech Armed Forces Doctrine (Army of Czech Republic, 2004). At the same time, the Czech Armed Forces Doctrine highlights the need for combat ethos and its development. A tension has been identified between the doctrine, which considers combat ethos as its foundation and emphasises it as an absolute requirement in relation to all members of the CzA, and the readiness of the army to implement a system of ethical education as a basic tool for building and developing moral competence (Mikulka, 2018).

A serious risk for the fulfillment of the normative prerequisites of ethical leadership in the CzA environment is the fact that the Code of Ethics of the Ministry of Defence Employees (Order of the Minister of Defence No. 6, 2013) does not allow to cover all areas of the performance of service of a professional soldier and, above all, does not cover the specifics associated with the exercise of moral competence in the conduct of military activities. The Delphi method was used to analyze the situational assumptions (to obtain the data). The limitations and risks associated with the use of the Delphi method (relatively small number of respondents, subjectivity of statements, motivation for participation, time-consuming, and the need to use feedback if no consensus was reached) were

partially minimized by the fact that the formulation of the questions built on previous unstructured interviews and close professional collaboration with the group of experts approached. The purpose was to obtain experts' views on the role of military professional ethics and ethics education in CzA. (Mikulka, 2014b, pp. 25–26).

More precise definition and identification of the problems and finding the key negative statements was done using the problem tree heuristic. To create the problem tree, a set of statements was used, which were generated through data collection and analysis using the Delphi method. From these, negative statements were selected (and partially stylistically modified), from which the key problem (statement) was identified: ethics education is not implemented systematically (planned, organized, deliberate, systematic) in CzA conditions. The remaining problems (negative statements) were broken down into causes and consequences (Grasseová et al., 2010).

Stakeholder influence analysis was used to establish underlying assumptions about the risk-stakeholder nexus in relation to military professional ethics and ethics education in CzA. Its implementation consisted of identifying stakeholders, formulating risks and assumptions about these stakeholders, assessing them in terms of their importance and certainty, and then analysing the relationship of the stakeholders to the development strategy — in this case, military ethics and ethics education (Grasseová et al. 2010, p. 201).

From the analysis conducted, it is clear that the internal environment of the CzA is not yet sufficiently prepared for the development of moral competence. However, the reality remains that moral competence is a necessary and indispensable prerequisite for fulfilling the requirement of building and developing a combat ethos.

A comparison of the results of both analyses (Analysis 2014 and Analysis 2018) of the readiness of the Czech military and professional environment for the use and development of moral competence shows that the key situational prerequisites

remain virtually unchanged. The quality of the environment is determined by the quality of the system of ethical training of military professionals, which is related to the process of developing moral competence. This process is fulfilled through the development of military professional ethics and, above all, through ethics education and propedeutics. However, the conclusions of both analyses show a virtually unchanged situation between the results of the 2014 and 2018 analyses. It can be positively assessed that the concept of “military (professional) ethics” was clearer and more understandable in the Czech military-professional environment in 2018 compared to 2014, and that the CzA environment in 2018 compared to 2014 better enabled the development of moral values of the military profession in military professionals. However, a comparison of the two analyses also shows that there has been no qualitative shift in addressing key issues and topics. Repeated analysis justifies the conclusions that ethics education and ethical propedeutics is still carried out in CzA in a generally non-conceptual manner, in an insufficient scope and breadth. The implementation itself depends on the conditions created for it by individual commanders, leaders and professional chiefs responsible for military and professional training, as well as on the capabilities, approach and inventiveness of individual educational entities dealing with this issue.

A natural consequence of the above described situation is the fact that issues and topics related to the development of moral competence are not perceived as important and necessary in the Czech military and professional environment and are not given adequate attention. The long-term absence of systematic education in the field of professional ethics negatively affects the process of developing moral competence and has a negative impact on the ability of commanders and members of units and formations (facilities) to build and develop a combat ethos, which the Czech Armed Forces Doctrine considers to be one of the supporting elements of functional armed forces and an absolute

requirement in relation to all members of the Czech Armed Forces (Czech Armed Forces Doctrine 2019, p. 9). The 2014 and 2018 analyses have repeatedly demonstrated the tension between doctrine and its requirements and the daily realities of life in individual CzA units and facilities (including educational ones). In the daily realities of life in CzA units and facilities, the actual perception of the importance and relevance of moral competence does not match the doctrinal requirement for this competence, exemplified by the emphasis on the moral integrity of CzA members. The analysis has shown that the Czech military and professional environment is not sufficiently prepared for the doctrinal approach to moral competence.

From the conducted analyses and their comparison, it can be concluded that the change in the quality of the Czech military-professional environment and the creation of conditions for the use of moral competence in fulfilling the requirements of the Czech Armed Forces Doctrine on combat ethos are directly linked to the creation of a functional model of ethical education and ethical leadership and its successful practical implementation.

At the same time, the 2014 and 2018 analyses confirmed that the greatest influence on the success of ethics education and ethical leadership will be – apart from the experts who will implement them – primarily command and decision-making authorities at the tactical and operational levels. These are unit and organisational unit commanders at the company / battalion / battalion / section / fleet, brigade / regiment / base / wing, force headquarters / command TC-MA and UoD levels. For the strategic level – GS, MoD, the model of ethical education and ethical leadership is mainly linked to the area of doctrines, strategic and conceptual documents, as well as political support and accountability.

The analysis of situational assumptions showed that ethics education and ethical propedeutics is implemented in CzA in insufficient scope and breadth, with a focus on a functional approach and with a missing element of an aspirational ap-



proach. The implementation itself depends on the conditions created by the various organisational units of the CzA and on the capacities, approach and inventiveness of the individual entities dealing with this issue. Personal prerequisites for ethical leadership are not systematically researched or purposefully developed in future commanders.

5. Design of the process of building and subsequent development of moral competence in military-professional contexts

As shown by the results of one of the studies aimed at determining the moral-value profiles of military professionals, where it was possible to demonstrate “that in the value profiles of the group of students – military professionals as a whole the Openness to Change value profile is more strongly represented than other profiles, which rather corresponds to the preferences of the age group in the whole population than to the desired changes in preferences with regard to the necessary degree of identification with the professional value Conservatism” (Nekvapilová, 2018), the ability to take a professionally and personally mature moral stance cannot be taken for granted in military-professional conditions. Such an attitude must be built, developed and eventually required, which ultimately means building and developing a system of ethical education and ethical leadership. In this context, it is necessary to perceive the tension between the doctrinal requirement for a level of moral competence and the results of the analysis conducted (Chapter 4), reflecting the ethical realities of the military-professional environment.

From the comparison of approaches to the issue of ethics and ethical education in selected foreign military – professional environments of armies (Aronovitch, 2001; Huntley, 2003; Crossley, 2006; Mileham 2008; Wolfendale, 2008; Robinson et al., 2008; Kasher, 2008; Olsthoorn, 2008; Berntsen and Rolfsen, 2008; Cook, 2008; Fumio, 2008; Desjardins, 2008; Cullens, 2008; Hude, 2008; Mikulka et al., 2019), the observation is that when the so-

called functional approach is favoured in these environments, the educational emphasis is placed on the effectiveness of ethical leadership through the creation of desired behavioural models. The risk of this effective approach is the possibility of suppressing the moral autonomy of those being educated. In contrast, the preference for the so-called aspirational conception places emphasis on the moral character development of members of the Armed Forces, which character is perceived to be as important as effectiveness. In this case, ethics education focuses on the building and development of right action, flowing from one's own moral autonomy (Mikulka et al., 2019).

In relation to the fulfilment of the role of the military leader as a well-rounded qualified individual, fulfilling a role that has a moral dimension, the functional approach is generally considered inadequate, as it does not fully respect the individual as an autonomous moral agent (Robinson et al., 2008). For this reason, an aspirational approach, which more fully develops the concept of the military profession as an honourable mission and emphasises the development of the character of the military leader, is suggested as more appropriate for the ethical education of future military leaders (Mikulka, 2017; Hefman et al., 2022). The proposal for a balanced implementation of both approaches in the Czech military environment in accordance with the results and findings of the conducted research (Mikulka, 2017; Mikulka et al., 2018) is the content of the following proposal for a model of building and developing moral competence in the Czech military professional environment.

5.1 Proposal for a Model of Building and Development of Moral Competence in the Czech Military – Professional Environment

The authors propose that the development of moral competence in the military-professional environment should use, according to the proposed model, both aspirational and functional approaches of ethical education and leadership (EEaL). Ac-

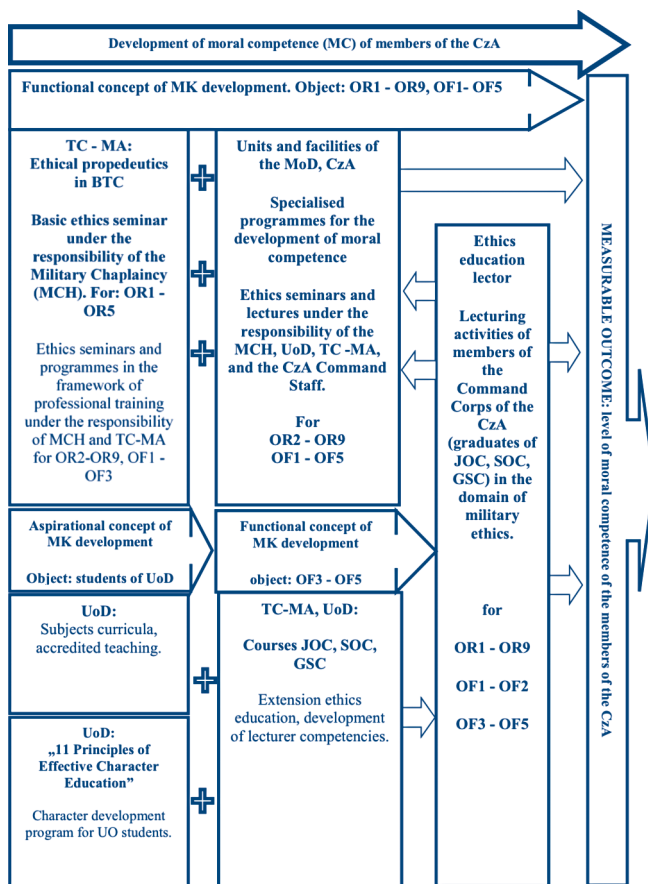
According to the proposal, the functional approach is to be applied in relation to rank corps OR1 – OR9 and subsequently to rank corps OF3 – OF5.

At the beginning of their service in the Armed Forces, members of the OR1 rank corps undergo the Basic Training Course (BTC) and members of the OR2 – OR9 and OF1 – OF3 rank corps under the Professional Training Course (PTC) organised by the TC-MA the so-called “ethical propedeutics” in the form of a basic ethics seminar and follow-up ethics programmes and seminars organised by the Military Chaplaincy and the TC-MA. This first

block of functional development of moral competence is followed by specialised programmes of development of moral competence in the form of lectures and ethics seminars for the rank and file of the Corps, OR2 – OR9, OF1 – OF5, held under the auspices of the Military Chaplaincy and ethics education lecturers from among the members of the Command Corps of the Military Chaplaincy.

In relation to the UoD students, the model proposes the application of an aspirational approach through courses in accredited university curricula and also through the character development pro-

Figure 1 » Proposal for a model of development of moral competence of members of the Czech Armed Forces (CzA)



Source: own work

However, across all of the above ethical concepts in the European cultural context, a basic distinction in the conception of morality can be highlighted: individualistic and altruistic. The individualistic (eudaimonistic) conception is based on the individual's moral responsibility for and to himself in the sense of doing what does not morally harm him and enables him to do good. In this sense, then, it is about a successful life (eudaimonia) whose building blocks are virtues (areté) and practical reason (phronesis).

Moral competence, whether perceived from a theological-philosophical, psychological or neuro-ethical perspective, is an important object of interest for the individual and the human community. However, the ability to adopt a professionally and personally mature moral attitude and subsequent moral action cannot be taken for granted. The creation of moral competence and its development must therefore be seen as a process of continuous building and subsequent development, enabling the fulfilment of the objectives and mission of the Armed Forces.

gramme, “11 Principles of Effective Character Education”, both under the auspices of the UoD. This aspirational block of EEaL is followed by a block of extension ethics education for ranks OF3 – OF5, delivered as part of the Junior Officer Course (JOC), Senior Officer Course (SOC) and General Staff Course (GSC), which, in addition to extension ethics education, should include the development of competencies for subsequent lecturing within the specialised programmes for the development of moral competence, designed for OR2 – OR9 and OF1 – OF3.

The measurable outcome is the resulting level of moral competence of individuals, groups of rank corps (OR1, OR2 – OR8, OR9, OF1 – OF3, OF4 – OF5) and selected groups of members of the Czech Armed Forces.

5. Conclusion

Moral competence, whether perceived from a theological-philosophical, psychological or neuro-ethical perspective, is an important object of interest for the individual and the human community.

However, the ability to adopt a professionally and personally mature moral attitude and subsequent moral action cannot be taken for granted. The creation of moral competence and its development must therefore be seen as a process of continuous building and subsequent development, enabling the fulfilment of the objectives and mission of the Armed Forces.

The analysis of the current state of moral competence in the military-professional environment has confirmed that the possibilities for the development of moral competence are determined by historical continuity, the quality of accepted and required standards and the fulfilment of the necessary situational factors through which the development of moral competence is realised. The analysis of the historical development in the conditions of the Czechoslovak and Czech armed forces has demonstrated the effort to maintain historical and content continuity, which can be built upon. However, it also revealed risks related not only to its external (ideological) but also to its internal (professionally one-sided) disruption.

The analysis of the normative assumptions

showed that the basic normative assumptions for the development of moral competence have been created in the conditions of the ACR. At the same time, however, a tension was found between the doctrinal requirement and the readiness of the military-professional environment for building and developing moral competence.

A serious risk is the fact that the Code of Ethics for Ministry of Defence (MoD) employees does not cover the specifics related to the application of moral competence in the conduct of military and especially combat activities.

The analysis of situational assumptions has shown that military ethics education and propeutics is carried out in the Czech Armed Forces to an insufficient extent and breadth, with a focus on a functional approach and with a missing element of an aspirational approach. It is clear from the analysis that the internal environment of the ACR is not yet sufficiently prepared for the development of moral competence.

On the basis of the analysis of the current state of development of moral competence, the conduct-

ed research and the knowledge gained in the framework of ethical education and upbringing in the Ministry of Defence, the authors propose to implement the developed model of development of moral competence of the members of the ACR (see Figure 2). In the implementation process itself, emphasis is placed on the effective use of the functional approach through the creation of specific types of ethics programmes in relation to individual groups of rank corps (OR1, OR2 – OR8, OR9, OF1 – OF3, OF3 – OF5) and on intensive cooperation between its individual subjects (TC-MA, Military Chaplaincy CzA, UoD).

The authors recommend that the development of moral competence in the conditions of the UoD be built on the platform of aspirational educational action, which would include the creation of a course that would create a unifying theoretical introduction to moral philosophy, guarantee the mastery of knowledge requirements in this area, and also guarantee the long-term character development of UoD students using the “11 Principles of Effective Character Education” program.

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Moral competence in military-professional contexts

ABSTRACT

The text is an overview study. Its aim is to define moral competence for the military-professional environment and to suggest possibilities for its development. The text presents the theoretical, social, and professional background for moral competence in military-professional settings. It summarizes the findings of ethical education and training in the military-professional environment, the results of research on the value characteristics of members of the Army of the Czech Republic, and students of the University of Defence. The findings were used by the authors to create a proposal for a model of the development of moral competence of members of the Army of the Czech Republic, which is the main output of this text.

KEYWORDS

Moral competence; military-professional environment; ethical education; values; development of moral competence

JEL CLASSIFICATION

I20; I23



Manager and artificial intelligence tools in the energy crisis: Artificial intelligence as an active tool to support the manager in times of high dynamics of environmental changes

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* 1. Introduction

With the advent of Industry 4.0 technologies, the trend in the use of artificial intelligence in business practice is increasing significantly. It is gaining ground in technological areas such as cybernetics in production, control and management activities, as well as in the areas of customer segmentation and valuation, prediction and simulation of the behavior of individual elements and entire systems. Another relatively new area of its application is in the field of human communication or analysis, translation and text generation. For example, Brock and Wangenheim state *“Recent years have seen a resurgence of interest in artificial intelligence (AI) among both managers and academics. Driven by technological advances and public inter-*

est, AI is considered by some as an unprecedented revolutionary technology with the potential to transform humanity. But, at this stage, managers are left with little empirical advice on how to prepare and use AI in their firm’s operations” (Brock, Wangenheim, 2019).

Artificial intelligence and considerations about its real use as a tool for direct decision support or even change management in internal processes of a company or their operators have been around for a relatively long time, however, the real demand for the development of actually usable artificial intelligence algorithms in this area has only recently become more pronounced. Industry 4.0 technologies, particularly the Internet of Things, provide vast amounts of data in real or near real time. This is significantly changing the possibilities of using



data in decision-making processes even with shorter response times in areas where this has not been realistically possible or effective until now. However, this trend is not something fundamentally new, as we discuss below. So far, it is sufficiently new in its deployment in practice to be commonly used and incorporated into managerial decision-making processes with confidence in its reliability and stability.

"It is necessary to compare these principles of embodied AI and behavior-based robotics to new management concepts such as the horizontal organization and lean production, which exhibit definite similarities to proposals recently made by roboticists" (Prem, 1997).

Already a quarter of a century ago, Prem mentions the necessity of linking artificial intelligence and the environment in which it is to operate. Chandra and colleagues (2022) state this thesis as a common feature of the equipment of companies today, especially in the field of customer service. *"In recent times, firms have shown an increased interest in designing and implementing artificial intelligence (AI)-based interactional technologies, such as conversational AI agents and chatbots, that obviate the need for having human service agents for the provision of customer service"* (Chandra et al. 2022).

Thus, it is evident that the trend of expanding AI implementations in various business processes is a very hot topic. In this paper, we will further discuss the specific area of the use of artificial intelligence, where it is directly involved in supporting decision-making processes based on the data provided, and what are the requirements of the manager, specifically under the critical impact of changes in the external environment, using the current energy crisis in Europe as an example.

2. Theoretical background

2.1 Artificial intelligence as a tool for managerial decision support

In order to use artificial intelligence as a viable management decision support tool, it is first necessary to ensure adequate market demand. According to the above, the market demand itself has existed for quite a long time, but in many cases it has been met not only with mistrust but also with the inability to specify the user's needs and, in some cases, to take responsibility for the resulting product on the part of the supplier. Artificial intelligence will thus be the subject of management training not only in terms of the ability to use it as a tool for the direct performance of his managerial role, but will also be used to support his own development and training. For example, in the past year, Odrakiewicz (2022) and others published an article where they mention the use of artificial intelligence as an important tool for management education, especially in higher education institutions.

Artificial intelligence as a decision support has long been part of the analysis and prediction of financial markets. In the 1980s, researchers used AI to create financial models based on mathematical and statistical models. Since then, the development of AI in financial markets has progressed rapidly. Another important event was the publication of the book "Neural Networks and Financial Forecasting" in 1995 by Robert Trippi, Robert Tumbrell and Efraim Turban. This book became one of the first major sources showing how neural networks could be used to predict financial markets. In 2001, MarketPsyche Investments founded the AI Hedge Fund, one of the first hedge funds to use AI to trade financial markets. This fund was one of the most successful using AI in the market. In recent years, the use of AI in the financial markets has become the norm. Banks and financial institutions use AI for various purposes such as market analysis, fraud identification, risk analysis and to predict

market movements. This development has only been amplified by the rapidly growing development of the Internet, which serves as a source of additional data, as Xiao states “While the advancement of Internet Technology generates massive amounts of data that can facilitate decision makings of financial markets, it also arouses new challenges to financial activities, such as the acquisition, processing and analysis of multiple information resources” (Xiao, 2021). For the use of artificial intelligence, sufficiently large input data is one of the important prerequisites.

2.2 Adapting manager competencies in Industry 4.0

The competency model is a facilitating tool for job definition, making it easier to set standards for job performance and to find and select employees. Managerial competencies and their definition may vary to some extent at different management levels, but the requirements for the level of decision-making competencies are generally the same. However, what is not so common is the use of AI elements for decision-making processes and also the control of the adaptability of AI to changes. Simply put, there is no universally defined competency for management positions to check whether and how AI can learn from previous experience, whether it delivers outputs of the required quality, or what processes need to be put in place to monitor, manage and maintain it.

The National Occupational Framework lists in a central database of competences those that a manager should have. Currently, knowledge of the processes involved in the application of AI is not mandatorily required. Only in competence i51.B.4001 of the database can we find the skill to operate machines and equipment in the field of management (management of organizations, departments, projects) in the form of “Application and use of computer technology”, which seems to be the most related from the list. More related competences, which correspond to the prerequisites for the use

of artificial intelligence in management, can be found only under competence j2, i.e. Computer Science and Information Technology (NSP, 2023).

Although the National Competency Database is not a generally binding regulation that obliges managers to develop a specific competency model, it is an excellent source of information. As is clear from the above, even with the rise of artificial intelligence, it is not common to view managerial competencies in the context of the use of AI. Yet, decision support could be an effective tool, the outcome of which could be to make the manager’s job easier and thus, ultimately, to the needs directed towards the re-education efforts of managers. Not only in general terms of artificial intelligence, but also to understand their principles, to be able to use the outputs for future learning and to be able to not only inquire according to their needs, but also to manage and maintain them. These needs were partly outlined by Namaki “Top management will not be able to formulate strategies that match contemporary disruption unless they develop a good understanding and an ability to interact with data. This interaction could relate to the insights that data analysis could reveal, the technologies that data analysis could lead to, the new arenas that data could divulge and the new opportunities that data analysis could unmask. This may require a process of re-education of top management and a realization that yesteryear forces and models may constitute a future peril instead of a boon” (Namaki, 2019).

2.3 Manager and the use of artificial intelligence

With the use of artificial intelligence in managerial decision-making processes, it is important to remember that the final decision remains in the hands of the manager. Thus, artificial intelligence can serve as a tool for data analysis and recommendations, but the final decision is still left to the manager’s human discretion. This is true for many decision-making processes where it is realistic to



give the manager enough time to reflect and make a decision. However, this approach is slowly beginning to change. The need to react more and more quickly to changes in market or weather conditions, for example, is increasing and the space for reflection and decision-making is shrinking. Another separate area is the limitations of detailed expertise in the subject matter addressed by AI and therefore the extent of its ability to assess the quality of the outputs provided. Thus, it follows from the competency needs of responsibilities mentioned above that managers must also be responsible for the data sources that are used to train the AI. If the data is biased or unrepresentative, the AI results may be skewed or unreliable. This is one of the broader business community's less obvious areas related to the use and operation of AI. A separate specific responsibility of managers is data protection. If personal data is used to train AI, they must ensure that it is protected and that they comply with relevant laws and regulations (Sharma et al., 2022; Zhang et al., 2020).

2.4 Digital twin as a manager's tool

The digital twin is a term that has become increasingly common in recent years in the context of Industry 4.0 and digitalization. It is a virtual copy of a real device or process that allows its behavior to be monitored and simulated in real time. This concept is becoming particularly important in industrial automation, where it serves as a tool for optimizing production processes and increasing efficiency. A digital twin is created by collecting data from a real device or process and then processing it using artificial intelligence algorithms. These algorithms are able to analyze the data, identify problems and suggest optimizations and improvements. The result is a digital model that accurately replicates the real situation and allows simulations and tests to be carried out without the need to create a physical prototype. There are many advantages to using a digital twin. One of them is the ability to perform simulations in real

time, allowing for rapid testing and optimization without the need to create a physical prototype. Another advantage is the ability to monitor and analyze the performance of a device or process in real time, allowing for quick detection of problems and prevention of their occurrence (Fuller, 2020).

The use of the digital twin in industry is widespread and finds application in many sectors, such as automotive, energy, healthcare, aerospace but also in, for example, so-called smart cities. In the automotive industry, the digital twin is used, for example, to simulate vehicle behavior under different conditions, allowing for improved vehicle performance and safety. In aviation, the digital twin is used to test new aircraft and optimize the performance of existing aircraft. A specific area of application for digital twins is the energy sector, both in manufacturing and in its distribution. For the control of generating resources, their technological production units, and transmission and distribution systems, the concept of digital twins has been used in particular for real-time control, where selected parts of control and dispatching systems allow simulations of the behavior of the controlled units under defined conditions before they occur or are implemented.

2.5 Artificial intelligence and energy

The energy sector is one of the most data-intensive industries, as the production and distribution of electricity and gas depends on many factors such as weather, demand, energy production and more. Thus, using a data driven approach for predicting energy consumption is one of the many practical applications of artificial intelligence in the energy sector (Amasyali, El-Gohary, 2017). Thus, the use of artificial intelligence in the energy sector is slowly becoming crucial for improving managerial decision making in this sector. Another example is the use of artificial intelligence to predict energy demand. By analyzing historical data, current trends and other factors, AI can accurately predict future energy demand, allowing energy companies

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to prepare for the need for increased energy production in a timely manner.

Another example is the use of AI to optimize energy consumption. Companies can use AI to optimize energy consumption in real time, meaning they can adjust energy production based on current demand and circumstances. This can lead to significant energy and cost savings.

Artificial intelligence can help to better optimize the use of solar panels and increase the availability of the energy they produce at the time of generation. This is where one of the main advantages of using AI for forecasting becomes apparent, in that it can process large amounts of data and produce more accurate predictions than basic statistical methods. Artificial intelligence can identify patterns of behavior and trends that may be overlooked or indistinguishable to humans or conventional statistical methods (Entezari et al., 2022).

2.6 Energy and business

In 2022, the European Union was plunged into an energy crisis that not only significantly affected the business sector, but also hit the end consumers in the population very hard. “Energy prices reached

an all-time high in 2022, mainly due to Russia’s unjustified invasion of Ukraine and its use of gas supplies as a weapon of war” (Council of the EU, 2022).

This situation has significantly accelerated the already ongoing process of transformation of the energy sector in the Czech Republic towards renewables. In 2022, there was an increase of more than 360% in commissioned photovoltaic power plants. “In 2022, a total of 33,760 solar power plants with a total capacity of 288.8 MWp were connected” (Hybrid, 2023).

This crisis has exposed many managers of different levels and areas to the need to respond in a relatively short time to the risks or outright threats associated with a significant jump in costs. As a result, many have turned towards considering the installation of renewables in their energy portfolios, not only generation but also operations and support, with the intention of improving their overall energy balance.

This put them in a situation where, without their own energy experts, or at least in this area, they had to decide whether and to what extent, or even with what technology, it was appropriate for their conditions to implement relatively large-scale



investment measures, albeit with state subsidy support. Especially in the case of larger or more complex energy portfolios, conventional computer simulation methods can be time-consuming to process and introduce a relatively high level of inaccuracy.

A typical example is the calculation methodologies according to the Energy Assessment and Audit Decree, which primarily work with annual average values of energy volumes and thus allow to disregard different fluctuations in energy consumption, not only based on different technological peaks, operating modes, but also on seasonal effects (MPO, 2021).

Such assessments or audits provide the manager with an initial idea of the energy balance of the building as an energy portfolio and basic suggestions for possible measures, but they do not explicitly address the optimization of these measures, the possible analysis of different types of synergies, and were probably not intended to do so anyway.

2.7 Prediction and simulation in practice

For the energy case studies described below, a digital twin approach was used in the form of creating a model of a specific energy portfolio from its relevant elements, typically from individual elements representing a selected part of consumption, to which the distribution of their consumption over time with a 15-minute period is simulated based on the provided baseline values (e.g., reserved power, annual consumption). In the case of buildings or sites with higher consumption, historical consumption data are usually available directly in a 15-minute period, going back at least 12 months.

According to the manager's specifications, the considered technologies (PV, Battery storage, Heating pumps etc.) are then added to the model and their behavior is simulated using prediction algorithms for a period of one year while maintaining the 15minute period. The simulation results in the calculation of the effects on the behavior of the

portfolio, in particular in terms of energy flows and their resulting balances, so that economic evaluations can be assessed and performed in the next step. Over these results, the optimal parameters of the added technologies (typically power and capacity) are then found with respect to the different optimization objectives.

The most commonly used optimization objectives are the magnitude of annual savings, payback period, net present value and energy self-sufficiency rate. The latter expresses the degree of contribution of the energies of the added technologies to the total consumption of the evaluated portfolio. In most studies, several scenarios with different variations of energy price inflation are also calculated and projected over the entire lifetime considered. The total number of options presented to managers is purposely limited to specified target optima, especially given the magnitude of the total number of model outputs (Herman, 2021a).

Using the selected output parameters of one of the energy case studies, we demonstrate the use of the decision support described above for the board of directors of a housing association and subsequently its members, who found it difficult to decide between the different options offered by combining the output of a PV plant, battery storage and the possible integration of a heat pump into the central DHW circuit of the apartment building.

Other studies addressed the energy portfolios of an agricultural cooperative and a wholesale grocery store, where the studies served not only as a basis for preparing market demand, but especially for deciding whether and how quickly to implement the projects.

2.8 Studies in simulation models

Residential House Study

The study was requested in 1Q/2021 and processed in 2Q/2021. It is an apartment building owned by a housing cooperative with the following basic characteristics: elevation of approximately 200 m above sea level located in the Polabska

plain. 5 above-ground floors with 28 apartments, 2 entrances with elevators and central heat supply from district heating. The tables below show selected parameters from the evaluated scenarios, where scenarios 1–3 are the outputs and capacities according to the offers from the suppliers and scenario 4 is the optimum found in terms of the amount of savings with maximum use of the roof area (cooperative assignment). (Herman, 2021a)

The table above shows significant differences in the initial purchase price of each scenario (Base Price) and the annual savings (Savings p.a.). Based on these outputs alone, the Co-op's Board of Directors was unable to decide which related measures to implement, whether to aggregate the apartments as one billed site, and whether it would be worthwhile for them to implement the heat pump installation. In order to do this, calculations comparing the benefits of each measure were added to the study, and the table below shows selected values from the option chosen for implementation.

From the above, it can be seen that assuming the billing points (apartments and other locations) are combined into one, the installation of PV alone is the only other significant benefit in savings.

Nevertheless, the cooperative also decided to install battery storage. One of the reasons for this was a state subsidy adjustment in late Q3/early Q4 2021 that improved the economics of its use. At the same time, the efficiency of the PV add-on panels was improved, thus increasing the potential PV output. Thus, the cooperative has installed PV with a capacity of about 20 kWp and a battery with a total capacity of 21 kWh in 1Q/2023, implemented the merger of billing points and postponed the decision to install a heat pump until after real operational data is obtained. In this case, the prediction and simulation study led to the decision to implement selected measures and postpone others, even though the changed conditions in the technology market and in subsidies did not lead the contracting authority to recalculate the selected target scenario.

Study Agricultural Cooperative

The study was requested and prepared in 1Q/2022. It is an agricultural cooperative that has its premises in 3 neighboring municipalities with different types of production and facilities. The assignment of the management of the cooperative was to sim-

Table 1 » Description of scenarios

Scenario	PV power (kWp)	Battery (kWh)	Generation p.a. (kWh)	Base Price (Kč)	Savings p.a. (Kč)	PP (with subsidy)
1. (PV, BAT)	5,6	10,6	6 219	360 600 Kč	95 578 Kč	4,8
2. (PV, BAT)	10,9	14,2	12 105	486 000 Kč	11 254 Kč	5,2
3. (PV, BAT)	16,5	24,8	18 324	833 685 Kč	120 784 Kč	7,7
4. (PV, BAT, HP)	16,5	10,6	18 324	978 034 Kč	136 017 Kč	6,5

Source: own elaboration

Table 2 » Savings increase (against base)

Join metering points	Optimized fuses breaker	PV	Heating pump	Battery	Optimized management
base	14,35 %	61,40 %	5,97 %	0,03 %	3,59 %

Source: own elaboration



Table 3 » Description of scenarios

Scenario	PV power (kWp)	Battery (kWh)	Non consumed energy (kWh)	Base Price (Kč)	Independence	Savings p.a. (Kč)	PP (y)	PP (with subsidy)
1	250	100	10 735	6 111 454 Kč	21 %	682 569 Kč	8,9	4,4
2	935	935	277 103	28 904 946 Kč	55 %	2 072 220 Kč	13,9	6,9
Diff (2–1)	685	835	266 368	22 793 492 Kč	34 %	1 389 651 Kč	5	2,5
Diff (%)	274 %	835 %	2481 %	373 %	168 %	204 %	56 %	57 %

Source: own elaboration

Table 4 » 20 years PV + 10y battery life time evaluation

Scenario	Pessimistic	Middle	Optimistic	Critical	Middle (w. subsidy)	Mid. w/w/o Subsidy	Mid. / Critical.
PP (years)	18,1	14,8	13,3	11,7	8,3	-44 %	-21 %
NPV (Kč)	-356 778 Kč	12 432 342 Kč	29 165 539 Kč	38 811 890 Kč	31 517 254 Kč	154 %	212 %
Total Cost (Kč)	40 153 499 Kč	41 196 473 Kč	42 324 538 Kč	42 415 940 Kč	18 107 979 Kč	-56 %	3 %

Source: own elaboration

ulate the energy portfolio of all 3 campuses and find the optimal sizes of technologies in sharing energy between them and to verify the different inflation trends. The table below shows the selected values to scenarios one and two with optimal values of technology sizes for different optimization objectives.

The table above shows, among other things, the significant difference in the scenarios in the amount of unconsumed energy, which could very likely be reduced by optimizing the management of the consumption of the buildings over time, but management did not require such a simulation in this study. It was envisaged to implement it as one of the next steps.

The following table contains selected parameters from the simulation of different inflation

and energy price scenarios for scenario two (935 kWp/935 kWh) with the size optimized for the amount of savings (see Table 3). In this study, given the scale of the investment, the implementation time was assumed to be at least 2 years. For the critical scenario, the following assumed annual parameter changes were used: Annual electricity price increase in % : 10, 10, 9, 8, 7, 6, 5, 4.5, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4 and annual inflation in % : 3.9, 4.7, 1.8, 0. 1, 2.8, 1.9, 2.5, 2.8, 6.3, 1, 1.5, 1.9, 3.3, 1.4, 0.3, 0.7, 2.5, 2.1, 2.8, 2.5. Relatively conservative from subsequent price and inflation trends anyway. (Herman, 2022)

In this scenario, the significant impact of inflation and energy prices on NPV is evident, while the degree of influence of the subsidy on the parameters evaluated is also shown. In this case, the man-

agement of the agricultural cooperative decided not to implement the investment, even though the economic parameters from the simulation outputs were motivating for implementation in the given conditions of subsidies and energy prices. Even a relatively conservative scenario with a fixed annual price increase of 2% comes out with a positive, albeit already relatively low, NPV. The specific reason is not known.

Study Wholesale

The study was requested and prepared in 2Q/2021. This is a wholesale grocery store that has several different buildings on its premises with different types of uses including refrigerated bulk freezer halls. The assignment from the management of the company was to simulate the energy portfolio of the selected buildings (according to their technical condition) and to find the optimal sizes of the technologies when sharing energy across the site. The table below shows the selected values to scenarios one and two with the optimal values of the technology sizes for the different optimization objectives. (Herman, 2021b)

The company's management decided on a PV size of 260 kWp and an increase in battery storage capacity. The decision to increase its capacity was made mainly to improve subsidy conditions and to reduce the risk of food endangerment during power outages from the distribution network. Thus,

the company has a PV installed in 1Q/2023 with a capacity of about 260 kWp and a battery with a total capacity of 88 kWh. In this case, the implementation decision was positive, and even in this case the change in conditions did not lead to a recalculation of the simulations. The results of the other scenarios led the management to accept the recommendation to prepare project documentation and construction modifications on the facilities for scenario 2 from the outset, with the understanding that they would implement scenario 1 as stage 1 and decide on the next stage after evaluating its operation and changes in their business.

3. Results

Each of the studies was chosen as an example of the partially different needs of managers in different settings over the same decision problem, about investing in a new technology, under significant uncertainty about future developments and with limited ability to use the data available to them about the composition and behavior of their energy portfolios. Managers, according to the studies to date, are not so much currently addressing the question of whether to invest in renewable technologies, but are coming up with the need for help to define to what extent, where and in what time-frame they should use it as an opportunity. In many cases, the results of the studies lead to rec-

Table 5 » Description of scenarios

Scenario	PV power (kWp)	Battery (kWh)	Non consumed energy (kWh)	Price (Kč)	Savings p.a. (Kč)	PP (y)
1	260	40	120 634	4 257 787 Kč	567 756 Kč	8,3
2	510	40	485 524	9 382 863 Kč	912 022 Kč	11,3
Diff (2–1)	250	0	364 890	5 125 076 Kč	344 266 Kč	3
Diff (2–10 in %)	96 %	0%	302 %	120 %	61 %	36 %

Source: own elaboration



ommendations to phase the implementation of these investments, especially where there is a significant difference between the different scenarios and a higher uncertainty of the future behavior of the energy portfolio on the part of the study sponsor.

The Data Driven approach used in the studies, using the Digital Twins model to search for optimal parameters according to the defined objectives and at the same time to define the boundary scenarios of future developments, allows managers to make a higher degree of conscious decision based on the data available to them.

The final decisions depend not only on the results of the simulations, as shown by the current status of individual investments after the studies, but on a number of other circumstances. According to unstructured interviews with some of the managers commissioning studies, it appears that these studies usually serve them both as confirmation of their initial assumptions or estimates, but especially as a basic decision framework within which they subsequently make sub-decisions about specific implementation relatively independent of the actual simulation results.

In the studies themselves, a certain degree of effort to document the quality and reliability of the result is evident in the form of documenting the input data, especially its quality, as well as describing the additional data sources used in the calculations. With one exception, no concerns about the quality or reliability of the results, or any need to demonstrate it, were noted by the sponsors in the commissioning, processing and presentation of the results of the studies. The extent to which this is due to the credibility of the compiler or trust in the algorithms, or other reasons, has not been assessed. The paper did not address the issue of comparing the quality of the results or their applicability or the time required for different procedures and methods for decision support in the same area, although they are also used in practice.

4. Conclusion

The increasing dynamics of environmental change brings managers into situations where they have to make decisions in a relatively short time frame about appropriate solutions with unclear future developments in areas with little or no expertise. Artificial intelligence appears to be one of the realistic tools to support managerial decision making in the conditions of available historical data. Predictive and optimization algorithms thus allow not only to efficiently search for optima based on these data, but also to define frameworks using boundary scenarios.

The need to monitor the quality and reliability of the outputs provided appears to be low in the studies conducted, yet the authors of the paper believe that it will increase. In this type of AI application, where there are relatively long latency between algorithm outputs, managerial decisions, actions resulting from the decisions and subsequent relevant and evaluable impact, this time can be used to validate the results in a more or less intuitive way. The ongoing increase in the use of artificial intelligence to evaluate and automate management in real time or close to it will probably start to increase the need to evaluate the quality of the outputs from these algorithms at an automated level, as there will not be enough time to validate partial results.

In this paper, we have not purposely addressed the area of such application of predictions, simulations and optimizations, although their implementation and results are available. As an example, automated predictive optimized energy portfolio management taking into account not only the history and weather forecast predicted production, consumption, but also market prices and its evolution over time. This type of application places increased demands on both the evaluation of its quality (success of predictions and optimizations) and the hedging of risks of inappropriate responses (e.g. when models are inappropriately or incompletely untrained). The main reason in this case is

the handover of direct portfolio management to the automated solution.

Thus, the use of tools with AI technology places demands on the manager not only in terms of the ability to identify their capabilities and define the tasks for their use, but also to define the required quality parameters and how to evaluate

them. Last but not least, it is also necessary to identify the main risks and threats that their use brings and to take appropriate measures. It can therefore be expected that the newly expected or required managerial competences will include those related to the use of artificial intelligence.

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Manager and artificial intelligence tools in the energy crisis: Artificial intelligence as an active tool to support the manager in times of high dynamics of environmental changes

ABSTRACT

The rapidly growing dynamics of changes in the business environment in the last decade is a significant factor leading to an increasing need for the development of new managerial competencies, especially in the area of the ability to identify, evaluate and respond adequately to change. Artificial intelligence and machine learning tools are already being used in a number of technological areas, but their direct application in managerial practice is at a relatively early stage. Opportunities in the real-world application of artificial intelligence for managerial practice are described by comparing it with common practice and with selected case studies from the period shortly before and during the ongoing energy crisis in Europe.

KEYWORDS

managerial decision making; artificial intelligence; machine learning; energy crisis; optimization; prediction; digital twin; simulation; studies

JEL CLASSIFICATION

C53; C63; E27; D11



Blockchain for the public sector: applications, challenges and potential

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* 1. Introduction

Recent years have seen an acceleration in the digitalisation of private sector and public sector organisations, which are more frequently confronted with new digital technologies that have the potential to improve their processes, products and services. At the same time, these technologies can also disrupt established business models and change external expectations (Urbach et al., 2018; Gimpel and Röglinger, 2015). One of these emerging technologies that currently stands out in the public space is blockchain (Beck and Müller-Bloch, 2017). In this paper, we focus on the potential of blockchain in the public sector using a systematic bibliographic analysis to reveal the areas in which the authors of academic paper see the potential of this technology. Following this, we focus on the functionality of the technology with the objective of demonstrating the real-world use of blockchain in selected areas of the public sector. The aim of this article is to present the potential of blockchain in different areas of the public sector and to demonstrate its use in selected examples.

2. Methodology

The methodology applied tracks the frequency of occurrence, where we will first focus only on the term blockchain. Keywords will then be expanded to include the terms blockchain and the public sector. As part of the analysis of the results, there is also an analysis of the relevance of found publications. Some publications contain keywords but are not related to the topic and the keywords were used in a different context. These publications are then excluded and only relevant publications that deal with the use of blockchain in the public sector are analyzed.

3. Literature review

Distributed decentralized databases are a subject that has increasingly become the subject of several scientific studies in recent years. The potential of blockchain is perceived in a wide range of disciplines and its use has been described as one of the possible sources of the fourth technological revolution (Myeong and Jung, 2019)). The potential of using blockchain in the public sector can be shown with the help of a systematic bibliographic analysis, which reveals both the dynamics of interest in



the topic and the significant themes that appear in scientific articles in this context. The Web of Science database, which has become one of the main databases of scientific articles and has a large coverage, will be analyzed. In the analysis, we will first discuss the dynamics of the occurrence of the topic of blockchain in general and then focus in detail on the occurrence of articles that deal with blockchain and the public sector. In addition to the dynamics, we look at the areas mentioned in this connection. Based on studies already published, it will be possible to show the perceived potential of this technology in the public sector.

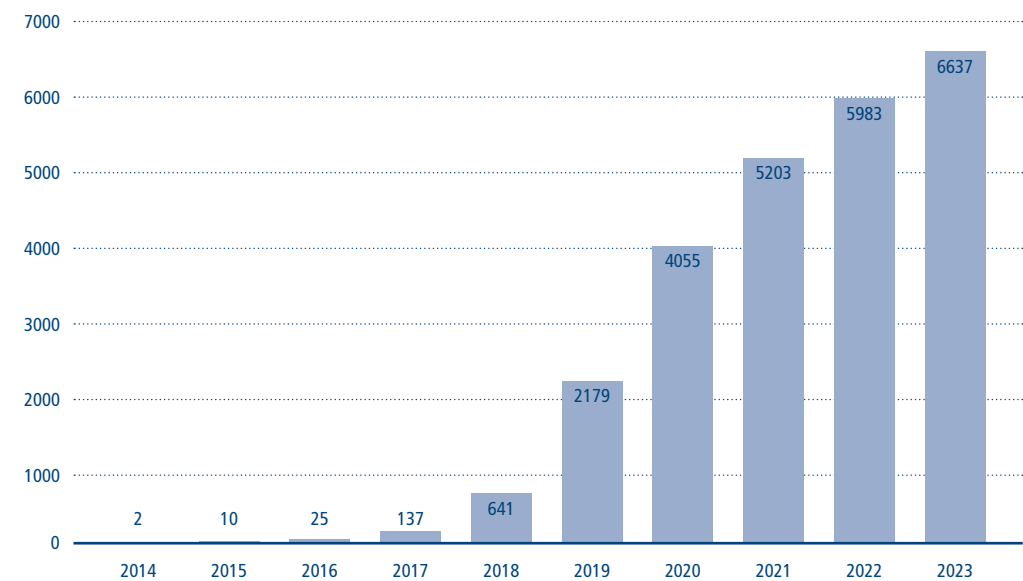
3.1 Bibliographic analysis of results in the Web of Science database.

Figure 1 shows the frequency of research publications that were found based on the keyword blockchain. The blockchain principle was introduced in 2008, and the first publications in the Web of Sci-

ence database appeared only in 2013. These publications deal with blockchain in the context of the cryptocurrency Bitcoin (Moser et al., 2013; Decker and Wattenhofer, 2013). In the following years, a gradual increase of interest in this topic is evident, where we talk about an increase in the number of publications in units between 2013, 2014, and 2015. The turning point comes from 2016 onwards when a sharp increase in publications covering the blockchain issue is evident. Then, in 2022, the total volume of publications in the database is equal to 6637. In total, 25,491 publications in the database contain this keyword. The data on the results shows a dynamic of interest that has a significantly increasing trend over time.

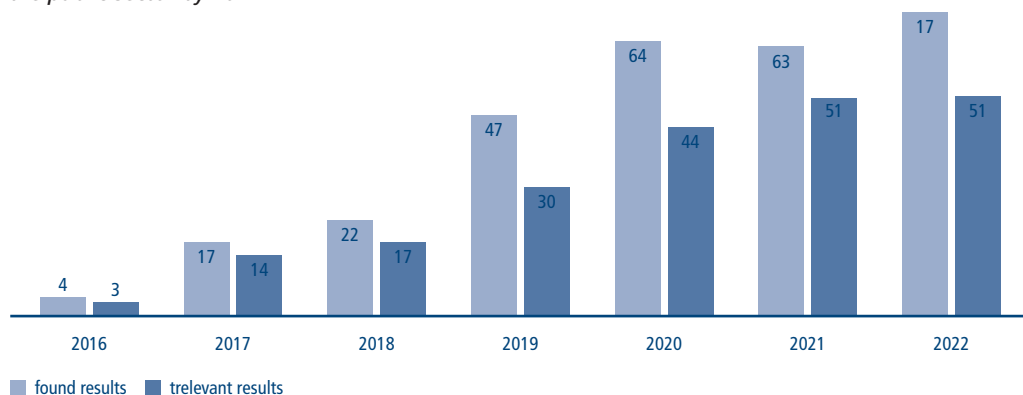
Figure 2 shows the results for the number of publications when the keywords “Blockchain” and “public sector” are combined up to 2022. A total of 288 results were found. Based on the analysis, it was found that of the number of articles found, only 210 articles were relevant to the topic. The

Figure 1 » Number of papers on the Web of Science that discusses the topic of blockchain by the year



Source: own processing according to Web of Science

Figure 2 » *Number of articles on the Web of Science that have addressed blockchain in the context of the public sector by 2022*



Source: own processing according to Web of Science

other articles did contain keywords, but the content was not related to the use of blockchain in the public sector. The first publication that addresses the use of blockchain in the public sector is from 2016. This year, we find a total of three publications; the most significant publication in terms of citation impact is the publication by Matthias Mettler named “Blockchain Technology in Healthcare The Revolution Starts Here” (Mettler, 2016), which was cited 388 times. In the following years, the interest in the topic of blockchain in the public sector grows significantly until it reaches 51 publications in 2022.

The topics that were covered in the articles can be divided according to the areas in which the authors saw the use of blockchain, and how blockchain is used or what are its benefits. The authors find the potential of using blockchain, especially in the fields of healthcare, agriculture, public finance, education, and administration. Other areas mentioned are waste management, transport, energy, international relations, and the environment. In total, 50 of the 210 publications focus on the potential for use in each area, with the remainder focusing either on a specific area or on sub-issues. The main arguments mentioned for the use of blockchain are security, transparency, and the possibi-

ty of storing and sharing information. In the healthcare sector, the potential for blockchain use is seen most often in the creation of electronic medical records of patients (Capece and Lorenzi, 2020; Meena et al., 2019; Siva Rama Krishnan et al., 2020), and in the creation of drug databases that would allow a better overview of the availability of drugs and their distribution (Sabbagh et al., 2021), or databases for better tracking of diseases (Azbeq et al., 2022). In the field of agriculture, there is a potential for better water management (Pincheira et al., 2020) and the management of food freshness by sharing information (Osei et al., 2021). In the field of education, the potential is seen in the creation of a database to verify academic degrees and diplomas (Ghamri et al., 2020) and in the creation of a classification system (Gharat et al., 2022). In the area of public finance, there is potential for the creation of a platform for tax collection (Søgaard, 2021; Khan and Syed, 2019; Demirhan, 2019), and also in public procurement (Khalfan et al., 2022). In the area of administration is mentioned e-voting (Kassen, 2020; Awalu et al., 2019; Fusco et al., 2018). In terms of the impact of the publication, four publications have more than 100 citations. Two of these publications dealt with the use of blockchain in healthcare (Mettler, 2016;

Engelhardt, 2017), another publication dealt with the use of blockchain in agriculture (Antonucci et al., 2017), and the last dealt with the use of blockchain in the context of a registry, which the authors refer to as e-residency (Sullivan and Burger, 2017).

3.2 Blockchain technology

In 2008, Satoshi Nakamoto (his identity is unknown) published “Bitcoin: Peer-to-Peer Electronic Cash System”, which aimed to provide a distributed ledger for electronic cash transactions (Nakamoto, 2009). Transactions are stored in a block, and the block senses form a blockchain. In order to ensure that a node reporting a transaction is legitimate, it must perform a proof by means of an algorithm. Platforms such as Bitcoin, Litecoin and Monero use the Proof of Work (PoW) algorithm to attach a new block to an existing ledger by solving a cryptographic puzzle. Miners verify transactions that compete with each other by arbitrarily trying all possible combinations of strings to get a desired result, called a “nonce”. Obtaining a nonce is very challenging and results in high power consumption. (Beck et al., 2016; Lin et al., 2017). Another option is to use the Proof-of-Stake (PoS) consensus protocol, which requires validators to hold and insert tokens to gain the privilege of receiving transaction fees (Ismail et al., 2019; Zhang and Lee, 2020). PoS uses fewer resources during the consensus process compared to the PoW protocol and is less risky in terms of attacking the network. PoS is used by platforms such as Ethereum, Cardano, Solana and Polkadot. There are other less used algorithms such as Proof-of-authority or Proof-of-activity. Once a transaction is verified and recorded by one node, it is transmitted to all nodes in the network. Each node maintains identical copies of the verified transactions, which are called blocks. The nodes start working on the next set of transactions and repeat the process. Briefly, these steps are summarized as follows:

- New transactions are broadcast to all nodes.

- Each node collects the new transactions into a block.
- Each node works on finding a difficult proof of work for its block.
- When a node finds a proof of work, it distributes the block to all nodes.
- Nodes only accept a block if all transactions in it are valid and have not yet been spent.
- Nodes express their acceptance of a block by working to create the next block in the chain (Dutta, 2020).

Communication can therefore, take place between geographically dispersed nodes in a peer-to-peer network through transactions and elements of cryptography. An immutable and complete ledger is replicated between all participants in the network and protected by strong cryptographic means (private keys, hashing functions, consensus mechanisms) to ensure irreversibility (Lohmer and Lasch, 2020; Wang, Shen et al., 2019). Blockchain has emerged in the context of the use of cryptocurrencies in transactions, furthermore there are a number of possible applications of blockchain, one of the other options being smart contracts, which allow for a wider application (Beck et al., 2016; Wang, Han, et al., 2019).

3.2.1 Smart contracts

Traditional business models are mostly dependent on third party services, which are mostly centralised and serve to settle potential conflicts between the parties involved, but the downside is that third party reconciliation is much slower and costly. A certain alternative may be the use of blockchain technology, which eliminates third party services for contract reconciliation, thus allowing trusted entities to trade with each other much faster and more economically. The essence of smart contracts is self-executing code that is triggered when predefined contract conditions are met; this process of automation can significantly increase the performance of entities participating in the contract (Lohmer and Lasch, 2020; Azzi et al., 2019).

The blockchain platform uses consensus algorithms to enforce the correct execution of a smart contract. The rules defined in the smart contract are executed when an event occurs. Blockchain technology ensures data security and integrity based on asymmetric key cryptography, hashing functions, and attack-resistant consensus protocols. The consensus protocol enforces that all miners agree on a common system state (Raskin, 2016).

3.2.2 Cryptocurrency

One of the most significant creations of blockchain technology in finance is cryptocurrency. Since the development of the first cryptocurrency, bitcoin, in 2009, a number of cryptocurrencies have been initiated to fulfill diverse needs and for various purposes. The following concepts illustrate how blockchain technology is used by the bitcoin network to provide secure and transparent transactions without the intervention of a financial intermediary. Everyone in the bitcoin network has a bitcoin wallet and has access to a pair of keys public and private. Public key is comparable to a bank account number, it is the address of a user's bitcoin wallet, which can be shared with others whenever

they want another bitcoin network user to send coins to their bitcoin wallet. Private key gives the user the permission to send bitcoins from his bitcoin wallet to the wallet of other users of the network, the private key can be considered as a password (Wang, Shen, et al., 2019).

When a bitcoin owner decides to transfer a certain amount of bitcoins to another user's wallet, he sends a message to all users of the bitcoin network. He uses his private key to sign the message. The other network users (miners) verify the transaction with a complex mathematical calculation and make sure that the initiator of the transaction has the authority to make the transaction. This transaction will be added to the ledger as a new block along with the other transactions. Each block contains information about the previous blocks, so it is almost impossible to change the recorded transactions in a single block (Wang, Han, et al., 2019).

3.2.3 Features of Blockchain

Key features of blockchain applications include increased availability, intermediation, instant asset tracking, direct peer-to-peer communication, reliable data provenance, short transaction times at low

Table 1 » Blockchain features and influencing factors

Blockchain Functions	Technology Factors	Factors Importance of Unidentifiable Factors
Immutability and security	Cryptographic measures	Immutability leads to better auditability because the data available is immutable and secure, which is also crucial for potential legal disputes. Transactions in electronic form have greater security through cryptography than paper form.
Transparency	Full history recording, real-time transactions, redundancy and decentralization	Real-time processing allows a significant improvement in transparency for all parties (entities). A decentralised system eliminates failures compared to centralisation.
Elimination of intermediaries	Decentralisation and no central authority	Cost reduction through direct peer-to-peer exchange, less dependency, equality of partners.
Non-refundability	Consensus mechanism, cryptographic measures	The consensus mechanism reduces opportunism. Firm commitments are legally verifiable.
Automatizace	Smart contract features	Automated data transfer and payments lead to lower costs and better IoT capabilities.

Source: own based on Lohmer and Lasch (2020)



cost, and reduced risks such as opportunism (Lacity and Khan, 2019). Not to be overlooked are the efficiency gains through automation that smart contracts exploit. An overview of selected functions and features of blockchain applications is elaborated in Table 1.

4. Potential of Blockchain in Public Sector

The opportunities that blockchain offers are many, not only for the private sector. In this section, two selected areas in the public sector in which Blockchain technology can be used are described in more detail, and there is also an addition to cryptocurrencies and digital currencies. Table II summarizes the use of blockchain and smart contracts in the public sector based on information from the European Union Observatory and Blockchain Forum (Triana Casallas, 2020).

4.1 Blockchain technology used for voting

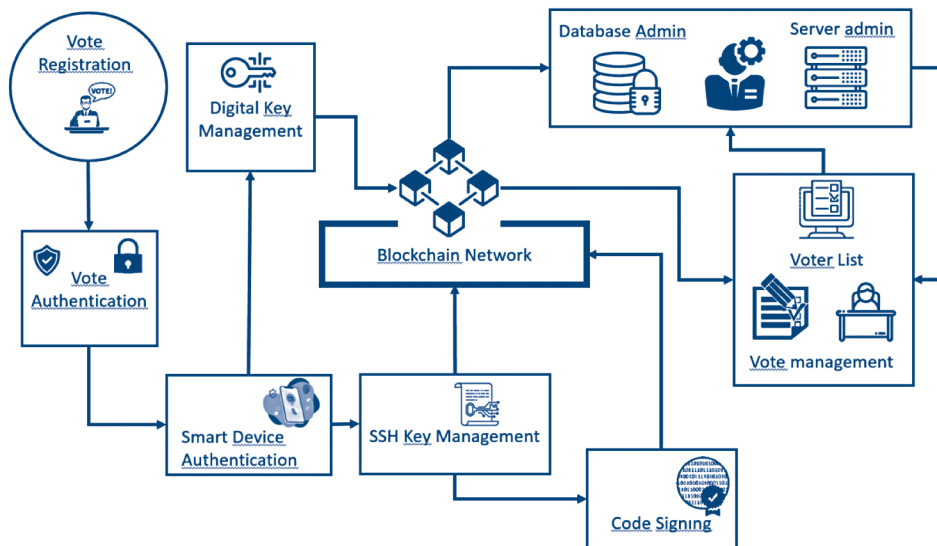
Elections are essential to democratic nations and serve to ensure the trust and accountability of the state’s electorate, and with that comes the ability to vote. From the government’s point of view, e-voting technologies can increase voter participation and confidence and renew interest in the electoral system, because with the increasing number of votes cast in real life, citizens are becoming increasingly aware of the importance of the electoral system (Liu and Wang, 2017). Information technology introduces new techniques and methods of e-voting, which are essential and pose significant challenges to the democratic system, in addition, e-voting increases the reliability of elections compared to manual voting, as well as the integrity of the voting process (Hang and Kim, 2019; Kim et al., 2022).

Table 2 » Blockchain and Smart Contracts Applications in the Public Sector

Country	Application	Status
Estonia	Online vote	Working
Australia (South)	Electronic Vote	Working (2019)
United Kingdom	Online vote	Tests
Sweden	Registration of property titles	Prototype (2015–2019)
Sweden	Register for company information	Initiative (2021–2023)
Honduras	Registration of property titles	Prototype (2015)
Ghana	Registration of property titles	Prototype (2014–2018)
Georgia	Registration of property titles	Prototype (2015–2019)
Russia	Registration of property titles	Prototype (2018–)
Switzerland	Online vote	Working
Denmark	Online vote (party vote)	Tests (2021)
France	Online vote	Tests
Holland	Online vote	Tests
Australia	Digital identity	Initiative (2018–)
Dubai	Verification of electronic medical records	Tests (2018–)
Italy	Digital identity	Initiative (2020–)

Source: own based on Triana Casallas et al. (2020)

Figure 3 » Blockchain technology in an election system



Source: own based on Jafar et al. (2021)

Despite the positives, the existing e-voting methods pose dangers because they are administered by a central authority, which in some ways limits fairness, privacy, secrecy, anonymity and transparency in the voting process. A certain option is to use the possibilities offered by Blockchain technology, such as a decentralized node for online voting or e-voting. (Gao et al., 2019). Blockchain, with its features of decentralization, transparency and security protection, is an alternative to conventional electronic voting systems (Ometov et al., 2020). A possible application of blockchain technology in an election system is shown in Figure 3.

4.2 Public health and blockchain

Blockchain could serve to improve public health record keeping, as traditional records run into problems with the entities that make or require the records not working on the same information platform. The benefits of using blockchain over tradi-

tional records include a reduction in human error when assessing health status, greater assurance of privacy, and increased speed and accuracy of information that could be used by scientists, medical personnel, and public health officials around the world (Bustamante et al., 2022).

A major test of the public's trust in public health information was the Covid-19 pandemic, because one of the problems was the spread of misinformation and the associated need to coordinate vaccine data. In this area, blockchain could have helped with recording and sharing information that would have been both transparently recorded and easily accessible. Blockchain alone cannot provide an antidote to conspiracy theories, but the use of an immutable record could help counter their spread. Companies began exploring how to use the blockchain as a platform to record antibody testing information soon after the pandemic began (Abd-Alrazaq et al., 2021). In response to the coronavirus pandemic, IBM established the MiPasa project in 2020, which supports

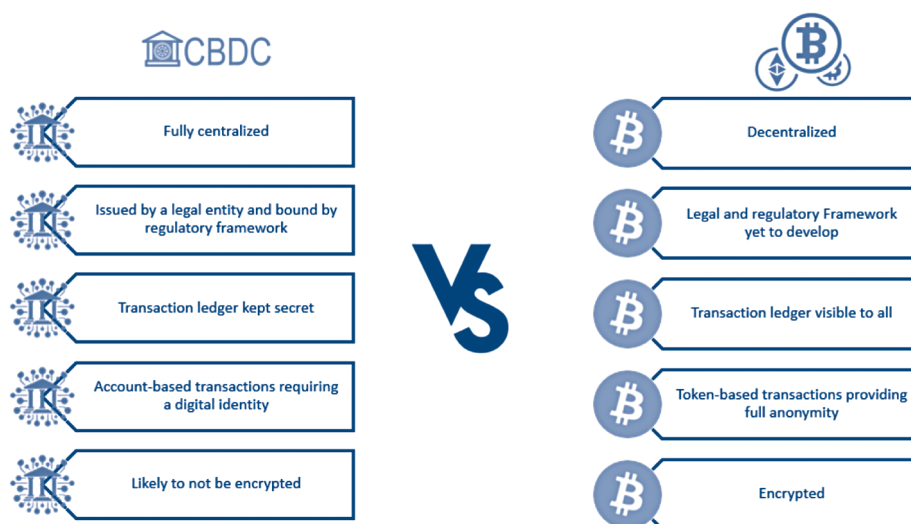
an open data node to detect COVID-19 carriers and infectious hotspots. MiPasa provides validated data through three types of validations between different data sources: reconciling different data sources such as WHO data, government agency data, and others; ensuring that new data entered into the system matches the original data; and a third level of validation comes from the public, who could report inconsistencies or bad data and provide public health officials with a seamless way to analyze and respond to public opinion (Singh and Levi, 2020).

Estonia was the first to apply blockchain applications in health record protection, using the technology since 2016. They use blockchain as an additional layer of security to help ensure the integrity of health records (Saxena and Verma, 2020). Healthcare reforms that include the use of blockchain remain an opportunity.

4.3 Finances and money

Money is something very abstract, it has gradually evolved over time from touch objects to electronic form – through credit cards. The Covid-19 pandemic accelerated consumer willingness to use electronic payments. At the same time, new ways of payment through cryptocurrencies have emerged. While each currency has its own unique characteristics, cryptocurrencies typically have four main advantages over conventional currencies. Money transfers and payments using cryptocurrency do not have to go through money transfer financial intermediaries that offer services such as currency exchange or transaction settlement. This feature becomes optimal in countries where the majority of the population does not have easy access to financial institutions (Hashemi et al., 2019). Cryptocurrency payments are processed and settled faster than payments using other payment methods, including traditional digital payments, and any request for a cryptocurrency transfer can be made using a digital device. Transferring money

Figure 4 » Two concept CBDC and cryptocurrencies



Source: own based on Laboure et al. (2021)

The Web of Science database, which has become one of the main databases of scientific articles and has a large coverage, will be analyzed. In the analysis, we will first discuss the dynamics of the occurrence of the topic of blockchain in general and then focus in detail on the occurrence of articles that deal with blockchain and the public sector. In addition to the dynamics, we look at the areas mentioned in this connection.

When a bitcoin owner decides to transfer a certain amount of bitcoins to another user's wallet, he sends a message to all users of the bitcoin network. He uses his private key to sign the message. The other network users (miners) verify the transaction with a complex mathematical calculation and make sure that the initiator of the transaction has the authority to make the transaction. This transaction will be added to the ledger as a new block along with the other transactions.

via blockchain can mean lower transaction fees compared to conventional methods or in many cases even no fees. The most valuable benefits of cryptocurrencies are that they have built-in inflation protection, as fiat currencies can be printed at the discretion of the central bank, which increases their inflationary nature. In contrast, cryptocurrencies have a controlled supply that is capped, and therefore no financial entity can manipulate their quantity.

Currently, entities can hold their liquid funds either physically in the form of cash, which is a liability or liability of the central bank from an accounting perspective, or electronically in the form of bank deposits, where it is a liability of the respective commercial bank. Central banks and governments are coming up with (researching and testing) the possibility of holding money that is a liability of the central bank, but in electronic form called Central Bank Digital Currencies (CBDC). The Bahamas has already seen the first implementation of this instrument, while China and Sweden are at an advanced stage of the project (Laboure et al., 2021). However, in most countries, caution prevails about the implementation of CBDC, as there are more questions than answers. The develop-

ment of cryptocurrencies has inspired discussions on CBDC, but the two concepts are quite different from each other, the differences are shown in Figure 4.

5. Conclusion

The bibliographic analysis shows the importance of blockchain and also the growing interest in this technology over time. The reason for the interest is the characteristics of this technology, which is characterized by immunity, security, transparency, and the ability to operate automatically and thus eliminate redundant steps in the chain. Thanks to these characteristics, we are already seeing the application of this technology in various areas of the private sector. In the context of the drive to digitize the public sector, the challenge is to use blockchain in this area as well. Studies published on the Web of Science show the potential of using blockchain in the fields of healthcare, administration, agriculture, public finance, education, waste management, energy, the environment, and international relations. Among the areas the biggest potential is seen in the healthcare sector in particular, where blockchain can be used for the creation of



electronic health records of patients, for the management of surgical procedures, for the creation of an overview of the availability of medicines and for the creation of databases for tracking diseases. Another area is administration, specifically e-voting, which has already been pilot-tested in some countries. The last major area is public finance, where blockchain can serve as the basis for databases for public procurement, public expenditure records, and contracting. The mentioned areas are a sample of the possible use of blockchain in the public sector, where we have illustrated the real-world exam-

ples in the mentioned areas. The challenge for further studies is to design and implement further uses of this technology, to establish it later as one of the possible platforms for the digitalization of the public sector.

Acknowledgment

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Blockchain for the public sector: applications, challenges and potential

ABSTRACT

In recent times, blockchain has gained a lot of attention as it can provide a solution for data auditability, increase user privacy and can also remove some of the limitations of the existing internet. Blockchain is a special type of distributed database storing an ever-expanding number of records (blocks) that are protected against unauthorized interference both from outside and from the peer-to-peer network nodes themselves. This paper will identify the areas and potential that decentralized technologies have for improving efficiency and security in various areas of the public sector. Attention will also be paid to digital currencies and cryptocurrencies that are based on decentralized blockchain technology and that have potential applications in the public sector. The aim of this paper is to present the potential of blockchain in various areas of the public sector and to demonstrate its use through selected examples.

KEYWORDS

Blockchain; Public sector; Potential; E-voting; Security

JEL CLASSIFICATION

M15; H21; C88



On the Existence of an Optimal Capital Structure: Theory and Evidence in the Midst of Current Turbulent Changes

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* 1. Introduction

Determining the optimal capital structure for a company has been an important target and a problem that has challenged academic world and practitioners for a number of decades. In the sixty or so years since the Modigliani-Miller theorem, academics have worked to relax the assumptions of the theorem in order to obtain a better understanding of the capital structure of companies. This ground-breaking work has produced some important insights but has not yet delivered fully coherent theory of optimal capital structure.

In practice, one cannot exactly pinpoint at which point or level of debt a firm reaches the optimal capital structure and there is no specific debt/equity ratio that can be used as a guide to achieving such a capital structure.

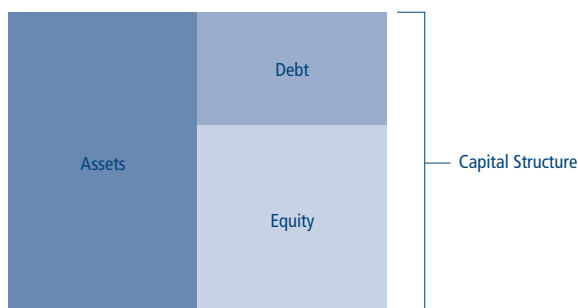
Companies need to determine the optimal capital structure that maximizes the company's market value by minimizing their cost of capital (an optimal capital structure should result in the lowest

weighted average cost of capital – WACC). Therefore, companies attempt to have the desired proportion of debt and equity financing that they want to achieve and maintain the target capital structure. It is important to know how the capital structure (expressed as liabilities/assets ratio) will react to global or economic events (war in Ukraine, inflation, supply chain problems, and the recovery from the COVID-19 pandemic) on any given day. The rest of the paper proceeds as follows. Section 2 presents the research objective, section 3 reports the methods and methodology. Section 4 outlines the theoretical background, section 5 presents quantitative analysis and identifies over-leveraged firms, section 6 summarizes and concludes with final evaluation of results.

2. Research objective

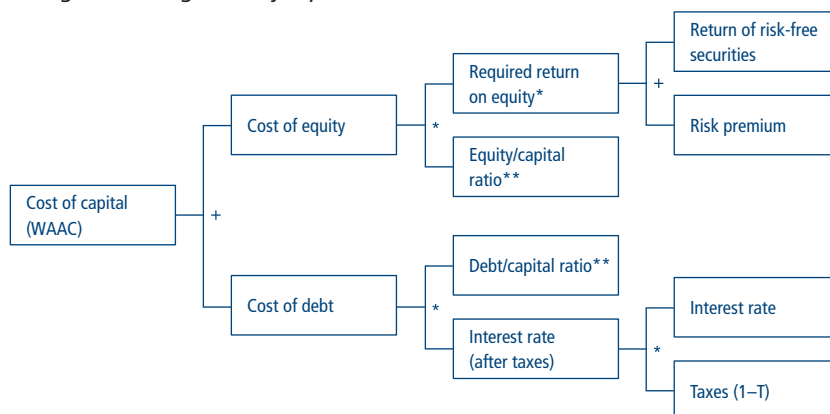
A number of theories have been proposed to explain the variation in debt/assets ratio across companies. The theories suggest that firms select

Figure 1 » Capital structure



Source: own calculations

Figure 2 » Weighted average cost of capital



* CAPM = Return of risk-free securities + (expected return of market portfolio — return of risk-free securities) × β -factor

** At market value

Source: own calculations

capital structures depending on attributes that determine the various costs and benefits associated with debt and equity financing. However, empirical work in this area has lagged behind the theoretical research. The current turbulent changes on the markets have affected the global economy broadly, but their impact will vary in intensity by different sectors and industries. For many companies and sectors there are serious questions of solvency and survival. As an example, the airline sector has come under particular stress globally and many airlines were looking for state support or

bailouts. We have also witnessed a global significant drop in sales in the sector “Accommodation”, reflecting the drop in the demand for hotels. On the other hand, the opposite positive example was a significant increase in sales for supermarkets, likely reflecting the increase in demand for online shopping. Therefore, the full impact of current turbulent changes on corporate financial health requires an examination of firm leverage and optimal capital structure.

Determining a firm’s optimal capital structure is challenging. Most existing studies on optimal



capital structure focus on the concept of a target debt level using predicted values from a regression rather than maximizing firm value with respect to leverage. However, firm value maximisation is central to the trade-off theory of capital structure.

The research question of this paper is: How have the current global events impacted capital structure (is there still an optimal capital structure in practice?) and what effects have the pandemic and other economic events had on firms of different sectors and different industries from this point of view? To fully explore the topic, an investigation into how different corporate sizes (a number of authors have suggested that leverage ratios may be related to the firm size) becomes a natural extension. In this paper, we focus on publicly listed firms only. Numerous studies argue that size can be a powerful explanation for cross-sectional differences in debt-equity ratios (see, for instance, Michaelas et al., 1999). This intends to capture a more conclusive and specific depiction of what economic sectors have been most affected.

3. Methods

Despite a vast literature on the capital structure of a company there still is a big gap between theory and practice. Most international empirical papers on capital structure have limited geographical coverage or implicitly assume that companies operate at their equilibrium leverage. The advantage of detailed financial statements (balance sheet and income statement) at the firm level is the information it provides on a number of variables, such as sales, debt and assets. Our calculation of the capital structure is based on the public data from the end of 2022. Data limitations force us to measure debt in terms of book values rather than market values. The source of all the data is The Bureau Van Dijk (A Moody's Analytics Company).

Many potential variables may or may not have a key role in the capital structure decision. These include a host of company-specific, industry-specific, macroeconomic, and institutional features. It is

apparent that the role and factors influencing capital structure decision change over time. Hence, cross sectional analysis of debt ratio alone would not be sufficient in understanding the dynamism of its determinants. It is important to understand whether companies react to new circumstances that occur on financial markets and how quickly they adjust their optimal capital structure in response to current turbulent changes.

We used a sample that includes firms (so-called blue chips enterprises) from a wide range of industries including financial services, automotive industry, consumer staples, energy industry, pharmaceutical industry, and airlines. Our database allows us to construct several standard firm-level determinants of capital structures that have been well established in the literature.

4. Theoretical Background

The study of capital structure has inspired an enormous amount of research during the last sixty years. Despite a lot of theoretical and empirical work has been carried out, much is still unknown about the overall implications of choosing a particular capital structure. Moreover, which are the drivers of financing decisions still remains a controversial and unresolved issue.

The theory of capital structure is first traceable to the work of Modigliani and Miller (1958) which examines the effect of financing mix on firm value. They come to the conclusions that are fundamentally in a conflict with the conclusions of traditional approach. Their model was based on unrealistic assumptions that there are no taxes, no transaction costs, no bankruptcy costs, perfect market exists with symmetry information, equivalence in borrowing costs for both companies and investors, etc. They showed that under these assumptions choosing of proportion of debt and equity does not affect company value as well as WACC as a substantially modified model (Modigliani and Miller, 1963).

The ground-breaking works of these two au-

thors initiated a large number of contributions from other authors who dealt with the issue of question. There are theories, which consider the perfect market, for example Brusov et al. (2013), Modigliani and Miller (1966), Brusov, Filatova, (2023), and other ones, considering the imperfect market (Brennan and Schwartz, 1978; Leland, 1994; Kane et al., 1984; Bikhchandani et al., 1998; Post et al., 2002; Filbeck et al., 1996; Fama and French, 2004; Myers, 1984).

Traditional trade-off theory and pecking order theory belong to the most acceptable theories of capital structure. According to the trade-off theory, companies have one optimal debt ratio (target leverage). They always intend to be near this ratio, after any deviation happening, debt ratio gradually returns to the target or optimal leverage ratio. The optimal level is attained by making trade-off between the gains from debt or equity to loss from them. Benefits involve interest tax shield and the losses include costs of financial distress, bankruptcy costs, agency costs, etc.

The pecking order theory, as suggested for the first time by Myers (1984), highlights that there is no well-specified optimal debt level which companies try to achieve. Firms only use external finance when there are not sufficient sources of internal finance. On the basis of this theory, firms finance internally rather than externally and debt than equity. The pecking order theory describes a preferred

sequence of funding types for raising capital. That is, companies first use financing from retained earnings (internal equity), the second source is debt, and the last source is the issuance of new shares of common stock (external equity).

Other popular theories that examine optimal capital structure are the so-called behavioural theories (Filbeck et al., 1996; Baker et al., 2002; Graham et al., 2013). These include management investment autonomy (the company capital structure is more influenced by investors, whose expectations are taken into account by company managers), the equity market timing theory (equity market timing theory means that a company should issue shares at a high price and repurchase them at a low price) and information cascades (to save costs and avoid mistakes, the company's capital structure can be formed by copying of the capital structure of successful companies in a similar industry).

To the latest theories about capital structures, it is worth mentioning the Brusov-Filatova-Orekhova theory of capital cost and capital structure (Brusov and Filatova, 2022) who created the BFO theory, which is valid both for companies of arbitrary age, as well as for companies with an arbitrary lifetime. In the BFO theory a new mechanism of formation of the company optimal capital structure, different from suggested by trade-off theory has been developed. Under this theory, with increased financial

Their model was based on unrealistic assumptions that there are no taxes, no transaction costs, no bankruptcy costs, perfect market exists with symmetry information, equivalence in borrowing costs for both companies and investors, etc. They showed that under these assumptions choosing of proportion of debt and equity does not affect company value as well as WACC as a substantially modified model (Modigliani and Miller, 1963).

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costs and bankruptcy risk, there is no optimal capital structure, which means that the trade-off theory does not work.

5. Summary of results

Previous empirical work in capital structure theory has showed controversial results, indicating that some theories better explain differences in financial behaviour of firms competing in different industries, while others find strong evidence when used in intra-industry investigations. From the literature analysis on the financial theories exposed above we carried out an empirical analysis over a sample of 60 companies from different industries. We decided to process the input data from the end of 2022. The sudden, unexpected events, which were the war in Ukraine and global turbulent changes that spread across the planet in a relatively short period of time have had a devastating impact on the economies of the affected countries, and, ultimately, on different industries and different business sectors. We focused our interest on blue-chip companies from six different sectors: automotive industry, financial services, consumer staples, energy industry, pharmaceutical industry, and airlines.

5.1 Automotive industry

From the automotive sector, we examined the capital structure of five companies: Tesla, Ford, BMW,

General Motors, and Ferrari. The results of our analysis are shown in Table 1.

As we can see from the table 1, there is not perfect (optimal?) capital structure in this industry. Young and luxury manufacturers (Tesla and Ferrari) have higher capital costs (WACC); Ferrari has highest WACC as a consequence of a lower credit reliability, Tesla is the youngest company of this sample, 2020 was the first profitable year, credit reliability is also relatively low. Of course, it is necessary to take into account country related reasons (different taxes, different interest rates).

5.2 Financial institutions (banks)

Financial institutions, especially banks, are generally excluded from empirical investigations of capital structure. However, large publicly listed banks are a homogenous group of firms operating internationally with a comparable production technology. Hence, they constitute a natural hold-out sample. We thus confirm the robustness of our findings outside the environment in which they were originally uncovered. We focused only on the 4 largest publicly traded commercial banks and bank-holding companies in the United States and one large publicly traded commercial bank from Switzerland: Bank of America Corporation, JP Morgan Chase & Co., Wells Fargo & Co., Citigroup Inc., and UBS Group AG.

From the Table 2 one quickly notices that US-banks all have similar capital structures. All of

Table 1 » Capital structure in automotive industry

Company	Region	Debt ratio	Debt/equity ratio	WACC
Tesla	USA	49.17 %	96.72 %	8.0 %
Ford	USA	81.08 %	429.55 %	6.6 %
BMW	Germany	67.27 %	205.50 %	5.3 %
General Motors	USA	73.11 %	271.83 %	6.3 %
Ferrari	Italy	67.78 %	210.37 %	9.8 %

Source: own calculations

Table 2 » Capital structure in financial sector

Company	Region	Debt ratio	Debt/equity ratio	WACC
Bank of America Co.	USA	91.48 %	1074 %	6.70 %
JP Morgan Chase & Co.	USA	92.14 %	1173 %	6.29 %
Wells Fargo & Co.	USA	90.24 %	925 %	6.06 %
Citigroup Inc.	USA	91.16 %	1031 %	4.73 %
UBS Group AG	Switzerland	94.54 %	1731 %	2.62 %

Source: own calculations

Table 3 » Capital structure in the consumer staple industry

Company	Region	Debt ratio	Debt/equity ratio	WACC
Unilever	USA	73.71 %	280.31 %	7.4 %
Procter & Gamble	USA	60.03 %	150.16 %	7.3 %
Mondelez Incorporation	USA	57.78 %	136.88 %	7.0 %
PepsiCo	USA	82.52 %	471.95 %	8.1 %
The Kraft Heinz Company	USA	47.05 %	88.86 %	6.6 %

Source: own calculations

them have the debt ratio between 90 % and 92 % and debt/equity ratio between 900 % and 1200 %. We can also see that, with the exception of Citigroup Inc., that WACC is between 6 % and 7 %. It can therefore be said that in this sector in the USA there are probably ideal (optimal) capital structures to which the banks orient themselves. The only foreign bank, here UBS Group AG, deviates significantly from its US competitors. While the debt ratio is only slightly higher over 94 %, the debt/equity ratio is almost twice as high and the cost of capital is much lower (2.62 %). We can therefore conclude that the capital structure in the US banking industry is very similar and that the companies here are oriented towards common ideals. However, this does not apply to the companies in the same sector from other continents, as seen here in the case of the UBS Group AG. However, this could have also to do with the size, as UBS Group AG is clearly the smallest bank within this sample.

5.3 Consumer staples

This sector consists of companies that provide essential goods and services that people use daily, like food, clothing, or other personal products. It also includes supermarkets and large consumer supercenters. Consumer staples are considered to be non-cyclical, meaning that they are always in demand, no matter how well the economy is (or is not) performing. This challenge has been exacerbated by current turbulent changes (rising inflation, for example) caused by increasing commodity costs – firms either have to pass on price rises to consumers or take the hit themselves. But due to the essential nature of the goods being sold by consumer staples, price rises have little impact on consumer demand.

This sector is also widely known to be defensive meaning it usually does well in economic downturns but does not capture all the gains from an economic rally. The only way companies in this in-



dustry can grow their business is to reduce costs, prices, and differentiate their products. Obviously, there is not a general, optimal capital structure in this industry sector, because the debt ratio is different, but WACC of three companies is almost identical (PepsiCo has the worst capital structure with highest WACC). The Kraft Heinz Company has the best capital structure with the lowest value of WACC.

5.4 Energy industry

One of the key industries in today's turbulent changes is the energy industry. Energy sector is regarded as unique, due to its importance in global economy, ownership structure and its usage as a "political tool". Despite the energy industry's substantial economic impact, as well as its specific ownership structure, the financial behaviour of companies in this industry is relatively rarely studied.

Significant differences were found in the level of debt ratio of the analysed companies. Generally, the overall financial situation of the companies in the energy sector depends on the share of private or state capital. State-owned companies guaranteeing the country's energy security are characterized by a more stable financial situation. Private companies with lower economic potential are more exposed to changes in the energy market.

5.5 Pharmaceutical industry

Pharmaceutical industry is one of the main sectors that contributes to the global economy and develops rapidly in international markets as a profitable business during current turbulent changes. The pharmaceutical industry currently faces hard challenges: patents expiring, mid-stage R&D pipelines gaps, the shift towards personalized drugs and other market pressures are weakening the traditional business model.

Table 4 » Capital structure in energy sector

Company	Region	Debt ratio	Debt/equity ratio	WACC
Chevron	USA	9.34 %	14.90 %	8.8 %
Shell	United Kingdom	52.55 %	224.96 %	7.5 %
RWE	Germany	58.35 %	244.70 %	4.8%
Saudi Aramco	Saudi Arabia	34.12 %	95.63 %	6.6 %
Valero Energy	USA	17.03 %	52.83 %	7.4 %

Source: own calculations

Table 5 » Capital structure in pharmaceutical industry

Company	Region	Debt ratio	Debt/equity ratio	WACC
Johnson & Johnson	USA	59.33 %	145.89 %	7.7 %
AstraZeneca	United Kingdom	62.71 %	168.18 %	6.6 %
Pfizer	USA	57.31 %	134.27 %	7.5%
Roche AG	Switzerland	69.29 %	225.60 %	3.1 %
Novartis AG	Switzerland	48.53 %	94.32 %	4.1 %

Source: own calculations

Table 6 » Capital structure in the airlines industry

Company	Region	Debt ratio	Debt/equity ratio	WACC
Air France	France	113.33 %	-215.9 %	4.64%
Lufthansa	Germany	44.71 %	49.2 %	4.65 %
Turkish Airlines	Turkey	67.31 %	343.7 %	2.83%
Emirates	United Arab Emirates	56.29 %	128.6 %	11.24 %
American Airlines	USA	112.53 %	-368.3 %	4.65 %

Source: own calculations

Table 7 » Summary table of individual industries

Industry	Knowledge gained
Automotive	No optimal capital structure found. All companies use different structure to achieve high value.
Banking	There might be an ideal capital structure. Debt ratio between 90% and 92% and debt/equity ratio between 900% and 1200%.
Consumer staples	No optimal capital structure even with similar market value.
Energy	No optimal capital structure. Differences stem from different owner groups.
Pharmacy	Average debt ratio around 59% seems to be the ideal structure in this industry.
Airlines	No optimal capital structure found. The debt levels are completely different.

Source: own calculations

As we have seen, the average debt ratio is 59 % and most of the companies mentioned are close to this number. This clearly implies that the industry relies heavily on the long-term debt to finance their research activity. For big industry players, the need to acquire new knowledge and the aggressive use of partnerships stress the importance of financial funds, in order to make deals and agreements in a timely fashion.

5.6 Airlines industry

The airline industry belongs to the most highly leveraged industries. The sector's basic regulation and the need for large investment were additional characteristics of air transport industry in the past. The open and competitive airline market resulting from deregulation helped in generating greater val-

ue for customers through reduced ticket costs and freight charges; however, the cost of operations, research, and development did not follow in the same direction, at least not immediately. This created a financial nightmare for most airline companies in their efforts to generate profits, and the problem seems to persist also during current turbulent changes. Many airlines have seen marginal profits at best in their operational lives: many more have folded. The airline industry is highly energy intensive because of the large fuel consumption (the volatility in fuel prices, adds to the normal operational risk) The airline industry is also capital intensive because of the need for large investments in planes and other fixed assets. The management have to choose from different financial sources when raising capital for these large investments.



Definitely, there is no optimal capital structure in this industry, the debt ratio is not correlated to the WACC. Even two companies (Air France, American Airlines) have negative equity, and, despite this fact, they are still on the market. It is found that most airlines do not follow the traditional finance management practice of lowering liabilities during lean times and increasing them during economic upturns.

5.7. Summary of results

Summary results of our analyses are presented in the table below. This table clearly shows that in current turbulent times values only come close to the optimal capital structure in the pharmaceutical industry and in the banking sector.

6. Conclusions

Capital structure is one of the key topics in the world of finance. Capital structure theories guide the companies how to pick up a best mix of debt and equity to generate optimal capital structure. However, the question that how a company should select an optimal capital structure that moves it toward its main target of financial performance also during financial crisis and decreases the weighted average cost of capital (WACC) is still unanswerable. The financing decision has a direct effect on the WACC which is simple weighted average of the cost of equity and the cost of debt. The weightings are in proportion to the market values of equity and debt. Therefore, as the proportions of equity and debt vary, so will the WACC. As a consequence, the first major point to understand is that, as a firm changes its capital structure (i.e. varies the mixture of equity and debt finance), it will automatically result in a change in the WACC.

In this paper, we provide the evidence on the impact of current turbulent changes on optimal capital structure in public firms. Traditional capi-

tal structure theory indicates a resultant change in optimal level of debt/assets ratio. Using data from the end of 2022, we exploit within-firm variation to estimate an empirical model of leverage. We tested these theoretical hypotheses over a sample of most important players in each industry.

The most important determinants for optimal capital structure are firm size, tangibility, industry leverage, and (especially, during current turbulent changes) inflation. Of course, country and economic specific factors are also playing significant roles in corporate financing decisions; some of those factors are corporate governance, corporate and personal tax system, law and regulations, development of capital and debt. These factors provide a solid basis of the fundamental patterns in the international data. Larger companies, companies that have more tangible assets tend to have higher leverage, firms, that have more profits tend to have less leverage, and firms operating in current inflationary environments tend to have low levels of leverage. As we have seen, these patterns are portable across different countries.

Our analysis of the capital structures used by companies worldwide indicates that there are significant differences also in the capital structures used by companies in the same industry and business sector. Mature companies with stable and predictable cash flows during current turbulent changes could include more debt in their capital structure. On the other hand, companies that face high uncertainty because of vigorous growth or the cyclical nature of their industries should carry less debt, so that they have enough flexibility to deal with negative events. Weaker institutions are almost always associated with significantly higher debt, and as a consequence, higher risk and equity transaction costs. However, to better understand this situation, it would be necessary to realize a more in-depth analysis, which was not part of and the aim of this paper.

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On the Existence of an Optimal Capital Structure: Theory and Evidence in the Midst of Current Turbulent Changes

ABSTRACT

Capital structure refers to the mix or proportions of a firm's permanent long-term financing represented by debt, and equity capital. The interest of financial economists in this topic was stimulated by the 1958 publication of a path breaking article by Modigliani and Miller (Modigliani and Miller were two economics professors who studied capital structure theory and collaborated to develop the capital structure irrelevance proposition). The optimal capital structure of a firm is the best mix of debt and equity financing that maximizes a company's market value while minimizing its weighted average cost of capital (WACC). This tech-



nical definition is not always used in practice, and firms often have a strategic or philosophical view of what the ideal structure should be. Moreover, there is no magic ratio of debt to equity to use as guidance to achieve real-world optimal capital structure. Capital structures can vary significantly by industry. Cyclical industries like mining, for example, are often not suitable for debt, as their cash flow profiles can be unpredictable and there is too much uncertainty about their ability to repay the debt. Other industries, like banking and insurance companies, use huge amounts of leverage and their business models require large amounts of debt. What defines a healthy blend of debt and equity varies according to the industries involved, line of business, and a firm's stage of development, and can also vary over time due to external changes in interest rates and regulatory environment. Theory claims that an optimal capital structure may exist in the same industry and in the same business sector however in practice it is more likely that in the same industry and in the same business sector a range of capital structures exists in which a company can minimise its WACC rather than one particular ratio of debt to equity finance. Objective of this paper is to investigate financial structures used in practice worldwide during the current market turbulence using examples from different industries and different business sectors and compare these results with the theories that deal with the issue in question.

KEYWORDS

Optimal capital structure; Debt; Equity capital; WACC

JEL CLASSIFICATION

G12; G31; M21



Consumer perspective on sustainable and natural cosmetic brands: The insight into the Czech market

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* 1. Introduction

More than ever before, natural resources are being depleted, huge landfills are being created, plastics are being deposited in the oceans, the climate is constantly changing and with it comes huge weather fluctuations and global warming. Thanks to human activity, large numbers of animals have become extinct and many are on the verge of extinction. This, and much more, is due to the ecologically disproportionate growth of the economy, which is caused by ever greater consumer demand.

With all this happening to nature and the environment, the theme of ecology is increasingly emerging and permeating all areas of our lives – local food from quality producers and farmers, sustainable fashion and cosmetics, eco-travel and the associated promotion of sustainable brands. All of these terms are increasingly being bandied about, especially with the younger generation having access to current affairs online from numerous organisations. As a result, they are more aware of the importance of ecology and are not indifferent

to the environment. Influencers who are interested in the issue and use their influence to spread awareness among the younger generation also play a big role in the awareness and attitudes of the younger generation.

As the demand for eco-mindedness increases, more and more sustainable companies are offering products that are environmentally and health friendly. The cosmetics industry in particular produces up to 120 billion units of plastic packaging per year, contributing to the loss of 18 million acres of forest per year (Power, 2021), so it is critical for the industry to create products sustainably with the least impact on the environment. As many companies see the demand for sustainability, it is often the case that they only use carefully thought-out campaigns to sell sustainability-themed products and in reality, it is greenwashing, where the average consumer has no way of knowing if a company is really acting sustainably. It is therefore important not only in a cosmetics company to follow the whole brand philosophy and not be fooled by just one advertising campaign.



The global cosmetics market is projected to reach an estimated \$463.5 billion by 2027 (Chouhan, et al., 2021) with a shift in preference towards natural, organic and herbal products. In addition to this shift, studies also show that consumers are driving change with a focus on adopting greener packaging and sustainable products. Roughly 80% of consumers report that sustainability is important to them and 60% are willing to change their purchasing habits to reduce their environmental impact (L Makeup Institute, 2023). Further figures are reported in a 2017 study on corporate social responsibility (Butler, 2018), where on average 90% of consumers (particularly from Generation X and Y) agree that they would deeply trust and would buy more from a company they consider environmentally and socially conscious.

2. Sustainable marketing

Sustainable marketing does not have a single definition and in the literature, we encounter the terms green marketing, environmental marketing or ecological marketing. Although most consumers refer to sustainable marketing only as the promotion of products with eco-friendly elements, it is a broader concept encompassing a range of activities (Jurášková, Horňák, 2012), which is described by Greval and Levy (In: Lu, Bock, & Joseph, 2013) as *“the strategic efforts of firms to provide environmentally friendly goods (i.e., eco-friendly or green goods) to customers”*. A different definition is provided by Kotler and Keller (2013, p. 681), according to whom it is *“the ability to meet the needs of humanity without harming future generations”*. A similar definition is provided by Hart and Dowell (In: Montiel and Delgado, 2014), who state that sustainable development strategies *“seek not just to do less damage to the environment, but to actually produce in a way that can be sustained indefinitely into the future”*.

Sustainable marketing is very popular, and consumers have long said they desire green products and sustainable activities, but their behaviour of-

ten does not match their desires. This fact was found by Harvard Business Review in their 2019 research (Conick, 2019), where 65% of consumers said they want to buy from brands that advocate sustainability, yet only 26% of consumers actually buy from these brands. Addressing this gap was 2017 research from the Journal of Marketing Research titled Turn Off the Lights: Environmental Efforts of Convenience of Firms (Conick, 2019), where researchers found that brands can lead consumers to act more environmentally friendly by their example, specifically by visible evidence that the firm is also making efforts to be green. It is clear, then, that done right, green innovations can mean not only better brand reputation and money saved, but also more loyal customers (Conick, 2019).

2.1 Green consumer

With the growing trend towards sustainability, more and more consumers are making sustainability central to their purchasing process. We refer to these consumers as green consumers. These are individuals who care about the environment and are aware of the impact of their consumption activities on the environment around them. These values do not only apply to the products themselves, but also on their own mode of transportation to work, where they work, vacation spot, etc. (Shabani, et al., 2013). Erdogdu, Arun, and Ahmad (2016, p. 84) define a green consumer as *“a type of consumer who purchases green products that are eco-friendly, organic, or energy efficient and therefore consumes less natural resources.”*

There are several types of consumer segmentation in sustainable marketing. The first segmentation is provided by Gingsber and Bloom (In: Shabani et al., 2013), who divide consumers into five categories:

1. True Blue Green: these are the approximately 9% of green consumers who have strong nature values and a desire to participate in environmental activities. These consumers reject any

products from companies that do not act in an environmentally friendly way.

2. Green Back Greens: 6% of green consumers who are not heavily involved in green activities like the previous group but are interested in buying green products.
3. Sprouts: consumers interested in green products but do not want to pay the extra price for these products. Up to 31% of them can be persuaded to buy green products by appropriate marketing.
4. Grousers: have very little knowledge about ecology and the environment, they make up 19% of green consumers. This group believes that green products are inferior in quality and efficiency.
5. Basic Browns: a group ignorant of environmental issues, approximately 35%.

Another segmentation for the American population was introduced earlier by the NMI (Natural Marketing Institute). It also divides consumers into five groups (Ottman, 2011):

1. LOHAS (19% of the U.S. population) – the acronym is from Lifestyles of Health and Sustainability. This is the most active group within green marketing, not only actively buying green products but also recommending them within their community. This group promotes green activities and supports laws to protect the environment.
2. Naturalites (15% of the U.S. population) – a group focused on healthy lifestyles with a healthy body healthy mind philosophy. This group is concerned about harmful chemicals in products and therefore purchases products labeled natural, without artificial chemicals or antibacterial. Compared to the previous group, they are not as committed to sustainability, especially in terms of recycling.
3. Drifters (25% of the U.S. population) – a segment primarily focused on social trends – behaving environmentally only because of a trend. This segment is highly influenced by the media and focuses on simpler activities such as waste sorting.

4. Conventionals (24% of the U.S. population) – a group that behaves environmentally only from a practical point of view (e.g., paying extra for energy-efficient appliances to save on electricity bills). This segment is environmentally conscious but not as motivated as LOHAS.
5. Unconcerned (17% of the U.S. population) – an environmentally indifferent segment.

2.2 Greenwashing

The growing trend towards sustainable marketing and its popularity with consumers is causing some companies to present themselves with slogans, graphics and keywords that imply a green policy, when in fact they are not officially signing up to it and it is an unfair marketing practice. This inspiration from green marketing and the creation of a false green identity is reinforced by the term greenwashing, first used by journalist Jay Westerveld to criticize hotels that encouraged social responsibility but then did not themselves sort e.g. waste (Ottman, 2011).

There are a number of definitions of this increasingly commonly used term in the literature. The Cambridge Dictionary defines greenwashing as “*behaviours or activities that make people believe that a company is doing more to protect the environment than it actually is*”, while the Oxford Dictionary sees greenwashing as “*misinformation spread by organisations used to create an image of an environmentally responsible company*”. It is merely a company’s attempt to appear as good as possible on the outside, but this effort is deceptive without real green (sustainable) activities inside the company. Some authors view greenwashing as environmental manipulation and classify it, along with whitewashing or brainwashing, to unethical or manipulative practices in public relations that originate from the use of insights from psychology and sociology (Hejlová, 2015).

Underlying all the above definitions is the fact that companies handle information for their own benefit and ecological reputation. Although these



definitions present greenwashing in a negative light and point to its misinformation and deceptive effects, the strategy of using ecology and sustainability themes for self-marketing promotion has become a global phenomenon for many businesses in recent years (Halada, 2015). This is evidenced by research conducted by the International Consumer Protection and Advocacy Network in 2020, which found that of nearly 500 websites surveyed that make claims about product sustainability, 40% of green claims made online can be misleading to consumers (GOV, 2021).

A typical example of greenwashing in the cosmetics industry is the creation of a natural atmosphere in advertisements or the labelling of cosmetic products as “natural” on the basis of one natural ingredient in the ingredients. Dohnalová (2020), states that cosmetic companies *“rely on the fact that most consumers cannot read ingredients and for most ingredient names do not know what is behind them. So they are not afraid to call a product natural, even if there is only one natural ingredient (e.g. aloe vera, chamomile extract, etc.) and the rest is classic synthetics.”* Laura Burget (In: Onovo, 2021), co-founder of Three Ships Beauty, adds that *“as more and more brands take advantage of sustainability marketing, it’s difficult to distinguish greenwashing from authentic messaging. While the industry’s growing interest in sustainability is a positive trend, it becomes a problem when brands only share a fraction of the truth. At Three Ships Beauty, we believe it is our responsibility to educate our customers about the science behind the product, and our priority is to communicate complete transparency. Our customers trust our brand because we will never make misleading claims or use fear-based marketing. Our website includes a full glossary of ingredients.”* Cosmetic brands that use greenwashing in their marketing include Physicians Formula, Johnson’s Natural and Tarte (Better Goods, 2021).

2.3 Sustainability of the cosmetics industry

The cosmetics industry is an industry that does not have a good reputation for sustainability, producing up to 120 billion units of plastic packaging per year, contributing to the loss of 18 million acres of forest per year (Power, 2021). Furthermore, according to the UN, only 9% of plastic waste ever generated by any industry has been recycled (Morosini, 2021). Packaging is an obvious problem, however, cosmetic brands that want to reduce their environmental impact must address other sustainability and environmental challenges, including carbon production in transportation, water waste and energy consumption (Power, 2021). Below you can find several examples that the cosmetics industry uses in sustainability:

- Minimising packaging waste
- Refillable packaging
- Banning toxic substances
- Involvement of environmentally friendly production
- Local production

3. Consumer behaviour in the purchase of cosmetics

“Consumption behaviour involves how individuals, groups and organisations select, purchase, use and discard goods, services, ideas or experiences that satisfy their needs and wants” (Vikova, 2017, p. 10). Schiffman and Kanuk (In: Hroboňová, 2020, p. 22) offer a more sociological perspective on purchase behaviour, defining it as *“the behaviours that consumers exhibit in seeking, purchasing, using, evaluating, and disposing of products and services that they expect to satisfy their needs.”*

When shopping for any product or service, the question of why they bought the particular product they have and not some other product that was also a choice may come to the minds of consumers and why they chose to buy it (Koleňák, et al., 2020). As part of this thought process, consumers

encounter so-called motivational forces that determine and influence consumption behaviour. There is also another issue that arises here, namely that of what will bring about a particular purchase decision for the customer. Here they also encounter their own decision making, where they may ask themselves why they choose a particular product (Vysekalová, 2011).

Some consumers still have a barrier in their consumption behaviour due to sustainable cosmetics. This barrier is due to the fact that they consider sustainable products to be unaffordable, do not believe that sustainable cosmetics can be functional (Onovo, 2021) or cannot recognize which product is truly sustainable and not just part of greenwashing. Sustainability is a broad term and each brand defines it differently. Inconsistent brand messaging is confusing and makes it difficult for customers to understand the purpose of switching to sustainable product alternatives. Lack of understanding and awareness is the reason why customers reach for a different product on the shelf. Product education is the key to bridging the gap between consumer behaviour and brand perception. For this reason, transparent communication and environmental education are as important as effective formulas (Burget In: Onovo, 2021).

Recent joint efforts led by L'Oréal, Henkel, LVMH, Unilever and Natura & Co in the personal care sector, some of the largest cosmetics companies, could also help to make sustainable cosmetics more transparent and easier for consumers to make decisions. In September 2021, the mentioned companies announced a collaboration to jointly develop an environmental impact assessment and scoring system for cosmetic products. According to the announcement, the scoring system will be brand-agnostic and will allow shoppers to more easily compare products and their environmental impacts with respect to the entire product life cycle (Morosini, 2021).

4. Generation of consumers

Although it is true that each individual is a very individual personality that has been shaped by factors specific to each of us and cannot be generalised, it is also possible to summarise the different generations by certain common features and characteristics. These are primarily related to personal goals, attitudes and motivations (Strauss and Howe In: Viternova, 2019). Jackson, Stoel and Brantley (2011) describe a generation as a group that is shaped by the moments that individuals experience. This shapes their values, expectations, preferences, attitudes and also their buying behaviour. Generational identity is then defined in relation to this foundation. It is this identity, including values and motivations, that marketers should seek to understand in order to target each individual correctly.

Generations are mainly differentiated based on the age and time periods in which they were born, as the same experiences, needs, symbols and memories of individuals correspond with similar ages, which can lead to similar consumption patterns (Hoyer, Macinnis, and Pieters 2018). Following these general definitions, three generations will be described below, i.e. Generation X, Y and Z.

4.1 Generation X

The term Generation X is a label applied primarily to the generation of the Western world that was born roughly between the first half of the 1960s and the late 1970s. Its beginning is associated with the discovery of the contraceptive pill (Howe and Strauss In: Viternova, 2019). In the Czech Republic, the term Husák's children is more commonly used, i.e. children born under the rule of President Husák during the totalitarian regime in Czechoslovakia (Bejtkovský, 2016). As part of the political background, this generation is also associated in the Czech Republic with the Velvet Revolution and the end of the totalitarian regime, which opened up greater opportunities in the labour market, also



associated with the possibility to travel (Stražilová, 2014).

These opportunities have led to greater competition in the labour market, which is a possible reason that careers and financial security are important to Generation X (Bejtkovský, 2016). Research by NMS Market Research and PR.Konektor has confirmed that employment is still a priority for Generation X and they have no problem with loyalty to their employees even in the form of overtime. In fact, based on the research results, they lean mainly towards life values such as peace of mind and a financially secure life (e.g. with their own home), to achieve which a steady income is inherent (Forbes, 2019). Related to this is the fact that they often struggle with burnout syndrome and guilt about not having time for their children (AkSen, 2014).

In terms of purchasing behaviour, Generation X shoppers use traditional methods of searching and decision making; they also want to hear the benefits of a product and why it is necessary (Lissitsa, 2016). Besides, they are also risk averse in their buying behaviour and more than any other generation, they research information when shopping online. They read more reviews and visit more opinion sites than other generations. Most will not even buy a product until they have researched it thoroughly, whether through online reviews or opinions on social media (Peralta, 2015).

It is also typical for Generation X to ignore advertising that is not aimed directly at them (Lissitsa, 2016). Generation X values honesty, authenticity and independence, especially when it comes to advertising. They seek out companies that promote in marketing that every consumer is different and do not respond well to a generic marketing approach (Peralta, 2015).

4.2 Generation Y

Generation Y is bounded by the years 1980–1997 approximately. Like Generation Y, this generation is also often referred to based on the political back-

ground that was taking place at the time, i.e. as Havel's children (Stražilová, 2014). Generation Y is also referred to by a more familiar nickname, namely Millennials, which is used all over the world, not just in the Czech Republic. This name is based on the period during which part of Generation Y came of age – the turn of the millennium (Vlček, 2017).

Like other generations, Generation Y was shaped not only by political but also technological events. The rise of new media, instant communication technologies, and social media has changed the traditional meaning and understanding of communication and work and social habits. In particular, computer and internet technologies have had a huge impact on Generation Y (Levickaitė, 2019).

Unlike Generation X, members of Generation Y see money only as a tool to make them well off (Forbes, 2019). Unlike their Generation X parents, they often change jobs and want to change established practices at work. They refuse to subordinate their hobbies or relationships to their job, and they refuse to work overtime and take risks at work. They demand more flexibility from employers – part-time work, flexible working hours or working from home. They do not see perseverance and patience as their value; all they really want is to be cool for decent money (AkSen, 2014).

In terms of shopping behaviour, millennials want quality services and products for their money (but they will buy them through a discount portal) and like to try new things and innovations, most often shopping online. If retailers don't want to lose them, they must not bore them and must be able to engage them (Forbes, 2019). According to Lissitsa (2016), Generation Y's loyalty is fickle, changes quickly according to fashion, trend and brand popularity and focuses more on style and quality.

Generation Y thinks about purchases, but often does not consider price in everyday ones and buys what they currently need. While they are happy to save on airfare when they fly with a cheaper airline

or do not want to pay exorbitant rates for a taxi in Prague and will use a cheaper alternative, they will pay a lot for good, healthy food without hesitation (Forbes, 2019). Furthermore, a 2015 survey showed that up to three in four millennial respondents are willing to pay extra for products or brands that use sustainable practices in their production or sales (The Nielsen Company, 2015).

4.3 Generation Z

Generation Z is currently the second youngest generation after Generation Alpha and its members were born from the second half of the 1990s to 2010 (Forbes, 2019). Members of Generation Z were born into a fully digitized world and are therefore referred to around the world as the Internet Generation, the iGeneration, or the Media Generation (Levickaitė, 2019). This is also related to the fact that they start school with the latest mobile phone and tablet in their bag and their main pastime is to take pictures, film and share everything on social networks. They have YouTube channel, Instagram, TikTok or various blogs as their bible (AkSen, 2014).

Since Generation Z is accustomed to getting basically anything online at lightning speed through digital tools, research shows that their average attention span has dropped even further, from 12 seconds to 8 seconds (Vision Critical In: Viternová, 2019). For this reason, it is a good idea in marketing to target this generation with short videos, which are not only delivered by the social network TikTok, but also by Youtube in the form of Youtube shorts or Instagram and reels. In terms of purchasing behaviour, this generation is highly influenced by their idols, – influencers they follow on YouTube, Instagram or TikTok. They spend on what's trending and what they see in their favourite idols on social media (Forbes, 2019).

5. Research methodology

5.1 Data collection

The data was collected through qualitative and quantitative research during March 2022. The pre-research began first with a quantitative survey through a focus group that involved six respondents who use natural cosmetics. Two of them belonged to Generation X, two respondents were part of Generation Y and two respondents were representatives of Generation Z. Using the focus group method, the final version of the questionnaire was validated and finalized to collect data quantitatively.

The survey as part of quantitative research was conducted anonymously by online questionnaire on Survio website also in March 2022, following a collaboration with LOBEY brand of natural cosmetics, when it posted it on their Instagram stories. This was because part of the questionnaire was focused on LOBEY and the questions were aimed at active users of beauty products. At the same time, the questionnaire was distributed within a Facebook group focused on skincare. A total of 1207 respondents visited the questionnaire, of which 639 completed the questionnaire, a success rate of 52.9%.

5.2 Research design

The research focused on searches of secondary professional and practical sources focusing mainly on sustainable attitudes in marketing, green consumer, greenwashing, sustainability in cosmetics and consumer behaviour across generations of consumers.

The aim of the primary research is to find out how consumers perceive sustainability when buying cosmetic products and how and whether they buy natural cosmetics.

The questionnaire in this research survey consisted of 22 questions that were logically linked to each other. The first part of the questionnaire fo-



cused on demographics, the second part on consumer behaviour in choosing cosmetics, the third part on sustainable cosmetics and the last part on the LOBEY brand. The last part is not part of this research paper, but served as an analysis for the design part of the final thesis of a NEWTON University student, Martina Machalová, one of the author. The first type of questions that appeared in the questionnaire were semi-closed questions – meaning that the respondent could choose from the options offered or add his/her own option. Another type of questions were closed questions. In these questions, the respondent had to choose an answer from the options offered and could not complete his/her own answer. The last type of questions that appeared in the questionnaire were open-ended questions. Within these questions, respondents did not have a choice of answers and wrote their own answer in the open-ended box. For seven questions, respondents had the option to select multiple answers, while for the other questions respondents could only select one answer. The questionnaire also included five filter questions that determined the next question based on the answer chosen. For example, “*Do you care about the ingredients when choosing a cosmetic product?*” or “*Is it easy for you to distinguish sustainable cosmetics from conventional cosmetics (containing synthetic ingredients)?*” or “*Do you follow any certification when choosing a cosmetic product?*” etc.

The application of current data on consumer purchasing behaviour for cosmetics will be linked and used to define the following research questions.

5.3 Respondents analysis

Out of the 639 completed questionnaires, the majority of respondents were women (95.3%). Their prevalence is fine, as they are the target group of the LOBEY cosmetics brand. The representation of men was 4.7%.

The age group of 21–30 years has the highest

representation (66.2%). This is the age group that also ranks highest among LOBEY customers. The questionnaire also showed that most men (22 out of 30) are in this age group. The second most common age group is 31–40 years (19.1%) and the third is 16–20 years (10.3%). The age groups with the lowest representation are 41–50 years and 51+ years, which are not part of the main target group of the brand. Among the target groups, the age group 15 and under has a small representation (only 2.3% of respondents). However, this target group is most active on TikTok, where the questionnaire was not distributed due to the impossibility to insert a link to the videos.

5.4 Research questions

For research on consumer preferences and attitudes towards sustainability and natural cosmetics, the following research questions were identified as sub-research areas that can be categorised according to the questionnaire conducted:

- RQ1: What factors do consumers consider when choosing cosmetics?
- RQ2: What brands of cosmetics do consumers think of as sustainable cosmetics brands?
- RQ3: What brands of natural cosmetics do customers buy?
- RQ4: What reasons do consumers buy natural cosmetics for?
- RQ5: What role do certificates play in the consumer's choice of cosmetics?

6. Research questions results

RQ₁: What factors do consumers consider when choosing cosmetics?

Most respondents chose natural ingredients (70%), but this was followed by price (44%). If products are purely natural, the price is often significantly higher than for conventional cosmetics, so these two factors weigh heavily in the selection of quality natural cosmetics. Other frequent answers included references from an expert (29.9%)

and references from friends (23.3%), while references from an influencer were chosen by only 4.9%, and surprisingly most of them were from the 21–30 age group, not the lowest. Based on the open-ended response option for this question, respondents were most likely to say that it was important to them if the brand did not test on animals.

Respondents were offered the following list of response options and could select up to three possible options, including “other answer” in the form of an open-ended question:

- natural composition
- price
- references from an expert
- references from friends
- local producer
- reviews on the internet
- sustainable business behaviour
- recyclable manufacturer packaging
- country of origin
- brand
- discount
- influencer testimonial
- advertising

In terms of the results with respect to the question on sustainability and the environment, 90.8% of the respondents to the questionnaire are interested in sustainability, but it is interesting to note that only 18% of the respondents are interested in sustainable business behaviour and 12.7% in recyclable packaging. These low numbers may be due to several reasons. The majority of respondents that they are interested in sustainability from a moral point of view, even if they are not factually and realistically interested. The second possibility could be that consumers are not aware of the importance of sustainability beyond cosmetics companies. It is not just the natural ingredients, but the overall functioning of the company, including packaging, that has a big impact on the environment. The last option, which is related to the second option, is that consumers are very influenced by advertising, with many cosmetic brands stating

that they are sustainable and organic only on the basis of few natural ingredients in the product and consumers then perceive the brand and the cosmetics as sustainable, which in practice means the application of greenwashing.

In an open-ended question on the composition of cosmetic products and the substances most often avoided by consumers, the following were mentioned: Silicones (20%), Parabens (18.3%), Alcohol (14.1%), Sulphates (5.7%) and, among specific substances, Formaldehyde (3.2%), PEG (3.2%), Phenoxyethanol (2.5%), SLS (2.3%), BHA and BHT (2.3%), Laureth-4 (1.1%) and Dimethicone (1.1%). A full 81.8% of the survey respondents are interested in the composition of cosmetics products.

RQ₂: What brands of cosmetics do consumers think of as sustainable cosmetics brands?

In terms of knowledge of sustainable cosmetic brands, respondents brought a relatively narrow number of brands on the market with the following examples: LOBEY (84.8%), Kvitok (34.3%), PURITY VISION (31.7%), Havlíkova apotéka (8.8%), Weleda (4.6%), Manufaktura (4.6%), Nobilis Tilia (4.1%) and Inlight (2.6). The 84.8% success of the LOBEY brand is of course to be attributed due to the publication of the questionnaire specifically through its online platforms. In this case, it was an open-ended response, so respondents could express themselves freely and with several possible examples of marks. Despite the total number of 639 respondents, there were 337 occurrences of examples of marks in this response.

RQ₃: What brands of natural cosmetics do customers buy?

The majority of respondents, 97.8%, who occasionally make a purchase, responded to the research questions on the topic of natural cosmetics brands purchased. The largest brands were LOBEY (86.4%), PURITY VISION (33.28%), Kvitok (23.8%), Havlíkova apotéka (7.5%), Goodie (4.6%), Alverde (4.3%), Renovality (3.5%), Manufaktura (3.3%), Nobilis Tilia (3.2%), Weleda (2.7%), Saloos (2.2%) →

Underlying all the above definitions is the fact that companies handle information for their own benefit and ecological reputation. Although these definitions present greenwashing in a negative light and point to its misinformation and deceptive effects, the strategy of using ecology and sustainability themes for self-marketing promotion has become a global phenomenon for many businesses in recent years (Halada, 2015).

Inconsistent brand messaging is confusing and makes it difficult for customers to understand the purpose of switching to sustainable product alternatives. Lack of understanding and awareness is the reason why customers reach for a different product on the shelf. Product education is the key to bridging the gap between consumer behaviour and brand perception.

and Yves Rocher (1.4%). The brands listed have truly natural ingredients, so it is evident that given the larger portfolio of brands listed, it is easier for respondents to identify a natural brand as opposed to a sustainable one.

RQ4: What reasons do consumers buy natural cosmetics for?

The most common reason for purchasing natural cosmetics was health reasons (52.5%), followed by ecology (26.2%) and ethical reasons (10.7%). The question was open-ended and respondents agreed that all three reasons were important to them. Only 2.2% of the respondents never buy natural cosmetics, while 17.7% always buy natural cosmetics. Therefore, it was also interesting to find out the reasons why consumers do not spend money on natural cosmetics. The most common reason was price (32.1%), which was chosen by 73.3% of respondents aged 15 and less and 42.4% of respondents aged 16–20, so the question is whether it is profitable to target this age group with marketing activities for natural and sustainable cosmetics, as this age group often does not have their own financial resources and if so, to a limited extent.

Within the topic under study, several respondents indicated on the basis of the open-ended response option that they do not find natural cosmet-

ics helpful for some health problems or are allergic to them.

Also related to the purchase of natural cosmetics is the area of correct identification of cosmetics without chemical additives, which are contained in conventional cosmetic products available in drugstores and even pharmacies. Therefore, in our research we were interested in how easy it is for consumers to distinguish sustainable cosmetics from conventional cosmetics that contain synthetic ingredients.

Respondents' reactions showed that two-thirds of respondents found it difficult to distinguish sustainable cosmetics from conventional cosmetics. There could be several reasons, for example the large number of substances in the ingredients with Latin names, where it is difficult to distinguish which substance it is. However, there are many sites on the internet where it is possible to upload the ingredients of products and get information on whether the ingredients are fine or not. Another reason may be that sustainability is mentioned in almost every advertisement, making it even more difficult for consumers to know when a brand is truly sustainable. A final reason may also be that sustainable cosmetic brands still do not present sustainability much in their marketing, at most in their ingredients.

RQ₅: What role do certificates play in the consumer's choice of cosmetics?

Almost two-thirds of respondents said they follow the certificates. Within the 15 and under age category, 66% of respondents do not follow certification and within the 16–20 age category, 43% of respondents do. In this case, cosmetic brands should do more to educate this generation about the certifications they have on their products and what they mean.

The research question therefore provided a summary answer that the age of the consumer is directly related to the quality mark of a cosmetic product and the consumer places a stronger emphasis on certification as they get older.

Respondents could also comment on which certificate on the cosmetic product they follow and is an indicator of quality for them. This question type offered predefined response options, including a open-ended response option. The most frequent answer was the HCS certificate (77.8%), which indicates that the product and its ingredients are not tested on animals, followed by CPK / CPK BIO (38.7%) and PETA (38.4%).

7. Conclusion

The survey found that over 90% of respondents are interested in sustainability, with 90% across all age categories, with only 80% of the 15 and under category interested in sustainability. This finding was further confirmed in that it is the younger generation who find it more difficult to understand the certificates on cosmetic products or to understand the ingredients in cosmetics.

Interestingly, although 90.8% of the respondents said they were interested in sustainability, when asked about the deciding factors when buying cosmetics, only 18% of the respondents said they were interested in sustainable company behaviour and 12.7% in recyclable packaging. These

results may be due to the fact that cosmetic companies often mention only natural ingredients in their promotions, but do not promote further information such as recyclable packaging or the overall company philosophy. The natural formulation was the one chosen by most respondents at 70%, but this was followed by price, which are two factors that interact strongly – if a product with a natural quality formulation, it often cannot match the price of products that are full of synthetic ingredients.

Another interesting result in the questionnaire was how difficult it is for consumers to identify sustainable cosmetics versus natural cosmetics. Only 30% of consumers find it easy to distinguish sustainable cosmetics from conventional cosmetics, which was confirmed when respondents were asked to write down a sustainable cosmetic brand and the range of answers was very limited compared to when asked about natural cosmetic brands that consumers are familiar with. Again, this is due to the fact that although natural cosmetic brands are often sustainable, they also do little to inform their consumers about sustainability as part of their marketing, and they then do not know that the cosmetic brand is also sustainable and what sustainability entails.

There is also the important observation that many consumers do not buy natural cosmetics because of distrust of the ingredients and functionality. This is something that sustainable cosmetic brands should work with and emphasise real results and reviews more in their promotions. As part of the promotion, brands should also make it easier for consumers to discover the ingredients and also help differentiate sustainable cosmetics from conventional ones, as these are two areas that are difficult for consumers. If sustainable cosmetic brands were better able to explain these areas in their promotions and thereby educate consumers, there would be less and less greenwashing.

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Consumer perspective on sustainable and natural cosmetic brands: The insight into the Czech market

ABSTRACT

The aim of the research article is to find out how consumers perceive sustainability in the purchase of cosmetic products on the Czech market. Based on the research of expert sources and practical approaches of brands, trends and consumer behaviour, a qualitative and quantitative analysis of Czech consumers buying mainly natural cosmetics will be conducted. Cosmetic products are experiencing a huge increase in consumption worldwide; therefore, the paper will also focus on consumer perception of brands both in terms of sustainability and natural ingredients. There are undoubtedly a number of factors that influence or discourage consumers to buy. This topic has also become part of the primary research, as well as brand recall of cosmetics brands in the area of sustainability or certification of natural cosmetics products. These topics are formulated into research questions. By answering the research questions, the paper will provide insights for manufacturers and brands of natural and/or sustainable cosmetics and help them to improve the sustainability of their product development in the area of sustainability and communication with the customers.

KEYWORDS

Sustainable marketing; Green consumer; Greenwashing; Sustainability of the cosmetics industry; Consumer behaviour in the purchase of cosmetics; Generations of consumers

JEL CLASSIFICATION

M31; M37; D47; D91



Social Cyclical Time Theory.

From the philosophy of nature to commodity markets

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* 1. Introduction

The aim of this article is to present a research design through an interdisciplinary synthetic linking of multiple scientific approaches. The article presents a proposal for empirical research that examines the output of the major global commodity exchanges. The theory is based on the assumption of European natural philosophy (i.e. philosophy of nature) about the relationship between the seven basic metals. The article uses a descriptive method to analyse the mutual influence of the seven philosophical basic metals — gold, silver, lead, copper, tin, iron and mercury — on today's commodity market. According to philosophy, the metals should have certain non-random relationships that are reflected in their mutual price relationship. According to philosophical speculation, these conditions should have a cyclical character. The framework is formed by the description of an ancient proto-scientific idea that transcendental influences of the spiritual world on the socio-economic behaviour of a population. This influence has different aspects. In a certain period of time, one of the seven metals should have a qualitative dominance. For this kind of dominance, the ancient Greek philosophical tradition used the specific term *chro-*

nokrator (spirit of the time/age). The term was used again by the Hegelian philosophy of the 19th century as *Zeitgeist*.

The manifestation of the spirit of the age was also explored by a special branch of philosophy: the philosophy of history. Until the 18th century, the philosophy of history and natural philosophy described the development of society on the basis of transcendental principles that gradually manifested themselves over time, following each other and repeating themselves in new forms in different epochs. According to ancient ideas, these principles also reflect natural or cosmic processes. By studying these natural processes, the philosopher could understand analogies to the social world. Metals played an important role in this because they were understood as substances of a certain quality. The seven basic metals have traditionally been used to symbolise the seven basic qualities of development (the seven stages of knowledge).

If there is a measurable regular relationship between the ratios of these seven metals, it could be expressed in the behaviour of commodity exchanges. So far, the relationship between gold and silver prices has been studied (e.g. Lucey, 2010; Tan, Floros, 2013), but all seven metals have not been studied together. Therefore, the possibility →

opens new trends in science — an integrated proto-scientific attitude of natural philosophy with modern tools of statistical verification (Löwith, 1986; Prinke, 2019). Business cycles have been of interest to economists since the beginning of economics as a science (Sherman, Kolk, 1996).

2. Natural Philosophy

In many ancient religious texts of the European cultural tradition, we find links to different qualities of time, which follow one another (e.g. the Book of Tobit, the Book of Enoch, the Book of the Giants). We find the same motifs in the philosophical tradition, which linked social and natural phenomena in analogical relationships (e.g. Hesiod, Solon, Ptolemy).

Christianity also adopted the succession of the seven periods (e.g. seven trumpets, seven vials, seven churches in the Book of Revelation). Philosophical speculation concluded that the order of time was not random (Pseudo-Dionysius, Albert the Great, Thomas Aquinas). The combination of natural philosophy and Christianity for the spiritual character formed the speculative imagination of the specific medieval theological discipline that Thomas Aquinas called “angelology” (Páleš, 2009). These speculations shaped the belief that society should be influenced by “seven spiritual rulers” described by philosophers such as Johannes Trithemius, Abraham ibn Ezra, Peter of Aban. The idea of “time signatures” is based on the archaic concept of sympathetic magic of traditional cultures, now described by anthropological methods (e.g. Fraser, 2002). Natural philosophy in the European tradition described the concept of seven time signatures, whose quality corresponds to the quality of the seven metals (Hampe and Sieroka, 2021). The combination of natural philosophy and religion shaped the contemporary notion of social time, expressed for example in the seven-day week or the seven primary colours adopted by Isaac Newton (Nesiba, 2022).

The idea of measurable time is known as

chronos, and we commonly use it for chronological and temporal data. Natural philosophy supplemented this physical time with the concept of quality (*kairos*). Measurable physical time (*chronos*) develops linearly, but *kairos* has a cyclical character, gradually developing as a circle (from beginning to end and then back again). One quality replaces another according to the nature of the spirit of the time. Metals represent these qualities, which is why certain high epochs of cultures have been called “golden epochs” or, conversely, times of struggle have been called “iron epochs”. The spirit of the time had an order that expressed the order of the seven metals: 1. silver, 2. mercury, 3. copper, 4. gold, 5. iron, 6. tin and 7. lead. The order was created on the basis of the geocentric view of the universe, according to the distance of the corresponding planets from the Earth, already 5,000 years ago. The sequence of days in the week with specific modification is organised according to this order. This idea of changing the character of time has a long philosophical tradition in the observation of nature and the universe. This idea was abandoned with the change in understanding from the closed world (*geocentrism*) to the infinite universe (*heliocentrism*) (Koyre, 2018).

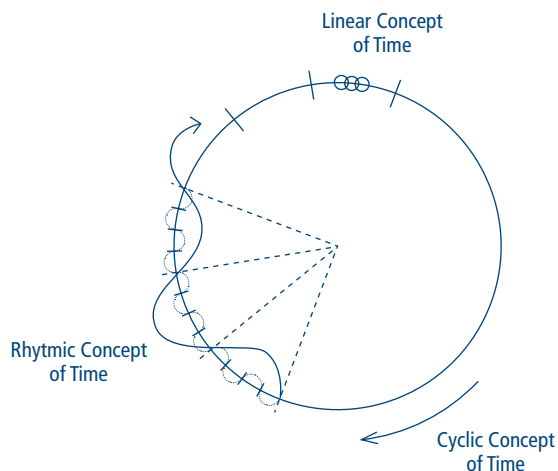
Seven planetary metals formed the basic framework for the study of natural philosophy, from the earliest written philosophical records to the 18th century, as reflected in proto-scientific approaches. It means symbolic expression as gold (signature of the Sun), silver (signature of the Moon), iron (signature of Mars), copper (signature of Venus), lead (signature of Saturn), mercury (signature of Mercury), tin (signature of Jupiter). Signatures had other terms as analogies or correspondences, and even in Renaissance philosophy they were the dominant way of understanding the world (e.g. in heraldry, medicine, or in the system of education at universities such as *Septem Artes Liberales*) (See Table 1 for details).

Modern science has left the theoretical background to planetary metals as non-scientific speculation that does not need to be investigated. How-

Table 1 » Proto-scientific analogies

Metal	Planet	Color	Tone	Virtue/Sin	Day
Silver	Moon	White	d	Temperance/Gluttony	Monday
Iron	Mars	Red	g	Fortitude/Anger	Tuesday
Mercury (quick-silver)	Mercur	Orange	h	Charity/Greed	Wednesday
Tin	Jupiter	Blue	f	Humility/Pride	Thursday
Copper	Venus	Green	c	Chastity/Lust	Friday
Lead	Saturn	Black	e	Patience/Envy	Saturday
Gold	Sun	Yellow	a	Diligence/Sloth	Sunday

Source: Own processing according to Corbin 1986, Burckhardt 2001, Karpenko, 2003, Almirantis 2005, Kollerstorm, 2019

Picture 1 » Philosophical Concepts of Time


Source: own processing according to Hart-Davis, 2011, Rovinelli 2018

ever, modern economic theory speaks of cyclical phenomena in economic development. By combining philosophical speculation and economic theory, this hypothesis can be tested to see if there are any probable aspects to the price cycles of the seven metals.

At the same time, seven patterns of economic and social behaviour, moral emotions, social emotions and social cooperation have been studied (e.g. Haidt, 2003; Ekman, 2007; Curry et al., 2019). This typology of seven basic behavioural patterns

is close to ancient natural philosophy, and this research can be complemented by a temporal perspective of development, as prices are an expression of socio-economic behaviour. Modern economics has focused on quantitative research, but has not tested the hypothesis of possible economic relationships between the seven primary metals. The verification or falsification of this hypothesis in science is prevented by a certain labelling that it could be a modern form of astrology or alchemy. At the same time, new sciences are emerging that



study the cyclical phenomena of social development and are close to the original concepts of natural philosophy.

We can mention, for example, the works of Albert Toynbee, Ferdinand Braudel, Pitirim Sorokin or, today, Peter Turchin, who combined empirical research economics with history and philosophy. The science that comes closest to this type of research today is called cliodynamics (the dynamics of social phenomena that hide the measurable laws of one of the nine goddess muse of history: Clio). Peter Turchin's cliodynamics complements Joshua M. Epstein's generative sciences (Epstein 2006). The roots of this approach can be found in the first models of the social dynamics of biological systems. It is possible to predict the evolution of the environment as a biomathematical model (Kaplan, Glass, 1995). Peter Turchin proposes to study oscillations in society over time as a combination of Newtonian mechanics and empirical statistics as cliodynamics (Turchin 2003). Turchin formulated the challenge of cliodynamics as the need for history to become an analytical and predictive science again. According to Turchin, social dynamics can be measured by statistics based on generative cross-correlations (Turchin 2003, pp. 11–14). Natural philosophy has been able to

connect different understandings of time, not only the currently dominant linear concept (e.g. big bang theory, Darwinism), but also the concept of rhythmic and cyclical time. We rediscover these concepts of the original philosophy of nature empirically in different fields, e.g. chronobiology, cosmology or economic cycle theory. The complexity of integrating the different concepts of time in scientific research arises from the fact that linear time (*chronos*) is easily measurable on the basis of socio-economic phenomena (e.g. price), whereas cyclic concepts (*kairos*) have a measurable range of phenomena that is limited by the qualitative validity of the data.

3. Philosophy and cycling theories

Cyclic and rhythmic time was the oldest concept of time. It was based on the pattern of movement of the bodies in the solar system around the Earth and the cyclical change of the natural seasons throughout the year. Cyclic time was understood as the returning state of nature. Cycles are characterised by individual phases — rhythms, most often by two dual polarities (e.g. day and night, heart beat systole/diastole). Rhythms occur regularly and can be predicted to some extent, and their in-

Modern science has left the theoretical background to planetary metals as non-scientific speculation that does not need to be investigated. However, modern economic theory speaks of cyclical phenomena in economic development. By combining philosophical speculation and economic theory, this hypothesis can be tested to see if there are any probable aspects to the price cycles of the seven metals.

Well-documented historical data on the prices, mining or processing of these seven metals has been available since the 20th century. It is therefore possible to verify the thesis of the inter-metallic relationship of all seven primary metals, as manifested in the prices. However, a long-term comparison of metal prices and cycles has NOT yet been made. The data is not freely available and must be purchased under strictly controlled licences.

dividual phases and stages can be described. The more complex the social world, the more complex the rhythm.

The rhythms of the seven visible cosmic bodies (Sun, Moon, Mercury, Venus, Mars, Jupiter and Saturn) were the basic element of determination. Natural philosophy was the first scientific attempt to integrate the idea of astrological determination with the Christian concept of free will and linear development (eschatology). Natural philosophy refers to the pre-Socratic philosophy of ancient Greece, but also to the popular or university philosophy of the Middle Ages, which sought to establish relationships between the micro-world (man) and the macro-world (the universe). Both worlds influence each other: linearly, rhythmically and cyclically.

From the 17th century, the concept of time changed in favour of a linear one, promoted by the scientific approach. But the relics of the cyclical concept remained, e.g. we understand the term “re-volution” to mean “return to the original state” (Nicolas Copernicus called his 1542 work *De revolutionibus orbium coelestium*, meaning “On the Circulation of the Celestial Bodies”). Knowledge of the cyclical movement of nature was a practical tool for predicting development. Today’s idea of linear time is deprived of these qualitative aspects of past time, e.g. the astronomer-scientist looks only to the sky, but not forward, into the future (Aveni, 1999, p. 23).

Natural philosophy worked with the concept of cyclical time in accordance with cyclical natural changes on earth and in the universe, and looked for regularities in them. The Pythagoreans spoke of the music of the spheres as the rhythmic principle of the whole universe. The first musical keys were measured geometrically according to the length of the strings. Rhythm is a natural manifestation of time, which determines frequencies, phases or periods. According to natural philosophy, the different phases of the rhythm of time affect everything, from nature to human beings, because in traditional thought nothing in nature was without meaning:

every situation in space refers to a sign in time; every place and every time are signs of destiny (Durand, 1993, p. 35).

Therefore, all ancient festivals were related to a cyclical, rhythmic, periodic time, which restored the ancient order after the days of chaos (festival); the very structure of these ceremonies presupposes ‘death’ and ‘resurrection’, a ‘new birth’, a ‘new man’. In the ancient tradition, this understanding of time was common as ‘wheels of time’. Pre-Socratic philosophers such as Anaxagoras, Empedocles or Heraclitus described the universe in this way. The classical idea of cyclical time was linked to the idea of the rebirth of souls (e.g. ancient philosophers such as Plato or Origen).

In the past, it embodied the quality of time in learning about the relationship between the macro world (the universe) and the micro world (man). In the Old Testament, in the First Book of Moses, this “cyclical” thinking appears even before the acceptance of the Covenant of Moses, when Joseph in Egypt explains the polarities of rhythm as the stages of seven fat and seven lean years from Pharaoh’s dream. Judaism, and then Christianity, came with a new radical concept — a linear concept of time in stages (Ecclesiastes 3:1-11). The interweaving of successive phases, but at the same time a long cycle, was manifested in ideas about the successive phases of the decline of cultures and their rebirth (e.g. in Indian mythology — the Yugas, as well as Hesiod’s stages of the Golden, Silver, Bronze, Heroic and Iron Ages). Time corresponded to “aging”, beginning with birth and ending with death (civilisation).

The Roman historian Polybius adopted the theory of the social cycle and described the history of Republican Rome according to this cyclical pattern. He showed in which specific aspects society is governed by laws that repeat themselves (mainly in Book VI of his History). He describes how this knowledge of cycles can be put to practical use in politics. These views also influenced Cicero, who formulated his advice on statesmanship in terms of a turning circle, the natural circulation and move-



ment of which one learns to recognise from the outset. For this is the main point of civic wisdom, to see the course and the twists and turns of the development of states, so that if you know where it is leaning, you can stop it or create obstacles.

Contrast to the currently dominant concept of linear, random evolutionary development, cyclical models have emerged since the 20th century, providing empirical evidence that cycles can be found in the social world. Contemporary science has fragmented into a number of scientific disciplines that produce incompatible results. Reconnection would reveal the hidden form of the cyclicity of time (e.g. *Bond cycles* were discovered by combining geology and biology, *Milankovitch cycles* by combining astronomy, geology, physics and mathematics).

Among the first theories were those of the Russian biologist Nikolai J. Danilevsky, who influenced O. Spengler and A. Toynbee. It is the historiography of the beginning of the 20th century, in contrast to that of the 19th century, which presents new concepts. It no longer follows only political history, but extends the field of research to social history, to the relationship between man and nature. In this approach, cyclical and periodic regularities appear more clearly (E. Gibbon, A. J. Toynbee). The attempt to record long periods of time led to the emergence of the influential French school of historiography, the *Annales*. Historians committed to the study of the laws of social development began to follow long periods of history (the long *durée*). The development of society according to this approach shows that it is possible to follow rhythmically repeating phases that follow each other.

4. Commodity market cycling theories

Classical studies include William Herschel's hypothesis that solar cycle variations in solar irradiance have a modulating effect on the Earth's climate and that there is a link between sunspots and crop prices (1801).

Economic theory searches for the causes of price changes in terms of their field. Prices show a cyclical character in relation to the stage of cyclical development of the economy as a whole. But the development of the whole economy is subject to even deeper natural and social causes.

Stock prices can be influenced by social dynamics and mass psychology, we can say "social mood" (Olson, 2006). Psychological factors and confidence levels are major contributors to market irrationality, which is most evident during financial bubbles and crashes (Shiller 2002). It has been argued that financial market trends are driven by emotions, which contribute to the tendency of investors to act in concert and engage in unconscious herding behaviour (Prechter, 2001).

The data for seven metals from the world's commodity exchanges can show whether statistical regularities point to deeper social cycles and whether natural philosophy has a factual basis. Research can continue on how economic theory models of economic cycles are constructed, which assume an inevitable cyclical repetition. This will include a comparison with currently recognised models of cyclical economic development, such as the Kitchin cycle (period of 3–5 years); the Juglar cycle (period of 7–11 years); the cycles of Longue *Durée* (medium-term conjunctures) of the French *Annales* School theory (periods of decades); the Kuznets cycle (period of 15–25 years); the Kondratiev wave (period of 45–60 years). Current integral science favours the analysis of ten-year cycles; decades are now accepted as the most likely (Korotayev, Tsirel, 2010).

Well-documented historical data on the prices, mining or processing of these seven metals has been available since the 20th century. It is therefore possible to verify the thesis of the inter-metallic relationship of all seven primary metals, as manifested in the prices. However, a long-term comparison of metal prices and cycles has NOT yet been made. The data is not freely available and must be purchased under strictly controlled licences. The data collected is only available within the

closed system of commodity exchanges and is not available to the public. The statistical research will cover official metal prices with which individual commodity exchanges have closed daily trading. The data collected will always have the same unit of measurement for all seven metals in a given year (either futures or daily closing price; mostly in USD).

The research can examine data from the major commodity exchanges in the world today. For commodity trading, the leading exchanges are COMEX (formerly known as Commodity Exchange Inc.), London Metal Exchange (LME), London International Financial Futures and Options Exchange (LIFFE) and Tokyo Commodity Exchange (TOCOM). The research can compare the same prices at the same time for all seven metals. It takes into account inflation, futures delivery and other economic aspects. Each exchange has a specific paid access for its investors. Data, including detailed historical data, is not available as open data.

All historical data has not been selected according to the seven planetary metals. This turns out to be a significant gap, as this assumption has not been verified. However, it is confirmed that the performance of each commodity on the stock market is subject to economic cycles. Since the beginning of the 20th century, the development of science and technology has made it possible to record all stock exchange data according to the daily market developments. This was particularly true of commodity exchanges, where raw materials were sold according to predetermined weight criteria and qualities.

The commodity exchange, like all types of trading exchanges, is subject to speculation. Speculation is a specific aspect of the economy and is usually studied from the perspective of economics or social psychology (e.g. Bosch, Pradkhan, 2015). Even partial analyses show that speculation reflects the mood of society. Records from longer periods show cyclical periods that end with the bursting of an economic bubble, and this also applies to the metals market. When interpreting the results

of the records and hindsight, a number of real aspects are evaluated. One aspect is still missing from the assessment. And that is the philosophical basis that certain qualities expressed by certain metals can follow each other and, at a certain stage, dominate the price compared to other specific metals.

The most important metals of natural philosophy — gold, silver — still determine the course of the global economy. Economic theories give metals an increasing influence on the economy. For example, Low et al. (2016), Bosch, Pradkhan (2015) and Ampomah et al. (2014) deal with the issue of precious metals. The other authors (Parida et al., 2020; Nguyen, Walther, 2020) deal with modelling and forecasting metal commodity prices and volatility on commodity exchanges. In addition, Albulescu et al. (2020) examined the local interdependencies between energy, agricultural and metal commodity markets and identified energy markets as having the greatest investment potential and risk diversification. A similar conclusion was reached in this study (Fousekis, 2020), in which the causality between future markets for agricultural, energy and metal commodities was identified (Greer, 2000; Gorton and Rouwenhorst, 2004; Gordon, 2006; Erb and Harvey, 2006).

Marañon and Kumral (2019) present the outcomes of an empirical inspection of Kondratiev waves in the actual prices of the base metals (copper, aluminum, zinc, lead, nickel, and tin), iron ore, and gold for the period 1900–2017. The results indicate an essential level of synchronization between metals prices' and the Kondratiev waves. The findings of this study serve as an argument for further research on the metals prices' cyclical components. Current findings of co-movement indicate strong co-movement among metals prices (Lescaroux and Mignon, 2008; Fernandez, 2015).

The other study, by Marañon and Kumral (2018), explored the Elliott wave principle (EWP) to interpret metal commodity price cycles. In order to see the applicability of EWP to commodity markets, a Monte Carlo simulation was performed on detect-



ed Elliott waves in gold, silver and copper prices and on a metal price index. The results of the research suggest that EWP would not be a sound approach to analysing commodity markets on a cyclical basis, as confirmed by the simulation results. Nevertheless, there is evidence that crowd psychology affects commodity markets, as proposed by Elliott. Therefore, this factor could be considered as an explanatory variable of commodity price formation and cycles for what is proposed to test its causality.

Karanasos et al. (2018) examined how the most prevalent stochastic properties of key metal futures returns have been affected by the recent financial crisis using mapped and unmapped data. The research suggests that copper and gold futures returns exhibit time-varying persistence in their corresponding conditional volatilities over the crisis period. Such persistence increases during periods of high volatility compared with low volatility. Among others, researchers in economics such as Babalos and Stavroyiannis (2015) examined the existence of herding behavior in metal commodities futures. Issler et al. (2014) examined spot metal price levels and changes in monthly, quarterly, and annual frequencies. Data consists of metal-commodity prices at monthly and quarterly frequencies from 1957 to 2012. The authors indicated that there must be a positive correlation between metal-price variation and industrial-production variation. Gleich et al. (2013) showed that every raw material comes with a fundamentally different set of relevant factors for economic scarcity. The mentioned economic research shows that studying specifically selected metals' cyclicity and economic regularities in metals and stock exchanges is possible.

When surveying prices on commodity exchanges, the project will examine other available data, namely the effect of metal mining volume among the seven elements. However, this research is only four goals and marginally concerns the primary type of price research on commodity exchanges. Current research on metal mining also shows cy-

clicality. Mining is considered a complex and cyclical activity involving numerous professionals, from exploration geologists finding a mineral deposit to engineers in the mineral extraction process to the marketing by economists and lawyers. Due to their inherent characteristics, either base or precious metals, such as malleability, good conductivity of heat and electricity, ductility, and durability, can serve many purposes (Pokhrel and Dubey, 2013).

However, these and thousands of other studies have not tested the possibility of a relationship between the seven planetary metals. One obstacle is the difficulty of the research, but also the availability of data. Data from each exchange must be examined separately. Since such research has not been carried out yet, verifying all available historical data from the beginning of the 20th century is necessary. The current state of research in commodity cycles focuses on different aspects. One of them is the monitoring of political effects (Mejía, 2015). A specific type of research follows the cyclical behaviour of commodity markets according to calendar effects (e.g. January effect, May effect, lunar effect, Mark Twain effect ... etc.). So far, none of these effects have been reliably proven (but neither have they been disproved), and the general belief is that possible correlations and all such patterns are the result of data dredging (Sullivan et al., 2001).

The research focuses on the possible prediction in the cyclically changing relationship of the market index with respect to the gold price, which is not linear, but the jumps in the changes are supposed to follow the sequence of the so-called Fibonacci series (Goeyardi et al., 2021), or they deal directly with non-scientific financial astrology (Pasavento, 2015; Williams, 2004; Skinner, 2016). Due to the large amount of different stock market data, any positive results found are often due to a statistical error known as data dredging or the so-called multiple comparisons problem. Therefore, it is necessary to establish a precise research framework that offers the principles of natural philosophy.

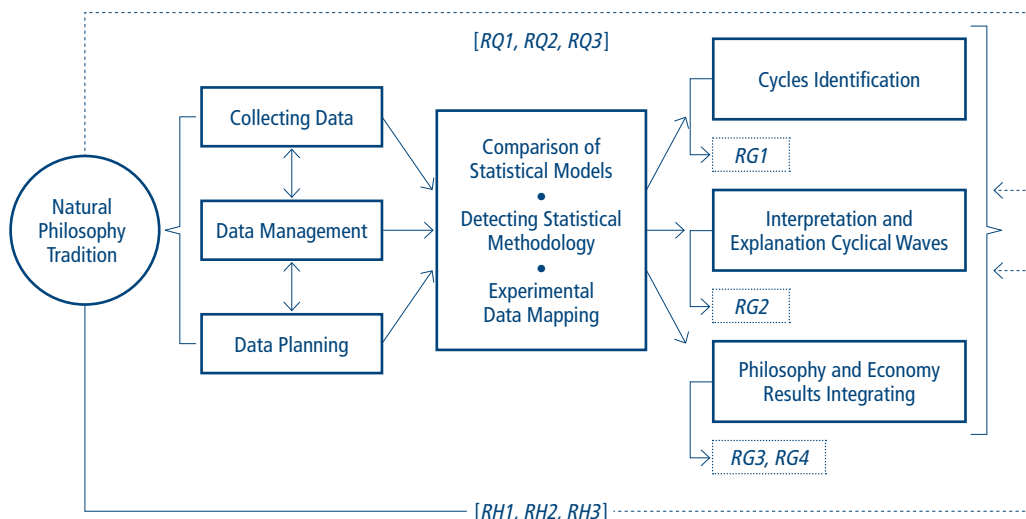
5. Proposal for research design

To understand the price time series, its decomposition using parametric and nonparametric approaches will be applied, e.g., smoothing, regression analysis, Fourier analysis (Korotayev, Tsirel 2010). When analyzing the time series, the applicants' research results in automated methods for identifying outliers in the time series (extreme value theory, change-point detection, kernel regression) can be applied and extended further. Also, extreme value theory will be used to assess the dependence between rare events and their clustering tendency.

The subsequent analysis will verify the hypothesis of cointegration of the time series from different exchanges. The mutual tendencies among the metals can be examined first by studying the time series of the absolute values. The Vector autoregression model (Stock, Watson, 2019) and cross-correlation analysis will be advantageous. Moreover, compositional data analysis (Brunsdon, Smith, 1998) might allow us to assess the dominance of the metals.

- Possible Research Questions (RQ):
 1. **RQ 1:** Do exist price cycles in commodity markets among the seven primary metals of Natural philosophy?
 2. **RQ 2:** How long waves of price domination could be detected for each metal separately or for a pair or trinity of metals?
 3. **RQ 3:** Can the cycles be found as extended aspects to the other commodities in identified economical cycles?
- Possible Research Hypotheses (RH):
 1. **RH 1:** The price differences among the same metals from all monitored commodity exchanges will unite according to the development of globally interconnected technologies.
 2. **RH 2:** Gold and silver will have more specific mutual relationships than the rest of the non-precious metals.
 3. **RH 3:** According to Juggler's seven to ten-year economic cycles, statistical analysis of metal relations shows the price dominance or price subordination of one (or pair, trinity) from monitored metals.

Picture 2 » Research Model



Source: Own processing

- Possible Research Goals (RG):
 1. **RG 1:** With the help of the purchased license to be able to enter the professional stock market commodity platforms of current commodity exchanges and examine economic data since 1900 for seven primary philosophical metals of Natural philosophy – gold, silver, tin, copper, lead, mercury and iron.
 2. **RG 2:** Compare data from individual exchanges separately and simultaneously math data from all three using suitable statistical methods. Find more variants of statistical ratio of cross-correlations.
 3. **RG 3:** To determine the relationship between the change in metal prices and its use in the world economy and impact on society.
 4. **RG 4:** To describe the exact composite business cycle indicator for the examined price waves.

6. Conclusions

The multidisciplinary synthetic linking of several scientific approaches is a challenge for contempo-

rary science. The present intention is based on the need for existing methods to shift knowledge based on objective comparison from several scientific perspectives. The intention for this one specific area (planetary metals in the historical price series of world commodity exchanges) can describe broader phenomena of modern history. With access to statistical data/time series, it is possible to compare other social phenomena using cliodynamics or social history. Access to data can create longer-term types of research in the field of modern social and economic history.

The present article presents a research design that would combine the knowledge of natural Philosophy with the current empirical output of commodity exchanges dealing with the trading of the seven basic metals described by natural Philosophy. The verification of the mutual relations between the prices of individual metals can be traced according to the theory elaborated by European natural philosophy in the period up to the 18th century. The article shows the new research perspectives in the integration of different sciences (i.e. philosophy, economics and sociology).

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Social Cyclical Time Theory. From the philosophy of nature to commodity markets

ABSTRACT

The purpose of this article is to present a research design. It is introduced a proposal for empirical research exploring the results of the four main global commodity exchanges on the theoretical assumption of natural philosophy about the relationship of the seven basic metals (gold, silver, copper, mercury, tin, lead and iron). The author focuses on the analysis of the integrating way of sciences, which connect the theories of philosophy with the current world commodity exchanges. The theory of the cycle of time for the seven qualities of time (i.e. chronokrators or Zeitgeist) has not yet been empirically investigated for shorter time periods (decades). The assumption of the variable dominance of one of the metals in the specific period can be applied in the analysis of the development on the commodity market by the prices among the seven metals. In the article the author suggests new possible perspectives of research in the future. The author uses the method of meta-synthesis of philosophical, social and economic theories.

KEYWORDS

Commodity Market; Cycling Time Theory Natural Philosophy; Planetary Metals

JEL CLASSIFICATION

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Managerial Corporate Reporting in Slovakia and Czechia in the Context of Sustainability

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* 1. Introduction

The impact of the activities of entrepreneurs in broad social and business relationships acts on the surrounding environment not only in close contact with the enterprise and indirect temporal connection but also in the current globalisation; they have an impact on the whole of society with consequences lasting until the distant future affecting not only the business sector but also the overall quality of life in both local and global company. On the other hand, the environment and society also influence the direction and implementation of the enterprise's activities, not only from the view of legally regulated processes but also from the point of view of society-wide interests in a global context. Therefore, over the past two decades, stakeholders' interest in high-quality, comprehensive business information has intensified, and this often also becomes a critical competitive tool. Reporting helps to provide visibility into the performance of an organisation and allows for informed decisions for all stakeholders to be made. For any organisation to thrive, it must have good reporting practices.

The issue of information about the enterprise is part of the research of several economic disciplines, e.g. accounting, management, marketing, microeconomics, finance, and computer science, but also of interest to other social sciences and humanities, as well as stakeholders in different scopes and directions of their interest.

The new managerial reporting and continuity of financial and non-financial information are essential to the effective functioning of an organisation. It provides a clear picture of the organisation's current financial position and results of operations, as well as its non-financial performance. This information is used by management to make informed decisions about where to allocate resources and how to use them best. Additionally, it is a valuable tool for communicating with stakeholders about the organisation's progress and performance. Depending on this, the impact of the quality of managerial reporting will continuously increase.

The contribution aims to identify the most critical areas of change and direction of reporting in the context of the new CSRD directive in Slovakia and the Czech Republic and the following new managerial challenges.

This paper focuses on the current challenges in business reporting following the adoption of the Corporate Sustainability Reporting Directive (CSRD), which will extend the obligations of several entrepreneurs in the Slovak Republic and the Czech Republic. In the individual sections of the paper, we focus on essential milestones and motives for the adoption of the CSRD Directive, comparisons, and identifications, as well as selected differences between the CSRD and the NFRD, which is already transposed in the Accounting Act in the Slovak Republic and the Czech Republic and has been the responsibility of selected entrepreneurs since 2017. At the end of the paper, we look at some aspects that will challenge entrepreneurs about the effectiveness of the CSRD.

2. Objective and methodology

The paper aims to analyse the essential requirements of corporate management reporting in Slovakia and Czechia in the context of reporting sustainability. The study of the adopted CSRD, there makes use, in particular, of the relevant electronic resources of the European Commission and EFRAG, whose discussion materials, descriptions of activities, procedural elements, and phases towards the current changes in reporting illuminate the studied context of the impact on the reporting of entrepreneurs in the Slovak Republic and the Czech Republic as regulated by the relevant accounting laws.

Both legislation – of the Slovak Republic and the Czech Republic, as member countries of the EU, must ensure comparability of reporting by transposing the directives, so it is crucial to identify the main elements relevant for member countries in the field of writing shortly. The comparative analysis of the NFRD and the CSRD is a contextual content theoretical analysis of the provisions of the correlative European legal standards governing sustainability reporting in the period under review. It aims to identify the most critical differences regarding the most significant impacts

on the scope, standardisation, verification, and transparency of the reported sustainability information on entrepreneurs.

The following deduction and synthesis of results with a link to business processes will make it possible to derive fundamental challenges for corporate reporting in both the Slovak Republic and the Czech Republic.

3. Theoretical background on company reporting development

The way companies report their information has evolved with changes in regulations and accounting standards, technological advances, and a growing focus on sustainability and social responsibility. This trend is globally accepted in reporting, especially in management reporting. With a focus on increased transparency historically for several decades, there has been a trend towards greater transparency in financial reporting. This has led companies to provide more detailed information about their financial performance and the risks they face. For example, companies now include more information in their annual reports on their accounting policies and practices and their internal financial reporting controls in line with evolving standards at the international level (Bakke and Whited, 2010; Bernanke and Gertler, 1990).

In addition to financial performance, companies increasingly report on non-financial measures such as environmental, social, and governance (ESG) metrics. This reflects the growing recognition of the importance of sustainability and social responsibility both in business (Gillan et al., 2021) and in the financial situation (Lahouel et al., 2019, Qiu and Tharyan, 2016), especially in the context of securities issuers and listed companies (D'Amato, 2020, Dhaliwal, 2011) with the perspective of stakeholders (Driver et al., 2002).

Several studies, mostly older ones, only deal with the environmental reports of firms from different perspectives (Al-Tuwaijri et al., 2004; Barth and McNichols, 1994; Clarkson et al., 2004; Mone-



va and Cuellar, 2009). More recent research studies often examine the relationship between sustainability factors and financial performance (Okafor et al., 2021, Xie et al., 2019, Long et al., 2020), and enterprise values (Li et al., 2018, Fate-mi et al., 2018). For example, Aouadi and Marsat (2016) focused on identifying the relationship between environmental, social, and governance (ESG) controversies and fixed market value. When interacting with a company's Social Performance Score (CSP), it was confirmed that ESG controversies do not directly impact the business's value. At the same time, the interaction is highly and significantly positive. In the waste of market value, it has only in firms with high viewership; those firms that are larger, perform better, are located in countries with more freedom of the press, are searched more on the Internet, are more followed by analysts and have a better social reputation of the company (Aouadi & Marsat, 2016). The role of management in applying the principles of social responsibility is confirmed in several aspects of the investigation. Altruistic managers or managers who thrive on the positive response of a company may choose to invest socially responsibly, even if they do not increase the company's value directly (Borghesi et al., 2014). Companies with more vital institutional ownership were found to be less likely to invest in CSR, which calls into question the argument that these investments are intended to promote a shareholder value (Adams et al., 2005). Softer firms with a more significant cash flow and higher advertising expenditure show a higher level of corporate social responsibility (Borghesi et al., 2014).

The development of non-financial reporting formats and standards has boomed in recent years, with a wide variety of reporting standards, procedures, and reporting tools worldwide, ranging from general to sector-specific or business-oriented. For example, the Global Reporting Initiative (GRI) guides companies to report on various sustainability issues, including greenhouse gas emissions, human rights, and community involvement

(GRI, 2022). The existence of different CSR reporting standards often causes problems with understanding information about other companies and over the reporting years of companies using different reporting standards. Integrated reporting promotes a more coherent and efficient approach to corporate reporting, drawing on other reporting areas and communicating the full range of factors (Pavlopoulos et al., 20219) that significantly influence an organization's ability to create value over time (IR, 2022).

The reporting format is being developed using new reporting information-sharing tools, e.g. the XBRL taxonomy and the ESEF reporting format. The European Securities and Markets Authority (W-ESMA, 2022) issues its annual public statements setting out the Common European Enforcement Priorities (ECEP) for the yearly financial reports of issuers admitted to trading on markets regulated by the EEA in the format of XBRL and ESFL, which is currently not only in financial reporting but also in non-financial reporting (W-ESMA, 2022). The trend in the reporting format is the use of predominantly structured data in reporting. As described by the SEC (2022), structured data *is divided into standardized parts that are identifiable and accessible to both humans and computers. The granularity of these parts can range from individual data points, such as a number (e.g. revenue), date (e.g. transaction date) or text (e.g. name), to data that includes multiple individual data points (e.g. the entire part of a verbal disclosure). Structured data can be created and communicated using data standards such as XBRL, XML, and JSON, or generated using web and pdf forms with many benefits. The widely available software can easily and quickly analyse the vast amounts of structured data without extensive and burdensome manual processing. This allows investors, analysts, and regulators to access and manipulate data in a single disclosure, comparing disclosures between registrants and previous disclosures from the same registrant* (SEC, 2022).

3. Current standardisation of company reporting in Slovakia and Czechia

The most significant inter-standardisation of reporting in the last century concerned the category of financial information, including at the level of legislative adjustments according to normative theory in Slovakia and the Czech Republic, until 1993 as one republic. Mandatory disclosure of information by entrepreneurs also includes accounting outputs, regulated at EU and individual EU Member State levels and referred to as financial information. When reporting them, they follow the basic legal standard for accounting, in the Slovak Republic Act No. 431/2002 Coll. on Accounting in the Czech Republic Act No. 563/1991 Coll. in the z. n. p., which is the fundamental basis for reporting financial and non-financial information. While the reporting of financial information in both the Slovak Republic and the Czech Republic is regulated in more detail by separate legislation at the level of MF SR measures or decrees in the Czech Republic for a long time, the area of reporting of non-financial information in the Slovak Republic and the Czech Republic does not yet have created or defined precise reporting frameworks in the form of some legal standard, just as there are no standards for their reporting at the EU level yet. The obligations of accounting enterprises are classified in the non-financial accounting laws according to the relevant criteria and rules only in a framework, while the specific content and form are within the competence of the enterprise itself. The framework reporting method does not reach a level relevant for decision-making, especially at the level of comparing, e.g., investment opportunities; therefore, supranational processes towards standardising the reporting of non-financial information are also highly topical. Monitoring this process is essential to predict the trend of future development of legislation linked to the mandatory transposition of EU legislation into the legislation of member countries, i.e. the Slovak Republic and the Czech Republic.

4 Reporting requirements for companies in EU countries in the context of sustainability

Sustainability reporting, or corporate social responsibility (CSR) reporting, has become essential for companies to inform stakeholders about their environmental, social, and governance (ESG) performance. There has been a growing interest in sustainability reporting in recent years as companies strive to demonstrate their commitment to sustainability and investors increasingly incorporate ESG criteria into their investment decisions. According to a KPMG study (KPMG International, 2020) the percentage of companies publishing sustainability reports has increased significantly. The study also found that sustainability reporting is becoming more complex, with companies including more non-financial metrics in their reports. The development of the concept of comparable reporting is a necessary condition for the quality and comprehensibility of the reported information.

In March 2018, the European Commission published an Action Plan on Financing Sustainable Growth to redirect capital towards sustainable investments, address financial risks stemming from climate change and other environmental and social challenges, and strengthen the transparency and long-term outlook of financial and economic activity (COM/2018/097 final).

Modern European integration publishing is linked to the single internal market with its digital dimension and strives for a commitment to intelligent, sustainable and inclusive growth (Eraportal, 2020). The action plan includes publishing new guidelines on climate-related disclosures by individual companies. The measures in the action plan are often dependent on the practice of companies disclosing adequate sustainability-related information. The regulations on the establishment of a framework – taxonomy (EP and R, 2020) to facilitate sustainable investment (COM/2018/353 final), on disclosures related to sustainable investments and environmental, social, and economic sustainability issues associated leg among other →

things, help to understand the importance of reporting non-financial information. The European Union is interested in environmental, social, and economic sustainability issues. Expresses, among other things, its clear stance on promoting socially responsible companies also in its Horizon 2020 program priorities for 2018–2020 and in identifying cross-cutting priorities for climate action and sustainable development, gender equality and humanitarian sciences.

The Global Sustainable Development Goals (SDGs) are focused on areas: people, planet, prosperity, peace, and partnership, which are also reflected at the enterprise level. Goapreciselyically 12.6 states: “Encourage companies, particularly large and multinationals, to adopt sustainable practices and integrate sustainability information into their reporting cycle” (UN, 2015).

In the context of sustainable growth, the EU contributes to completing the CMU by enabling investors and other stakeholders to access comparable non-financial information from investee companies across the EU. In the rules, they need to develop more comprehensive plans to effectively achieve the SDG (UN, 2021), Sustainable Development Goals. The materials on sustainable development and world transformation of the 2030 Agenda (UN, 2015) set out actions and tools to identify policies conducive to reducing pollution. However, the current situation needs to be more generally assessed as the successful implementation of these policies. When it comes to solving environmental problems, it is widely perceived that many of them need to be completed.

Private finance plays a vital role in meeting the objectives of the European Green Deal, which defines the EU’s transformation goals (Figure 1) for a sustainable future (EC, 2019b). It states that achieving a climate-neutral and circular economy requires the total mobilisation of industry.

The European Green Deal (EC, 2019b) aims to support and accelerate the EU industry’s transition to a sustainable, inclusive growth model. In line with the Green Deal, consumer policy will help

consumers incentivise choices and actively participate in the change. The Circular Economy Action Plan will also include measures to incentivise entrepreneurs to offer consumers a choice of reselection, durable and repairable products. New business models for renting and sharing goods and services will also play a role if they are sustainable and affordable. An essential aspect of decision-making, in line with the objectives of the SDGs and the European Green Deal, is reliable, comparable and verifiable information that enables stakeholders to make more sustainable decisions and reduces the risk of environmentally misleading advertising, so-called “green whistleblowing”. Several key acts since 2014 for standardization of sustainability reporting were realized in the European Union:

- 1) October 2014 – the adoption of the NFRD, Directive 2014/95/EU amending Directive 2013/34/EU as regards disclosure of non-financial and diversity information to certain large enterprises can be identified in the process of standardizing non-financial and diversity information by certain large enterprises (EP and Council Directive 2014/95/EU, 2021).
- 2) June 2017 – Commission guidelines on non-financial reporting are not mandatory, and companies can choose to use international, European, or national policies according to their preferences or conditions (EC, 2017).
- 3) June 2019 – Guidelines on reporting climate-related information, complementing the existing guidelines on non-financial reporting in a specific area (EC, 2019 a).
- 4) February 2020 – Public consultation on revising the NFRD Non-Financial Reporting Directive (EC, 2020).
- 5) April 2021 – Legislative proposal for a Directive on Corporate Sustainability Reporting directive (CSRD) to amend the existing reporting requirements of the NFRD (EC, 2021).
- 6) June 2022 – On 21 June 2022, the Council and the European Parliament reached a provisional agreement on the – Corporate Sustainability Reporting Directive (CSRD), endorsed by repre-

sentatives of the EU member states on 30 June 2022 (EC, 2022a).

- 7) November 2022 – EFRAG published thirteen Exposure Drafts (EDs) of European Sustainability Reporting Standards (ESRS). These EDs represent the first set of standards required by the CSRD and cover various sustainability (ESG) topics. The final version of the standards will be adopted by the European Commission as a delegated act in consultation with EU Member States and several European bodies (EC, 2022b).
- 8) 28 November 2022 – The Council finally approved the Corporate Sustainability Reporting Directive (CSRD) (EP and Council, 2022).
- 9) 16 December 2022 – CSRD was published in Official Journal of the European Union – Directive (EU) 2022/2464 of the European Parliament and of the Council of 14 December 2022 amending Regulation (EU) No 537/2014, Directive 2004/109/EC, Directive 2006/43/EC and Directive 2013/34/EU, as regards corporate sustainability reporting (CSRD, 2022).
- 10) 5 January 2023 – CSRD entered into force – on the twentieth day following its publication in the Official Journal.
- 11) Individual EU Member States must transpose these provisions into their national legislation no later than 18 months after January 2023, that is until July 2024. In the Slovak Republic and the Czech Republic, it can be assumed in the relevant accounting laws. Reporting of sustainability information will continue to be an annual exercise.

Due to the increase in the number of entrepreneurs who will be obliged to report sustainability information, the application of the requirements will be divided into 4 stages. Planned dates for the implementation of the CSRD by individual entrepreneurs in the EU (EP and R, 2022):

- 1) companies already covered by the NFRD (public-interest entities with a recalculated number of employees of more than 500) – reporting according to the CSRD in 2025 for 2024;

- 2) large companies that are currently not subject to the NFRD – reporting under the CSRD in 2026 for 2025;
- 3) listed small and medium-sized enterprises (excluding microenterprises) and next selected financial institutions and non-complex credit institutions, captive insurance undertakings, captive reinsurance undertakings – reporting according to the CSRD in 2027 for 2026;
- 4) third-country enterprises with a net turnover of more than 150 million in the EU if they have at least one EU subsidiary or branch above certain thresholds – reporting under the CSRD in 2029 for 2028.

The European Commission shall adopt delegated acts supplementing CSRD to provide for sustainability reporting standards by 30 June 2024. Those sustainability reporting standards (ESRS) shall specify the information that undertakings are to report and, where relevant, shall specify the structure to be used to present that information. In the delegated acts the European Commission shall specify the information described in table 1. The sustainability reporting standards (ESRS) shall consider the subject matter of a particular sustainability reporting standard. The Commission has already published the first draft of reporting standards for open discussion processes. For general requirements there are two cross-cutting standards drafted:

- ESRS 1 General Principles – general requirements.
- ESRS 2 General, strategy, governance, and materiality assessment disclosure requirements – general disclosures.

In development, there are Sector-specific standards and SME proportionate standards, which will be applied after a few years and after evaluating the effects of the recent norm entered into force. The new EU sustainability reporting requirements will be applied to all large companies since 2025. Listed SMEs will also be covered, but they will have more time to prepare for the new reporting rules. According to EU Parliament calculation, →

Table 1 » Content of ESRS standards according to CSRD

Specific factors	Content	Draft of Standards	
Environmental factors	Climate change mitigation, greenhouse gas emissions	ESRS E 1	Climate change
	Climate change adaptation		
	Water and marine resources	ESRS E 3	Water and marine resources
	Resource use and the circular economy	ESRS E 5	Resource use and circular economy
	Pollution	ESRS E 2	Pollution
	Biodiversity and ecosystems	ESRS E 4	Biodiversity and ecosystems
Social and human rights factors	Equal treatment and opportunities for all, including gender equality and equal pay for work of equal value, training and skills development, the employment and inclusion of people with disabilities, measures against violence and harassment in the workplace, and diversity	ESRS S 1	Own workforce
	Working conditions, including secure employment, working time, adequate wages, social dialogue, freedom of association, existence of works councils, collective bargaining, including the proportion of workers covered by collective agreements, the information, consultation and participation rights of workers, work-life balance, and health and safety	ESRS S 2	Workers in the value chain
	Respect for the human rights, fundamental freedoms, democratic principles and standards established in the International Bill of Human Rights and other core UN human rights conventions, including the UN Convention on the Rights of Persons with Disabilities, the UN Declaration on the Rights of Indigenous Peoples, the International Labour Organization's Declaration on Fundamental Principles and Rights at Work and the fundamental conventions of the International Labour Organization, the European Convention for the protection of Human Rights and Fundamental Freedoms, the European Social Charter, and the Charter of Fundamental Rights of the European Union	ESRS S 3	Affected communities
		ESRS S 4	Consumers and end-users
Governance factors	The role of the undertaking's administrative, management and supervisory bodies in sustainability matters, and their composition, as well as their expertise and skills in relation to fulfilling that role or the access such bodies have to such expertise and skills		
	The main features of the undertaking's internal control and risk management systems, in relation to the sustainability reporting and decision-making process	ESRS G 1	Business conduct
	Business ethics and corporate culture, including anti-corruption and anti-bribery, the protection of whistle-blowers and animal welfare		
	Activities and commitments of the undertaking related to exerting its political influence, including its lobbying activities		
	The management and quality of relationships with customers, suppliers and communities affected by the activities of the undertaking, including payment practices, especially regarding late payment to small and medium-sized undertakings		

Source: Own processing according to CSRD (2023) and EFRAG (2022)

nearly 50,000 companies in the EU will follow the new requirements for collecting and sharing sustainability information, compared to 11,700 companies covered by the current rules in the European Union. The following section will identify the main differences between the NFRD reporting Directive currently in force and the newly adopted CSRD — Sustainability Reporting Directive and the stages of application of its provisions by some categories of business entities. Table 2 below summarizes the identified underlying changes in sustainability reporting as non-financial information based on comparing the Non-financial Reporting Directive — NFRD and Corporate Sustainability Reporting Directive — CSRD.

All the above-mentioned changes in sustainability reporting in EU countries, i.e. SR and the Czech Republic, too, resulting from adopting the CSRD will be applied to all obliged entities in the described four steps.

In some research, corporate social responsibility is equated with the concepts of corporate sustainability, sustainable entrepreneurship, corporate conscience, corporate citizenship, conscious capitalism or responsible entrepreneurship (Wood, 1991; Lin, 2018) and translates into a business model that focuses not only on making a profit from the business but also on corporate self-regulation in the social and ecological spheres (Horváth, 2017; Sheehy, 2015) and information

Table 2 » Identified differences between NFRD and CSRD

Content	NFRD Directive	CSRD Directive
Information — concepts	CSR (Corporate social responsibility) Non-financial information	CSR (Corporate sustainable reporting) Sustainability information
EFRAG Working Party	PTF — NFRS	PTF — ESRS
Procedures	Guidelines, recommendations	Standards, formalization
Obligation to apply	Optional	Mandatory
Frames	Internationally recognized frameworks, e. g. GRI	ESRS issued by EFRAG
Form and format — modified	Member States' law	Single European Electronic Format (ESEF), allowing machine reading, open access
Obligated parties	Large enterprises, public-interest entities, with more than 500 employees	Large corporations and issuers of securities with publicly traded securities (excluding micro entity)
Sustainability information	Non-financial information for the obliged entity	Sustainability information for the obliged party, also considering sustainability along the supply chain
A form of the report	Separate report or part of the annual report	Part of the annual report
Verification/audit	No mandatory audit	Mandatory reasonable assurance
Liberation	Exemption of subsidiaries of undertakings that publish the corresponding information in a consolidated report	Exemption of subsidiaries of undertakings if they publish the corresponding information in a consolidated report identifying the effects of the subsidiaries

Source: Own processing



The development of non-financial reporting formats and standards has boomed in recent years, with a wide variety of reporting standards, procedures, and reporting tools worldwide, ranging from general to sector-specific or business-oriented. For example, the Global Reporting Initiative (GRI) guides companies to report on various sustainability issues, including greenhouse gas emissions, human rights, and community involvement (GRI, 2022).

In development, there are Sector-specific standards and SME proportionate standards, which will be applied after a few years and after evaluating the effects of the recent norm entered into force. The new EU sustainability reporting requirements will be applied to all large companies since 2025. Listed SMEs will also be covered, but they will have more time to prepare for the new reporting rules.

about it constitutes the content of non-financial information about enterprises.

Many researchers provide valuable insights into the field of sustainability reporting and demonstrate the importance of this practice for organisations and stakeholders. They are interested in research to deepen their understanding of sustainability reporting and its impact on corporate behaviour and sustainability outcomes. An overview of the literature on sustainability reporting identifies key research gaps and opportunities for future research. The authors mostly argue that sustainability reporting is a complex and multidimensional phenomenon that requires a nuanced understanding of organisations' motivations, practices, and outcomes. New requirements of company sustainability reporting will open questions and problems with their practical application and effect on decision-making which will be essential to solving by research in Slovak and Czech environments as well.

4. Conclusion

As the business world continues to evolve, so do the reporting requirements for companies. In recent years, there has been a shift towards what is

known as integrated reporting. This approach takes a more holistic view of a company, considering financial and non-financial information to get a complete picture of its performance. Sustainability reporting has become an important tool for companies to communicate their ESG performance to stakeholders. ESG analysis is becoming an increasingly important part of the investment process. For investment professionals, a key motivation in considering environmental, social and governance (ESG) issues as part of their financial analysis is to understand better the companies, they invest in. While there is evidence from some studies that sustainability reporting positively affects the reputation and legitimacy of firms, there is mixed evidence on the relationship between sustainability reporting and financial performance. Several studies also found that many companies engage in stakeholder dialogue for representational purposes instead of listening to and responding to stakeholders' concerns. The company management significantly impacts all sustainability processes and their reporting. Stakeholder engagement, the use of standards and frameworks, and the transparency and quality of reporting are vital factors influencing the impact of sustainability processes and reporting. However, companies also face several

challenges in producing high-quality company reporting in the context of sustainability.

Company reporting is an integral part of the business. Every enterprise must ensure financial and non-financial information is available to its customers, business partners, shareholders and other stakeholders correctly and promptly. The report shall be uniform, consistent, and available in real time. Reporting requirements are changing and increasing the importance of continuity of financial and non-financial information stakeholders require. There is an essential role in management decisions about all aspects of sustainability double materiality. In future research, it will be necessary to deeply review new conditions on company management in the context of reporting and sustainability aspects from Europe, Slovak, and Czech perspectives and continue with research in the following review questions important for decision making. To evaluate reporting, it is

crucial to develop and appropriately prepare tools to provide and process information before and after reporting and get verification on how they will evaluate information linked to each other, comparable information in time with competitors' data, and how they will influence user decision-making, with behavioural analyses as well. In higher education in management study programs, it is important to focus on increasing students' knowledge and skills in current trends in business, management, and reporting in line with the needs of sustainable development and the European Green Deal.

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Managerial Corporate Reporting in Slovakia and Czechia in the Context of Sustainability

ABSTRACT

In recent years, corporate reporting has increasingly expanded to include reporting in broader contexts that financial performance. In particular, the area of sustainability reporting, significant environmental, social and management aspects of the company's operation in society is the subject of interest of more and more interested groups, especially investors oriented on decisions if capital direction. The scope of sustainability reporting in the Slovak Republic and the Czech Republic is regulated by accounting laws in line with international legal acts, mainly EU directives. The paper aims to identify the most critical areas of change and direction of reporting in the context of the new CSRD directive in Slovakia and the Czech Republic.

KEYWORDS

Reporting; CSRD; Information; Sustainability

JEL CLASSIFICATION

Q01; M40; M48



A review of fundamental principles of educational processes in teaching economics

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* 1. Introduction

The paper deals with issues of educational processes and its principles in economic subjects. Educational institutions aim to raise self-confident, creative, independent and responsible graduates. There are ever-increasing requirements for educational processes in today's society, which co-determine the competitiveness of graduates on the labour market and their ability to succeed in this environment thanks to the acquired knowledge and skills. The introduction of modern teaching methods, often also called activating methods, is becoming a trend in teaching. This puts more pressure on the abilities and skills of teachers to be able to teach their students more effectively and according to modern principles. In educational institutions, the problem with the motivation of their students, mutual interaction and communication occurs more and more often. A non-sufficient motivation of students results in poor understanding of the topic, in poor average grades and in poor ability to apply gained knowledge. This paper aims to present a review on key principles of educational processes in economic courses based on a literature retrieval on the topic of education from the point of view of the learning process and teaching.

2. Pedagogy as a scientific discipline and its development

Pedagogy is one of the social science disciplines that examine a deliberate influence of the development of a person's personality by means of upbringing, education, teaching, learning, etc. (Čábalová, 2011). According to Kořa et al (2018) and Vališová, Kasíková (2022), pedagogy is a science of education: "Upbringing and education are an important part of culture, which is a collective and specific human product. Without education and training, people would never be able to enter the general space of thinking, they would not be able to understand moral and intellectual values, they would not even be able to understand the systems of theories and knowledge on which important skills that serve orientation in the world and in life are based". Pedagogy applies its knowledge in practice, and thus educational phenomena and processes are being influenced. A great Czech scholar and philosopher Comenius was also a theoretician of pedagogy and an author of many works on this topic. He made a significant contribution to the formation of pedagogy as an independent scientific field, who understood it as a systematic science of education of children and youth.



Comenius promoted pedagogy as a path of an individual's entitlement to upbringing and education as well as the path of social remedy, the basis of which is to help a person developing full humanity (Čábalová, 2011). In Comenius' view, upbringing and education are systematic, illustrative, smoothly progressing and harmonizing the student's abilities with the goals of education.

The subject of pedagogy is the upbringing and education of each individual, and is classified as a social science. If the subject of interest is the understanding of educational phenomena and processes, it is referred to as a normative science. It can be characterized as an explanatory science if pedagogy clarifies educational processes and phenomena, searches for their causal explanations or looks for answers to related questions. It is necessary to look for connections between both approaches, on the basis of which pedagogy can be called an explanatory-normative science (Čábalová, 2011).

Pedagogy has gradually established relationships with other scientific disciplines and new pedagogical scientific disciplines were created based on practical needs. These can be divided into (Vališová, Kasíková, 2022):

- basic pedagogical disciplines – general pedagogy, methodology of pedagogy, history of pedagogy, comparative pedagogy, didactics, theory of education, special pedagogy, pedagogical diagnostics;
- border pedagogical disciplines – pedagogical psychology, sociology of education, pedagogy of personal and social development, social pedagogy, multicultural education, etc.;
- applied pedagogical disciplines – can be further divided according to:
 - age cohorts of personality development – preschool pedagogy, primary pedagogy, secondary school pedagogy, university pedagogy, andragogy and gerontopedagogy;
 - social areas – pedagogy of leisure time, pedagogy of corporate education, etc.;
 - educational institutions – school and out-of-school pedagogy.

Since the pedagogical scientific discipline is also gradually developing, certain innovations of the above-mentioned structure are also taking place. Some scientific disciplines try to dominate other sciences or, on the contrary, tend to isolate themselves and confine themselves to their own issues. Therefore, it is necessary to develop interdisciplinary relationships and deepen individual specializations so that all ideas, values, knowledge and skills can be passed on (Kořal et al, 2018; Vališová, Kasíková, 2022). In the field of examination of the quality of teaching, a numerous research activities into teaching processes, student activation, use of teaching methods and didactic case studies has been conducted, see for instance Pecina, Marinič (2021).

3. The educational process and its actors

An educational process is any activity through which one subject directly or indirectly educates and another subject learns. Learning is always included in this process, if this is not the case, we cannot speak of an educational process. Educational processes take place throughout life. The following three main determinants enter the education process (Průcha, 2017):

- Student – subject of learning regardless of age and the environment in which the education takes place. It is an individual personality that is characterized by physical, affective and cognitive characteristics.
- Educator – an actor of educational activity, a teacher in pedagogical practice
- Curriculum – knowledge and activities that students are supposed to master at school, where the learning process is applied.

The educational process has three main determinants, which are further influenced by other factors. First, there is a social need to communicate something to students through the subject matter, than the teacher sets basic goals that he wants to achieve during teaching. And based on didactic

principles, he plans the curriculum, which he conveys to the student using selected teaching form and methods (Pecina, 2012). The educator manages the educational process and the students actively acquire the subject matter. The teacher transmits the curriculum based on the set goals, while respecting the didactic principles and using different teaching methods and resources. In the process of mastering the subject matter by students, it is an active creative activity that is managed by the teacher and thus, in addition to the attainment of knowledge and skills, it supports the overall development of the personality. In the literature, the stages of the educational process according to implementation are usually (Mojžišek, 1988):

- Motivation — preparation for active learning of the subject matter;
- Exposure — creating new knowledge and skills;
- Application — use of acquired knowledge and skills in practice;
- Fixation — consolidation and deepening of the subject matter;
- Diagnostics and classification — checking the results of the teaching process.

The concept of competence has been defined by Veteška and Tureckiová (2020) as a person's unique ability to act successfully and further develop its potential in the context of various tasks and life situations. The development of teacher's competences is related to the change of student's role in teaching. The student is led to greater independence, takes responsibility for his learning, and thus there is a change of roles. The teacher is no longer the main and only source of insights and knowledge, he becomes a moderator who supports and cooperates with his students (Janíková, 2008). The teacher transmits his opinions and attitudes, therefore it is appropriate that his personality covers following features:

- creativity — the ability to look for new stimuli and to overcome the current level;
- moral and principled attitude — strong will, positive attitude to work;
- pedagogic optimism, discretion, calmness and

concern — trust in education and in the student, patience, self-control, active approach;

- a deep approach to students — affection for students is reflected in the quality of work, it is necessary to get to know your students as much as possible, understand them and accept them;
- fairness — consistency in dealing with offenses, objective assessment of students.

A necessary characteristic of a teacher is a sense of humour, social sensitivity and the ability to effectively organize teaching. A pedagogue is expected to have a general overview, as well as professional education, which he further expands as part of lifelong education. Mental and physical health are prerequisites for mastering this profession. The listed requirements are certainly not exhaustive, but sufficiently represent the key demands of the teaching profession.

4. *The concepts of teaching and curricula*

In the traditional concept of teaching students took a passive reproductive role instead of being led to independent and creative thinking. Nowadays, however, the role of students in teaching has changed significantly thanks to modern approaches to teaching. Emphasis is placed not only on creativity but activity during teaching is required. Even so, the role of the student is subordinate as it is to some extent prescribed by the school rules. Students are approaching their learning in different ways, and as they are growing up personally they are expected to take more responsibility for their learning. According to Maňák (1998), an important prerequisite for a student's creative learning is an awakening of his initiative, activity, and the expansion and deepening of independence. The ability to think creatively, solve problems, and make acceptable decisions is one of the basic goals of education. Students generally like interesting and varied teaching, which motivates them to do their own creative work. Creative work and the ability to think creatively is a motivating factor for students. A creative student thus satisfies his need



for self-realization and at the same time acquires new skills (Petty, 2013). For a proper education, it is necessary to know the basic mechanisms of learning and its laws.

The curriculum can be understood as the content of teaching or education, which is a result of teaching as the content of education. Kalhous and Obst (2009) are listing the following four curriculum components:

- Knowledge — constitutes an essential part of the curriculum. Students should not only memorize knowledge, but also understand its structure and be able to generalize facts using concepts to explain the connections between them.
- Skills — include the goal of the activity, the choice of means, the procedure of the activity and the control of the results. The skills can be further divided according to the substantive content into work skills, social communication and negotiation skills, and cognitive skills.
- Values — reflect the meaning of reality for a person, its needs and interests and are the basis of a person's moral consciousness. It is, for example, a person's attitude to society, nature and to himself.
- Characteristics of a person — all three previous components of the curriculum are related to the characteristics of a person. These are learning outcomes that have been fixed in the form of features of the learning subject, which include, for example, intensity and concentration of attention, persistence, value orientation, verbal memory capacity, etc.

Learning itself can be understood as a process in which persons acquires individual experience. Students learn to adapt to new living conditions and new forms of behaviour under unstable or spontaneous conditions. According to Vališová, Kasíková (2022), learning is a process of acquiring various knowledge, skills, attitudes and gaining experience leading to acquiring diverse competences. Nakonečný (1997) defines the term learning as an effect of experience on changes in the psyche, which have an adaptive function and based on

these changes, an individual adapts to changed living conditions or situations. Pedagogical theory further states that thanks to experiential learning, a person remembers up to 80 % of new knowledge, while only 20 % from a simple message. Based on this theory, D. A. Kolb created a typology of four learning styles (Medlíková, 2013):

- divergent style — emphasis on feelings and listening;
- assimilating style — most prominent in building abstract theories;
- converging style — typical of planners and creators;
- accommodating style — suitable for those who learn best by independent activity.

Kolb and Fry (1975) also investigated the relationship between professions and preferred learning style and found that the subject uses the learning style in which he is the strongest. In the case of teachers, it is therefore the use of an accommodating style. Learning emphasizes the activity of the learning subject. Current theories of learning are based on knowledge of the functioning of the human brain. The most effective methods and procedures are those that involve as many students as possible in the work and enable them to communicate with each other, cooperate, gain direct experience and at the same time accept the others. At that moment, positive mutual cooperation and communication arise, students learn to argue and respect the opinion of others. A new curriculum should contain fewer explanations, but should be based on discovery, research, using the concept in practice and not learning by heart. Curriculum is understood as a content of education in the broader sense of the word and the process of its mastering, i.e. as all the experience students get in the school environment and related activities. (Maňák, Švec, 2003).

5. Learning and motivation of students in teaching economics

The law of motivation assumes that the motivation to study is influenced by so-called external and internal motivation. Factors that affect motivation to learn are: student activity and satisfaction from it; success and failure in activity; social moments; the connection of the activity with previous activities or experiences and interests of the student; setting goals; tendency to complete a task, etc. The law of transfer emphasizes an effect of learned content on further course of learning. The effect can be positive or negative. The transfer can be further divided into specific or non-specific and lateral or vertical. The law of repetition is a compliance with the conditions of effective repetition. The law of feedback presents a form of self-control in which an individual actively receives, processes and evaluates feedback in learning activities.

According to Čáp and Mareš (2007), three general laws of learning can be used for pedagogical and didactic purposes:

- Learning takes place as gradual approaching process to the goal – random attempts and errors, gradual understanding, methodical progress.
- Learning takes place through regulatory and self-regulatory mechanisms using feedback – it expresses the importance of receiving and processing information for creating ideas, images and plans for future activities.
- The effectiveness of learning depends on the mutual interaction of internal and external conditions – internal conditions are motivation, prior knowledge, skills, experience, personal characteristics and learning methods. External conditions can include family, school, group influences, classroom atmosphere, etc.

Motivation is a driving force of a psychological nature that stimulates human behaviour and activity. The basic internal source of motivation is a motive, which determines the direction of behaviour. A complex structure of motivational dispositions is

typical for every individual, some of which are innate or partially acquired. Innate motivational dispositions are biological needs, acquired are social needs, value orientations and attitudes (Výrost, 2008). Motivating students to learn is one of the most important factors in achieving performance. Because this motivation to learn is not innate, it needs to be learned. Students' motivation is mainly influenced by their families and the environment in which they live, after entering diverse educational institutions teachers and experiences with them influence their motivation too. Factors that increase motivation include (Hunterová, 1999):

- level of uncertainty;
- accompanying feelings;
- success and interest;
- knowledge of the results of one's own work;
- intrinsic or extrinsic motivation.

Auger and Boucharlat (2005) point out that motivating students means creating such conditions that encourage them to act. Students should feel that they have achieved something in the lesson and the teacher should see an increasing motivation to learn. Auger and Boucharlat (2005) also list factors supporting the motivation of so-called problem students, which can be generalized and applied to all students:

- motivation of the teacher himself – the rule that whoever wants to motivate must be motivated himself;
- confidence in students' progress – one cannot motivate students without believing in their further educational opportunities;
- the need to talk about the meaning of assigned tasks – the need to explain why the subject is being taught, how he will be able to use the acquired knowledge and skills, how the successful completion of the task will be assessed;
- the need to create interactive situations – developing mutual cooperation, when the teacher's role changes from a directive leader to an advisor;
- the possibility of experiencing success – students need to be motivated and appreciated. If →

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the assessment does not come, the students will be indifferent to the tasks or demotivated.

The teacher's goal is to arouse students' interest in the subject and motivate them to learn. Interest can be increased by using examples from practice, emphasizing exceptionalities, pictorial representation, and experience. Teacher should be able to excite his students about learning, which will make them look forward to the lessons, which will also affect the students' learning outcomes. For these reasons, the teacher must prepare for the lesson in advance, have a clear idea of the content of the lesson, the goals of the given lesson, but also the teaching methods that will achieve student motivation. If the teacher comes to the class unprepared, the students will recognize it very quickly and use such situations to become inattentive or can be intentionally diverting from the topic (Sitná, 2013).

6. Conclusions

The success of teaching depends on well planned lessons, compliance with goal-setting and adherence to didactic principles, which have a great influence on teaching as a whole and at the same

time allow an application of teaching methods. These general principles must be in accordance with the specific goals of teaching and in connection with the basic laws of the teaching process. The methods that the teacher uses in his teaching should activate the students and increase their interest, perception and thinking itself. Therefore, it is important that the teacher knows the nature of teaching methods very well and knows how to use them at the right time and in the right place. Student motivation to learn is one of the most important factors to achieve the desired performance. The teacher's goal is to arouse students' interest in the subject and thereby motivate them to learn. Economics teachers should as much as possible illustrate studied issues with examples from practice, on which students much more easily understand why it is important to master the given issue and at the same time they remain motivated for further learning. Interest can also be increased by emphasizing uniqueness, visual representation or experience. A teacher should be able to excite his students about learning, which will make them look forward to the lessons and can also positively affect the learning outcomes. Students should be

given the opportunity to think independently, let them work purposefully and actively support them in consolidating the acquired knowledge. Better knowledge and skills can be achieved through continuous feedback, when the teacher checks whether the students understand the topic. However, at

the same time, it is necessary to pay attention to a differentiated approach to students, to consistently apply educational goals, to apply illustrative examples in teaching and not to underestimate or overestimate students.

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A review of fundamental principles of educational processes in teaching economics

ABSTRACT

The paper aims to present a review on key principles of educational processes in economic courses based on a literature retrieval on the topic of education from the point of view of the learning process and teaching. There are ever-increasing requirements for educational processes in today's society, which co-determine the



competitiveness of graduates on the labour market and their ability to succeed in this environment thanks to the acquired knowledge and skills. The methods that the teacher uses in his teaching should activate the students and increase their interest, perception and thinking itself. Therefore, it is important that the teacher understands the nature of teaching methods and knows how to use them at the right time and in the right place. Student motivation to learn is one of the most important factors to achieve the desired performance. Economics teachers should as much as possible illustrate studied issues with examples from practice, on which students much more easily understand why it is important to master the given issue and at the same time remain motivated for further learning. Interest can also be increased by emphasizing uniqueness, visual representation or experience. Better knowledge and skills can be achieved through continuous feedback, when the teacher checks whether the students understand the topic.

KEYWORDS

economics; education; student; curriculum; motivation

JEL CLASSIFICATION

A10; A20; A23



Diagnostics of Metacognitive Abilities of University Students V.: The Ryff Scales of Psychological Well-Being

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* 1. Introduction

“Modern world as highly uncertain, defined by constant change” is how the modern environment describes The World Economic Forum. This environment places increased demands on educational institutions and students themselves. On the one hand, universities must reflect the changing environmental characteristics in the education they provide. On the other hand, they must modify their educational outputs considering this environment. Students need to adapt their cognitive strategies to changing learning conditions. This is where the field of metacognition is crucial.

The focus of the research study also responds to a long-standing problem among university graduates — the discrepancy between their knowledge base and their competence, i.e., their ability to use this knowledge in practice.

When we are talking about the development of competencies in education, there are two basic ways of acquiring and developing them, implicit and explicit. The implicitization is related to the process of university studies, which is very different from previous levels of education. Students ac-

quire many competencies, which can happen without much thought by the teacher, by ‘simply’ performing university duties. Explicit, targeted competence development is possible in two ways. The first is to focus on a given competence and its behavioral infestations and then to improve these manifestations (e.g., presentation skills, communication skills, interviewing, etc.) through various methodologies. In this case, we are creating “solutions”, i.e., students are learning specific practices for a given competence. The second option is to work on the ability to reflect on their practices and behaviors in particular situations and to develop self-reflection through the reinforcement of metacognitive strategies. In this way, we convey to students a general algorithm they can use at any time in different domains, i.e., we create an independent “solver”. And the focus on the “solver” is very closely related to the field of metacognition.

Scientific research shows that these abilities can have a positive impact on an individual’s mental health and well-being. We are presenting data analyzing the level of selected scales of the well-being of university students in relation to metacognitive variables. This is the fourth part of the data →

of comprehensive research on the metacognitive abilities of university students, now using The Ryff Scales of Psychological Well-Being.

1.1 Metacognitive Skills

Metacognitive skills are abilities that enable individuals to understand and regulate their own thoughts and cognitive processes. These abilities include, for example, the ability to plan, pay attention, perceive, recognize, and manage emotion, reflect, reason about reasoning, and self-reflect. The first classification of metacognition, thinking that involves thought operations, was introduced by Flavell in 1979. He named four metacognitive categories: metacognitive knowledge, metacognitive experiences, tasks, and strategies (Flavell, 1979). Subsequently, other authors elaborated on these categories, e.g., metacognitive knowledge (Kluwe, 1982). Schraw and Moshman (1995) talk about metacognitive skills, which can be understood as metacognitive activities that help a person to manage his or her own thinking or learning (e.g., planning, monitoring, evaluating). The form of the concepts is theoretically continuously deepened, and their field of application is expanding.

Van der Stel and Veenman (2014) looked at the development of metacognitive skills in a longitudinal study. Findings indicated that metacognitive abilities increase qualitatively and quantitatively in adolescents and appear to be predominantly general, domain-independent. They contribute to learning performance partially independent of cognitive ability. In relation to academic performance, according to the results of Montagu (1991) and Schraw (1998), partial deficiencies in general intelligence can be compensated by developed metacognition. Veenman, Van Hout-Wolters, and Afflerbach (2006) confirm that metacognitive skills, although moderately correlated with intelligence, contribute to learning performance beyond intellectual ability. Intellectual skills alone account for about 10% of the variance in learning outcomes. The joint effect of intellect and metacognitive

skills explains another 20%, and the contribution of metacognitive skills alone is about 17%. The effects have been observed for different types of tasks, in different domains.

1.2 Concept of Well-being

Well-being is a topic of positive psychology that has been emphasized since approximately the 1980s. During this period, the psychology of personal well-being emerged as a counterpart to clinical psychology, which deals with psychological disorders and in this context, for example, burnout syndrome (Blatný, 2010).

The term was defined by the World Health Organization (WHO) as “a state of complete physical, mental and social well-being”. Dragomirecká and Bartonová (2006) further mention that the concept of well-being emerged within the social sciences as opposed to material well-being, as critics of unlimited economic growth have questioned whether the internal quality of life increases with increasing material wealth. Well-being is often seen as a superior concept to life satisfaction. It is life satisfaction that is one of the key components of personal well-being, and hand in hand with pleasant and unpleasant affects, it influences overall personal well-being. Although these components are usually in harmony with each other, it is also possible to encounter an individual who is satisfied in his or her life despite experiencing few positive emotions. Thus, long-term life satisfaction is not necessarily related to the respondent’s current mood (Eid, Larsen, 2008).

1.3 Relationship between Metacognitive Abilities and Well-being

Well-being, or the subjective feeling of happiness and overall satisfaction with one’s life, encompasses many aspects such as positive emotions, a sense of purpose and control over one’s life. It appears that metacognitive skills may play a key role in achieving these aspects of well-being. For exam-

ple, the ability to reflect and consider one's own thoughts and experiences can help individuals identify and address negative thought patterns that can lead to depression, anxiety, and other psychological problems. The ability to plan and pay attention can help individuals achieve their goals and manage stressful situations.

Similarly, the ability to recognize and manage emotions can have a positive effect on well-being. For example, an individual who can regulate their emotions and cope with negative feelings may have higher levels of overall happiness and a reduced risk of depressive states.

Finally, the ability to reflect on reasoning and self-reflection can help individuals understand their own thought process and identify how their own approach to problems can lead to successful solutions. This ability can lead to a greater sense of control and a sense that the individual has influence over their own life.

1.4 Introduction to the Research

The dataset described below was compiled and translated within the project "Metacognitive abilities of university students and possibilities of their development". Metacognitive abilities are a decisive element in developing competencies and overall personality development. The research aimed to find out the level of metacognitive abilities of university students of different years of study and to find the connection of metacognitive abilities with selected personality characteristics indicating personality growth and learning (self-efficacy, optimism, time orientation to the future, well-being). Furthermore, based on the findings consider the targeted development of metacognition. The presented text presents the results of the fifth part of the dataset the Ryff Scales of Psychological Well-Being (in this study — only part of this method — 36 items with four aspects) focuses on measuring four aspects of well-being and happiness. In the original, this method is a 84-items method (long form, 54-items for medium or 18-items for short

form) and measures six aspects of well-being. SPSS Statistics was used for data analysis.

2. The Ryff Scales of Psychological Well-Being

2.1 Background

In the last century, the concept of psychological well-being was gradually born. There was no clear definition of well-being and whether there are actual dependencies between well-being and its empirical impact. Thanks to this, non-theoretical concepts of psychological well-being were widely used, but they were limited in their definition of constructs (Ryff, 1989).

At the end of the 1980s, American researcher Carol Ryff recognized the need for a specific instrument for measuring psychological well-being. After researching the theoretical literature in the field of mental health (Jahoda, 1958), self-actualization (Maslow, 1968), optimal functioning (Rogers, 1961), maturity (Allport, 1961), and developmental life span (Buhler & Massarik, 1968), (Neugarten, 1968), Ryff identified these diverse areas that converge into six basic constructs or dimensions: self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth (Ryff et al., 2007; adapted from Ryff, 1989).

There are currently three basic variants of the Ryff Scales of Psychological Well-Being. The longest test consists of 84-items (14 for each scale) and is used by Ryff and her colleagues at the Institute on Aging at the University of Wisconsin-Madison. The mid-length version consists of 54-items (9 per scale) and the shortest version, developed for national telephone surveys, consists of 18-items (3 per scale) and is used in various large-scale national and international surveys.



2.2 Data and Applications

Students from NEWTON College were involved in all parts of the research. Participation in the research was voluntary and included 115 undergraduate students in the Economics and Management degree program. There were 85 students from the first year, 14 from the second year and 16 from the third year, 75 women and 40 men.

The dataset is based on questionnaire and scaling methods to determine the level of development of partial metacognitive abilities and strategies for NEWTON College students.

As the research on metacognitive abilities in early adulthood is not systematically developed in the Czech Republic, it was necessary to identify research methods from foreign professional (scientific) literature. The obtained test files were translated into Czech. Subsequently, they were evaluated and selected to form a compact whole. Methods were administered by group, in the form of a pencil – paper during the lessons. The final dataset includes 5 parts:

1. AILI, Awareness of Independent Learning Inventory – independent learning (45 items);
2. Goals Inventory – Learning and Performance Goal Orientations (25 items);
3. MCQ-30, Metacognition Questionnaire 30 – metacognition in relation to personality (30 items);
4. The Ryff Scales of Psychological Well-Being (36 items).
5. MMG, Multi-Motiv Grid – semi-projective method (total 14 items, in this research eight items selected);

The first study (Pánková, Benetti, 2020) was devoted to the results of the AILI questionnaire focused on independent learning driven by metacognition. The second study reflected the outputs of The Goals Inventory Method (Pánková, Benetti, 2021). The previous study refers to the outputs of the MCQ 30 Method (Pánková, Benetti, 2022). This study reflects the outputs of the Ryff Scales of Psychological Well-Being method. For the research were used only part of this method – The Ryff, the

84-item Psychological Wellbeing (PWB) Scale measures six aspects of well-being and happiness: autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance – the 36-items in four aspects of wellbeing and happiness: autonomy, personal growth, purpose in life and self-acceptance.

The SPSS Statistics were used for data analysis.

3. Results of the Research

In the MCQ 30 Method, five subscales were monitored:

- POS: Positive beliefs about worry,
- NEG: Negative beliefs about uncontrollability and danger,
- CC: Cognitive confidence,
- NC: Need to control thoughts,
- CSC: Cognitive self-consciousness.

First, Table 1 represents the case processing summary. Of the total 115 respondents, 112 respondents responded within the POS component; 3 respondents lacked answers, accounting for 2.6% of respondents. Within the NEG and CSC components of 115 respondents, 110 respondents answered, and five respondents did not respond. Of the 115 respondents, 111 responded to the CC and NC files, so four did not answer.

Second, to analyse the dependence of variables, it was first necessary to assess the normality of the data. An assessment of the normality of data is a prerequisite for many statistical tests because normal data is an underlying assumption in parametric testing. There are two main methods of assessing normality: graphically and numerically. SPSS Statistics was used for data analysis. The results of the numerical assessment of normality are summarised in Table 2.

A Lilliefors Significance Correction was performed for the Kolmogorov-Smirnov test – table 1 shows the results including this correction. According to the results of elementary statistical analyses, except POS all components have an approximately normal distribution. Next, we calcu-

Table 1 » Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
POS	112	97.4	3	2.6	115	100.0
NEG	110	95.7	5	4.3	115	100.0
CC	111	96.5	4	3.5	115	100.0
NC	111	96.5	4	3.5	115	100.0
CSC	110	95.7	5	4.3	115	100.0

Source: own elaboration

Table 2 » Test of Normality

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
POS	0.070	112	0.200	0.987	112	0.382
NEG	0.116	110	0.001	0.954	110	0.001
CC	0.107	111	0.003	0.952	111	0.001
NC	0.113	111	0.001	0.965	111	0.006
CSC	0.110	110	0.002	0.960	110	0.002

Source: own elaboration

Well-being, or the subjective feeling of happiness and overall satisfaction with one's life, encompasses many aspects such as positive emotions, a sense of purpose and control over one's life. It appears that metacognitive skills may play a key role in achieving these aspects of well-being. For example, the ability to reflect and consider one's own thoughts and experiences can help individuals identify and address negative thought patterns that can lead to depression, anxiety, and other psychological problems.

There are currently three basic variants of the Ryff Scales of Psychological Well-Being. The longest test consists of 84-items (14 for each scale) and is used by Ryff and her colleagues at the Institute on Aging at the University of Wisconsin–Madison. The mid-length version consists of 54-items (9 per scale) and the shortest version, developed for national telephone surveys, consists of 18-items (3 per scale) and is used in various large-scale national and international surveys.



Table 1 » Correlations

		POS	NEG	CC	NC	CSC
POS	Pearson Correlation	1	0.489	0.298	0.527	0.459
	N	112	109	110	110	109
NEG	Pearson Correlation	0.489	1	0.444	0.332	0.451
	N	109	110	108	108	108
CC	Pearson Correlation	0.298	0.444	1	0.292	0.109
	N	110	108	111	110	109
NC	Pearson Correlation	0.527	0.332	0.292	1	0.290
	N	110	108	110	111	108
CSC	Pearson Correlation	0.459	0.451	0.109	0.290	1
	N	109	108	109	108	110

Source: own elaboration

late the sample correlation coefficient – we chose the Pearson correlation coefficient (1.1) for our needs. However, considering the result of the normality test, we have to consider POS dependencies as insignificant. The results are shown in Table 3.

$$r = \frac{\sum_{i=1}^n (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum_{i=1}^n (x_i - \bar{x})^2 \sum_{i=1}^n (y_i - \bar{y})^2}} = \frac{\sum_{i=1}^n x_i y_i - n\bar{x}\bar{y}}{(n-1)s_x s_y}, \quad (1.1)$$

where:

\bar{x} and \bar{y} are sample averages and s_x and s_y are the sample standard deviations.

One of the components correlates very low CSC to CC ($r = 0.109$), and some of the components correlate low (P value < 0.001): NEG to NC ($r = 0.332$); CC to NC ($r = 0.292$) and CSC ($r = 0.109$) and NC to CSC ($r = 0.290$). Only two components correlate moderately (P value < 0.001): NEG to CC ($r = 0.444$) and CSC ($r = 0.451$). No item in the analysed components significantly reduces their internal consistency or correlates significantly with other items.

4. Discussion

The analysis of independence can be modelled using various statistical modelling tools. The correlation method was chosen according to the character of the examined data, namely the Pearson correlation coefficient. Pearson's correlation coefficient is a statistical indicator of the strength of a linear relationship between paired data. It is a sample correlation coefficient. Positive values of r mean a positive linear correlation between the investigated quantities. The results of the analysis showed that there is a weak dependence between the variables examined. In addition, other statistical tools reflect the dependence between the variables examined. Further research could also focus on comparing the results using other statistical methods that can be used to investigate dependence between variables.

5. Conclusion

The aim of the research, which was attended by 115 bachelor's students of the Economics and Management study program, was to determine the level of their metacognitive abilities and to demon-

strate whether there is a dependence between learning orientation and performance orientation. The article focused only on the results of the third part of the dataset – The MCQ 30 method. The MCQ 30 focuses on measuring differences in selecting metacognitive methods of beliefs and judgments and monitoring trends considered necessary in the metacognitive model. In the MCQ 30 method, 30 items are scored on Likert's 4-point scale presenting the level of agreement. The re-

sults show that there was a dependence between the five subscales. There was a very low (CSC to CC), low (NEG to NC, CC to NC, CC to CSC and NC to CSC), and moderate (NEG to CC and NEG to CSC) dependence between the individual components. Overall, further research could focus on re-testing students and comparing the results with the results of this research. If the dataset included enough students, the results could be compared separately between years of study.

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Diagnostics of Metacognitive Abilities of University Students IV.: The Ryff Scales of Psychological Well-Being

ABSTRACT

The World Economic Forum describes today's modern world as highly uncertain, defined by constant change. The current global situation limiting full-time forms of study in schools of all levels places new demands not only on the education system but also on the learning practices of pupils and students. Students' metacognitive skills affect their ability to change cognitive strategies with respect to any changes in the teaching process and often determine their success in new conditions. And not only in studies – it turns out that metacognitive skills are necessary competencies for success in the work field in the modern world. This paper aims to present data analysing the level of selected scales of the well-being of university students in relation to metacognitive variables. This is the fourth part of the data of comprehensive research on the metacognitive abilities of university students. The present study builds on the previous studies: "Diagnostics of Metacognitive Abilities of University Students: Awareness of the Independent Learning Inventory Method", "Diagnostics of Metacognitive Abilities of University Students II.: The Goals Inventory Method" and "Diagnostics of Metacognitive Abilities of University Students III.: The MCQ Method" and complements it with outputs from another method, this time focusing on measuring well-being and monitoring trends considered necessary in the metacognitive model. The overall goal of the test battery is to determine the level of metacognitive abilities of students and their connection with other personality characteristics and styles of their learning. The study focuses on the results of the test the Ryff Scales of Psychological Well-Being (in this study – only part of this method – 36 items with four aspects) focuses on measuring four aspects of well-being and happiness. In the original, this method is an 84-item method (long form, 54 items for medium or 18 items for short form) and measures six aspects of well-being considered necessary in the metacognitive model. The questionnaire survey was aimed at students in the 1st to 3rd year of the Economics and Management study program at NEWTON College (University). The results of university students' overall diagnosis of metacognitive abilities lead to two goals. First, naming possible areas of development so that students use metacognition consciously will allow them to respond flexibly to changing teaching conditions.

From the second point of view, by knowing the structure of students' metacognitive abilities, universities can adapt their teaching methods to maintain their effectiveness even in the distance form of study.

KEYWORDS

Metacognition; Well-being; Autonomy, Metacognitive Skills; University students.

JEL CLASSIFICATION

I20, I21, I23; M12



The Concept of Competencies: Tool for Employee Development in Modern Enterprises

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* 1. Introduction

The World Economic Forum's "The Future of Jobs Report 2020" (WEF, 2020) describes today's modern world of work as highly uncertain, defined by constant (and, as the situation of recent years shows, often unpredictable) change. It is not just technological advances, automation and globalisation that constantly influence and transform the way we live and work. As a result, the acronym VUCA (volatile, uncertain, complex, ambiguous) has been coined for the contemporary world. Clearly these aspects place increased demands on the organisation of businesses and their prosperity.

The conclusions of the document estimate that up to 85 million jobs may be transformed, replaced by automation or digitisation, or disappear by 2025. As a result, tens of millions of jobs will emerge with new requirements for their performers, i.e. with the potential for diagnosing existing employee competencies and developing new ones.

Attention is therefore turning more intensively to maximising the use of all types of resources, not excluding human resources. But how to select suit-

able employees when it is unclear what skills will be needed by the businesses? Enterprises have often focused on recruiting new, skilled people and only addressed gaps in the training and development of existing people. Little conceptual focus has been given to opportunities to improve existing employees (Alessandri et al., 2018). It now appears that it is the employees who, with appropriate and thoughtful nurturing, will help a company gain a competitive advantage.

Attention is thus turning again and more structurally to competencies and competency models. Professionally specific behaviour must be continuously modified or replaced by new elements. In order to manage this process, core competencies are needed as they represent a lasting value in the process of change. Working according to instructions is no longer implemented; autonomy is coming to the fore. Key competencies are a kind of meta-knowledge and are therefore an effective tool for solving various problems of professional education and development in an environment of rapidly changing framework conditions (Belz, Siegrist, 2015). The topic of a functional concept of key competencies is relevant not only with regard to

the current needs of companies, but especially to the future ones (Luthans, Youssef-Morgan, 2017). Hand in hand with the description of the necessary skills goes the appropriate diagnosis of their current level.

2. Concept of Competencies in Human Resources Area

The definition of Campion et al. (2011) captures the essence of why competencies are such a hot topic in Western economies — it defines competencies as a set of knowledge, skills, abilities, experiences and other characteristics that are needed to perform effectively in given jobs. This perspective defines competencies as the demonstrable characteristics of a person, including knowledge, skills and behaviours that enable performance (Ledford, 1995). The main purpose of the concept of competencies both inside and outside the company is then communicative. They describe what people need to know and master in order to effectively contribute to the profitability of a given enterprise (Zingheim, Ledford, & Schuster, 1996). Along with competencies, enterprises often focus their attention on motivational drivers in order to increase the efficiency of employees' work (Žičar, Janiš, & Pánková, 2016).

2.1 Evolution of the term and its current use

Although the notion of competencies is not a new concept, it is now becoming increasingly relevant. This is also evidenced by the World Economic Forum's themes and documents that have focused intensively on competencies in recent years (WEF, 2020). This is due to the current high level of environmental uncertainty, the development of artificial intelligence and others, which point precisely to the importance of targeted development of the quality of human resources in terms of competency. It is competencies that will enable greater flexibility in responding to changing environments and employment circumstances. The conclusions of

the document estimate that up to 85 million jobs may be transformed, replaced by automation or digitisation, or disappear by 2025. As a result, tens of millions of jobs will emerge with new requirements for their performers, i.e. with the potential for diagnosing existing employee competencies and developing new ones.

The preceding text summarises the current views on categorisation and enumeration of competencies in both general and very detailed terms. If we want to think in greater detail about the diagnosis and methodical monitoring and development of competencies in different enterprises, we need to understand the concept of competencies and competency models in more depth so that we are able to design them effectively for the benefit of the productivity of the enterprise.

The key qualifications were mentioned as early as 1974 by Mertens (1974). He described them as elements of education that are superior in content to other educational objectives. They help people to function in practical aspects of work and personal life and facilitate the development of further knowledge (Belz, Siegrist, 2015). The notion of competency was introduced into work practice by Boyatzis in 1982. Boyatzis (1982, In Rothwell, Lindholm, 1999) defines competency as “an essential characteristic of an employee (e.g., a motive, trait, skill, aspect of self-image, social role, or body of knowledge) that results in effective or above-average job performance.” Based on the research findings, Boyatzis pointed out that there is no single factor that distinguishes successful performance from unsuccessful performance, but that this is due to the influence of multiple factors, i.e., he anticipated the emergence of competency models.

In psychological terminology, the concept of competencies is a mixture of knowledge, skills and attitudes. Important is their observability in behaviour (also referred to as Skills, or Hard-Skills vs. Soft-Skills). The definition by Belz, Siegrist (2015) points out the difficulty of diagnosing competencies, their overlap and intersectionality — “Core



competencies encompass the full spectrum of competencies which cross the boundaries of individual disciplines. They are an expression of a person's ability to behave appropriately in a particular situation, in accordance with oneself, i.e. to act competently". Lyce, Spencer (1993, cited in Rothwell, Lindholm, 1999), add an essential and still valid fact – a characteristic becomes a competency only when it can predict something meaningful in the real world, i.e. it is described by the rhetoric of specific behavioural manifestations.

2.2 Competency Model: Structuring Competencies for Practical Use

In practice, competencies are often described in sets, called competency models. These are multiple competencies defined in relation to a specific role or position. Within the cognitive-theoretical approach, certain general structure of competencies was defined already by Mertens (1974). He calls them key competencies because they help to cope with the reality and manage the flexible demands of the world of work. This is the list of key competencies according to Mertens:

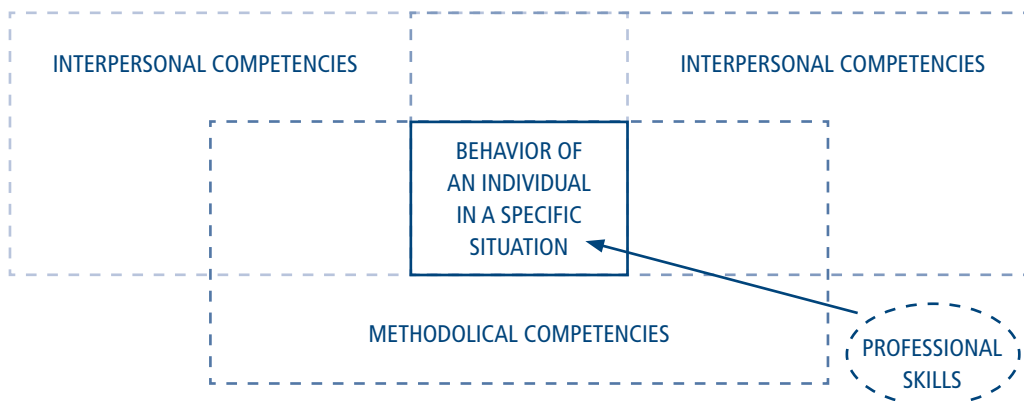
- basic competencies (basic mental operations as a prerequisite for cognitively coping with various situations and requirements);

- horizontal competencies (to acquire information, understand it, process it and understand its specificity);
- extension elements (basic knowledge in terms of fundamental cultural techniques – numerical operations, and knowledge relevant to a specific occupation – measuring techniques, work protection, handling tools);
- contemporary factors: filling in knowledge gaps in the light of new knowledge (modern history and literature, counting with sets, the constitution).

It is clear that the individual competencies cross the boundaries of each discipline. They express the ability to act in accordance with oneself, appropriately to the situation, to be competent. These are various highly complex competencies working together. A more concrete and practically applicable way of thinking about the competency model is offered by Belz, Siegrist (2015). It presents a structure involving the interplay of three components – personal competencies (intrapersonal), social competencies (interpersonal) and methodological competencies. The aforementioned groups of competencies further branch into specific competencies with unique content.

- Intrapersonal competencies, i.e. in relation to one's own person (competent handling of one-

Figure 1 » Competency model



Source: adapted from Belz, Siegrist, 2015

Figure 2 » Top 10 Skills of 2025



Source: WEF, 2020

self, ability to reflect, assess and develop one's own value – e.g. ability to self-reflect, self-manage, self-confidence, etc.);

- interpersonal competencies, i.e. social competencies (e.g. ability to communicate, negotiate, resolve conflicts, lead a group, teamwork, etc.);
- methodological competencies (related to the way of working and achieving the goal – e.g. ability to plan, work with information, analytical thinking, etc.).

From the description of the various groups of competencies, it is clear that only the so-called “soft skills” are included in the competencies, the individual's expertise stands outside the competency system, as these are the focus of environmental variability. According to the authors, it is the competency level of each individual that determines the ability to apply expertise in practice.

Vaculík (2010) describes the same groups of competencies in terms of content. He describes competencies that relate to a) a person's approach to a problem, b) approach to people, c) approach to oneself. The last group of competencies, focus-

ing on the approach to oneself, is the most difficult to identify (Krause, Gebert, 2003). The others can usually be identified by observation or by specialised methods, such as those that tend to be part of the Assessment Centre.

The World Economic Forum regularly conducts large-scale employer surveys on employability skills. In The Future of Jobs Report 2020 (WEF, 2020), it lists the emerging skills for year 2025. Methodological skills (critical thinking, analysis and problem solving) are already regularly featured while self-management skills, such as active learning, stress resilience and flexibility, are now emerging.

Figure 2 shows the overlap of the list of skills and especially their breakdown ('competency model') with the above. Three, or four unifying groups have crystallized – methodological (Problem-solving), intrapersonal (Self-management), interpersonal (Working with people) and basically professional, technological competencies (Technology use and development).



Professionally specific behaviour must be continuously modified or replaced by new elements. In order to manage this process, core competencies are needed as they represent a lasting value in the process of change. Working according to instructions is no longer implemented; autonomy is coming to the fore. From the description of the various groups of competencies, it is clear that only the so-called “soft skills” are included in the competencies, the individual's expertise stands outside the competency system, as these are the focus of environmental variability. According to the authors, it is the competency level of each individual that determines the ability to apply expertise in practice.

2.3 Design and Characteristics of Competency Model

A well-designed competency model is the basis for the most effective measurement of competencies for specific employees in a company. The development of a competency model in a company can be based on the general structure presented above. At the same time, the characteristics formulated by Woodruffe (1993) must be taken into account when constructing it so that the competency model is viable:

- be at a certain level of generality,
- be based on observable behaviour
- be simple and concise
- be user-friendly
- be marked with dimensions
- avoid vagueness and ambiguity
- be forward-looking and mirror even future requirements.

Kubeš, Spillerová, and Kurnický (2004) summarize it simply: “Whether competency is considered to be an observable behaviour or rather behavioural assumptions in the form of personality characteristics, both approaches use performance in a specific work situation as a criterion.” Authors defining competencies agree on the need to link competency to observable behaviour, job performance and company values.

The competency-based model is always job specific. On the other hand, Collins and Porras (1994)

declare some competencies and values as universal for all visionary companies. Such as innovation, product quality and customer service, individual initiative and growth, integrity, continuous improvement and self-renewal, and technical superiority. Competencies are defined for the whole organization or certain professions (Armstrong, Taylor, 2020).

Kubeš, Spillerová, Kurnický (2004) summarize several types of competence models:

- Universal competency models (core competency models) include competencies common to all employees of a company regardless of their role or position in the hierarchy.
- Specific competency models identify competencies that are key to a specific job in a specific company. According to this “a competency model includes an exhaustive list of all relevant competencies directly related to a given job role.”
- Generic competency models represent a proven, empirically derived list of competencies common to specific roles. The lists are the result of extensive research and can be a good guide or starting point for developing a company's own competency model.

Rothwell and Lindholm (1999) frame possible approaches to building a competency model in a particular enterprise as follows:

- Borrowed approach — in this approach, the company does not create the competency mod-

el, but adopts it ready-made, usually from a commercial offer of HR and consulting companies. These usually are based on generic models.

- Borrowed and tailored approach — i.e. the combined approach adapts the adopted model to the specifics of the company.
- Tailored approach — is the most challenging but often the most functional approach to constructing a competency model. It requires a deep knowledge of the position, the company and the external conditions. It is based on the analysis not only of specific positions, but also of the company culture and its values.

Sophisticated definitions of competencies and their decomposition into concrete observable behaviours are a prerequisite for being able to assess them.

3. Competence Assessment

In his paper, Professor Yves Doz (1996) says about competencies, among other things: — “Competencies are not easy to manage. Competencies are not very tangible, nor measurable, and the more valuable competencies may well be the least manageable. Competencies are fragile.” Competencies in the concept as presented above are indeed entities that are quite difficult to quantify and directly measure, particularly when we talk about competencies of the so-called soft-skills nature. This does not mean, however, that it is not possible to assess the level of competency of a given person, to monitor its development and also to consciously encourage and then achieve its development.

3.1 Key Assumptions and Principles

Despite being difficult to measure, the competencies are undoubtedly both measurable and systematically developable. This fact can be demonstrated by almost any human skill, starting with movement skills, specifically walking in young children, through e.g. riding a scooter, bicycle, ski

or snowboard, playing a musical instrument, dancing, etc. to controlling (driving) a motor vehicle or even an aeroplane, etc. Almost identically, it is possible to look at soft-skills competencies, including typical managerial skills in the form of leadership, crisis communication, negotiation, conflict resolution and others (Woodruffe, 1993; Doz, 1996; Balantyne, Povah, 2004 and others).

However, if competencies are to be quantified, meaningfully “measured”, credibly assessed and then purposefully developed, certain key conditions and requirements need to be met, particularly related to:

1. the assessed competency itself,
2. the process of assessing individual competencies as well as the competency endowment of the individual as a whole,
3. the choice of appropriate assessment methods for the chosen competency,
4. the process of competency assessment.

All actors involved in the evaluation, i.e. the commissioner, the evaluators and the evaluated must have a common understanding not only of the purpose (Why?) and the subject (What?) of the evaluation, but also of the methods and procedures (How?) of the evaluation process as a whole.

In relation to the competency being assessed, it is essential to have an adequate, precise and sufficiently detailed definition of the competency that is fully and unreservedly shared and understood by the commissioner of the assessment, all individual assessors and the person being assessed and is in line with all evaluation methods used in the assessment.

Accuracy and consistency in understanding the nature, content and structure of the competency being assessed is the absolute basis for its meaningful assessment, regardless of whether it is a knowledge-based competency, a hard-skills competency or any typical soft-skills component.

The unambiguous definition of competency must be shared by all actors and be complemented by a purposefully created transparent set of relevant criteria and indicators that will allow the as-



assessment of the level of competency in the case of a specific person being evaluated. The individual criteria take into account various sub-aspects of the definition of the relevant competency, while the indicators enable the identification and subsequent comparison of the degree of fulfilment of the chosen criterion. In order to quantify the indicators with the necessary level of detail and precision, scales or rating scales are usually used. It is appropriate to relate these scales directly to specific observable or measurable manifestations of competency (e.g. a required test result or observable behaviour).

The above-mentioned facts very clearly indicate what makes the process of assessing individual competencies as well as the competency endowment of the individual as a whole so specific and which part of the process requires special attention. The main keywords in this context necessarily include, in particular: qualitative, individuality, objectivity and ethics (Woodruffe, 2000; Thornton III, Rupp, 2006; Gruber, Kyrianova, Fonville, 2016, etc.).

3.2 Methods of Competency Assessment

The choice of the relevant method or combination of methods, their specific use, organisation, implementation and evaluation are undoubtedly among the most important parts of the assessment of competencies and competency endowment as a whole. The chosen methods must reflect not only the definition of the competency to be assessed, including criteria and indicators necessary for its assessment, but also the fulfilment of individual principles that are key to the effectiveness and efficiency of the assessment, i.e. in particular validity, reliability and ethicality of the assessment. In general, competency assessment methods can be categorised in various ways, e.g. (e.g. Woodruffe, 2000; Thornton III, Rupp, 2006; Armstrong, Taylor, 2020 and others):

1. implemented individually / in small groups / in larger groups,

2. based on immediate/short-term/medium-term observation and evaluation,
3. conducted with a single evaluator / multiple collaborating evaluators / multiple independent evaluators,
4. carried out with the participation of either internal / internal and external / external evaluators only,
5. conducted in real (work) conditions / simulating (work) reality / deliberately divorced from (work) reality,
6. implemented in the workplace / outside the workplace,
7. implemented through face-to-face contact / implemented online,
8. carried out periodically / non-periodically / irregularly / randomly / one-off,
9. implemented as part of / outside the performance appraisal system,
10. having impact on the remuneration of evaluated persons / no impact on remuneration.

The following belong to the specific tools that are most often used for mapping and assessing competence endowment and subsequently for competence development (both hard-skills and soft-skills) (Woodruffe, 2000; Ballantyne, Povah, 2004; Thornton III, Rupp, 2006; Vaculík, 2010; Pechová, Šišová, 2016 etc.):

- a) Verification of (expert) knowledge and skills
- b) Observation (observation)
- c) Analysis of evidence
- d) Multi-faceted feedback
- e) Interviews
- f) Behaviourally oriented interviews
- g) Psychodiagnostic tools
- h) Rehearsal, training
- i) Case studies
- j) Group games
- k) Role-playing
- l) Simulation
- m) Mystery activities
- n) Assessment centre / development centre

Validation of (expert) knowledge and skills is used particularly to determine the level (i.e. ex-

tent, structure, quality and intensity) of the assessee's specific expertise and skills, including e.g. language skills, manual skills, etc.

4. Conclusion

The topic of key competencies, their evaluation and development has been resonating in professional publications focusing on management and especially human resources management for more than a quarter of a century. The competencies of employees are considered to be an important aspect of the competitiveness of any organisation,

not just businesses. Possession of relevant key competencies in their required quantity is considered one of the basic prerequisites for the fulfilment of vision, mission, strategy and strategic objectives (e.g. Armstrong, Taylor, 2020, etc.).

However, if key competencies are to make an effective contribution to the above, they must be given adequate attention by the institutionalised body in question. Particularly the existence of a coherent internal system dedicated to the definition, assessment and development of (staff) competencies is essential.

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The concept of competencies: a tool for employee development in modern enterprises

ABSTRACT

Although the notion of competencies is not a new concept, it is now becoming increasingly relevant. This is also evidenced by the World Economic Forum's themes and documents that have focused intensively on competencies in recent years (*The Future of Jobs Report 2020*). This is due to the current high level of environmental uncertainty, the development of artificial intelligence and others, which point precisely to the importance of targeted development of the quality of human resources in terms of competency. It is competencies that will enable greater flexibility in responding to changing environments and employment circumstances. The aim of the text is to comprehensively introduce the concept and notion of competencies and competency models with emphasis on their use in working with people in the modern environment. Therefore, in order to be able to work effectively with competencies in a business environment, it is necessary to understand the concept of competencies in depth. The text returns to the explanation and appropriate methodical understanding of the concept of competency so that it can be used precisely when working with people in real life. Their simple, user-friendly and at the same time, specific structure and content is essential for the use of competency models across personnel processes. Only by naming the specific manifestations of behavior hidden behind the name of a specific competency can we appropriately assess, evaluate and develop it.

KEYWORDS

Human resources; competencies; competency model; competency assessment

JEL CLASSIFICATION

J23; J24; M12; M51; M53



Animal in commercial relations

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* 1. Introduction

Man's approach to animals has changed in various ways over time. In the earliest epic work that has survived, the Epic of Gilgamesh, the protagonist battles nature personified by the monster Chuvawa. This character, living in a cedar forest, personifies the dangers of wild animals as well as the elements of nature in general.

"In the forest lives Chuvava the strong.

You and I, we will kill it,

*"We will eradicate all the evil of the earth
and cut down the cedars!"*

(Author unknown and Matouš, 2008)

So, in the relevant time, people were concerned about wildlife. On the other hand, the domestication of a number of animal species was already underway and had largely taken place by then. Indeed, the relationship to nature suggested here may have been one of the reasons why humans began to harness nature. The moment man took possession of an animal, he began to regard it as his own. He had already deprived it of its nature. He restricted it in its freedom, and took from it what he saw fit (for it). Thus, although we can perceive

man's relationship with animals as problematic only since the moment when industrialization began in the trade of animals and animal products, the origin of this problem must be sought at the moment of the beginning of the domestication of animals by man (Pschera, 2018).

At the same time, however, a certain existential dualism between man and animal cannot be ignored. The man who hunts dumb animals, who separates them from himself by this act of violence, never leaves the feeling of similarity that, on the contrary, connects him with these animals. *"In this vicious circle, then, there were acts that seemed contradictory but were in fact nothing other than the concrete problems of that existential dualism. Humans could treat animals as their own species and yet still manage to kill them. Animals were hunted, yet they were shown the utmost respect. In primitive peoples we can still observe this today."* (Pschera, 2018).

However, once the more organized trade in animals began, decisions had to be made about their factual and legal nature as well. From the earliest legal codes that have survived to us, we know that animals were understood as things. This is not only Chammurapi's code, but also the laws of Urnammu or Eshnunna that preceded it (Klíma, →

1979). There is probably nothing particularly surprising about this, given the fact that in some cases people were considered to be things. However, the above does not change the fact that an animal (like a human) differs from an ordinary thing in many ways – it perceives, experiences, reacts, feels pain. Our own feelings and experiences are mirrored in animal behaviour. Thus, the factual status of the animal resulting from the understanding of its similarity to man has always necessarily reflected its specific characteristics.

After all, in biblical history, a common language united animals in paradise – how else could the serpent speak to Adam and Eve and seduce them (Pschera, 2018). Yet in some ways, at least on a nonverbal level, some form of possibility of mutual communication remains with us. Thus, if Act No. 40/1964 Coll. the Civil Code (hereinafter also “**OZ64**”) considered a living animal as a thing, it did not mean that the entire Czech legal order viewed animals in the same way as a towel or a motor vehicle. So what is the legal framework for animal protection? And is this protection sufficient in the light of current scientific knowledge and prevailing public opinion?

In recent years, there has been increasing discussion in expert circles about whether animals can even have their own subjective rights. In this regard, the authors of the publication Chapters on Animal Rights (Černý et al., 2016) have probably provided the most lucid selection of opinions on this topic. In a very simplistic way, it can be concluded that these experts from various humanities disciplines are inclined to the opinion that it is not appropriate to grant animals subjective rights at the present time. In order to ensure a sufficiently good quality of life for the animal corresponding to its biological disposition, public law protection, currently found primarily in Act No. 246/1992 Coll., on the Protection of Animals against Cruelty, as amended (hereinafter also referred to as the “**Anti-Cruelty Act**”) and in related and implementing legislation, should be sufficient.

2. Private law protection of animals

However, the private regulation of the trade in animals should not be left completely aside either. Act No. 89/2012 Coll., the Civil Code, as amended (hereinafter also the “**CC**”) already reflects the special nature of the animal when it states that “*a live animal is not a thing [...]*” (§ 494 CC). Section 494 CC further provides that a living animal has special meaning and value as a living creature endowed with senses, and the provisions on things apply to it *mutatis mutandis* to the extent that this does not contradict its nature. This general proclamation of the CC might at first glance appear to be a legal norm without special legal consequences. However, its meaning can be seen when interpreting certain legal acts. If, for example, a contract involving a live animal contravened the relevant provision of section 494 CC, we could consider the possible nullity (in the extreme case, the apparent nullity) of such a contract. In practice, this would normally be an absolute nullity, since the contradiction with the provision of Section 494 CC would in most cases clearly disturb public order. It could easily be argued that this would be the case even if the Civil Code did not grant any specific status to living animals, since disregarding their characteristics as living and sensually endowed creatures would contravene the Anti-Cruelty Act and related legislation.

In this respect, however, it is necessary to ascertain how the Anti-Cruelty Act actually defines the object of protection. According to the provisions of Section 3(a) of the Anti-Cruelty Act, for the purposes of the Act, an animal means any living vertebrate, other than a human being, but not a fetus or embryo. Thus, invertebrates are not protected by the Anti-Cruelty Act. They are a group of animals representing about 95% of all animal species living on Earth. The Civil Code thus takes a significantly broader view of the protection of living creatures in commercial relations. Although the trade in animals in the Czech Republic continues to involve mainly the treatment of vertebrates (Lymbery, 2017), it also increasingly concerns some inverte-

brates, such as some species of molluscs, crustaceans or insects. The civil law definition of a living animal thus further complements, on one of several levels, the protection of all living creatures on this planet.

It must be remembered that this protection applies exclusively to the living animal. However, that fact does not preclude us from considering a possible contradiction of a legal act concerning a creature which, prior to its killing, was treated in breach of the provisions of Article 494 of the Civil Code as invalid, even though its killing took place prior to the importation of animal products obtained from it from third countries. Usually, therefore, invertebrates caught in the oceans and seas will not be imported into the Czech Republic as live animals. Nevertheless, the legal regulation on the invalidity of legal acts which would contradict the nature of these creatures in a more substantial way within the meaning of Section 494 of the Civil Code may be applied to them.

3. Law against animal cruelty

The Anti-Cruelty Act remains the key piece of legislation for the protection of animals against cruelty. Although its original wording dates back to 1992, it is still an up-to-date and regularly amended piece of legislation – currently, a total of 17 amendments have been incorporated into the Anti-Cruelty Act, with the latest one coming from autumn 2022.

The Anti-Animal Cruelty Act is primarily an administrative regulation, which also contains specific facts related to the protection of animals against cruelty. The central concept of this legal protection is the animal, the definition of which we have already discussed above (a living vertebrate different from humans). Other key concepts are, for example, suffering, unreasonable pain, killing, slaughter, or euthanasia. It is these concepts that are important in terms of the protection of animals at the time of killing (see the provisions of Sections 5 to 5j of the Anti-Cruelty Act). The term cruelty itself

is then defined by section 4 of the Anti-Cruelty Act and includes a range of practices from subjecting animals to unreasonable training and demands, to nutritional offences and some inappropriate medical interventions, to keeping and transporting animals in substandard conditions.

It is the transport of animals that the Anti-Cruelty Act (and indeed the whole of Part Three of this legislation) devotes special attention to. Sections 8a to 8g of the Anti-Cruelty Act lay down general conditions for the transport of animals, as well as maximum transport times, requirements for procedures, means of transport, the transporter and the animal to be transported.

However, the Anti-Cruelty Act does not always deal with all animals across the board; on the contrary, it contains some protective mechanisms and prohibitions across the board and some procedures specifically designed for certain categories of animals. For example, it distinguishes between wild animals, farm animals, experimental animals and pets. However, these categories do not perfectly divide animals in such a way that every animal belongs to just one category – on the contrary, an animal may belong to several categories at the same time, for example, depending on the specific situation in which it is found. Wild animals are those that belong to a species whose population is self-sustaining in nature, even if they are bred in captivity. A farm animal is an animal kept for the production of animal products (in particular milk, meat, wool, leather or fur). It also includes wild animals and other farmed animals, including fish (if so farmed). A pet animal is an animal for which the economic effect is not the main purpose of the keeping, either kept on the premises or in the home, kept primarily for the purpose of a person's leisure activity, or kept as a companion for a person.

The specific protection of wild animals focuses in particular on the regulation of the possibilities and methods of hunting and trapping of these animals, as well as rules for their breeding (for example in zoos) and for their training for performances



(for example in circuses). For farm animals, legal protection is a counterbalance to the efforts of industrial breeders to maximise their profits. This protection therefore covers practically everything from the parameters of the holding facilities to the size of herds, the staff required, the life expectancy of the animals or their breeding and neutering. In the case of pets, the regulation is not nearly as detailed and precise, given the lower economic importance, the smaller size of breeding facilities and the greater emotional attachment of breeders to their animals. In particular, it requires the provision of conditions for the safe keeping of animals to ensure that their biological needs are met, as well as conditions for trade in such animals.

The Anti-Cruelty Act also singles out a special category of animals requiring special care from the pet population, which is subject to higher requirements, such as the need for a breeding permit or record-keeping. The protection of experimental animals, on the other hand, is based on the need to obtain authorisation for the behaviour and use of experimental animals, including the need for training and qualification of individual natural persons. In addition, the approval of experimental projects, including consideration of the purposes of the experiments or the minimisation of animal suffering, plays an important role.

4. Other legislation

However, not all of the protection mechanisms described above are contained in the Anti-Cruelty Act, from the most general maxims to the specific parameters of particular procedures or measures. On the contrary, the Anti-Cruelty Act is complemented by other legislation both at the statutory level and within sub-legislative legislation. Among the most significant are:

- Decree No 384/2021 Coll., on the protection of dogs and cats when kept for breeding purposes;
- Decree No 4/2009 Coll., on the protection of animals during transport, as amended by Decree No. 22/2013 Coll.;

- Decree No 208/2004 Coll., on minimum standards for the protection of farm animals, as amended;
- Decree No 418/2012 Coll., on the protection of animals at killing, as amended;
- Decree No 419/2012 Coll., on the protection of experimental animals, as amended; or
- Decree No 346/2006 Coll., laying down more detailed conditions for the breeding and dressage of animals.

The basic themes and focus of the individual decrees need not be emphasised here, as the legislator has done a good job of naming them rationally and concisely (*nomen atque omen*, if you like).

The Anti-Cruelty Act and the aforementioned implementing legislation are also significantly linked to the veterinary regulations, which, in addition to the requirements for livestock production, also lay down certain requirements for the quality of animal husbandry and the standard of living of animals. The main source of law here is Act No 166/1999 Coll., on veterinary care and on amendments to certain related acts (Veterinary Act), as amended (hereinafter also referred to as the “**Veterinary Act**”), which is implemented, for example, by Decree No 342/2012 Coll., on animal health and protection, on the movement and transport of animals and on authorisation and competence to perform certain professional veterinary activities. However, for the purposes of working with the Veterinary Act, care must be taken to ensure that it contains its own definitions of basic terms which may differ substantially from the same-sounding terms of the Anti-Cruelty Act. For example, livestock within the meaning of the Veterinary Act includes bees, beehives, bumblebees and insects intended for human consumption or for the production of processed animal protein. These creatures are not even animals (let alone farm animals) under the Anti-Cruelty Act.

Indirectly related to the protection of animals are several other laws that deal with specific subjects of regulation that are inherently related to the protection of animals. Among the most important are:

- Act No 114/1992 Coll., on Nature and Landscape Protection, as amended;
- Act No 449/2001 Coll., on hunting, as amended;
- Act No. 99/2004 Coll., on fishery, exercise of fishing rights, fishery guards, protection of marine fishery resources and amendment of certain acts (Fisheries Act), as amended;
- Act No 100/2004 Coll., on the protection of species of wild fauna and flora by regulating trade therein and other measures for the protection of such species and on amending certain acts (Act on Trade in Endangered Species), as amended;
- Act No 91/1996 Coll., on animal feed, as amended; and
- Act No 154/2000 Coll., on the breeding, rearing and registration of livestock and amending certain related acts (the Breeding Act), as amended.

With regard to the EU legislation, it can be stated that animal protection is mostly dealt with in the form of directives, which are implemented into Czech law in the form of Czech (national) regulations, where, for example, the Anti-Cruelty Act states in its footnote 1 that it incorporates a total of 6 EU Council Directives. However, there are exceptions here as well. One of them is for example Council Regulation (EC) No 1/2005 of 22 December 2004 on the protection of animals during transport and related operations and amending Directives 64/432/EEC and 93/119/EC and Regulation (EC) No 1255/97.

The list of relevant legislation would not be complete without at least one source of law of international origin – in this case, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). This Convention is not limited to vertebrates, but also protects plants, in addition to invertebrates, from the threat of extinction due to the excessive commercial exploitation of endangered species. In particular, CITES regulates trade in endangered species taken from the wild, and CITES regulates information obligations, necessary permits and documents in connection with such trade.

4. *Animal in criminal law*

The protection of animals is also ensured by criminal law. However, it is necessary to recall the notorious principle of subsidiarity of criminal repression, which is related to the application of criminal law as the ultima ratio, i.e. the last (highest and final) instrument of law. On the basis of this concept, criminal law should only be used to protect animals in situations where, for example, the means contained in the Anti-Cruelty Act are insufficient to provide effective protection.

If the development of the civil regulation of animals has shown a paradigm shift from the understanding of the animal as a thing to its special grasp due to its specific nature and certain similarity to humans manifested at least in the ability to feel pain, the development of criminal law shows a similar trend even more clearly. Act No 140/1961 Coll., the Criminal Code (hereinafter also referred to as “**the CCC**”) contained (apart from poaching) a single act protecting animals, namely in the provisions of section 203 of that code (cruelty to animals). According to the the old CCC, only killing of an animal, i.e. causing death by cruelty, or in the case of repeated cruelty, was punishable. However, there was a requirement that “*the offender has been convicted of a similar offence (i.e. animal cruelty) within the last year, or has been convicted of an animal cruelty offence within the last 2 years.*” (Prchalová, 2009). This offence (in both basic versions of the offence) carries a penalty of up to one year imprisonment.

Act No. 40/2009 Coll., the Criminal Code, as amended according to the context (hereinafter also referred to as “**the new CCC**”) represented a revolution in the field of animal protection compared to the old CCC. Firstly, the offence of animal cruelty no longer required the animal to be put down or the act to be committed despite prior punishment, but “*only*” the abuse of an animal in a particularly cruel or torturous manner or in a cruel or torturous manner in public.

Secondly, even for the offence thus amended, →

However, the above does not change the fact that an animal (like a human) differs from an ordinary thing in many ways — it perceives, experiences, reacts, feels pain. Our own feelings and experiences are mirrored in animal behaviour. Thus, the factual status of the animal resulting from the understanding of its similarity to man has always necessarily reflected its specific characteristics.

The Anti-Cruelty Act and the aforementioned implementing legislation are also significantly linked to the veterinary regulations, which, in addition to the requirements for livestock production, also lay down certain requirements for the quality of animal husbandry and the standard of living of animals.

the offender faced a prison sentence of up to two years (for an offence similar to cruelty under section 203 of the old CCC, it would then be a prison sentence of up to three years). Thirdly, additional offences such as negligent neglect of an animal were added to the new CCC. However, the development of criminal law does not end there. By amending the Criminal Code with Act No 114/2020 Coll., the criminal penalties for cruelty to animals were further increased from a maximum of two years to three (and from three years to five, for example, if the death of an animal is caused). In addition to the above, this amendment added an additional offence of keeping animals in unsuitable conditions.

Thus, although the criminal law does not contain a definition of an animal and the definition of the Anti-Cruelty Act limited to vertebrate animals is “only” applicable here, and the principle of subsidiarity of criminal repression must be observed, there is a clear trend in the development of the criminal law to expand the range of defective behaviour with animals that the criminal law considers to be criminal offences. Hand in hand with this trend is the increase in criminal penalties for these offences. This emphasises “the so-called dereification process, which is the so-called de-ani-

malisation, whereby the former treatment of the animal as an object is changed to that of a living creature. Animals, like humans, are living creatures, capable of experiencing pain and suffering to varying degrees and therefore deserving of human attention, care and protection.” (Jelínek, 2020)

5. Conclusion

We often see the face of nature shining with contentment. We do not see “or we forget that the birds that sing merrily around us are mostly feeding on insects or seeds, and so are constantly destroying life; or we forget to what extent these songsters and their eggs or their young are being destroyed by birds of prey and animals. [...] as more individuals are produced than can survive, there must in every case be a struggle for existence either with one individual of the same species, or with individuals of other species, or with the physical conditions of life.” (Darwin, 1953). Despite this fact, we need not, indeed must not, behave cruelly and ruthlessly in this struggle of life. Despite all the achievements of scientific progress, we are still far from understanding the fauna around us, even more so in terms of human language.¹ For a long time, peo-

¹ For example, it has been possible to determine the meaning of some catbird sounds, where the term “boom” probably means an inanimate danger, “hok” an eagle flying, “krak” a leopard, “hok-u” any danger approaching from the treetops, while the terms “krak-u” or “waku” probably have the meaning of some general danger (Petr, 2020).

ple were even convinced that animals could not suffer. Only in recent decades has this attitude undergone a radical change, but even after that we should not abandon the scientific approach to the issues involved.²

Recent evidence suggests that many invertebrates do experience pain. However, this is probably not without exception, especially in the case of

selected insect species that live such short lives that the experience of physical pain is not meaningful to these creatures (Petr, 2020). Further research should continue to be carried out in this area, which will be taken into account in the ongoing legislation concerning the protection (rights) of all living creatures.

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Animal in commercial relations

ABSTRAKT

This article discusses the factual differences between animals and things and the relationship between humans and animals. The reflection of these facts and social facts in law has long been inadequate, and there has been some tension. The development of criminal and civil law thus shows a certain alienation of animals, together with a growing respect for them. This is also linked to the development of relatively robust regulation at the level of administrative law.

KEYWORDS

animal protection; animal cruelty; animal husbandry; animal in contract; animal as object; animal rights

JEL CLASSIFICATION

K12; K14; K32; K38; Q18

x

² A turn in this direction occurred, among other things, after the publication of Peter Singer's *Animal Liberation*.

Price sensitivity testing as a blueprint for basic product pricing

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* 1. Introduction

Data-driven decision making is becoming increasingly prevalent in the wine industry as wineries and vineyards leverage technology to gather and analyse data (Lorenzo et al., 2018; Gilinsky et al., 2016; Jenster and Jenster, 1993). This data can include information on weather patterns, soil quality, grape yields, production costs, and consumer preferences (Blake, 1998). By utilizing this data, winemakers can make informed decisions about everything from when to harvest the grapes to which marketing strategies to employ.

Regardless of their size or status as a small, medium, or large company, wineries face a multitude of challenging decisions in situations where information may be scarce. Along with the complexity of these decision-making situations, it is important to consider the nature of the decisions themselves. One decision-making challenge that all wineries must face is determining the optimal price strategy.

One area where data-driven decision – making is particularly useful is a price setting. By analysing consumer purchasing patterns (Ehrenberg, 1959) and market trends, wineries can determine the optimal price point for their products. This can

help them to maximize profits while still remaining competitive in the market, and especially on saturated one.

Another area, where data-driven decision making is valuable is in production efficiency. By monitoring and analysing production data, wineries can identify areas where improvements can be made to increase efficiency and reduce costs.

In addition, data-driven decision making can be used to improve the overall quality of the wine. By analysing data on grape maturity, acidity levels, and other factors, winemakers can make informed decisions about blending and aging to produce the best possible wine, what refers then to the value-based pricing approach.

2. Price setting process – pricing

The process of making price decisions in the wine industry has not been extensively explored. However, data acquisition techniques are vital to ensure effective price decision-making. Having a well-defined and structured decision-making process is important as it enables businesses to identify the necessary data required for the price decision-making process (Angelis and Phillips, 2021; Gregory and Long, 2009; Irwin et al., 2011). Previ-

ous studies on wine pricing have explored various topics, including consumers' attitudes and their willingness to pay a premium price (Siu et al., 2016), the effect of positive emotions during wine tasting on price (Dressler and Paunovic, 2021), the influence of weather and market conditions on price (Hekimoğlu et al., 2017), as well as the impact of factors such as winery reputation, wine quality, region, vintage, and winery size on wine pricing (Ling and Lockshin, 2003; Schamel, 2003).

Price decision-making has been studied across a wide range of industries, such as financial services, construction, production, tourism, education, commerce, transportation, healthcare, and the wine industry. The wine industry has largely overlooked the importance of the price decision-making process, which relies heavily on effective data acquisition techniques. A well-defined decision-making problem is essential in identifying the correct and necessary data for the process. While previous research has examined wine pricing from various perspectives, such as consumers' attitudes, their willingness to pay, and the impact of factors such as weather, market conditions, winery reputation, quality, region, vintage, and size, the question of how to properly price a product based

on different types of customers and their price sensitivity remains.

For marketers and researchers alike, understanding consumer price sensitivity has been a global topic of interest (Slaba, 2021; Hartono et al., 2020). This concept refers to how customers perceive the value of a product in economic terms and can be used to segment customers (Sendegeya et al., 2009; Nicolau, 2009). One common way to measure price sensitivity is through assessing customers' willingness-to-pay and knowledge about pricing.

3. Methodology

Our pilot research aimed to determine acceptable price levels for a new bottled white wine product not yet available on the Slovak market. We conducted a price sensitivity test to find out what price consumers would be willing to pay for this product in a relatively new market segment of bottled white wines. To carry out the study, we used a product from Austria's Hillinger winery that was unknown on the Slovak market. The original research sample consists of respondents (male N= 44%; Female N= 56%) aged from 20 to 65. The respondents

Regardless of their size or status as a small, medium, or large company, wineries face a multitude of challenging decisions in situations where information may be scarce. Along with the complexity of these decision-making situations, it is important to consider the nature of the decisions themselves. One decision-making challenge that all wineries must face is determining the optimal price strategy.

A well-defined decision-making problem is essential in identifying the correct and necessary data for the process. While previous research has examined wine pricing from various perspectives, such as consumers' attitudes, their willingness to pay, and the impact of factors such as weather, market conditions, winery reputation, quality, region, vintage, and size, the question of how to properly price a product based on different types of customers and their price sensitivity remains.



Figure 1 » Tested wines of Green Veltliner



Source: own processing

come from different regions of Slovakia (western, southern, central, northern, and eastern). The researchers assured the objectivity of the measurement by using electronic data collection instruments to avoid influencing participants. The participants were briefed in writing by one researcher. Then, the collected data were subsequently processed in statistical software DATAtab.

We visually compared Hillinger's Green Veltliner with four well-known wine brands from each wine-growing region in Slovakia, including Green Veltliner Nichta, Green Veltliner from winery Dubovský & Grančič, Green Veltliner Pomfj Mavin, and Green Veltliner Skovajsja. Respondents were presented with these four competing products with the aim of recalling their internal reference price, based on past prices paid for the brand (Peschel et al., 2022). Chosen products were presented in person as follows in figure 1.

4. Results

Applying the van Westendorp price sensitivity test results in a price interval that ensures the product is priced at a level acceptable to consumers, lead-

ing to the desired sales volume and revenue. This method helps companies identify different price levels, including the so called marginal merchantable price (PMC), marginal non-marketable price (PME), optimal price (OPP), indifference price (IPP), and the price acceptance interval (RAI) (Raab et al., 2009).

The van Westendorp price sensitivity meter is widely utilized in marketing research for concept and product pricing (Lipovetsky, 2006; Roll et al., 2010) the frequently used technique for determining price sensitivity, provides estimates of the range of acceptable prices that potential buyers would be willing to pay by defining the upper and lower price level (Harmon et al., 2007).

This technique is based on answering 4 questions about price (Van Westendorp, 1976):

- at what price would you consider the product so expensive that you would decide not to buy it – the product and service are too expensive;
- at what price you would start to doubt the quality of the product – the product and service are too cheap;
- at what price you would consider the product expensive but would still be willing to consider

buying it — the product and service are expensive, it represents the upper limit of the price;

- at what price you would consider the product a bargain — the product and service are cheap, it represents the lower limit of the price.

Gained results are provided by charts in Figure 2.

5. Conclusion

Our pilot study on wine pricing adds to the existing literature on the pricing strategies of the wine industry. The study aimed to investigate the impact of price sensitivity by testing a new product in a new market. The van Westendorp price sensitivity meter was utilized to determine the acceptable price range for the Green Veltliner wine from Hillinger winery. The results showed that all respondents found a price of more than €10.00 to be optimal, while a price of less than €4.99 was considered cheap or too cheap. Only 1% of respondents considered a price of €0.50 to be too cheap. The thresh-

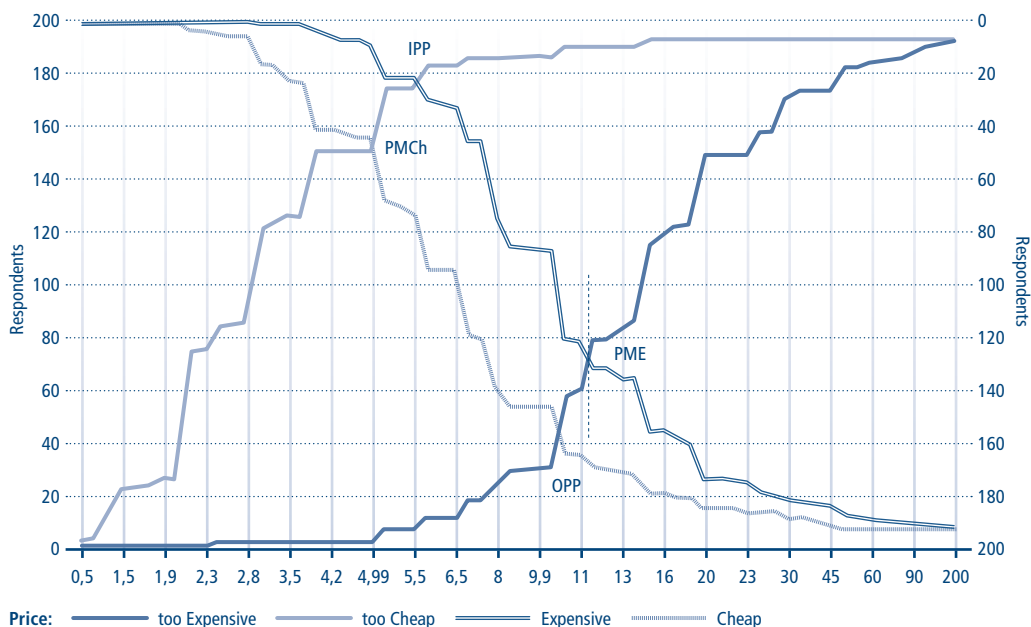
old price before a negative differentiation effect occurred was €10.00, and a price of €12.00 or higher would likely result in no sales. The unacceptable price from the consumer's perspective was €200.00, with no respondents willing to pay for the product at that price point. The acceptable price range for Hillinger's Green Veltliner was found to be between €4.99 and €12.00, as represented by the blue curve in the figure above.

Overall, data-driven decision making is transforming the wine industry, enabling wineries and vineyards to make informed decisions about every aspect of their business, from production to pricing to marketing.

Acknowledgement

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Figure 2 » Range of acceptable prices for Hillinger's Green Veltliner



Source: own processing

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Price sensitivity testing as a blueprint for basic product pricing

ABSTRACT

With the current advancements in technology, it is now feasible to gather and save vast quantities of intricate data and information. This has enabled pricing decisions to become more precise and up-to-date. The primary objective of the research was to determine the price point that consumers would be willing to pay for a new food product in a highly competitive market. The study was carried out in the wine consumer segment using the van Westendorp price sensitivity test, which helped us to establish the acceptable price range for a white wine, specifically Green Veltliner, that is entering a new market. To conduct the test, we utilized an unknown wine brand from another European Union country (Hillinger winery from Austria) as our test product. This was done to ascertain the customers' price sensitivity of the new product in the Slovak market.

KEYWORDS

Prices sensitivity; product pricing; price optimization; van Westendorp price sensitivity meter

JEL CLASSIFICATION

P42; E3



Anticipated effects of the cancellation of the electronic records of sales system in the Czech Republic

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* 1. Introduction

The electronic records of sales ('EET') system was introduced in the Czech Republic with effect from 1 December 2016. The instrument was designed to ensure that businesses duly declared their sales received in cash. Until then, it was suspected that some entrepreneurs were not declaring their cash income for taxation, which could lead to the crime of cutting tax payments. However, their customers and clients (maybe) did not care. Since they did not receive any receipt for the taxable transaction, they paid a lower amount to their supplier (Radvan, 2013). The discount was usually granted in the amount of the value-added tax lost by the state through undeclared sales. Income tax was also not paid and, in the case of individuals, adequate amounts of social security and health insurance were not paid.

The Ministry of Finance of the Czech Republic, therefore, proposed an online concept of electronic records of sales. It was inspired by the Croatian model. It worked on the principle of automated

communication between the trader and the tax administrator at the time of receipt of the cash payment (Figure 1). This way each cash receipt was assigned unique codes; the codes were included in the receipt received by the customer.

However, the introduction of electronic records of sales was not without difficulties. There was a splitting between the professional and lay public, and even the then opposition (i.e. what are now the government parties) were against the introduction, promising their voters to cancel the system.

There were diverse arguments against the EET system. However, there was usually talk of a disproportionate burden on businesses as they had to buy new equipment that could be connected to the Internet unless they already used some document printing technology.¹

The opponents were also concerned that the data could be misused by competitors and there was talk of the possible eradication of entrepreneurs (a significant loss of entrepreneurs was expected). Therefore, this argument was opposed, for example, by Boháč (2018), who argued that

¹ Alternatively, they used outdated devices.

conducting business should not be protected at the cost of reduced tax revenue, as taxes are a contribution to the running of public affairs. At the same time, the Financial Administration of the Czech Republic (2022a) was arguing that some form of sales records – whether online or offline – had been in operation in 17 EU countries.

Eventually, opponents at least managed to delay the introduction of the obligation for specific groups of entrepreneurs: For the purposes of electronic records of sales, four groups of entrepreneurs had been classified based on the date when they were to start registration. Group 1 (to start from 1 December 2016) included providers of accommodation and catering services. Group 1 (to start on 1 March 2017) included entrepreneurs in retail and wholesale trade. Groups 3 and 4, however, never eventually started recording. First, this obligation was suspended by the Constitutional Court of the Czech Republic (2017) and from May 2020 onward, the obligation was suspended due to the COVID-19 pandemic. As can be seen from this

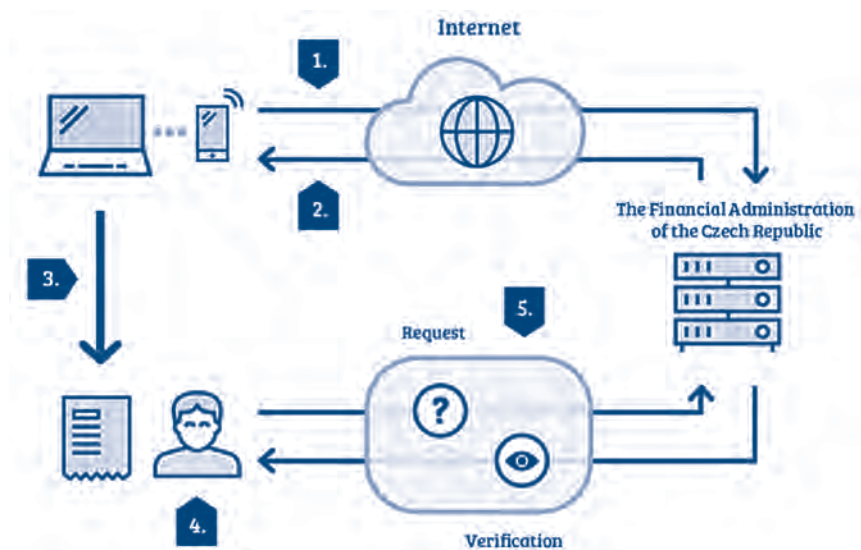
brief recap, the electronic records of sales faced many obstacles, so it is perhaps not surprising that the government composed of former opposition parties cancelled the system on 1 January 2023.

Our paper, therefore, aims at evaluating the electronic records of sales system in the Czech Republic in terms of effectiveness as well as predicting the possible effects of its discontinuation.

2. Methodology

As a basis for evaluating the effectiveness, we used publications that we have contributed to in recent years. Therefore, we used our scientific articles and a paper from the *Trends in Business* conference as sources of analysis (Semerád et. al., 2022). We have been following this instrument since its introduction and have used critical analysis to highlight the benefits and negatives of electronic records of sales. Subsequently, we observed how the business culture changed after May 2020, when the obligation to record cash sales was sus-

Figure 1 » The electronic records of sales



Source: Financial Administration of the Czech Republic (2016–2022)

pended. As an example, we used the accommodation sector to estimate future developments in entrepreneurial behavior.

We also monitored the development of the number of VAT payers from January 2021 to January 2023. The data were sourced from the Financial Administration of the Czech Republic (2023) and its statistics involving the VAT payer register. The data were available as of 10 February 2023 and included, among other things, the development of the number of VAT payers as of 31 January 2023. The data can be used to predict how the tax administrator's ability to inspect taxpayers is going to change. The first data on the development are obvious when looking at the month-on-month comparisons made from November 2022 to January 2023.

3. Results

According to critics, the electronic records of sales system was assumed to cause a significant decline in the number of entrepreneurs. However, this estimation was not confirmed. As Marethová and Snopková (2018) and Pisková and Semerád (2022) report, not only has there been no decline in the number of entrepreneurs, but there has been a year-on-year increase, at least in the accommodation services sector. In addition, the authors mentioned above are consistent in that the sales recorded have increased – which led to an increase in the number of VAT payers. This fact shows that the electronic records of sales system has had a significant contribution to the cultivation of the market environment.

We believe (Semerád et al, 2022) that the system had one major shortcoming, i.e., the lack of communication of the benefits to the public. Moreover, in our opinion, the government of Andrej Babiš has failed to make use of the potential offered by the EET system to the maximum extent. This was particularly evident during the COVID-19 pandemic when the government was not very efficient in distributing aid to disadvantaged entrepre-

neurs. If the government used the information it obtained from entrepreneurs from tax returns filed in periods before 2020, it would be able to support entrepreneurs effectively and in a targeted manner with relatively minimal paperwork issues and without unnecessary delays. Such aid could be granted in particular based on comparing previous and current sales.

Instead, the government decided to suspend the operation of the electronic records of sales system. This move was not a happy one, as it only proved that there was no real improvement in the entrepreneurial environment. Semerád et al. (2021), for example, point to this when they focused on fraud in accommodation services in mountain resorts. The point was that these accommodation facilities should have been closed and their operators should have been compensated for this. However, because there was a huge demand from guests who wanted to go skiing in the mountains, the instrument of long-term accommodation was abused as it was not forbidden, unlike short-term accommodation, which was why newspapers reported about people literally moving to the mountains. In addition, as Hejtmánek (2021) put it, the accommodation contracts were torn up by the hosts after the stay. It can be assumed that they did the same in the case of cash receipts. This way multiple frauds were committed. First, the inter-district travel ban measure was circumvented; second, the revenue from the accommodation provided was not declared and, in addition, there was undue use of state aid. If such frauds occurred in the past, we fear that they are going to continue to occur after the complete discontinuation of the EET system as well. These concerns are mainly driven by a change in behavior on the part of entrepreneurs. Many of them have completely stopped accepting payment cards and only accept sales in cash. While one can of course agree that this is due to their rational efforts to save costs – mainly bank transaction fees that entrepreneurs pay to banks, if we look at the bigger picture, the volume of card payments is growing year-on-year. Paying in cash

in facilities that previously accepted cards may lead to the assumption that a grey zone is being artificially formed with a negative impact on the state budget and more.

As we also see based on our observation within a variety of businesses, such as those providing catering services, entrepreneurs do not issue due tax receipts; instead, they settle the charges with customers only based on making marks on blank and unmarked pieces of paper indicating the quantity of food and beverages consumed. Here, too, it may be disputed whether any actual declaration of the revenue received is going to happen. However, we are very sceptical that all sales will be declared.

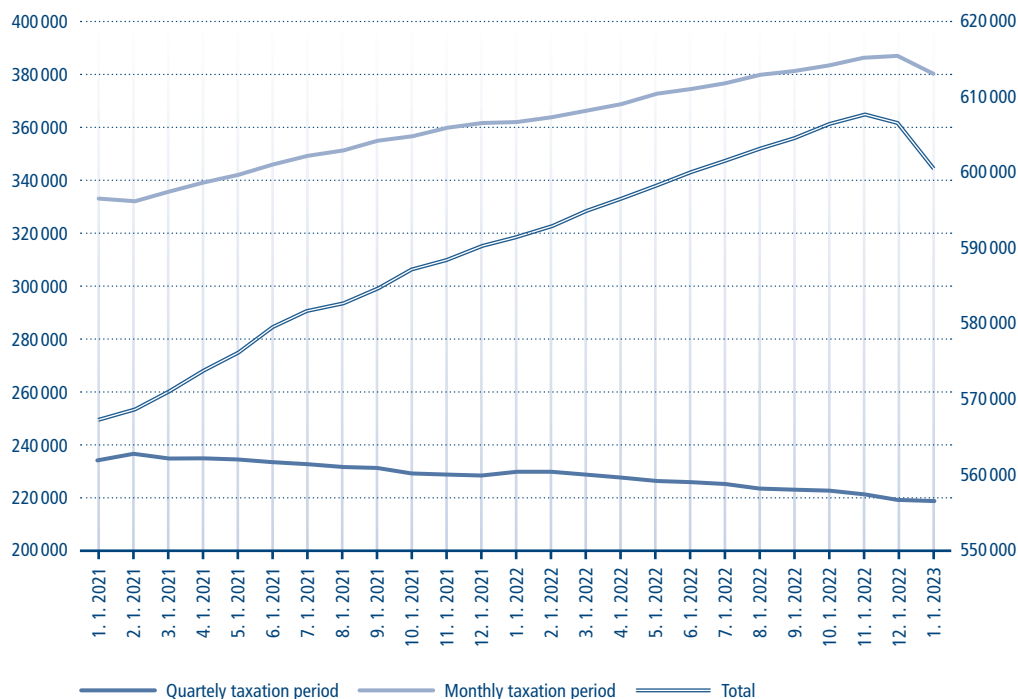
It is obvious that the government of Petr Fiala is proceeding very liberally and is gradually losing its ability to supervise entrepreneurs since it is not

only about any EET system, but also the conditions for VAT registration have changed. The initial limit of 1 million CZK, which was previously expected to be reduced to 750,000 CZK (Draft Amendment to the Value Added Tax Act in 2014 – Parliamentary Print 291, Senate Print 380), was increased to 2 million CZK from 1 January 2023 onwards.

The doubling of the limit for compulsory VAT registration has already brought a month-on-month decline (November 2022–January 2023), according to the first data from the Financial Administration of the Czech Republic. However, the decrease in the number of taxpayers in absolute terms (see Figure 2) was not dramatic, i.e. the number of taxpayers decreased by 6,737 (from 607,335 to 600,598), i.e. by roughly 2.01%.

When evaluating our data, we are aware of the

Figure 2 » Development of the number of VAT payers in January 2021–January 2023



Source: Financial Administration of the Czech Republic (2023); processed by the authors; Numbers of VAT payers are on the left axis. Total number of VAT payers is on the right axis.

bias in the case of cancellation of registration. According to the transitional provision, VAT payers who did not exceed the limit of 2 million CZK had only five calendar days (from 2 December to 8 December 2022) to cancel their registration (Financial Administration of the Czech Republic, 2022b). As a result, the number of registrations will continue to decrease. However, this change is going to show gradually with a delay.

These entrepreneurs will then also no longer be obliged to send control statements, which is another tool used to suppress VAT fraud (for more information on its functioning, see e.g. Semerád and Bartůňková, 2016).

This way the government is voluntarily losing important tools that help both the digitisation of the state agenda and the real-time supervision of entrepreneurs. We believe that in the long run, this may lead to incorrect reporting – in other words, under-reporting – of sales and incorrect calculation of tax liabilities. Some of the current opposition politicians (e.g. Czech TV, 2022) speak of a dark period and a return to the 1990s when massive fraud took place. We resist such a statement because we still believe in the good of the entrepreneurial environment.

Regardless of these facts, we believe that the government should have kept the obligation to record sales at least voluntarily. The information sourced this way – available to tax administrators – could be used in a pro-client approach towards taxpayers and VAT payers (Uminský, 2014).

At the same time, the aim of digitizing public administration could be met as one of the government's objectives. From the point of view of a sound financial manager, we also assess negatively the unnecessary costs incurred both on the side of taxpayers and on the side of the state.

It is clear that the cost of reintroducing the EET² system, should it happen, will be disproportionately high. Once cancelled, a project is also very difficult to restart in terms of investment and financ-

ing, as the government's decision has sunk the costs incurred by numerous sectors in the national economy, including the expense of building the EET system on the part of the state. Convincing the public of the benefits of such measures will be a much more challenging task, however.

In our opinion, the cancellation of the EET instrument is an ill-conceived solution that means unleashing the functioning of the grey economy. For the market economies of the neighboring countries where it was introduced, governments do not consider any cancellation of the EET system. We can assume that the neighboring countries are well aware of the benefits of the data collected – whether from the EET or other systems – for the market to function well. Businesses in the neighboring countries have in principle become accustomed to the recording of sales and have no difficulty in complying with this measure.

At this point, it should be emphasized that the European Commission (2022) has come up with an initiative in the field of VAT. Termed 'VAT in the digital age', this action plan aims to regulate VAT reporting and e-invoicing obligations, the application of VAT from the perspective of the platform economy, and uniform VAT registration in the EU as early as 2022. It also contains electronic invoicing of the transactions made, which should be communicated online by the VAT payer to the tax administrator.

This will put entrepreneurs in a position where they will once again be obliged to electronically communicate complete information about their transactions to tax authorities. The cancellation of the EET system is thus an obvious step backwards that may not last long. However, it means gambling with the functioning of the entrepreneurial environment in the form of very high costs, as well as with the willingness to disclose information to the state due to businesses' fears of subsequent cancellation of the EET tool.

² If the opposition parties are even going to consider it.

4. Conclusion

The electronic records of sales ('EET') system was introduced in the Czech Republic with effect from 1 December 2016. The instrument was designed to ensure that businesses duly declared their sales received in cash. It was based on the principle that at the moment of payment, the entrepreneur recorded the sale on the tax administrator's portal and subsequently received unique codes which were printed on the cash receipt; all this was a matter of a few seconds.

Although this duty (except for the necessity to purchase suitable technical equipment) did not burden entrepreneurs, it had its opponents even among the opposition politicians of the time. They promised to cancel the system if they become members of the government. This happened with effect from 1 January 2023.

In our paper, we aimed to evaluate the electronic records of sales system in the Czech Republic in terms of effectiveness and also to predict the possible effects of its discontinuation. Since we have been following electronic record keeping for a long time, we have also used our previous articles and

conference papers to determine the effectiveness of the instrument. Based on the data sourced, it needs to be concluded that the EET system did not bring negative effects in the form of a significant reduction in the number of entrepreneurs. The opposite was true, at least for accommodation services: there was a gradual increase. At the same time, there was an increase in recorded sales, which led to an increase in the number of VAT payers.

However, Petr Fiala's government uncompromisingly cancelled the system. It should be noted, in its defense (and for better understanding), that the electronic records of sales system had been discontinued as of May 2020, which we consider to be a wrong decision since it has been shown that the business environment has not improved and that entrepreneurs still tend to circumvent legal obligations. We gave a specific example of accommodation services during the COVID-19 pandemic period when reports began to emerge that operators were running their facilities despite the ban and that they were tearing up their contracts with tenants after the end of the stay.

We are also currently witnessing that many businesses have stopped accepting payment cards

First, the inter-district travel ban measure was circumvented; second, the revenue from the accommodation provided was not declared and, in addition, there was undue use of state aid. If such frauds occurred in the past, we fear that they are going to continue to occur after the complete discontinuation of the EET system as well. These concerns are mainly driven by a change in behavior on the part of entrepreneurs. Many of them have completely stopped accepting payment cards and only accept sales in cash.

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and issuing proper tax receipts. Although we still believe in the honesty of Czech entrepreneurs, there is at least room for a grey economy.

The state has simply lost the ability to supervise entrepreneurs. The increase in the limit for VAT registration to 2 million from 1 January 2023 has reduced (and will reduce even further in the future) the number of taxpayers who are no longer obliged to transmit control statements. As a result, the state has no choice but to trust that entrepreneurs will properly fulfil their tax obligations.

The paradox is that the European Commission is also calling on its Member States to comply with duties using online tools. In 2022, it came up with the concept of 'VAT in the digital age'. In the future, entrepreneurs will have to continue to communicate with their tax administrators online.

Although any of the future governments may reintroduce the EET system, we believe that this would be a very difficult task. It would be difficult to convince the public that this measure makes sense even though it had once been repealed. At the same time, we are aware of the huge investment costs of this project that has failed very recently.

Thus, it can be assumed that in case of reintroduction of the EET tool, the state and entrepreneurs will have to incur (unnecessary) extra costs. We believe that this lack of focus in decision-making on key issues of the state and the numerous changes to laws may pose a greater problem and uncertainty for entrepreneurs in the long term when planning their business activities compared with the sales records system and online sales reporting toward the tax authorities.

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Anticipated effects of the cancellation of the electronic records of sales system in the Czech Republic

ABSTRACT

The electronic records of sales (EET) system was a measure that was used in the Czech Republic in 2016–2022 to record sales received in cash. Although this measure did not restrict entrepreneurs in any fundamental way, it had its opponents even among the opposition politicians of the time. They promised to cancel the system if they become members of the government. This happened with effect from 1 January 2023. In our paper, we aimed to evaluate the electronic records of sales system in the Czech Republic in terms of effectiveness and also to predict the possible effects of its discontinuation since as early as during the suspension of the EET system, i.e. May 2020–December 2022, it became clear that the business environment has not improved and that entrepreneurs tend to circumvent legal measures. This was evidenced by the fact that some of them have stopped accepting payment cards and stopped issuing proper tax receipts. Although we still believe in the honesty of Czech entrepreneurs, there is at least room for a grey economy. The state has simply lost the ability to supervise entrepreneurs. The paradox is that the European Commission is also calling on its Member States to comply with duties using online tools. In 2022, it came up with the concept of “VAT in the digital age”. In the future, entrepreneurs will have to continue to communicate with their tax administrators online. The state is gradually losing another option – control statements – through increasing the VAT registration limit from 1 January 2023 onwards. Our results showed a reduction in the number of VAT payers between November 2022 and January 2023.



→ **KEYWORDS**

Electronic records of sales; EET; entrepreneurial activity; tax administration

JEL CLASSIFICATION

H20; O16; O21



Startups and Global Startup Ecosystems

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* 1. Introduction

We can see that startups became a very popular form of entrepreneurship in last years. It is so because they do not have a strict business structure and create a very creative environment for their employees. Even though most known startups are unicorns, which are big and worldwide known startups, there are also other types and forms of startups, which affect the economy of countries on the local level. Every startup as a business structure is well known for its innovative way of thinking about problems that are solved. Even though we encounter the word startup every day not everybody knows the meaning of it. For a better understanding of this problem, we will not just focus on the definition of a startup, but we will also get a closer look at the startup ecosystem to better understand the meaning and position of startups in the economy.

2. Startups as an important part of the economy

To better understand the meaning of startup, we need to know how experts define the startup. Most experts define a startup as a young company with a business model that supports innovation, they

are also lean in their operations and focus on rapid growth in the very beginning. In general, startups tend to have few employees and fast growth potential. They provide products with widespread appeal that either doesn't exist or solve a problem better than the currently available options (TRUiC Team, 2023). — Other experts, on which relays Holtschke (2022) define startups as enterprises, which did not know (1) what is its product, (2) who is its customer and (3) how it comes to money (Dave McClure — the founder of global Accelerator 500 Startups). Eric Ries, the author of the “Lean Startup” book on the other side sees the startup as a human institution that has been created to offer a product or service under extremely uncertain conditions. However, the most frequently cited definition is that of the forefather of the startup movement, Steve Blank, who defines a startup as a temporary organization that seeks a repeatable and scalable business model. Paul Graham, on the other hand, defines startups as “engines of growth”, since they were created for rapid growth.

Another definition of this term says that “startup” refers to a young company that has often been newly founded with little initial capital. It is in the initial or start-up phase and has not yet established itself in the market. The goal of the startup is there-



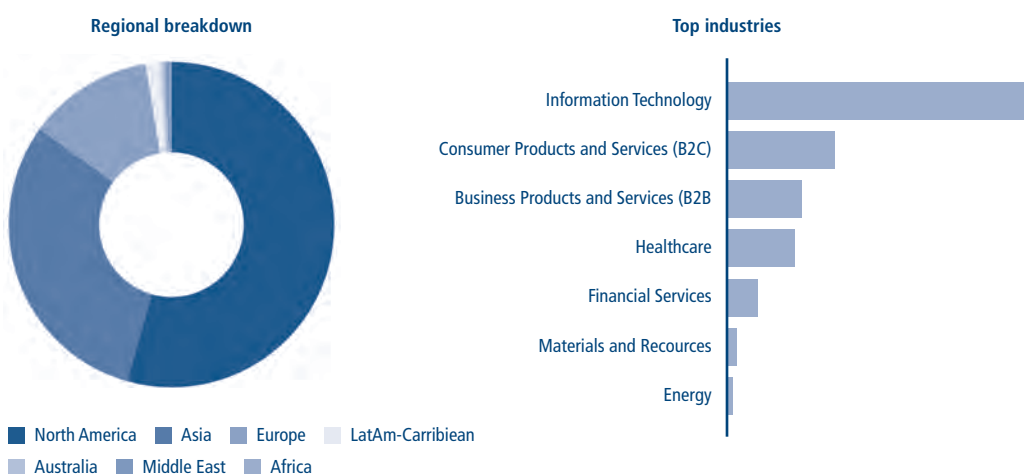
fore to grow as quickly as possible. For founders, it's about differentiating yourself from the competition with an innovative or unusual business idea. This makes the startup an interesting employer, especially for young job seekers. It is precisely the innovative business model that distinguishes a startup from another newly founded company. Therefore, the newly opened bakery is not a startup because the business model is already established and well-known. Thanks to this, startups expand and modernize the market and thus create new jobs (Einstieg, 2022).

According to FranchisePortal (2020), startups are young businesses that are based on an innovative business model with high growth potential. Most of them were created only a few months or years ago or are still in the initial phase. They are initially financed with seed capital and then seek additional sources of external capital for expansion, such as venture capital, fundraising, or business angels. They often enter emerging markets or create entirely new markets by implementing and optimizing scalable business models. As soon as their business models are mature and established,

such companies are no longer startups, but in many cases, they try to maintain the typical "startup spirit" after establishing themselves in the market. They rely on their original strengths such as flat hierarchy, high dynamism, creative freedom, flexible office solutions, etc. If all this is not enough, they establish or separate individual divisions as startups and support them through incubators or integrate acquired startups into the existing organization.

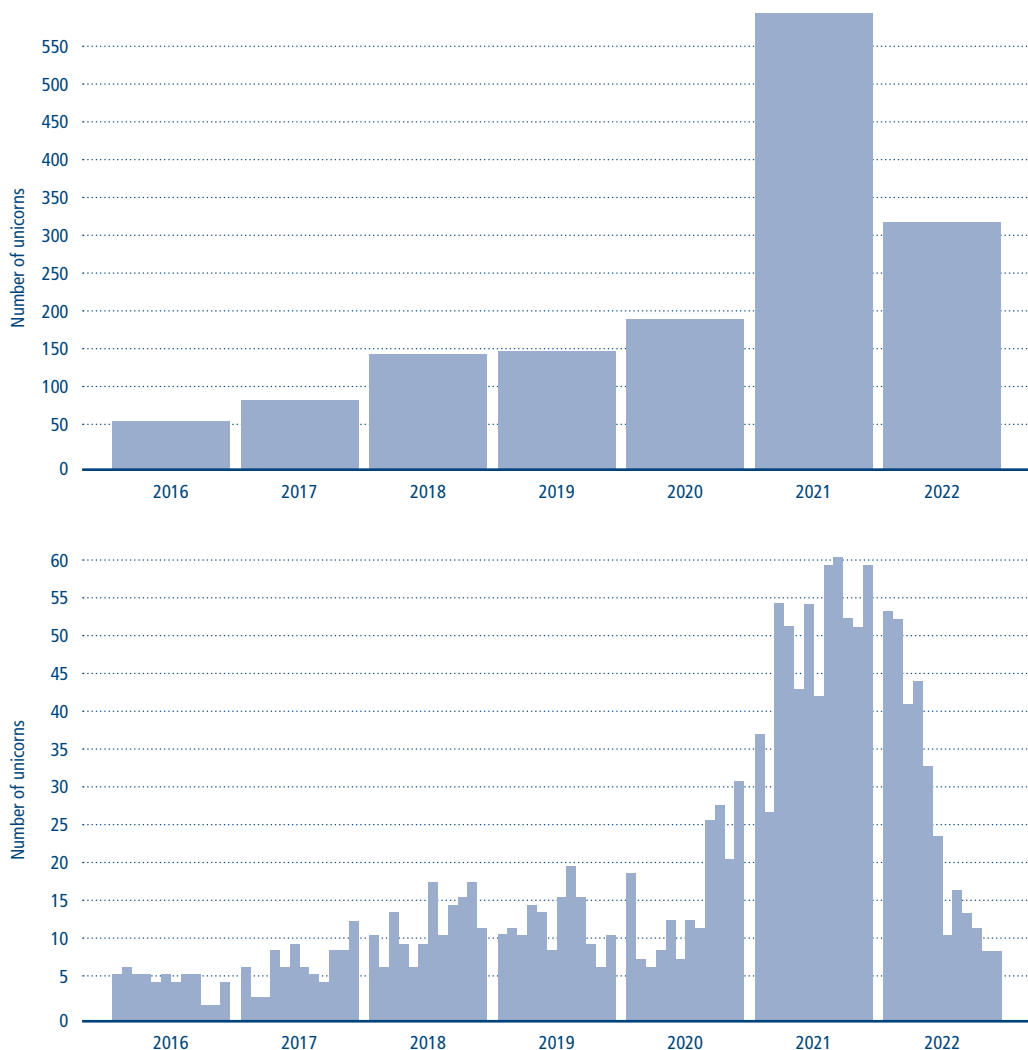
The most known type of startup is "Unicorn" which are globally known startups with a value of more than 1 billion USD. Based on Rubio (2023), there are 1 245 active unicorns with a cumulative valuation of 3,9 trillion USD. In Figure 1, we can see the allocation of global unicorns based on regions and the field of their activity. When we look at the regional breakdown, we can see that the biggest part of the unicorns is located in North America (846 total unicorns). In second place is the Asia region with 476 unicorns, and in third place is Europe with 194 unicorns. Other regions such as LatAm-Caribbean (23), Australia (7), Middle East (7), and Africa (3) are the home of the rest of the

Figure 1 » Regional and Industrial Allocation of Unicorn Startups



Source: Rubio (2023)

Figure 2 » Annually and a Monthly Overview of Global Unicorn Creation



Source: Rubio (2023)

unicorns. But when we look closer to the country level, we can say that the most active unicorns, of any country with 667 companies, has the US (or 54% of the global total as of Nov. 1, 2022). Chinese unicorns are the second-most common at 211 companies, followed by India (63 unicorns), the UK (36 unicorns), and Israel (29 unicorns) (Rubio,

2023). On the same figure, we can also see, that the top industries where unicorns are active are Information technology (789 unicorns), Consumer Products and Services (B2C) (277 unicorns), B2B products and services (192 unicorns), Healthcare (179), Financial Services (80), Materials and Resources (22) and Energy (17 unicorns).



As we can see (figure 2) there is permanent growth of new global startups over years from 2016 (62) to 2021 (591). With a closer look, we can see, that year with the most created unicorns was the year 2021 (591 new unicorns with a total unicorn value of 1,5 trillion USD). In 2022, we can see a decrease in the creation of new startups there were only 319 new unicorns with a total value of 588,6 billion USD, compared to 2021. Every month, the best month for the birth of new unicorns in 2022 were January (53), February (52), and April (44). The worst months were November and December both with 9 new unicorns, and July – with 11 new unicorns.

3. Startup ecosystems in the world

When we speak about startups we need to speak also about the startup ecosystem which is an important part of the supporting system for startups. The startup ecosystem is an interdependent system of communities, organizations, resources, and service providers that support the growth of startups in a particular geographical area. It is a closed system in which every element is connected and mutually dependent (Pahwa, 2022). We can say

that the startup ecosystem is a complex and dynamic network of people, organizations, ideas, and resources. These elements work together to create a physical or virtual environment suitable for launching and growing new startups as we can see in figure 3. The benefits of startup ecosystems are multifold and include: 1) Benefits for the local community and economy, 2) Startup benefits and 3) Worker benefits. When these ecosystems are carefully planned and created, their impact potential is immense and the most well-known example of a business ecosystem is the Silicon Valley ecosystem (Emerging Humanity, 2023).

Based on Sanesi (2021) for startups, it is important to be a part of an ecosystem because startup ecosystems are very important frameworks and growth systems to increase engagement with the startup community and the global network. 3 reasons why startup ecosystems provide extremely important ecosystem functions and ecosystem processes to enhance corporate venturing activities are:

1. speed – being part of a startup ecosystem, dramatically shortcuts the amount of time startups are going to spend solving their business problems. Rather than building in-house their capa-

Figure 3 » Startup Ecosystem



Source: <https://emerginghumanity.com> (2023)

As soon as their business models are mature and established, such companies are no longer startups, but in many cases, they try to maintain the typical “startup spirit” after establishing themselves in the market. They rely on their original strengths such as flat hierarchy, high dynamism, creative freedom, flexible office solutions, etc. If all this is not enough, they establish or separate individual divisions as startups and support them through incubators or integrate acquired startups into the existing organization.

Nowadays, more startups have easy access to business acceleration services, either through specialized programs such as Challenger, HealthCare Lab, or Elevator Lab, while universities in Bratislava, Košice, and Žilina have also increased their efforts to provide incubation services of good quality and sustainability for startups in the early stages of development.

bilities, they could partner, invest, or acquire a venture, fast-tracking access to innovative solutions and capabilities.

2. **learnings** — by being part of a startup ecosystem, startups can quickly learn successes and failures from other ecosystem participants. Adopting an open innovation approach could speed up their product and service development or identify the right service providers to partner with and
3. **connectedness and community** — the interaction between individuals in the ecosystems creates a supportive community (entrepreneurs groups, meetups, etc.) allowing knowledge sharing, networking, and a flow of talents, resources, and ideas (Sanesi, 2021).

Startup biomes such as Silicon Valley, New York, London, and the MENA (Middle East/North Africa) region are all thriving examples of entrepreneurial communities. The value of the world's startup economy is rapidly approaching \$3 Trillion. There are over 270 startup ecosystems globally in 100 different countries and that number is on the uptick (Hendricks, 2021).

On the question “Why is it important to rank and have a good startup ecosystem?” StartupBlink CEO, Eli David, affirms that good startup ecosys-

tems are fundamental. They create jobs, boost the economy, increase tax revenue, improve quality of life and urban innovation, and attract and retain talent. As an entrepreneur, location will greatly influence the chances your startup will succeed. Knowing how well the ecosystem performs is also important. Corporations use these rankings to make decisions about future expansion, universities and consulting agencies use them for research, and governments and local development organizations use them to gauge how well their programs are paying off. The efforts of governments, municipalities and development organizations make a real difference (StartupBlink, 2021).

As we can see and also the Global Startups Ecosystem Ranking by StartUp Genome (2022) shows, the best location for a startup ecosystem is in a location with enough activity, a wide variety of industries, and expertise in order to be effective. This would preferably be in a bigger city instead of in a small town. Different cities offer different types of industries. So it is important to choose a city that supports a specific ecosystem field but at the same time, the ecosystem should be open to collaborating with other cities. The most successful startup ecosystems strengthen and support one another over borders and continents.



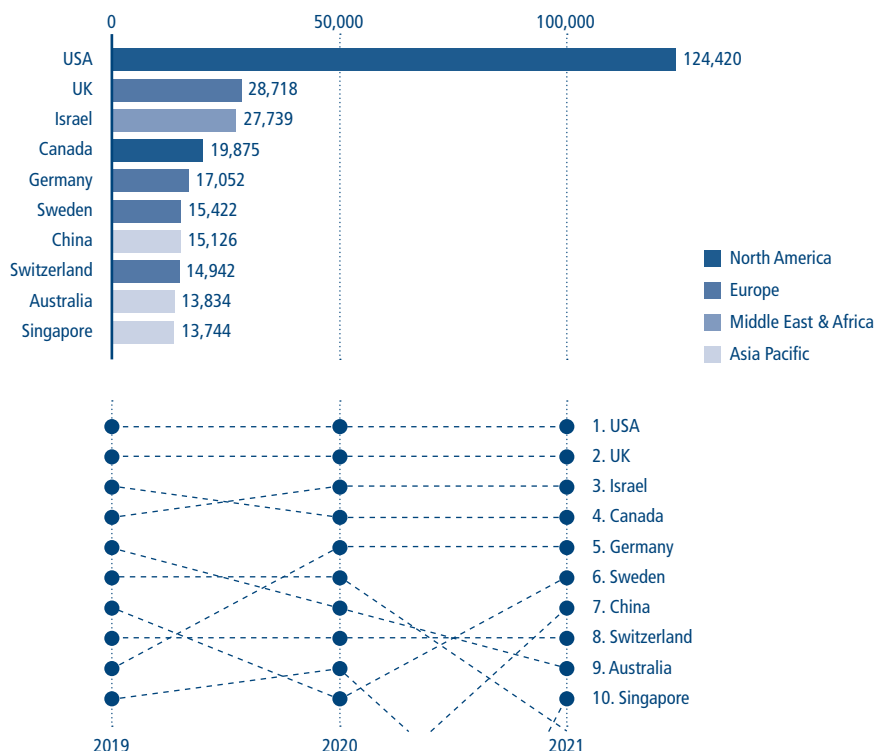
DU Desk (2021) says that if a country's startup ecosystem is growing, many talented people would choose to invest in their country rather than look out for better opportunities. It can also help retain a highly-skilled workforce within a country. They also say that startup ecosystems can also have a long-standing impact on the country's economy. One of them is obviously job creation. There is no doubt that startups thriving in a successful ecosystem accelerate job creation. This in turn helps contain brain drain. And lastly, all these factors help improve the economy of the country and do a great service towards the image-building of a particular country. This can also help attract a lot of foreign investment in the long haul.

Based on the Startup Ecosystem Index Report

2021 by StartupBlink (2021) the top startup ecosystem countries globally in 2021 were on the 1st place the USA, followed by the UK (2nd), Israel (3rd), Canada (4th), and Germany the 5th place. In the next five places, there were also Sweden, China, Switzerland, Australia, and Singapore. As we can also see (figure 4) the US and the UK keep their trend during the years 2019, 2020, and 2021. The next three countries keep their place in 2020 and 2021, but Israel and Canada switched their places during the year 2019 and Germany switched from 8th to 5th place during 2019.

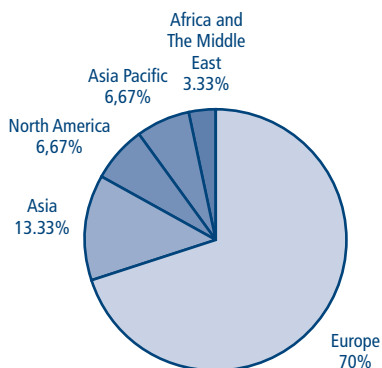
From the Global Startup Ecosystem Ranking 2022 made by StartUp Genome (2022) we can say, that the same five ecosystems remain at the top of the ranking as in 2020 and 2021, but Beijing has

Figure 4 » Top Startup Ecosystem Countries Globally — Total Ecosystems Scores with Trends in the Top 10 Countries



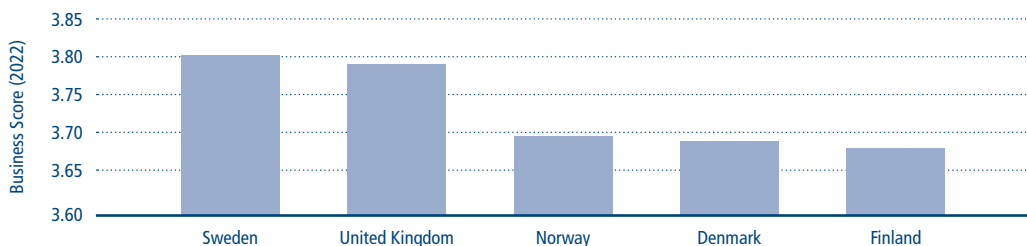
Source: StartupBlink (2021)

Figure 5 » Percentage of Startup Business-Friendly Countries in each Region



Source: Enginsoy (2023)

Figure 6 » The Top 5 Most Startup Business-Friendly Countries in 2022



Source: Enginsoy (2023)

dropped one place, with Boston taking its former place at the 4th place. Silicon Valley is 1st, followed by New York City and London tied for 2nd place, Boston at 4th, and Beijing at 5th place. In aggregate, the top five ecosystems now account for an Ecosystem Value of \$3.8 trillion. The remaining 25 of the top 30 ecosystems, in aggregate, are worth \$2.3 trillion in Ecosystem Value. Silicon Valley is undoubtedly still the world's leading ecosystem, but its share of early-stage investment by dollar amount has declined from 25% in 2012 to 13% in 2021. As early-stage funding is a leading indicator of the future of tech, this trend suggests that the growth of tech in the rest of the world will continue to be faster than in Silicon Valley.

In addition to evaluating startup ecosystems

from the point of view of access to capital, support of startups with a suitable network of support organizations, or various support programs, we can also evaluate startup ecosystems from the point of view of the Startup Business-Friendliness which considers parameters such as Diversity Index, Internet Speed, Internet Freedom, R&D Investment, Availability of various technological services, Number of Patents per capita, Level of English proficiency, Top Universities per location, Internet Users, Regulatory Quality, Innovation Index and Ease of Doing Business Index. From this view, we can say, that Europe takes the Lead and the Top 30 Locations for startup-friendliness are Dominated by European Countries. Among the top 30 startup-friendly countries, the European region boasts 21



locations, followed by 5 Asian-Pacific, 2 North American, and 2 Middle Eastern & African countries (Enginsoy, 2023).

The Top 5 Most Startup Business-Friendly Countries in 2022 were Sweden, the United Kingdom, Norway, Denmark, and Finland. They are the top locations in terms of startup-friendliness. From 2021 to 2022, Luxembourg, Singapore, and Latvia showed a noticeable increase in their Business Score rankings. Luxembourg increased its position from 41 to 30, and Singapore from 28 to 17. Latvia also jumped from 36 to 27 (Enginsoy, 2023).

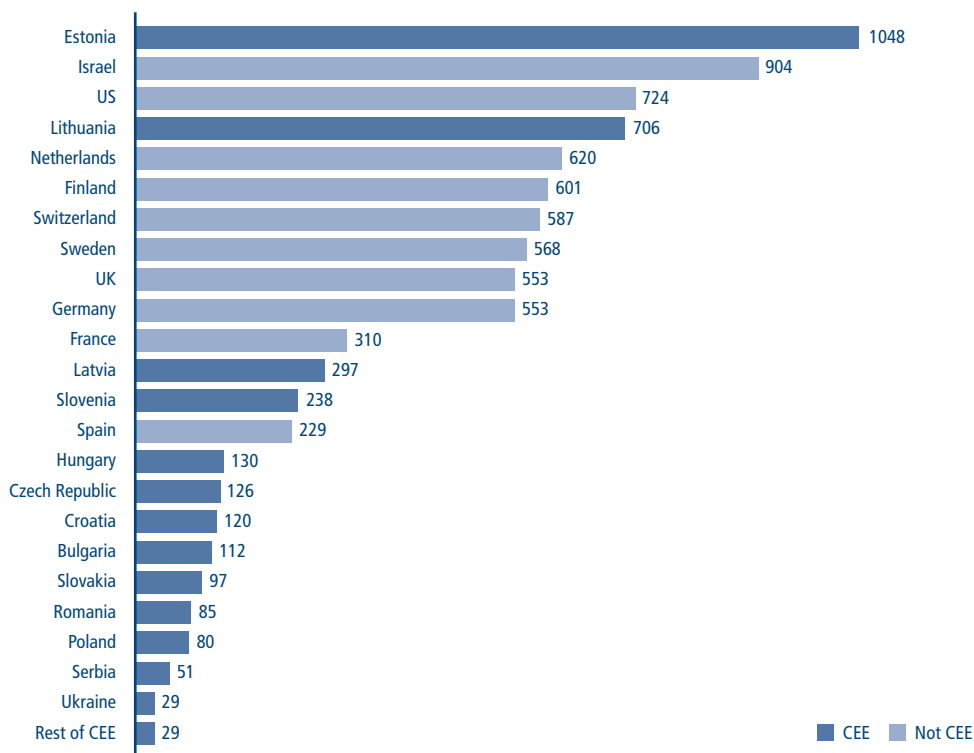
When we look at the ranking of the top 100 startup business-friendly countries in 2022 we can see, that Czechia is in the 24th position with a business score of 3.145. Compared to 2021 Czechia worsened her position by three points. But from

the global ranking of ecosystems, we can see, that Czechia is in the 32nd position of the global ranking and the change compared to the previous year was a betterment by 8 points. On the other hand, Slovakia was from the business-friendliness score with 1.407 business score in 2022 in the 59th position (change from 2021 -3 points). From the global startup ranking is Slovakia's position the same (59) and there came no change compared to the previous year.

4. Startups and startup ecosystem in Slovakia

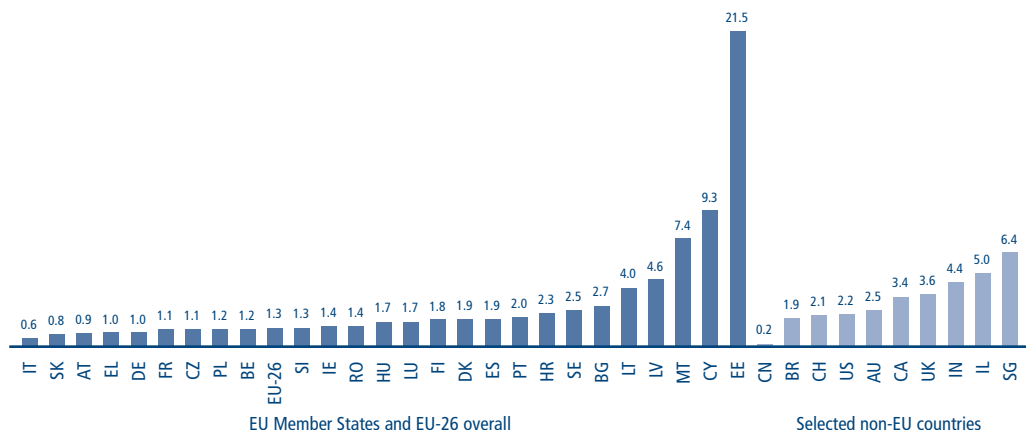
As we have seen in the previous part, Slovakia is situated, from the view of business-friendliness score in the 59th position of the top 100 startup

Figure 7 » Startups per 1 million inhabitants in EU-27



Source: Dealroom (2021)

Figure 8 » Startups per 1 Billion EURO GDP in 2020 (EU-26 and selected non-EU countries)



Source: European Commission (2023)

business-friendly countries. When we look at other startup statistics we can see, that in Slovakia, there are only 97 startups per 1 million inhabitants, which is compared to Estonia, the top of EU-27 countries, with 9.25% of its performance. As we can also see Slovakia is at the bottom of the monitored countries, while only Romania (85 startups/1 million population) and Poland (80 startups/1 million population) are the worse of the EU-27 countries. The worse result within Europe is achieved only by non-EU-27 countries, namely Serbia and Ukraine, respectively. the rest of the non-member countries of Central and Eastern Europe, such as Moldova, Montenegro, Albania, Macedonia, or Belarus with an average of 29 startups per 1 million inhabitants. In terms of the position in Europe in this area, the mentioned facts, unfortunately, rank Slovakia among the worst countries of the EU-27 and the whole of Europe.

If we look at data from the Crunchbase database (Filus, 2022), a total of 16,253 startups were active in the EU-26 (EU-27 without the Netherlands) as of December 31, 2021. These EU startups accounted for 12.5% of the global number of startups. Germany had the largest number of SME startups within the EU-26 (3,353 startups or 20.6% of all SME startups within the EU-26). Another

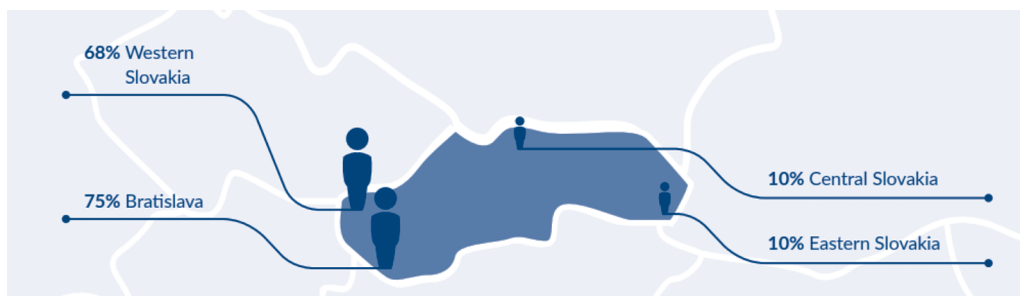
four Member States (France, Spain, Sweden, and Italy) accounted for more than 5% of the total number of start-ups in the EU-26. As for Slovakia, there were 74 startups, which represents a 0.5% share of all startups in the EU-26. The Annual Report on the State of SMEs in the EU 2021/2022 points out that the number of startups per 1 billion EURO of GDP in 2020 (in current prices) across Member States is between 0.6 and 2.0 startup SMEs per 1 billion EURO of GDP, while Slovakia's point of view, it is 0.8 startups, as we can also see in Figure 8, while only Italy was worse with its 0.6 startups per 1 billion EURO of GDP.

From these data, we can see, that Slovakia as a startup ecosystem is ranked rather than countries with no so good startup performance and startup friendliness. In the year 2016, based on the SAPIE report were Slovak startup founders young and highly educated. 83% of startup founders in 2016 were aged 20–39 and 67% of them had a university degree. While the majority of Slovak startups chose Slovakia as their country of registration (89%), the most popular place for registration is western Slovakia (68%). While most of these startups are allocated in Bratislava (Sapie, 2016).

However, if we look at the document prepared by CIVITTA, we can conclude that the startup eco-



Figure 9 » Startup allocation within the Slovak ecosystem in 2016



Source: Sapie (2016)

system in Slovakia currently includes various forms of support such as business incubators, acceleration programs, or specialized consultancy with the aim of helping innovative companies capture and commercialize their ideas and talent. Nowadays, more startups have easy access to business acceleration services, either through specialized programs such as Challenger, HealthCare Lab, or Elevator Lab, while universities in Bratislava, Košice, and Žilina have also increased their efforts to provide incubation services of good quality and sustainability for startups in the early stages of development. In addition, co-working spaces such as HubHub, which is sought after by startups and freelancers. Despite the fact that a large part of the supporting infrastructure within the Slovak ecosystem is currently allocated in the capital, other cities, especially Košice, are quickly catching up with their initiatives such as IT Valley, Technikom, Eastcubator, or Medipark Košice (Civitta, 2020). In addition, in its report, CIVITTA divides the Slovak startup ecosystem into five main areas, which are: Healthcare (developing between two cities: Žilina and Martin), Fintech (headquartered in Bratislava), Mobility (located in the western part and formed cities of Trnava, Nitra, Bratislava), Climate resistance (has its roots in Bratislava) and Digital and creative area (founded by a community of creatives in Košice). On the other hand, there are also in the Slovakia region some funding companies

which are willing to provide venture capital to startups during their seed phase as well as during further development, which is very important, because as Mura, Buleca (2012) say: “Each enterprise needs own financial sources for its activity. But many companies by the medium of self-financing cannot assure the trouble-free running of the business and they are using various forms of external resources of settlement.” And for startups are such resources venture capital and angel funds.

5. Conclusions

“Innovations have become a driving force for the future opportunities of the companies.” (Urbaníková et al., 2020) and innovation is also the main essence of startups. As we can see startups became a very important part of the business environment. Their benefits are primarily in the fact that they are young and dynamically growing businesses with innovative ideas that they are trying to further develop and then bring to life despite low capital. The advantage of startups also lies in the fact that they support creativity in the team and at the same time take into account the uniqueness of each team member, as well as in the fact that they do not try to copy generally established concepts and models, but look for their own path and are not afraid of mistakes, because they take it as part of development, thanks to which they move forward. The

disadvantage of startups is their often high mortality rate, as many of them often become insolvent due to lack of capital or inability to sell the developer product, which is liquidation for them. However, in order to minimize these impacts, it is necessary to create suitable startup ecosystems that will help budding startups overcome various obstacles that could discourage them from further development. From a global point of view, we can see that the best startup ecosystems are located primarily in large cities, even world metropolises, which integrate both the scientific, business and financial spheres, which cooperate with each other in order to support the development of innovative ideas and thus enable startups to subsequent integration into the country's economy. And although in Slovakia we are far from the countries that belong to the top startup ecosystems, we can already slowly observe the gradual improvement of local

startup ecosystems. At the same time, however, as stated by Kučera, Nemec (2021), many areas of economic activity would cease to function in the current crisis period without support from public funds, and that is why, especially in today's era of state support for the business sector due to the energy crisis, it is necessary to take care to ensure economical, efficient, expedient but especially the effective use of these funds (Kučera, Nemec, 2022), which can also help startups overcome problems caused by increased energy costs.

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Startups and global startup ecosystems

ABSTRACT

Startups are a very important part of every economy. In the last years, startups gain on importance because of their innovative way of solving problems and not-so-strict business structure. When we speak about startups we need to know, that they are very jung enterprises with quick growth potential and they are not a permanent stay of entrepreneurship. For maintaining a good innovation performance in a country it is important to support such innovative firms and individuals and to create a supportive environment so these creatives stay in their home country and do not look for better opportunities abroad, where financial and law opportunities are much more profitable. Also, the startup ecosystem of a country is very important for the forming and development of innovative ideas and their transformation into startups. From the global point of view, we can see, that countries with good business infrastructure, high financial and also non-financial support, and good enterprises-university-financial organizations network belong to the top global startup ecosystems, and also they are the home to many globally known unicorn startups, which are also with their value an important part of the economy. The aim of this paper is to provide a comprehensive view

of startups and the global startup ecosystem, which forms the basic framework for the development and support of startups and their establishment within the local and often also the world economy.

KEYWORDS

Startup; Innovation; Economic Potential; Ecosystem; SME

JEL CLASSIFICATION

M13; M21; K20

x

Leadership development at the University of Defence through the eyes of academic staff

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Introduction

Among the basic pillars of education and readiness of future successful graduates of the University of Defence (UD) for the future profession is a sophisticated system of training. The basic system consists of the overlapping areas of education, training and education. Especially in command and staff positions in units and facilities of the Army of the Czech Republic, these educational attributes are required. One of the basic pillars of a successful graduate is to be a good leader. Above all, it appeals to a combination of moral qualities, clear assignment and information transfer, and support from one's own team and support from superiors. These interlocking aspects are important for the proper functioning of any successful organization, especially for an organization such as the Army of the Czech Republic, working for the security and defense of the Czech Republic.

This paper examines the development of leadership at the University of Defence in the accredited five-year study programme Management and Use of Armed Forces through the eyes of academic staff. The paper is conceived as a continuous part of the already published paper Leadership devel-

opment at the UD through the eyes of students. Here the concept of leadership itself was described, but above all the question of why teaching leadership is such an important part of the preparation of future officers of the Armed Forces and what methods of information transfer are used and preferred was explained.

The paper is divided into two parts, where the first part focuses on the factors influencing the teaching of leadership at the Defence University, such as the school climate, experience with direct and indirect teaching, material, technical and personnel support, and time allocation. The second part focuses on the perspective of academics on the development of leadership and the possibilities for the direction of leadership at the University of Defence, not only conceptually, but especially technologically. Respondents were interviewed as an evaluation tool and we will highlight how modern technologies can contribute to improve interactive practical learning with the contribution of simulation technologies or augmented reality in order to best simulate real conditions.

The aim of this paper is to broaden public awareness of leadership development at the University of Defence and to contribute to the discus-

sion on methods and ways of teaching leadership through the lens of critical thinking.

1. Factors influencing the educational process

There are many factors that can affect higher education. One factor that can affect the quality of executive education is the climate of the organization, in this case the climate of the school. Another important factor that affects the educational process is indirect instruction.

1.1 School climate

School climate refers to the quality and character of school life. School climate is based on people's patterns of experience of school life and reflects norms, goals, values, interpersonal relationships, teaching and learning practices and organisational structures. However, school climate is more than an individual experience. It is a group phenomenon that is larger than one person's experience (Cohen et al., 2009).

In the literature, one can also encounter a closely related concept that describes in general terms such a phenomenon as organizational climate, which has already been described by Conrad and Sydow (1984). Organizational climate as a result of processes of perception and cognition of organizational variables is a fluent and integrated description of employees' knowledge about their organization expressed in linguistic means.

Organizational climate can be understood as relationships and phenomena as perceived by students in the Army environment. In the environment of the University of Defence, students are strongly influenced by the military environment and the military way of life. It is an inherent part of the educational process and students are guided to it. We can imagine it as the organisation of time and activities such as daily routine, going out, adapting to social norms, observing service rules and regulations, morning roll call, administration.

The climate of the school is thus realized primarily by the relationships between people in the organization. Whether these relationships are formal or informal. According to Ježek, in the context of school climate, questions should be asked that focus on the people in the organization who are the main determinants in shaping this phenomenon: "Who are the people involved in the school climate phenomenon" (Ježek, 2005).

As part of military regulations, students are required to report to the instructor at the beginning of class, keep records of the number of students and reasons for absences, and attend all employment. At other educational institutions, the obligation to attend all classes is not so dogmatic. This also applies to education in military-vocational training, after classical school. To give an idea, this includes, for example, orderly training, rifle training, field training. All this, together with the observance of military discipline, courtesy and basic orders, creates a specific environment and a specific atmosphere. One of the basic attributes in creating a positive school climate is the attitude of the teacher, especially the way he or she builds rapport with the students. Also the platoon leader, the student who holds a formal position and is also their superior. The conflicts that arise then naturally affect the school climate.

When training in field conditions, situations arise, sometimes the goal of these jobs, where classmates are dependent on each other. Certainly the interdependence, shared responsibility, even the evaluation of the whole group at the expense of individual performance will show up in individual interpersonal relationships. Often the relationship between teacher and students in such training can affect social role dynamics. It is the joint activity and often the joint evaluation that will affect the social perceptions and perceptions of colleagues and teachers. In the present case, these are objectively contingent relationships that are impersonal in nature. With some simplification, one could say that their essence does not lie in the interaction of specific persons, but rather in the interaction of



certain social roles (Mareš, Krivohlavý, 1995). This also affects the interaction with students. And the way of perceiving the organization and the military environment also affects the educator when working with them. The approach and desire to study, to learn, to prove oneself, to develop critical thinking is always in interaction with students.

1.2 Indirect teaching

The switch to distance learning was necessary in accordance with government regulations as a counter-epidemiological measure against respiratory diseases and Covid 19 in particular. As it became clear during the evaluation interviews with students during motivational interviews, a relatively large number of students did not perceive distance learning as a negative experience. Students, especially in technical subjects, appreciated the opportunity to make better use of their time and to capitalise on this experience in the future. Similarly, academic staff were keen to view the experience as positive and would like to use it in the future.

The qualitative research showed that academics lacked contact with students specifically during tutorials and seminars. Here they try to encourage them to think critically and motivate them to be active. They also perceived a reduced perception of students' needs and pedagogical tact. According to Holeček, this is manifested by empathy, i.e. the ability to empathise with the student's psyche. We use this term to refer to the correct, sensitive and responsive guidance of students that contributes to the optimal development of their personality (Holeček, 2014).

They perceived the situation as difficult, especially during the transition period, when almost 100% of the students were not comfortable with this way of teaching.

Two polar types of teachers were described at Masaryks university. The first type are functionalists who focus on transferring knowledge and skills to students. In a time of pandemic, they are trying their best to replace the various components

of face-to-face teaching with digital tools and applications with the help of judicious pedagogical analysis. They believe that quality online teaching is challenging but feasible and potentially brings a new quality to higher education. The second type identified are authenticists, who understand teaching as the creation of knowledge and skills through a process of authentic communication between teacher and students. These teachers believe that online tools cannot adequately replace face-to-face teaching" (Šeďová, Nekardová, Rozvadská, 2021).

1.3 Research methodology

Qualitative research was conducted in the leadership department using semi-structured interview technique. Data collection was done through pre-designed questions related to indirect teaching and school climate. The following questions were asked in the interview:

1. What was the transition to Covid 19 indirect instruction like for you?
2. What do you see as the negatives and positives of indirect instruction?
3. Do you see any potential for distance learning in the future, or does it not make sense to you and cannot be replaced by direct instruction?
4. What is your opinion on "blended learning", i.e. the combination of direct and indirect teaching in the environment of the University of Defence?
5. Do you think that the school climate affects your performance at the Defence University in terms of motivation, results, working with students and teamwork?
6. Do you think that the school climate influences student motivation?
7. Is school climate important to you?

The aim of the research was to find out the view of teaching leadership through the eyes of the teachers of the department that deals with leadership at the Faculty of Military Leadership. Furthermore, to verify and compare subjective experiences with distance education, views on leadership

Organizational climate can be understood as relationships and phenomena as perceived by students in the Army environment. In the environment of the University of Defence, students are strongly influenced by the military environment and the military way of life. It is an inherent part of the educational process and students are guided to it. We can imagine it as the organisation of time and activities such as daily routine, going out, adapting to social norms, observing service rules and regulations, morning roll call, administration. Leadership at the Defence University is also more focused on research and innovation, and uses modern technologies and practices. Overall, the evolution of leadership at the Defence University reflects the evolution of the field as a whole, and that there is a shift from an authoritarian style of leadership to a participative and team approach, with an emphasis on values, vision and social responsibility.

development and the importance of organizational climate. The selection of the research sample was done by purposively approaching 9 of the remaining 11 staff members of the leadership department. Participation in the empirical research was voluntary and was perceived more as an effort to help and to openly comment on issues within a collegial relationship. We see a limitation of this research in that the reflection on information and experiences of indirect teaching was assessed retrospectively by the probands and in part the selection of individuals in this case was limited to the leadership department. However, this is consistent with the aims stated in this thesis.

1.3.1 Indirect teaching from the perspective of academic staff

The interviews revealed that in most cases the process of moving to online learning was not more or less comfortable for APs. The results suggest that educators can be divided into two basic groups. The first group can be characterised as those who subjectively perceived the transition as something for which they were not sufficiently prepared and technically secure, despite the organisation's efforts to put in place measures to support a smooth

transition to distance learning. More than half of the interviewees felt that they were de facto forced to find their own way to cope and manage the situation. I would give the following example for this group, where one of the interviewees says: *"It was a challenging period when the UD was hardly prepared for such a situation, both in terms of material provision and support for teachers, and in terms of organisation and methodology, where teachers were kind of left to their own devices and it was up to them how to deal with the situation. Only over time have some measures been put in place."* (Response by academic staff member.)

In the second group, I would include the part of the AP that perceived the transition quite positively. To illustrate, I give an example of a response representing this group from one of the interviewees. *"I was able to deal with the technical difficulties fairly quickly. – Although a training session was organised to familiarise academic staff at the UD with the operation of the MS Teams system, I had to discover its didactic use gradually on my own. In the early days, the programme also did not have all the necessary functions as it does today"* (Academic's response).

As another example, age did not have a signifi-



cant effect on the responses within the two groups. For example, some younger colleagues responded that they perceived the transition to online teaching as an increased burden, so in contrast, more experienced colleagues perceived the transition and practice of indirect teaching as seamless. One respondent's answer to the question How did you perceive the transition to indirect teaching? *"I did not have a problem with it, on the contrary I tried to activate the pedagogical possibilities of current communication technologies. I have led students to a higher degree of creative independence, for example in working with sources, literature, the internet, their own supporting texts etc. Thus, indirect teaching has its positives, but one can never overlook the indispensability of direct teacher-student contact."* (Academic response.)

For both groups, it can be noted that despite the different views on the transition itself, all respondents rated it as stable. In general, the research showed that academic staff did not resign themselves to the unexpected and relatively rapid change in teaching methods, but rather took it as a challenge.

The positives that academic staff saw in indirect teaching were in some respects consistent with the students' accounts. In particular, there was agreement on the issue of efficiency and time savings, both for students and academic staff. Six respondents saw the potential of such teaching in the future.

A key factor is adequacy, which should be based on the needs and requirements of the students. *"The magic of success lies in a productive, dynamic balance, in the dialectic (in the mutually supportive unity of opposites) of the two approaches. At the same time, however, it is necessary to strengthen students' motivation for independent research and creative work in solving study tasks and problems"* (response of academic staff).

The research showed that, in general, from the perspective of the teachers from the Department of Leadership, "blended learning" can be implemented in the UD environment in such subjects where

independent work of the student is appropriate, where he does not have to be in the laboratory, in a specially equipped classroom, on the training ground.

The negatives that academics saw in indirect teaching are broadly similar and again stem from the lack of social contact between teacher and student. According to most colleagues, this contact is important, on several levels. Firstly, in terms of communication, where the lack of non-verbal communication is mentioned, the need for more frequent feedback in indirect teaching, and also the degree of social interaction in gaining the academic-student relationship. Less natural ability to communicate emotions, humour, reduced ability to engage students and perceive their interest, fatigue.

There are also practical experiences where, for example, students did not have sufficient self-reflection or motivation to participate in distance learning. *"There may be a tendency for some students to become disengaged and undisciplined or inconsistent when not under the personal supervision of the teacher."* (Academic staff member's response).

Academic staff who are more comfortable with student-centred interactive teaching may perceive indirect teaching as not valuable in terms of not being able to fully communicate with the student, e.g. lack of impact of non-verbal communication on students and impaired relationship building with the student. This is related to the perceived greater need to motivate students to engage in indirect teaching. To confirm the example, let us give one representative view for this group. *"I see the negatives in the limitation of personal contact between teacher and students, which cannot be replaced by anything, not even the smartest technology. Some students may tend to be unpleasant and unruly or inconsistent when not under the personal supervision of the teacher."* (Response by academic staff member).

In general, however, their approach was that they viewed the change as largely positive and as a

challenge and opportunity to develop a teaching option that had been relatively little applied.

1.3.2 School climate as seen by academic staff

The school climate is perceived as important by almost all academic staff. This was the case in 100 % of the responses. These factors affect each individual worker differently, with varying intensity depending on the personality parameters and preferences of the worker. Personally, I see it as a set of combinations of several different factors that can affect persons in an organization. With respect to the individuality of each one, supportively or vice versa. Exaggeratedly, we could say that in the extreme case it can be an eliminating factor for someone. All of them reported that in some way the climate of the organisation influences their impact on the UD. These factors affect each individual worker differently, with varying degrees of intensity depending on the personality parameters of the worker and his or her particular motivation for work performance.

"I perceive the climate of our school primarily as a space for my own creative self-realization, I feel virtually no limitations for it, and I especially perceive the favorable creative climate of our department, which is inspiring for independent creativity. It is up to me how I turn this opportunity into real creative results. I like the work very much and I feel that the students can sense this from me and that it motivates them to actively participate in the teaching process." (Academic staff member's response).

2. Leadership

Leadership can be seen as a combination of different skills and qualities, especially the ability to communicate, motivate, delegate tasks and create an environment where people feel respected and valued. Leadership can also be based on certain values such as courage, integrity and empathy.

Leadership, also known as leadership or the ability to lead non-violently, is based on the Eng-

lish word "leader". Leadership has many definitions, which are intertwined. According to Kateřina Jančíková, *"Leadership can also be defined as the process of making sense of what people do together so that they understand and identify with it."* (Jančíková, 2016).

2.1 Leadership Development

The development of leadership has changed and evolved over time, depending mainly on changes in society, technology, the economic situation and other related factors. At the beginning of the 20th century, leadership was primarily based on an authoritarian style of leadership, where managers were seen as the sole source of knowledge and decision-making. In the 1930s and 1940s, with the development of theory, the authoritarian form of leadership was criticised and new ideas such as the so-called democratic style of leadership, where subordinates were given more space for their own ideas and initiatives, began to be promoted. The next milestone in the development was the 1950s and 1960s, during this time theories relating to employee development began to develop. In particular, concepts such as motivation and increased employee engagement were applied. On the other hand, the late 1970s and early 1980s saw the development of a competitive environment and the concepts of teamwork and collaboration began to emerge in leadership. In the late 1990s and 21st century, leadership began to focus more on values, vision and social responsibility. At the same time, the importance of communication, mental health and diversity increased during this time. Overall, the evolution of leadership shifted from an authoritarian style to a democratic and team-based approach, with an emphasis on employee development, values and social responsibility (Maxwell, 2011).

2.2 Leadership Development at the University of Defence

Leadership is seen as one of the necessary competencies that every commander should possess. It is a combination of some perhaps more familiar disciplines such as social psychology, management, social communication, ethics, etc. The development of leadership at the defense university has unfolded in a similar way to other fields, depending on the changes in society and new knowledge in leadership and management. Early in the existence of the Defence University, leadership was primarily based on an authoritarian style of leadership. With the development of democratization of society and new knowledge in the field of leadership and management, new ideas began to take hold at the Defence University, especially the participative leadership style, where subordinates are given more space for their own ideas and initiatives.

In the next phase, Leadership is shifting more towards a team approach where emphasis is placed on collaboration and development of students' competencies. At the same time, the concept of leadership based on values, vision and social responsibility becomes more prominent. Currently, there is a shift from traditional military approaches to cooperation with the civilian sector and international cooperation. Leadership at the Defence University is also more focused on research and innovation, and uses modern technologies and practices. Overall, the evolution of leadership at the Defence University reflects the evolution of the field as a whole, and that there is a shift from an authoritarian style of leadership to a participative and team approach, with an emphasis on values, vision and social responsibility.

The teaching of the subjects Leadership, Military Leadership and People Management is intended to prepare and equip future leaders not only with the necessary basic knowledge and key skills for successful leadership of subordinates, but also to contribute to the recognition and fundamental

formation of one's own leadership style (Dont, Horváth, Urban, 2022).

In the accredited study programme SP 2014 the subject Leadership has been newly incorporated. The aim of this subject was to prepare future officers to work effectively with people, not only with their subordinates, but also with their colleagues and across the communication flow of the unit. In 2019, the new SP 2019 curriculum was accredited by the National Accreditation Authority and the Leadership subject was completely restructured. The new curriculum focuses on establishing a social science foundation in the first semester, and in particular on developing ethics, psychology, sociology, andragogy, communication, and cultural and civilizational contexts (Dont, Horváth, Urban, 2022; PUB-70-01-01, 2007).

The basics of social sciences are very necessary for further development in the application part. The second and third semesters are focused on the application part, which mainly emphasizes:

- military professional ethics – values of the military profession, moral integrity of the military professional, civil society × Army of the Czech Republic;
- psychology – self × military organization (Army of the Czech Republic), self × burden, self × burden of others, self in burden × others in burden;
- communication – tools and forms of communication (announcement, persuasion, negotiation, issuing a task), information flow management, feedback.

Between the second and third semesters, a field training is prepared for successful graduates. The field training includes comprehensive training based on completing a 24 – hour march with complex tasks and overcoming physical and mental obstacles. – Participants' stress levels are measured before and at the end of comprehensive training. It is a primary indicator of an individual's resilience.

Further field training is provided for students at the end of the second year, where we again measure the students' resilience. This time with a focus

on quickly assessing a crisis situation, which consists of the unit being shot, wounded and treating the soldier. This is followed by transport across the water to safety and handover to the care of a doctor. In this situation, we evaluate the natural selection of the leader on the team who can best respond to the situation. Even immediately after the situation, we measure resilience. We can compare the measured values from the resilience measurement in the second year with the measured values from the first year. By comparing the two measurements and observing the stress situation, we can narrow down the number of natural leaders (Dont, Horváth, Urban, 2022; PUB-70-01-01, 2007). In any field training or stress situation, students can learn about themselves, especially their limits. “In the leadership department, we help people learn who they are so they can understand who they can be.”

Students have already completed the theoretical knowledge and practical exercises and at this stage of the course their core teaching comes in their fifth and then sixth semesters. In terms of leadership development, this is the most prestigious training at the Defence University. Bringing all the experience into a professional military environment with the very focus on the combat ethos and Esorit de Corps, resilience and stress management, stress management, resilience and resilience building strategies, development of commander competencies and model situations in military leadership. It is a three-day continuous military training, which incidentally includes a 30 km march with stressful model situations. For almost the entire time, students are observed. They are directly supervised by instructors at each post and are observed in the field using drones as they move from post to post. By using drones, we are able to more effectively and specifically assess the mental and physical handling of model situations in inaccessible terrain. The data obtained, can be replayed and analyzed repeatedly, which leads to increasing the effectiveness of the development of students and academic staff and streamlining the whole concept of teaching (PUB-70-01-01, 2007).

2.3 View of Academic Staff on Leadership Development at the University of Defence

For our purposes, I used the interview as an evaluation tool. In a Defense University school setting, I can conduct interviews easily and as needed. The target group, i.e., academic staff, are easily accessible in terms of time and location. I have well defined my objectives, what I would like to find out and from whom, and prepared suitable conditions for the interview, especially the office of the Deputy Head of the K104 Department of Leadership. I had prepared in advance the wording of the questions and the topics I would ask my colleagues. I used the semi-structured interview method, which I appropriately supplemented with the observation method. This approach seems to me to be the most appropriate for obtaining the most reliable information on the topic. Ten interviewees participated in the interview, 7 directly from the K104 Department of Leadership Faculty and 3 from the Leadership Faculty. I also wanted to get an outside opinion, someone not influenced by the internal politics of the K104 Department of Leadership.

During the interview, which took place over coffee in the office, I asked the respondents 6 simple questions:

1. What are the biggest challenges facing academics at the University of Defence today in relation to the development of leadership education?

I put the answers into three possible levels:

High Relevance — Academics at the Defense University face challenges such as rapid changes in technology, changes in the strategy of the Defense University itself, and demands for better communication and collaboration among teams. Leadership development can help address these challenges by providing tools and techniques to manage and motivate students.

Medium importance challenges, where challenges are still present but are not a priority for the



Figure 1 » Chart answers to Question No. 1

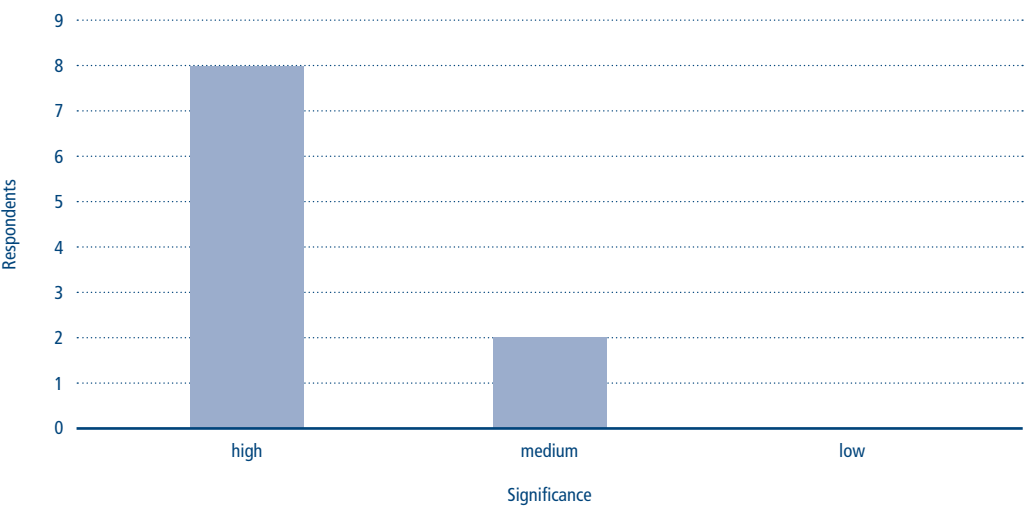
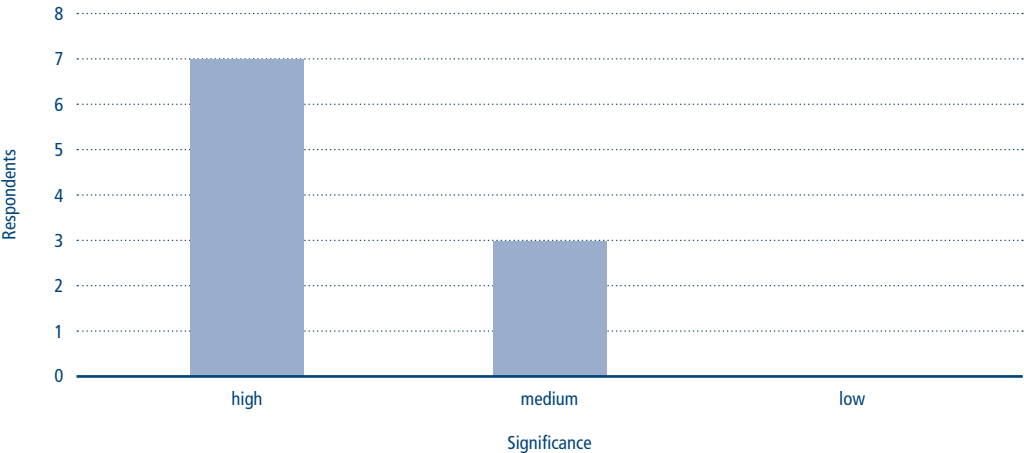


Figure 2 » Chart answers to Question No. 2



University of Defence. Academic staff are still trying to improve their skills and competencies but are not being forced to make significant changes in leadership processes.

Low salience of challenges, where the Defence University has no specific leadership challenges. Academic staff can continue to develop their skills and competencies but this is not a priority for the University of Defence.

The chart shows that academics agree with 80% on high importance issues such as rapid changes in technology, changes in the strategy of the Defence University itself and demands for better communication and collaboration between teams. Leadership development can help address these issues by providing tools and techniques to manage and motivate students.

2. What is the current state of leadership development at the University of Defence and how it differs from previous years?

I put the answers into three possible levels:

High degree of change in leadership development from previous years. Academic staff are actively seeking to improve their skills and abilities in the areas of teaching readiness, team leadership and collaboration between teams.

Medium Level – Academic staff are trying to improve their skills and competencies in the areas of leading teams and collaborating among teams, but the pace of change is not as pronounced as in the past.

Low Level – Academic staff continue to develop their skills and competencies, but there is no significant shift in the areas of readiness for teaching, team leadership and collaboration between teams.

Leadership development at the University of Defence is constantly changing depending on the current needs of the University of Defence. In recent years, there has been a greater focus on team leadership and collaboration among teams, as well as the use of technology to improve communication and productivity.

It is also evident from this chart that the vast majority, 70% of respondents, believe that academics are actively seeking to improve their skills and abilities.

3. What are the best practices for leadership development at the University of Defence?

The question did not have a choice of possible answers, it was open-ended. The most common answer, with 7 responses, was education and training. In particular, organizing regular education and training blocks that provide students with the skills and tools needed to successfully lead a team.

The next most common response, 6 times, was engaging in practice and giving students opportu-

nities to try out new skills and competencies in practice and gain first-hand experience.

The same number of responses had regular monitoring and evaluation of student leadership performance to see what is working and what needs improvement.

Exactly half of the responses, 50%, agreed on creating and providing a supportive environment where students are able to develop their leadership skills and competencies without fear of failure or criticism. Respondents agree on the use of modern technology, such as augmented or virtual reality.

Only two respondents agree on providing one-on-one mentoring and coaching for students to get feedback and help in solving specific problems.

4. What measures should be taken to strengthen the teaching of leadership at the University of Defence and what are the most appropriate ways to implement these measures?

All 8 responses were in favour of improving the content of teaching, i.e. strengthening curriculum courses and seminars focused on developing leadership skills and competencies. Especially the inclusion of new topics such as leadership in a digital world, change management and adaptability.

Practice, practice and practice again, this response was also repeated in 8 cases. Providing students with more opportunities for practical exercises to use and put their skills into practice, e.g. through projects, simulations or learning games.

The next most frequently mentioned measure was to increase collaboration with professionals and experts in the field of leadership who can bring new and practical experience and enable students to develop practical skills and receive feedback from experienced professionals and experts. This response occurred in 7 cases.

In 5 responses there was a request to raise awareness of the importance of leadership and its benefits, which could be the subject of promotion or training programmes. It is the low awareness of the importance of leadership that leads to disinter-



Figure 3 » Chart answers to Question No. 3

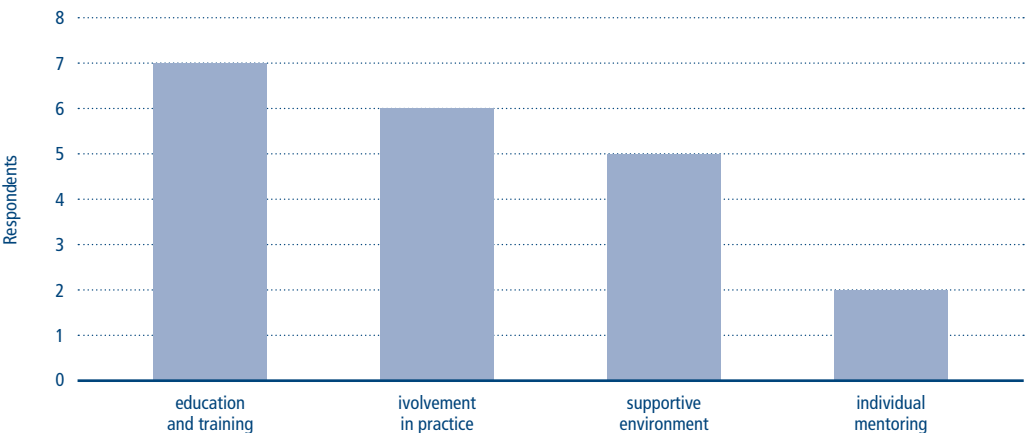
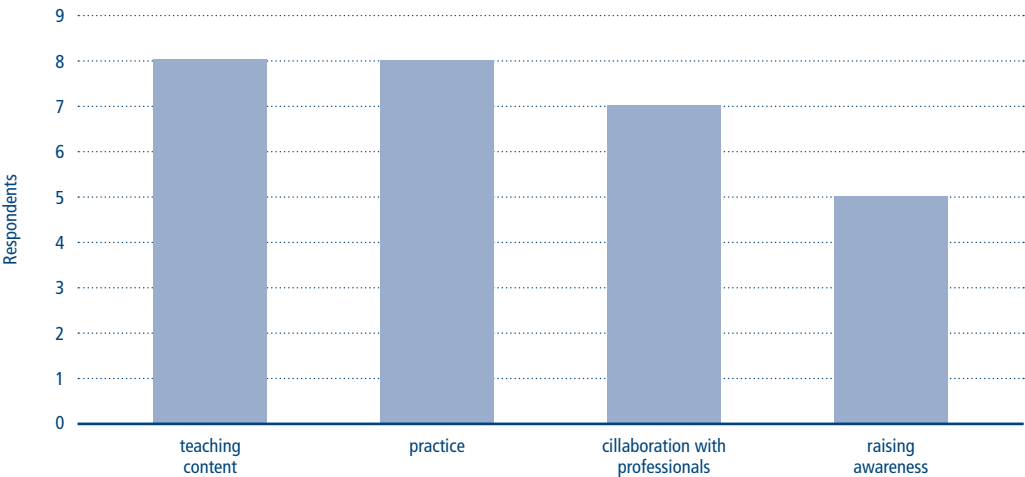


Figure 4 » Chart answers to Question No. 4



est on the part of students. As one respondent complained in an interview, *“It’s a huge shame. On the one hand, we have a passionate academic here who gives everything to his or her craft, even going the extra mile. And on the other hand we are up against an uninformed student with a lax attitude, closed to new opportunities.”*

5. Should we make more use of modern technology in teaching leadership?

All respondents agreed on the answer “YES”. The use of modern technologies such as virtual reality can be very useful for developing leadership skills, especially in the area of situational leadership. Situational leadership focuses on a leader’s ability to adapt his or her approach to leading a team or indi-

vidual depending on the situation he or she is dealing with. The use of virtual reality can allow students to create and simulate various situations in which a commander must adapt his or her approach to leadership.

Further, respondents agreed that virtual reality can be used to create interactive scenarios that allow students to develop their situational leadership skills. Students may be exposed to a variety of situations such as crisis situations, unclear goals, or communication challenges and must find the solution that will be most effective for that particular situation. Respondents highlight the opportunity to receive immediate feedback and reflect on their behavior and decision-making in situations. This feedback can help students better understand how they could improve their leadership skills.

Virtual reality can also help students better understand situations they may encounter in the real world. For example, students can use virtual reality to practice situations they might experience when managing a large team or dealing with communication challenges with colleagues or supervisors, but especially in crisis or life-threatening situations.

Overall, therefore, with the agreement of all respondents is that the use of virtual reality in situational leadership can be very useful for developing leadership skills.

At the same time, however, 8 out of 10 respondents stress the consideration that virtual reality is not a substitute for real situations and that students should also have the opportunity to gain practical experience in managing real-world situations.

6. How would you evaluate the overall development of leadership at the University of Defence?

Across the spectrum of respondents, who all agree that the Defense University is focused on defense and security education, leadership development at this university can be influenced by a variety of factors, such as current changes in the internation-

al security environment, new technologies in the defense field, and research in the psychology of leadership and military leadership.

It should be noted, however, that respondents also stressed that it is also important for the Defence University to be actively involved in research and development in the field of leadership in order to contribute to the development of new ideas and methods in this area and also to ensure that students acquire the cutting-edge knowledge and skills needed for their future careers in defence and security.

Overall, leadership development at the Defence University is focused on providing quality leadership education that meets the needs of the modern security environment. This includes, for example, the use of new technologies, the development of specific skills and abilities required for military and security leadership, and the use of the latest research and trends in leadership and psychology.

Conclusion

In conclusion, the teaching of leadership at the University of Defence is very important for the preparation of future officers of the Czech Army. The development in the field of leadership at this university is positive, as evidenced by the growing interest of students in this field and the efforts to modernize teaching using simulation technologies and augmented reality. However, the teaching of leadership should be increasingly integrated with other disciplines, not only at the University of Defence, but also within the entire educational system in the Czech Republic.

Overall, it can be said that the development of leadership at the University of Defence is still in process and the academic staff is very interested in its further development to ensure the best possible preparation of future officers of the Army of the Czech Republic for their future profession. Ultimately, the education and training of future officers is essential to ensure the security and defence of our country.



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ABSTRACT

The paper deals with the development of the Leadership course at the University of Defence (UD) in the accredited five-year study programme Management and Use of Armed Forces (MAF). This time the authors focus on the issue from the perspective of the academic staff of the Department of Leadership. The paper is divided into two parts. The first part discusses the factors influencing the teaching of leadership at the UD such as school climate, direct and indirect teaching experience, material, technical and personnel resources, and time allocation. The second part focuses on the possibility of directing leadership at UD, not only conceptually, but especially technologically. We will point out how modern technologies can contribute to improve interactive hands-on learning with the contribution of simulation technologies. Finally, we will address the questions of whether interdisciplinary collaboration and the prospect of using modern simulation technologies, will increase student interest and motivation and deepen the perception of modern technologies as an effective tool in teaching. The aim of this paper is to contribute to the discussion on teaching leadership and to share examples of good practice.

KEYWORDS

Leadership; situational leadership; school climate; indirect teaching; simulation technology; virtual reality

JEL CLASSIFICATION

K20; K22; M14; M20



Presidential elections in the Czech Republic 2023 — victory or defeat of political

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* 1. Introduction

“Czechs do not associate such expectations with any public office as with the office of president. The president is supposed to be the wisest, the most respected, in short, the best man of the state. The Masaryk tradition places on every candidate and few will stand up to the public’s scrutiny. But until he is elected. Then the glare of Masaryk’s glory falls on him and the popularity polls fly skyrocket. Czechs simply love their presidents.” (Tabery, 2008)

This study focuses on the presidential elections in the Czech Republic in 2023. The course of the pre-election struggle has already shown that this was not “just” an ordinary election of the head of the Czech state. On the contrary. It was this election that strongly demonstrated a number of long-term problems of Czech politics and the real impact of socio-economic crises on the Czech Republic and its citizens. Thus, a permanent frustration with a series of parallel crises, which meant a fundamental restriction of individual freedom, including freedom of movement (the problems of coronacrisis), the impact of a deep economic crisis unprecedented in the last 33 years in Czech society (skyrocketing energy prices, inflation, high mortgage prices, uncertainty on the labour market, re-

strictions on car production, etc.), became an integral part of the Czech Republic’s political life; the security crisis (the war in Ukraine), the migration crisis and, last but not least, the crisis of values (the gender issue, ecological extremism, the racial issue, the division of society into conservative and progressive parts, etc.).

All this has caused an unprecedented level of uncertainty, frustration and negative emotions in Czech society. The presidential elections seem to have been an important valve for this. After 33 years of building democracy and a market economy, Czech society, or at least a significant part of it, is asking itself whether the current political, economic and security system is sustainable in the long term and whether it is not under acute threat. This social framework forms a significant part of the backdrop in which the presidential election also took place and is one of the essential circumstances that led to both the huge increase in negative emotions throughout the campaign (especially before the second round) and to the final outcome of the election. Moreover, a highly insecure (anxious) society, full of fears and anxieties about the present and the future, becomes much more vulnerable, influential and manipulative. This opens up the possibilities of political marketing tech-



niques (Lees-Marshment et al., 2019; Turcotte, 2021; Downer 2016), which can effectively exploit these negative emotions and channel them into support for a particular candidate. Therefore, the main thesis of this article is that although the direct election of the president should have been an ideal opportunity for a clash of different political leaders, their concepts, life stories and visions, in this case it was much more a clash of different styles and campaigns of political marketing, which offered its customers – the voters – exactly what they wanted: a candidate who would relieve them of these fears (at least declaratively) and who would be a guarantee (but only according to political propaganda) of a favourable development in the future. We can already conclude that the real winner of this election is political marketing.

2. The President of the Czech Republic and his constitutional and legal definition

This direct presidential election, with its tense pre-election atmosphere and these dilemmas, should not exist in the Czech environment at all. In terms of its political regime, the Czech Republic is a classic example of a parliamentary representative democracy in which the main burden of the executive power is borne by the government, which exercises it on the basis of trust, control and accountability to the Chamber of Deputies. Unlike, for example, a presidential system, in a parliamentary system, 'the functions of the head of state are separate from those of the head of government, who is the prime minister or chancellor. The Head of State is not an active participant in the decision-making process and intervenes only in times of tension or crisis. In such a case, the Head of State acts as an arbitrator in conflicts between political forces. Although the president or the king appoints the prime minister and, on his proposal, the ministers, this is usually only a formal step, since the composition of the government must be accepted by parliament. As a result, the role of the head of state is limited to representing the country in inter-

national and internal relations and performing various honorary and ceremonial functions." (Cabada, Kubát et al., 2007, p. 189)

The diction of the Czech Constitution – especially Articles 62 and 63, which clearly indicate a very small scope of presidential powers, which are, moreover, substantially limited by the necessity of counter-signature by the Prime Minister or a member of the government authorized by him (Article 63, paragraph 3 of the Constitution) – also corresponds to this concept. Given only the formal and representative status of the President, and the fact that he is not himself accountable for the performance of his duties, unlike the Government, which is subject to the approval, accountability and control of the Chamber of Deputies of the Parliament, the President of the Czech Republic was originally elected indirectly. At the same time, this indirect election was generally considered a common practice at the time of the creation of the Czech Constitution in 1992 and, with the exception of Poland, was also successfully applied in the neighbouring countries of the Czech Republic – the Slovak Republic and Germany. A specific case is the directly elected president in the Republic of Austria. Here, however, it is a remnant of the specific and turbulent circumstances of the establishment of the Austrian Republic: *"The direct election of the Federal President was introduced by an extensive amendment to the Federal Constitutional Law of 1929. 3 However, it was only a logical consequence of a major conceptual transformation of the Austrian constitution. From the beginning, the Austrian Republic was beset by political crises resulting from the social crisis following the collapse of the old regime. The irreconcilability of the main political currents (conservative Catholicism and Social Democracy), which had escalated into a kind of latent civil war, did not allow for a parliamentary solution to political issues. The aim of the constitutional reform on which these currents were eventually able to agree was to weaken the dysfunctional parliament in favour of the executive. Therefore, it was the federal president who was significantly strengthened, and*

who, in addition to direct election, was given the right to appoint and dismiss the government, to dissolve the national council (lower house) on the government's proposal, and to issue emergency decrees with the force of law" (Grinc, 2011, pp. 139–140).

Similar reasons led to the introduction of a directly elected and relatively strong president in Poland after the fall of the communist regime. It was a strong, directly elected president, responsible de facto to the people and not to the parliament, who was to be the guarantor of a successful political transition and a possible correction of the unstable party system. "In this context, from the regime's point of view, the president had the logical role of a guarantor who would be able to correct the ongoing reform and thus become a possible lifeblock if the situation were to take a different than desirable direction." (Javůrek 2008, p. 85).

In the Czech Republic, however, such conditions did not exist — on the contrary. It was the first post-communist state that managed to partially create and partially restore a standard system of political parties and parliamentary democracy in a historically record time. In particular, thanks to later presidents Václav Klaus, who founded the Civic Democratic Party (ODS) in 1991, and Miloš Zeman, who completed the successful restoration of traditional social democracy, founded in 1878, a very stable right-wing system of two dominant parties was established, which still managed to win a full 75% of all votes cast in the 2006 elections. From this point of view, there was no need to create a special centre of power outside parliament and outside the political parties, i.e. a directly elected president (with too much power). On the contrary, these were rather diminishing over time, since the President of Czechoslovakia could still have the right of legislative initiative until the collapse of the common state, i.e. until 31 December 1992 (Vodička, Cabada, 2003). However, the authors of the new constitution, in force since 1 January 1993, did not count on such a thing. Their conception of the presidential office was entirely

consistent with the legal and political theory of the head of state in a parliamentary democracy (Stroem et al., 2006), as we have described above.

The two presidents of the newly established Czech Republic were therefore elected — like their Czechoslovak predecessors since 1918 — indirectly by the Parliament of the Czech Republic. The tradition of this indirect presidential election is as old in the Czech environment as the republican system itself. At the historic meeting of the Revolutionary National Assembly on 14 November 1918, the deputies present both decided that the new Czechoslovak state would be a republic and elected its first president, Tomáš G. Masaryk. Indirectly — and also unanimously — Václav Havel was also elected the first post-revolutionary president on 29 December 1989. The tradition of indirect election has thus managed to overcome all regimes and has become a stable part of Czech political traditions. Why, then, did the change take place?

The answer to this question must be sought in recent history and in a series of fatal circumstances that accompanied, in particular (but not only), the course of the presidential election of Václav Klaus in 2003 and especially 2008. The second election of Václav Klaus rather resembled a mafia story. Given the balance of power in the then Czech Parliament, every vote was at stake, and for the then ruling ODS it was a matter of prestige to get its founder and honorary chairman back into the highest constitutional office. Some legislators reported suspicions of corruption and blackmail; some were sent threatening text messages or even bullets. "First, two senators (SNK — Independents), Liana Janáčková and Jana Juřenčáková, announced that envelopes containing bullets had been sent anonymously to the Senate. The same message was sent to the MP Evžen Snítily (ČSSD — social democrats). Finally, the bullet casings were sent to the Chamber of Deputies Michal Pohanka and Miloš Melčák. Included was a letter saying that if they go to vote on Friday, the cartridge cases will end up in them." (Aktuálně.cz, 2008)

There were also secret meetings between repre-



representatives of Václav Klaus' team (Chancellor Jiří Weigl) and lobbyists around former ČSSD chair Miloš Zeman (Miroslav Šlouf) about the support of some ČSSD members for Václav Klaus. Miloš Zeman did not forget his party's "betrayal" from the last election and thus indirectly supported the election of Václav Klaus. Interior Minister Ivan Langr is alleged to have threatened his cabinet colleagues (Environment Minister for the Green Party Bursík) that if they did not support Klaus, "someone would go grumpy": *"Langer uttered these words in an emotional conversation with Green Party leader Martin Bursík. I respect the fact that you have your candidate, but you also have an obligation to respect that there should be some kind of consensus... You're wiping your ass with the others. In other words, you're saying that these guys, these guys are going to wipe their ass with those... I'll tell you what the game was about. What a dirty game it was, how many people are going to get grumpy!"* (Aktuálně.cz, 2008) In the words of former senator Jiří Zlatuška, the Prime Minister and ODS chairman Mirek Topolánek himself threatened KDU-ČSL chairman Jiří Čunek to support Klaus or else criminal proceedings would be opened against him again. There's already a car waiting for you outside." (Topolánek should have threatened Čunek, 2008)

"During the first round of the presidential election, three politicians collapsed, sparking a heated argument about who was pushing whom until they collapsed. Already during Friday, the People's Party senator Karel Barták, who belonged to the Švejnár camp, became ill. He ended up in hospital with heart failure. On Saturday, Evžen Snítily of the ČSSD, who did not actively support the party candi-

date, collapsed. And thirdly, the People's Party senator Josef Kalbáč disappeared from the hall without explanation. Later, the People's Party announced that it was also due to nausea. Kalbáč's absence caused an election deadlock." (Aktuálně.cz, 2008). This is only a partial list.¹ The presidential election perfectly divided both the government coalition – ODS supported Václav Klaus, most of the People's Party and the Greens supported his opponent, the economist Jan Švejnár – and the individual parties – the People's Party (the Kalbáč case)², the Greens (the Zubová case), and the ČSSD (the Snítily case)³. This split in the government coalition led, among other things, to the premature collapse of the government a year later.

Above all, it has so disgusted voters and even politicians that they have begun to seriously consider changing the electoral system to a direct one. Moreover, this demand resonated strongly in virtually all opinion polls. It is precisely among the Czech public that direct election – contrary to tradition and the concept of the Constitution – enjoyed and still enjoys high support. For example, a full 82% of Czech citizens expressed satisfaction with the direct election of the president in the December 2022 STEM survey.

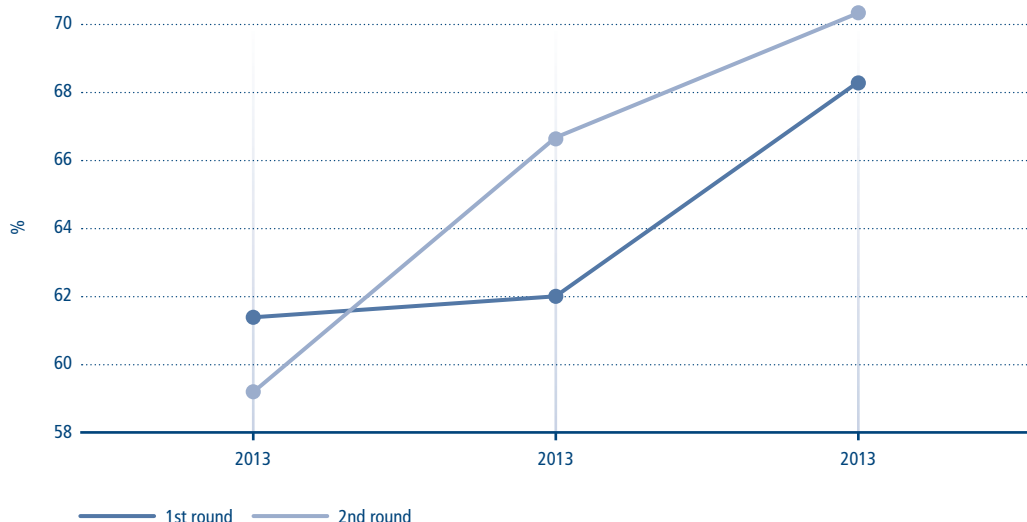
Opinions on it do not differ by gender or age and only slightly by education and social status: *"Younger people and those with a university education have more reservations about it. Men and women do not differ significantly in their views on the way the head of state is chosen. Half of the respondents have no reservations about direct election, while another 32% of Czechs said they are more inclined towards this system. On the other hand, six percent of the public definitely reject di-*

¹ Let us recall the case of Green MEP Olga Zubová, who mysteriously disappeared before the second round of voting and could not be reached. (Antoš, 2008)

² By his absence, he first reduced the necessary quorum to vote for Václav Klaus in the last third round of the third election, although the People's Party supported his opponent Jan Švejnár (Kopecký, 2008).

³ In the first rounds he did not vote for the official candidate of his ČSSD party, Jan Švejnár, and in the last election he voted directly for Václav Klaus. The party expelled him from the club and from the party for this (Kopecký, 2008). He was one of the fathers of the revival of social democracy at the local level, who founded a local organisation of the ČSSD as early as 29 November in Dobruška, East Bohemia. In 1996 he was elected as an MP for the first time. He was the third ČSSD MP to leave the ranks of the ČSSD since his election in 2006 (the others were Michal Pohanka and Miloš Melčák).

Figure 1 » Participation in the presidential election



Source: E15, 2023

rect election, while 12 percent are rather against it. The answers are similar in the different age groups, with the exception of people aged between 18 and 29. Among these youngest voters, 42 per cent of respondents strongly support direct elections, while another 36 per cent are rather in favour. In terms of education, support for the current method of choosing the head of state is strongest among people with primary and secondary education without a high school diploma. Without reservation, 56 percent are in favour of direct election. In the case of those with a high school diploma, the figure is 48 percent. Among the college-educated, two-fifths support direct election of the president without reservation, while more than a quarter reject it.” (Mahdalová, 2022).

This strong support is reflected, among other things, in the high voter turnout, which reached an incredible 70.25 percent in the last election in January 2023 (see Figure 1 for a comparison of individual elections). In some districts — especially in Prague — it even exceeded the 80% threshold (E15, 2023). Red line right participation in the first round

of the election. Blue line left participation in the second round of the election.

However, a key part of the consideration of direct election was not so much the public's wish as the fact that the last indirect election of the President of the Republic was held three times, each in three rounds, and thus only after the ninth round was a new President elected, and only by a single vote (Kopeček, 2012; 2022). This fact indicated a serious dysfunction of the existing system. Moreover, it was already then clearly demonstrated that the choice between politically strong candidates significantly splits Czech politics (and the public), which is not afraid of any means — even on the edge, or beyond the edge of legality, to promote its strong leader. This fact should have been a strong warning for the future. Just as Czech politics has been sharply divided, including the use of illegal methods of political struggle in the last indirect election, the Czech public has also been pitted against each other in all three direct presidential contests to date, including a hitherto unsuspected degree of dehumanisation of individual candidates →

and, unfortunately, the hate campaigns by their supporters against the other camp that have come with each successive election. The acrimony and hatred of the campaigns is thus significantly threatening the elementary democratic consensus and, among other things, the willingness of the part of society whose candidate lost the election to accept the candidate of the other camp as its president. If the founder of the modern Czech (Czechoslovak) state Tomáš G. Masaryk said that democracy is a debate, then this last presidential election in particular can hardly be called democratic. Like the previous ones, they were built on a binary vision of the world and politics — alleged good versus alleged evil. The victory of one is the fatal defeat and destruction of the other. And anyway their voters were branded with the adjectives democratic versus undemocratic voters. Thus, the direct, and thus seemingly more democratic, form of voting paradoxically becomes the enemy of democracy. And it completely contradicts our first democratically elected president's broader definition of democracy, to which he says in Capek's Conversations with T. G. M.: *"Democracy is not just a form of government, it is not just what is written in constitutions; democracy is a view of life, it rests on trust in people, in humanity and in humanity, and there is no trust without love, there is no love without trust. I once said that democracy is discussion. But true discussion is only possible where people trust each other and honestly seek the truth. Democracy is a conversation between equals, the thinking of the free."* (Čapek, 1990, pp. 245–246; see also on this topic Kroupa, 2010, pp. 15–23)

3. Direct election of the president as a systematic mistake

While the direct election of the president has found its great supporter in the Czech public, the Czech professional public has been extremely critical of the introduction of direct elections since the beginning of these considerations, and its attitude has not changed even after three direct elections —

quite the opposite. Stanislav Balík, a political scientist at Masaryk University, speaks eloquently about this. He even describes the introduction of direct election of the President of the Republic as "the biggest political systemic mistake" that Czech society committed after November 1989: *"The logic of these elections leads to further polarisation of society. This is what we, as political scientists and constitutional lawyers, have warned about, but in vain. Now we are reaping the bitter fruits, Balík said, adding that the imaginary ditches are not being filled in, but rather are deepening."* (Soukup, 2022). Among political scientists, there is perfect agreement on this point, even based on decades of experience. Tomáš Lebeda, a political scientist at Palacký University, says: *"The political science community has perhaps never been as united as it was on the issue of introducing direct election of the president. It was saying, roughly ten years ago, that it was an intervention that would skew the position of the president and undermine the constitutional system."* (Musil, 2022)

The same position was taken in 2007 by his colleague from Charles University, Michal Kubát, who added another argument in his Introduction to the Study of Political Science: *"If the head of state is only a symbol, practically devoid of power, we find no clear justification for his being elected in direct and universal suffrage."* (Cabada, Kubát, 2007, p. 189). The negative attitude of Czech political scientists towards the introduction of direct elections was also supported by constitutional lawyers. Among the 16 experts on constitutional law were the Dean of the Prague Law Faculty, Professor Aleš Gerloch, Professor Jiří Jirásek, Jan Wintř, Vojtěch Šimíček and other representatives of all four Czech law faculties. They met, among other things, on the floor of the Senate's Standing Committee on the Constitution and Parliamentary Procedures, thanks to the initiative of its then chair, Jiřina Rípelová, in 2012 on the eve of negotiations on amending the Constitution in this direction. *"There was not a single strong argument from the supporters of direct election of the president that would jus-*

tify the appropriateness or even necessity of such a constitutional change. In fact, the reasoned report and the discussions so far have been almost exclusively driven by the opinion that the citizens want direct election or that this requirement is included in the government's programme statement. For obvious reasons, however, these claims cannot be considered a convincing argument for the introduction of direct election ... I certainly do not recommend the introduction of direct election of the President of the Republic: the positives arising from this constitutional change are quite marginal compared to the negatives." "However, I fear that this will make governance in the Czech Republic even more complicated, which will worsen its functioning. As a result, it will lead to further disappointment of the public and ultimately to a reduction in their trust in politics." "The argument for stronger legitimacy of the directly elected President of the Republic would have merit if the position of the President were strengthened, which, however, the proposal does not bring. Thus, the effect of the proposed constitutional amendment may be more to expand the space within the 'negative' powers of the president." "The discussed amendment to the Constitution will lead to the creation of a new centre of power. Since the constitutional system is a closed constitutional system, one actor in it can only become stronger at the expense of another actor. If the president strengthens, the government weakens." (Jirsa, 2014)

Unfortunately, the constitutional experts were not wrong. One of them — Professor Jan Wintr, a member of the Legislative Council of the Government — summed up his ten years of experience with the direct election of the President by saying: "I think this experiment has failed." According to Wintr, "After ten years of experience, direct election of the president has fit very badly into the system of parliamentary democracy." "Instead of focusing on

solving substantive political issues, we are constantly dealing with conflicts between the directly elected president and now the government, now the Chamber of Deputies, now even the Constitutional Court." (Kropáčková, 2022)

The last "nest of resistance" to direct election was the Senate in 2012, when a majority across the political spectrum pushed it through the Chamber of Deputies. Even in the Senate, there were opponents and supporters of direct election among various parties, although, for example, the ČSSD had this item on its election programme (the influential Senator Jiří Dienstbier was a strong supporter) and, on the contrary, the ODS party most strongly advocated direct election, including Justice Minister Jiří Pospíšil⁴, who was also the official proposer of the proposal to amend the Constitution. In particular, long-standing senators with knowledge of the matter — Jaroslav Kubera (ODS), Tomáš Jirsa (ODS), Petr Pithart (himself a political scientist and constitutional lawyer for the KDU-ČSL), Jiřina Ríppelová (ČSSD), etc. Jiřina Ríppelová, in an interview with Czech Radio, also added a strong argument against the direct election, which was supported by the public: "The distrust of the citizens in the political elites and the idea and desire to change something, and they believe that change will be brought about by a directly elected president who will be able to do something, to accomplish something, who will simply be the just one, the leader in the Castle, and unfortunately that is not going to be the case, and it is necessary to tell those citizens that, because we are not addressing the powers of the President of the Republic in the law, we are only changing the election of the President of the Republic from indirect to direct election." (Čechová, 2012)

These words were prophetic and accompanied all the elections so far — most often the one in 2023. The high voter turnout and the extraordinary confrontation in the campaign showed a profound

⁴ Moreover, he indicated to the senators that they are only expected to smoothly adopt the amendment, which was decided long ago in the Chamber of Deputies: "The amendment is the result of long debates on the floor of the Chamber of Deputies across the spectrum among the Democratic parties." (Novinky.cz, 2012).

misunderstanding of the possibilities and limits of the presidential office and its powers, which were not increased by direct election compared to the original situation. Nevertheless, a large part of the citizens believed in the person of the president as a saviour, which some candidates still fed during their campaigns. Moreover, Jiřina Rippelová⁵ rightly pointed out the efforts of directly elected future presidents, who will thus significantly strengthen their legitimacy and power in the political system, to introduce a de facto semi-presidential system in which the actual powers of the president would go far beyond the list guaranteed by the constitution. Indeed, President Zeman has repeatedly attempted to do this, especially — but not only — during his second term.

Jaroslav Kubera, the Teplice senator for the ODS, was not kidding when he said: *“Direct election is not the result of a systemic debate, but a populist gesture on the theme: the people want it!”*⁶ (Novinky.cz, 2012). Outside of the Senate, he was even more strident, anticipating, among other things, a number of formal problems that would accompany a truly direct presidential election, including the crucial role of political marketing or the solicitation and verification of votes from citizens. As some Senate candidates already do, promising money to counties even though they do not decide on it. He added that the election will be costly and it will be a show, with the most popular person winning... *“It will be an incredible chaos,”* said Jaroslav Kubera, adding: *“Fifty thousand signatures are needed for a person to run — unless*

they have the signatures of ten senators or twenty deputies. But it’s not clear, if Töpfer and Bobošíková are standing somewhere, whether people can sign both. And who will verify the signatures. And can those senators sign the candidacy of two different candidates?” (Novinky.cz, 2012).

History has proven the direct election skeptics right. Virtually all fears have come true. On the other hand, direct election could also have been an opportunity for new personalities to enter Czech politics, with their life experience, uncorrupted by mainstream politics, who would be natural leaders of the society and strengthen its declining trust in democratic politics, its institutions and representatives. This is all the more so as Czech political parties after 2006 were going through a deep crisis, the disintegration of the hitherto stable right-wing system, extensive corruption, and programmatic and personal aridity. Czech politics reacted with the emergence of a whole series of new political projects (Věci veřejné, TOP 09 and especially ANO), and the Czech public was deeply disillusioned. On the contrary, it seemed that a directly elected president, whom the Czech public had long imagined as a modern-day Masaryk, concentrating moral maturity, non-partisanship, non-corruptibility, and service to the public and the public interest, could bring about the much-awaited moral renewal of politics and the start of a new, better phase of Czech politics. Moreover, its already bad reputation has been significantly complicated by the global economic crisis and its impact on the Czech economy, or rather by the fatal inability of

⁵ Another problem Senator Rippelová saw, among other things, in the further expansion of the already rather high number of elections (in addition to elections to the Senate, the Chamber of Deputies, the European Parliament, regions and municipal and town councils). This has indeed meant a permanent election campaign, with all the consequences — lower turnout in all types of elections, constant clashes between political entities, which instead of looking for substantive solutions will engage in constant election campaigns, constant deepening of conflicts of opinion in society, etc. Not to mention another — the considerable financial demands on the state budget that a two-round presidential election will unnecessarily bring.

⁶ Tomáš Lebeda, a political scientist from Olomouc, offers an interesting explanation in an interview for the magazine Reporter. When asked: “There was a special coalition for direct election. Jiří Paroubek, Jiří Pospíšil, although his then party ODS was sceptical. It was pushed into the programme of the Nečas government by Věci veřejné and TOP 09, although Miroslav Kalousek soon publicly regretted it. Can we say that this was a form of populism? He replied. But the main reason, in my opinion, was that the economic crisis came at that time. And because direct election was popular among the people, at a time when there was no good news, it became a way to give something positive to the public without any cost to the politicians. In times of crisis, it could have been a plus political point.” (Musil, 2022)

Czech political parties and their representatives to deal effectively with the effects of this crisis. The Czech economy has plunged into a deep and repeated crisis, which has significantly shaken society's confidence in the existing economic and thus political model of the Czech Republic, established after November 1989.

This fact also contributed significantly to the election of Miloš Zeman as a rather left-wing politician as president in the first direct election, which took place in two rounds in January 2013. He then won the second one five years later. Unfortunately, there was no leadership, let alone a revival of Czech politics. This is despite the fact that Miloš Zeman had a number of prerequisites for this — he was a strong personality, one of the key actors of post-Soviet politics who shaped it significantly, educated, linguistically equipped, a brilliant speaker. (Kopeček, 2017) But if we use one of the many definitions of leadership: *“Leadership is the ability of an individual or a group of individuals to influence and guide followers or other members of an organization. Leadership involves making sound — and sometimes difficult — decisions, creating and articulating a clear vision, establishing achievable goals and providing followers with the knowledge and tools necessary to achieve those goals. An effective leader possess the following characteristics: self-confidence, strong communication and management skills, creative and innovative thinking, perseverance in the face of failure, willingness to take risks, openness to change, and levelheadedness and reactivity in times of crisis.”* (Pett, 2017)

It is clear, then, that the newly elected president was definitely not a leader — instead of fulfilling a long-term vision, overcoming obstacles, winning the public over to his goals, moderating Czech politics, and bringing in moral and value perspectives that would sharpen opinions, Miloš Zeman used his mandate to promote his power, the economic interests of friendly companies and personal revenge against specific people and entire parties (cf. his parent party, the ČSSD). Unfortunately, the ideas of leadership have been completely buried. But

if Miloš Zeman was at least a strong personality, capable of influencing Czech politics in a significant way (albeit according to his own power interests), with a broad outlook and political experience, with his departure the hope for at least some leadership has been definitively extinguished. Incidentally, he was the last of the big three Czech politicians, or presidents, whose political careers were launched by the Velvet Revolution, who came from the ranks of the revolutionary Civic Forum and who have fundamentally shaped modern Czech democratic politics (but also the economy) over the last 33 years. The phase of post-communism has thus definitively closed (Skalický, 2023).

As we have already stated, the positive side of direct elections could have been the emergence of new personalities and a new generation of politicians — leaders who had already grown up in a democratic environment, had received quality education, including language education, had experienced life in advanced democracies and could put their good experience from a successful professional life in science, politics, business, etc. to good use in the presidential office. At the same time, such personalities would guarantee the further development of Czech democracy, all the more so as it is going through a deep crisis, like other Western democracies, associated with major upheavals in the existing economic model and the security and international political situation in the world, including in the near abroad (Ukraine). The need for true leadership in Czech politics, linked to the personality of the head of the Czech state, who has enjoyed high respect and prestige among the Czech population for many decades, has never been greater since November 1989.

4. Presidential elections in the Czech Republic 2023 — will leadership or political marketing win?

Unfortunately, after the announcement of the candidates for the presidency, it was clear that the election of the head of state in 2023 — whoever it



may be – will not fulfil these hopes and expectations. This was despite the fact that the candidates' resumes were in many ways respectable. If we restrict our attention to the three most prominent candidates for the presidency who surpassed the 10% threshold in the first round of the election (held on 13 and 14 January), they were the former prime minister and chairman of the ANO movement, Andrej Babiš, among others one of the richest citizens of the Czech Republic, who acquired his fortune during the wild privatisation of the 1990s (Kmenta, 2017). He is also an army general, former Chief of the General Staff of the Czech Army and Chairman of the NATO Military Committee Petr Pavel, as well as the former Rector of Mendel University in Brno Danuše Nerudová. The key problem of the campaign in general was the absence of any vision of the Czech Republic. All the candidates limited themselves to often unspeakable, general phrases. For example, Petr Pavel ran with general slogans such as *"I will restore peace and order!"* or *"From the beginning, I have raised themes such as the return of decency, dignity, and normal communication."* (České noviny, 2023)

However, these slogans were only a marketing response to the bad impression of a large part of society of the performance of the presidency of Miloš Zeman. Pavel himself introduced his campaign by saying: *"This election was a battle of two worlds. In ours, courage, honour, dignity and telling the truth are valued, even when it is not appropriate. The rules are followed and apply to all. In our world, things are decided by those who understand them and don't run from responsibility. And then there is the opposite world. Where lies, fear and chaos run rampant. Solutions to problems are only talked about and only worked when it is for one's own benefit. I'm sure we can all agree that we want to live in that better world. One without chaos and lies. We want to live in one country. A country where we have order and dignity. I will lead the way to that as president."* (Pavel, 2023)

Instead of a clash of specific programs and personalities, a "clash of values" ensued, which,

moreover, extremely polarized Czech society. Voters of other candidates – especially Andrej Babiš – were portrayed as members of the "world of evil", while Pavel's supporters were portrayed as supporters of the *"world of good"*. The already existing trenches in Czech society were thus deepened and the *"ordinary"* election of a new head of the world became a struggle between good and evil, democracy and totalitarianism. And this despite the fact that it was a democratic election in which neither candidate was even a potential threat to Czech democracy, did not intend to change anything about the Czech Republic's membership in the EU or NATO, etc.

Andrej Babiš's campaign was not very successful either – instead of the authentic Babiš, whose emotive and in many ways controversial personality divided Czech society for ten years, a statesman who unites society and is non-conflicted was presented. This, in turn, was an obvious attempt to win a broader spectrum of voters than the ANO movement itself (about a million and a half in the 2021 elections to the Chamber of Deputies). And also to meet the demand of a large part of society for the president to "unite", i.e. to be a link in uncertain and dangerous times, when society and politics are severely divided. At the same time, Andrej Babiš has presented himself as a man of the people who is interested in the existential problems of ordinary citizens in times of severe economic crisis, even though his fortune is about 70 billion. The reason for this was simple – it was the ANO movement and its billionaire chairman who, since 2016 at the latest, have dominated the left-wing "market" with voters, and it was pensioners, the socially weaker, less educated and less well-off who were among his loyal voters. This was confirmed, among other things, by the above-standard support for Andrej Babiš in the most socially and economically threatened regions – the Ústí nad Labem, Karlovy Vary and Moravian-Silesian regions.

Danuše Nerudová was also far from the leader, and even had a chance to come second in the polls.

She had all the prerequisites for success. Once again, a large part of society would like to see a woman at the head of the presidential office – among other things, following the example of Slovakia and its president Zuzana Čaputová (also a woman and also blonde), to whom she was often compared. For one thing, she could draw on the high esteem she enjoys as a university professor and rector. In contrast to the rather conservative agenda of the two male candidates, she also raised more progressive issues (marriage for everyone, protection of the LGBT community, ecology and climate, etc.), which earned her the emotional support of part of the younger generation (especially Pirate Party voters). Unfortunately, she was not an authentic candidate either and the media often labelled her as a marketing product. Political marketer Jakub Splanec commented on this by saying: *“Danuše Nerudová did well in the part of the campaign when she was not known. She was among the people, she was visible and she brought a fresh wind. But it turned out that her biggest problem was reality. As soon as the marketing image turned into content, she weakened. She couldn’t handle the slightest criticism or crisis communication.”* (Veselý, 2023)

But for all of these candidates, their past has shown. In the case of Andrej Babiš – in addition to the aforementioned acquisition of property during the era of privatisation – his alleged cooperation with the communist State Security was discussed. He was supposed to have signed this cooperation as a foreign trade worker in 1982 (Spurný, 2022). In any case, he was a member of the Communist Party. Even more serious was the communist past of Petr Pavel (and his wife). The historian of the Institute for the Study of Totalitarian Regimes, Petr Blažek, by studying archival documents deposited in the Archive of Security Services, discovered not only that Petr Pavel was also a member of the Communist Party of Czechoslovakia (joining in 1983), even the chairman of its basic organization, but that, following his great model – his father, a colonel of the military intelligence of the CSLA (Czech-

oslovak People’s Army – Army during the communist régime), he systematically prepared for an intelligence career in NATO countries – among other things by studying the prestigious D-2 intelligence course: *“It was in 1987 that a significant career change began to take shape for Pavel. After four years with the Prostějov elite paratroopers, when he first commanded a platoon and then a company, he was undergoing vetting as a candidate for possible reassignment to the Intelligence Directorate of the General Staff. This was the Czechoslovak military secret service under the previous regime, which included foreign residences. Pavel was admitted to a postgraduate course for intelligence officers, which began in 1988. Members of the Special Purpose Airborne Regiment, which was based in the Hanák town, were trained for special operations in the rear of the (Western) enemy. “He wanted to join the special units that were part of the communist military intelligence, the second largest secret service in the former Czechoslovakia, Blažek points out.”* (Pšenička, 2022; see also Blažek, 2022) His current wife Eva was also a member of the Communist Party. She was also a student at the Klement Gottwald Military Political Academy in Bratislava, which educated the “political workers” of the Czechoslovak army, the so-called politruks, who were the extended arm of the Communist Party in the army (Guttman, 2022).

In both cases, it turned out that both candidates – Babiš and Pavel – were rather nomenklatura careerists who in each regime promoted themselves and their interests above all and were willing to cooperate with any regime that would allow them to do so. So no principles, values, etc., but personal gain. So, in the case of the electoral contest, slogans and attitudes, it was definitely not about political, values or personal authenticity. Unlike the only real dissident among all the presidential candidates who actually stood up to the past regime, signed Charter 77 and was sentenced to several months in prison for it, the SPD candidate Jaroslav Bašta. The PR presentation, full of positive values, which styled both candidates as ambassadors of



goodness or of the people, was a mere example of perfectly executed political marketing, which made them (also in the case of Danuša Nerudová) the real winners of this election. Another dissident and journalist Ivan Hoffman has aptly written about this: *“Even the historically highest voter turnout did not prevent the candidate of the liberal urban democrats, the artistic elite and the euro-unionists from becoming a pampered communist intelligence officer, while the working people, the peasants, the patriots and the euro-sceptics have no choice but to support a billionaire who is in the opposition only by mistake. An atmosphere of blind hatred is to blame for the absurdity of one side telling itself that the rugged capitalist is actually a philanthropist, while the other side looks forward to seeing the uniformed careerist return the ethos of Václav Havel to Prague Castle. With this, the ‘elites’ compensate for their frustration with the past electoral successes of the rural plebs, while the ‘plebs’ hatefully define themselves against the arrogant elitists and specifically against the arrogant Prague-ites. Because of this mutual apathy, the voters will have to savour the cup of bitterness to the full, although from a distance it is clear that everyone will lose, regardless of who wins. But this is already the law of two-round direct elections, moderated by the media, which treat the selection of the head of state as a reality show and add fuel to the fire to boost their ratings.”* (Hoffman, 2023)

The direct presidential elections in 2023 thus offered a rather absurd drama from the work of Václav Havel. Instead of a new generation, unburdened by the communist regime, which was supposed to revive Czech democracy and the citizens’ trust in its healthy functioning, to rid it of corruption and the network of old godfathers, the old communist elites came to power again, albeit — thanks to political marketing — dressed in a new,

liberal garb. The Czech Republic has gone back a proverbial 33 years, both in the selection of candidates for the second round and in the hateful and determined campaign, where the voter of the second camp was not a full democratic voter, but an enemy and a “desolate” who should be disenfranchised because he or she votes “wrong”. This is aptly evidenced by the statement of the former chairman of the Communist Party of Czechoslovakia, Vojtech Filip, who aptly commented on the duel between Babis and Pavlo in the second round of the presidential election (held on 27 and 28 January 2023): *“In the first round of the presidential election there were three former members of the Communist Party of Czechoslovakia⁷ (not the Communist Party of Bohemia and Moravia), 37.5%, in the second round two members are going, there they have 100%. It shows how far-sighted the cadre policy of the former Communist Party was. One was then and is now a businessman, the other is still at war, just exchanging the enemy for mercenary pay.”* (iDnes, 2023).

It is piquant that the only presidential candidate who actually stood up to the past regime, signed Charter 77, and was sentenced to several months in prison for it, was the candidate of the right-wing radical SPD, Jaroslav Bašta.

However, the serious mistakes of the past also caught up with Danuša Nerudová, even though, given her age (44), it was not a communist past. During the campaign, Mendel University, where she was rector until 2022, was audited by the National Accreditation Office, which found serious misconduct at the school, especially in the implementation of the doctoral program in economics: *“According to the audit by the National Accreditation Office, the school violated the Higher Education Act, government regulations and its own regulations.”* (iDnes, 2022)

⁷ In the first round, it was still a former rector of Charles University, Tomáš Zima, who joined the Communist Party at the age of 19 — before he graduated from high school (1983). He became chairman of the faculty committee of the SSM at the Faculty of General Medicine at Charles University, and then of the all-region committee of the SSM. In January 1989, in the context of the events of the so-called Palach Week, he wrote an editorial on the front page of *Rudy Pravo* to reassure the public and support the existing regime (Kreuzman, 2019).

Given only the formal and representative status of the President, and the fact that he is not himself accountable for the performance of his duties, unlike the Government, which is subject to the approval, accountability and control of the Chamber of Deputies of the Parliament, the President of the Czech Republic was originally elected indirectly.

The second round of the election and the final winner of the presidential contest brought bad news for Czech politics and for society as a whole. Two presidential candidates with a communist past, who were even active collaborators of the communist security services, were again running for Prague Castle. Moreover, the whole campaign, especially before the second round, took place in a sultry atmosphere, with two irreconcilable camps facing each other, threatening each other with violence and sometimes even death.

The problem was not just the overall failure of the university's leadership, but the direct participation of Rector Nerudová herself in the program. Through an Austrian and German agency, the school was supposed to lure foreign students from those countries for money to the English version of the program, who under suspicious circumstances (only a few visits to the school during their entire studies were enough) and in record time graduated in German-speaking countries from a recognized Ph. In addition, a number of foreign students were seriously suspected of plagiarizing their dissertation (and defended) papers. One of them was to be led by Danuše Nerudová (Pšenička, 2022). The problem was also the long silence of the presidential candidate and the not very successful efforts to explain it. This significantly weakened the position of Nerudová, who presented herself as "a hope for change". Some of her statements also proved unfortunate ("I am a woman, a young one at that, and a handsome one at that. This is the biggest handicap I have." "I didn't doubt myself for a minute, not for a second, not for a millisecond, not for a picosecond.") (Hron, 2022), which further deepened the suspicion that she was not an authentic personality who wanted to transfer her successful academic and professional career experience to

politics, but rather the aforementioned marketing product, which was intended, among other things, to meet the social demand for greater representation of women in politics. It is not surprising then that despite initially high expectations, the first round of the election was a landslide and even fell well short of the agencies' initial expectations, which ranged from 25–21% just a week before the first round of the election.

The second round of the election and the final winner of the presidential contest brought bad news for Czech politics and for society as a whole. Two presidential candidates with a communist past, who were even active collaborators of the communist security services, were again running for Prague Castle. Moreover, the whole campaign, especially before the second round, took place in a sultry atmosphere, with two irreconcilable camps facing each other, threatening each other with violence and sometimes even death. The two main candidates accused each other of purposeful lies and misinformation and presented themselves as the embodiment of the only correct values. Even the Constitutional Court did not uphold its role as the guardian of democracy, according to its president, Pavel Rychetsky, who described the outcome of the presidential election as "a victory of love and



truth over lies and hatred,” thus clearly siding with one political party instead of remaining above the parties as his position and status commanded (Vašínová, 2023). The problem with this election was also the flight from independent journalism, with journalists overwhelmingly resigning themselves to their role as “watchdogs of democracy” and both in the campaign and after the election results were announced, clearly siding with one candidate, whose media image was thus significantly more positive (Kvasnička, 2023; Kaiser, 2023; Vokál, 2023). The modern means of communication – especially social networks – from which we had originally hoped to strengthen democratic participation and the possibility of freely expressing opinions, also failed completely. The publicist Thomas Koulidakis commented on this by saying: “The most tragic lesson of the election campaign is how readily the behind-the-scenes marketers and many of the watchdogs of democracy were carried along with the tide of hate on social media. This real evil on the networks unfortunately became one of the ‘winners’ of the election campaign.” (Koulidakis, 2023, p. 6)

With these elections, the Czech Republic seems to have erased the last 33 years of democracy and returned to the days of non-democracy, which does not recognize plurality of opinions and fiercely fights for the only right truth. Freedom of opinion and pluralism, respect for man as a citizen and for his inherently different opinions, which form the very basis of democracy, have completely disappeared. Czech democracy has faced the biggest test of the post-Soviet era so far and unfortunately it has not emerged victorious.

5. Conclusion

The third winner of the direct election was General Petr Pavel. However, the election ended in an unambiguous disaster for Czech democracy. Instead of trying for a new leadership, the better marketing campaign, the huge fear, uncertainty and apprehension that have been plaguing the Czech society

for the third year (as we have already stated in the Introduction of this study), the better image of the new president, whose beard and especially his moustache resembled the first president Tomáš G. Masaryk and, with his declared values, President Václav Havel. In both cases, however, it was only an external conformity. The rebel Masaryk, who made a significant contribution to the liquidation of the undemocratic Austrian regime in the name of true democratic ideals (Masaryk, 1933) and the restoration of Czech statehood, or Václav Havel, who during Pavel’s military career in the intelligence service and the Communist Party either served in prison or tried to overthrow the communist regime, certainly do not bear any comparison with the newly elected president. Ironically, one of the architects of Peter Paul’s victory was Andrej Babiš. For many citizens, he was not an acceptable presidential candidate and they supported anyone else. We can only guess what the evolution of this election would have been if someone else had stood for the ANO movement with less historical and personal weight – for example, the actor and diplomat Martin Stropnický.

Be that as it may, this third election also led to a huge social upheaval and polarisation, and a further weakening of democratic governance. It has again generated a strong political player, legitimised by the power of direct election, who will create his own political concepts, and thus Prague Castle will continue to function as an alternative power centre, including a number of figures who stand in Pavlov’s shadow but may be key in the president’s decision-making. The ideal of a head of state who has purely formal powers and merely represents the Czech state internally and externally, receives state delegations and is a staple of Czech society and politics, such as the late Queen Elizabeth II of England, is again unattainable. Tensions within the executive will continue.

There are only two ways out. The Czech political parties should realise that a strong president in the Castle is a problem whoever is ruling in the “under castle” and that it is therefore in their com-

mon interest to return to indirect election. This does not have to be implemented by Parliament alone. The new presidential electors could be representatives of Czech local government – municipalities, towns and regions, or representatives of civil society – Czech universities, trade unions, employers' associations, etc. But all this is a matter of political agreement.

The second option is to return to 1918 and restore the kingdom. This way is even less likely, although it has a number of positives – the monarch

is not elected (except perhaps for the accession of the first king), he does not interfere in politics, he really unites society, he is prepared all his life for the exercise of his mandate, etc. And in the case of the election of the Luxemburg dynasty, which has already entered Czech history in an extremely positive way, the Czech Republic would be able to connect with the real core of the European Union, including its financial flows. However, any of these alternatives is significantly better than a direct election.

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Presidential elections in the Czech Republic 2023 — victory or defeat of political leadership?

ABSTRACT

This study focuses on the course and analysis of the presidential elections in the Czech Republic in January 2023. The author describes the path of the Czech political and constitutional system from an indirect presidential election by Parliament to a direct one and points out — together with other experts from the ranks of political scientists and constitutional lawyers — the fundamental shortcomings of this indirect election for Czech politics and the constitutional system. These were fully manifested in the last presidential elections, which led to the extreme polarisation of Czech society, which has long been deprived by a series of health, security and economic crises (coronacrisis, war in Ukraine, economic crisis, etc.). These crises led to a pre-





viously unsuspected frustration and emotional course of the presidential election. This, together with the poor offer of the candidates, contributed to the crucial role played by political marketing in this election. And also to the fundamental failure of the concept of political leadership.

KEYWORDS

Leadership; Politics; Elections; the President; Czech Republic; 2023

JEL CLASSIFICATION

F15; G18; H7; H83; L88



Implementation of the NIS 2 Directive and its impact on the obliged persons

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* 1. Introduction

Cyberspace is an environment made up of an uncountable number of device, of which some are primarily transform mechanisms for the data, some are for processing data and other are for local processing and display (Reis, 2016). By cyber security, we mean the sum total of measures aimed at ensuring the protection of cyber space (Hendrych, 2009). These measures can be of different nature – legal, organizational, educational, technical, etc. Cyber threats are constantly increasing in intensity, and it is therefore necessary to emphasize ensuring cyber security in the organization. Infrastructures, networks and operators are increasingly interconnected, meaning that deficiencies in one organization in one industry can cause disruption to many other economic sectors across the market.

In this area, it will be necessary to react primarily to a significant legislative change, which is heralded by the adoption of the draft Directive on measures to achieve a high common level of cyber security in the Union, known as NIS 2 (hereinafter referred to as the “NIS 2 Directive”). The NIS 2 Directive was adopted in December 2022, while the deadline for its implementation is 21 months. The NIS 2 Directive is expected to be implemented in the Czech Republic in the first half of 2024 by

adopting a new Cyber Security Act. The NIS 2 Directive widens the scope of regulation by adding new sectors according to their importance to the economy and society, and introduces a clear size limit. This means that all medium and large organizations in selected sectors will be included in the scope of the NIS 2 Directive. This is an increase from the current approximately 600 obliged entities to 6 000. At the same time, the member states are left with some flexibility when it comes to identifying smaller entities with a high security risk profile.

2. Methodology

In this section, the scientific methods used will be briefly described. The work method represents an organized procedure leading from the starting point to the intended goal. The most frequently used methods in legal sciences are logical, exact, sociological, systemic and comparative methods (Knapp, 2003). As for the scientific methods that will be used in this article, the author will mainly use the methods of induction, deduction, analysis, and synthesis. Abstraction, i.e. the method of distinguishing essential elements from non-essential ones, will be used mainly in the examination of new legislation. Induction represents the progres-



sion of thought from the particular to the general. This method will be used in the work, for example, when examining the impact of the NIS 2 Directive. Deduction is the opposite of induction, i.e. a thought process leading from the general to the particular. Deduction will be used in the thesis mainly in determining which subjects will be the obliged persons according to the NIS 2 Directive. Analysis refers to a method in which the whole is broken down into its individual parts. The opposite of the analytical method, synthesis, consists in combining individual parts into a whole. Analyzes and syntheses are usually used at the same time, i.e. first we assess the individual parts, which we then put together into a unified whole. The method of analysis and synthesis will be used in the work, for example, in connection with the analysis of the specific impacts of the NIS Directive 2 on individual obliged entities.

3. NIS 2 Directive

Cyber criminals usually target individuals or companies, with an intention of stealing money or company secrets. But in a few cases, a cyber-attack might be targeted at a larger group or entire country. In such cases, certain information and privacy are not the only things at risk. Some cyber-attacks are aimed at creating chaos and causing unrest among the public, leading to destruction and damage at a large scale (Shinde, 2021).

The NIS 2 Directive, as its name suggests, is not the first directive in the field of network and information systems security. The previous Directive (EU) 2016/1148 (hereinafter referred to as the “NIS Directive”) aimed primarily at achieving a high common level of network and information system security at the level of the European Union. NIS Directive aimed to build cybersecurity capabilities across the EU, mitigate threats to network and information systems used to provide essential services in key sectors and ensure the continuity of such services when facing incidents, thus contributing to the EU’s security and to the effective functioning

of its economy and society (NIS 2 Directive, Recital point 1).

For this purpose, states should first of all adopt a national strategy for the security of networks and information systems and establish CSIRT teams (Cyber Security Incident Response Team). The NIS Directive further introduced security and incident reporting requirements for operators of essential services and for digital service providers.

The EU cybersecurity rules represented by NIS Directive in 2016 were updated by the NIS 2 Directive that came into force in January 2023. It is developing the existing legal framework to keep up with an evolving cybersecurity threat landscape. By expanding the scope of the cybersecurity rules to new sectors and entities, it further improves the resilience and incident response capacities of public and private entities, competent authorities and the EU as a whole (European Commission, 2023).

3.1 Obligated entities

It is very important to compare the NIS directive and NIS 2 in terms of which subjects it affects. Compared to the previous directive, the NIS 2 directive significantly expands the range of obliged persons. NUKIB expects that the number of obliged persons will increase from 600 to at least 6 000.

NIS Directive 2 in Article 3 introduces the category of Essential entities and the category of Important entities. According to Recital 15 of the NIS 2 Directive, this division is made taking into account the degree of critical importance in terms of the sector or type of service they provide, as well as their size.

As we have seen, threats have become increasingly widespread in the economy. Therefore, the NIS 2 Directive attempts to expand the scope of the NIS 2 Directive. For example it targets the additional economic sectors (such as food production, manufacturing of medical devices, postal and courier services), and indicates clearly that all medi-

um or large companies in the relevant sectors are within the NIS 2 Directive's scope (Mariniello, 2022).

The NIS 2 Directive will no longer identify individual information and communication systems (critical informational infrastructures, essential services, etc.), but rather identify the criticality of the sector, the category of entities and defining their obligations.

At the same time, the obliged entities affected by the NIS 2 Directive are determined by size. The decisive criterion is whether the company is a medium or large. However, there is an exception to this rule for smaller companies, which, under the conditions set by the directive, can also enter this regime regardless of their size.

3.2 Obligations according to the NIS 2 Directive

What obligations does the NIS 2 Directive entail? The aim of the NIS 2 Directive is primarily to ensure that organizations implement security measures to increase cyber security. Obligations set for organizations in essential category will be much stricter than for organizations in important category. NIS 2 Directive includes a basic elements that all obliged entities must address or implement as part of the cyber security measures they take. There are for example:

- Risk analysis and information system security policies.
- Incident handling (prevention, detection, and response to incidents).
- Business continuity and crisis management.
- Supply chain security.
- Security in network and information systems.
- Policies and procedures for cybersecurity risk management measures.
- The use of cryptography and encryption.

The scope of the measures is similar as in actual legislation. Additionally, the NIS2 Directive will require a two-step process for reporting security incidents to the relevant supervisory authorities.

First, once an organisation becomes aware of the security incident, it must submit an initial report within 24 hours of first becoming aware of the incident. From there, the organisation has one month to submit a final report.

4. Implementation of NIS 2 Directive in the Czech Republic

The NIS 2 Directive is expected to be implemented in the Czech Republic in the first half of 2024, in the form of a new law on cyber security. The National Cyber and Information Security Agency (hereinafter referred to as "NUKIB") is the central administrative body for cyber security, including the protection of classified information in information and communication systems and cryptographic protection. It was established on August 1, 2017 on the basis of Act No. 205/2017 Coll., Amending Act No. 181/2014 Coll., on cybersecurity and on amendments to related acts (hereinafter referred to as "the Cyber Security Act"), (The National Cyber and Information Security Agency, 2023). For the purposes of the Cyber Security Act, the term cyber security must be understood primarily in the sense of the legal measures ensuring the protection of cyberspace, which are contained in this Act (Maisner, Vlachová, 2015).

NUKIB published a proposal of the new Cyber Security Act (hereinafter referred to as "the New Cyber Security Act") and related decrees, in January 2023. In addition to NIS 2, the New Cyber Security Act also introduces a Supplier Risk Assessment Mechanism (hereinafter referred to as "the Mechanism"), which is a purely national initiative. Inspections of the obliged entities will be carried out by the NUKIB ex-ante, and in case that deficiencies are detected, the NUKIB will also have the power to issue a temporary ban on the performance of a management function by a natural person in a regulated organization. There is a significant tightening of sanctions, for important entity category the upper limit is 7 million EUR or 1.4% of the world turnover for essential entity category the



upper limit is EUR 10 million or 2% of worldwide turnover.

NUKIB will be able to issue a temporary ban on the performance of a management function to a natural person in a regulated organization for the essential entity category. As part of the control of the fulfillment of obligations, it is expected to maintain the principle where NUKIB issues remedial measures where it orders organizations to stop with behavior that is not in accordance with legal obligations and to adopt security measures or processes established to report incidents brought into line with the requirements. NUKIB also imposes administrative fines for offenses in addition to or instead of corrective measures.

5. Supplier Risk Assessment Mechanism

The NIS 2 Directive also regulates the obligation of states to ensure and regulate the security of the supply chain. The NIS 2 Directive (point 91 of the recital) lists the criteria that should be taken into account when assessing the riskiness of supply chains. Point 91 of the NIS 2 Directive recital states that the following criteria need to be taken into account:

- the extent to which essential and important entities use and depend on specific critical information and communication technology services, systems and products;
- the relevance of specific information and communication technology services, systems or products for the performance of critical or sensitive functions, including the processing of personal data;
- availability of alternative services, systems or products of information and communication technologies;
- the resistance of the entire supply chain of information and communication technology services, systems or products during their life cycle to disruption and
- in the case of emerging services, systems or products of information and communication

technologies, their future significance for the activities of the subjects.

Obligated persons of the Mechanism (as proposed in the New Cyber Security Act) will be obliged to find out information about suppliers of safety-relevant supplies and report them to NUKIB. NUKIB will collect and evaluate information and data associated with an authority or person that relate to a possible threat to the security of the Czech Republic, internal or public order or the fulfillment of the supplier's riskiness criteria. When assessing risks, NUKIB (2023) will reflect the criteria established by the decree on supplier risk criteria, which are strategic criteria based mainly on the supplier's country of origin (i.e. they are assessed from the point of view of whether the supplier's country of origin has a democratic political system, separation of powers, respect for human rights, independent judicial review, there is no obligation to cooperate with intelligence services, etc.). NUKIB will be subsequently authorized, within the framework of risk reduction, to issue measures of a general nature, in which it sets conditions or prohibits the use of the supplier's performance of safety-important supplies in a critical part of the specified scope (if it detects a possible significant threat to the security of the Czech Republic or internal or public order as a result of an evaluation of risk criteria suppliers).

The supplier chain security assessment mechanism is still in the process of being developed and that the information provided may not correspond to the final form. NUKIB declares that it wants to regulate only what is strictly necessary. Otherwise, it would be a burden for the private sector and the State. The NUKIB also seeks to coordinate the Mechanism with the NIS 2 Directive (Vlachová, 2022).

The Mechanism will not affect all systems of a given entity, but only the security critical parts and the supplies to them. The screening criteria will be in the implementing legislation. The screening of an entity does not mean its automatic exclusion. Emphasis will be placed on communication with

the entity — close cooperation with the entity is expected. Threats will be assessed in an objective manner and the screening process must be reviewable. However, the process will not be fully transparent due to national security interests in some information. The screening will be carried out by the NUKIB and other entities such as The Security Information Service, The Office for Foreign Relations and Information, the Military intelligence, the Ministry of Foreign Affairs or the Financial Analytical Office.

The process must be as transparent as possible, based on risk analysis, predictable for all parties — only such a Mechanism will not harm the openness of the economy, but at the same time ensure the national security. NUKIB is currently working on draft criteria for the Mechanism. The Mechanism will apply to critical infrastructure and operators of essential services. The Mechanism foresees investment cycles and transition periods of several years will be set — details are currently being discussed. When assessing risks, NUKIB reflects the criteria set out in the proposal of Decree on Supplier Risk Criteria, which are strategic criteria based primarily on the supplier's country of origin. The criteria set in the proposal of Decree on Supplier Risk Criteria for the state of origin of a supplier are as follows:

- The state is not subject to sanctions imposed by the EU or the Czech Republic, or the state itself has not imposed sanctions on the EU or the Czech Republic;
- The state has not repeatedly violated its international legal obligations, in particular its human rights and international trade obligations;
- The state has not acted against the interests of the EU, the Czech Republic or their allies in the long term, including conducting, financing or otherwise supporting cyberattacks or espionage or other intelligence activities;
- The state has concluded treaties with the Czech Republic on protection or cooperation in the area of: (i) data security (including personal data), (ii) intellectual property, (iii) cyber secu-

urity, or the state is subject to the same international legal obligations as the Czech Republic;

- The state does not require the cooperation of persons within its jurisdiction for national security purposes, including the obligation to actively exchange information or the mandatory placement of a representative of the state in the contractor's organizational structure.

6. Evaluation of the proposed Mechanism

The proposal of the New Cyber Security Act is received positively by the professional public from the perspective of the implementation of the NIS 2 Directive, but there is quite strong criticism of the proposed Mechanism. There are voices that the proposed Mechanism unjustifiably goes beyond the scope of the implemented NIS 2 Directive. The aim of the NIS 2 Directive is to promote harmonization of Member States cybersecurity law across the EU, the Mechanism undermines this principle. In the NIS 2 Directive, recital 91 lists criteria for the risk assessment of supply chain — the bill does not take these (objective, technical) criteria into account and sets out other criteria of a geopolitical nature. The New Cyber Security Act does not take these objective criteria into account and instead sets other criteria of a political disposition in contradiction with the Directive.

The Mechanism is therefore unbalanced and may cause inequality between suppliers. It will mainly affect selected suppliers from third countries who may be disadvantaged by government decision compared to other suppliers. Problematic is also the nature of a measure of a general nature, in which NUKIB may set conditions or prohibits the use of the supplier's provision of a security-relevant supply in a critical part of the specified scope. Proposal of the New Cyber Security Act excludes the procedure for adopting a measure of a general nature under the Administrative Code, inappropriate due to the lack of possibility of appeal. There is also a possibility of unreasonably broad administrative discretion of the NUKIB to grant an



NUKIB will be able to issue a temporary ban on the performance of a management function to a natural person in a regulated organization for the essential entity category. As part of the control of the fulfillment of obligations, it is expected to maintain the principle where NUKIB issues remedial measures where it orders organizations to stop with behavior that is not in accordance with legal obligations and to adopt security measures or processes established to report incidents brought into line with the requirements.

The Mechanism will not affect all systems of a given entity, but only the security critical parts and the supplies to them. The screening criteria will be in the implementing legislation. The screening of an entity does not mean its automatic exclusion. Emphasis will be placed on communication with the entity — close cooperation with the entity is expected. Threats will be assessed in an objective manner and the screening process must be reviewable.

exemption from the supplier risk limitation. Possible exceptions from the prohibition allow the NUKIB to exercise broad freewill in imposing the exemption.

7. Adoption of a new legislation in organisation

Most of the measures, that organizations will have to implement in light of the new legislation are not new things and a lot of companies are hopefully already working on these areas.

Organisations that belong to the sectors that the NIS2 Directive covers will be responsible for complying with the new security measures in the NIS2 Directive.

One of the focus areas of the NIS2 Directive is to ensure that organisations have adequate risk analyses and security policies in place. Finally, it is important to work with data processing partners that have a high level of security to ensure a secure supply chain. Regarding the obligations of organizations related to the implementation of the NIS 2 Directive in the Czech Republic, it is also necessary to focus on the proposal of the New Cyber Security Act. According to the New Cyber Security Act, or-

ganizations will primarily have the following obligations:

- Report to NUKIB the fulfillment of the criteria for identifying a regulated service
- Identify primary and support assets across the organization and determine which are related to the provision of the regulated service, these then form the scope of cyber security management
- Keep a documented record of the identification of the scope of cyber security management including registration of primary assets that were excluded from the specified scope, and justification of this procedure
- In specified cases (with potentially highly adverse impacts of cyber security incidents), within the scope of cyber security management, they must ensure that all information and data are processed on the territory of the Czech Republic
- Ensuring cyber security training (employees, management).

If the entity is a mandatory person of the Mechanism, it must additionally find out information about suppliers of safety-significant supplies and document this information at least to the extent of

identifying all safety-significant supplies and suppliers of safety-significant supplies who provide them, and to report this information and changes to it to NUKIB within 10 days of their finding.

As part of the adaptation to the NIS 2 Directive, it can also be recommended to view internal regulations and internal processes and conduct an audit of the organization's internal processes and find out whether internal regulations are applied in practice. Organisation may also check whether the security measures in place correspond to legal obligations and review contractual relations with suppliers, to determine whether the cyber security requirements are covered in these contracts.

8. Conclusion

The NIS 2 Directive was adopted in December 2022 and now has an implementation deadline until October 2024. Implementation of the NIS 2 Directive in the Czech Republic is expected in the first half of 2024 in the form of a New Cyber Security Act. NUKIB published a bill in January 2023 and asked professional public to comment it. In addition to NIS 2 Directive, the New Cyber Security Act introduces a Mechanism, which is a purely national initiative. The NIS 2 Directive expands the scope of regulation by adding new sectors according to their importance to the economy and society and introducing a strict size limit. The NIS 2 Directive will no longer identify individual information and communication systems (critical informational infrastructures, essential services, etc.), but rather identify the criticality of the sector, the category of entities and defining their obligations. This represents an increase from the current approximately 600 obliged entities to 6000. All medium and large organizations in selected sectors will be included

in the scope of the NIS 2, under the categories essential (obliged person under a regime of higher duties), and important (obliged person under a regime of lower duties).

Inspections of the obligated entities will be carried out by the NUKIB ex-ante, and in case that deficiencies are detected, the NUKIB will also have the power to issue a temporary ban on the performance of a management function by a natural person in a regulated organization. There is also a significant tightening of sanctions, at the upper limit of €10 million or 2% of worldwide turnover.

The aim of the NIS 2 Directive is to support harmonization and standardization in the field of cyber security at the EU level. If, in addition, each of the Member States decided to introduce its own risk assessment mechanism, serious interpretational contradictions could arise. The decision to combine the implementation of the European NIS 2 Directive with the mechanism for verifying the security of supply chains in the new bill on cybersecurity may directly jeopardize the implementation of the NIS 2 Directive. Regulation should consider the wider impacts it may cause. Inappropriate regulation could have impact on different market segments, indirectly affect customers and the state budget.

Adoption in an inappropriate form could result in causing financial losses and slowing down the advancing digitalization process. Inappropriately set legislation can undermine the principle of fair competition, worsen the business and investment environment and affect investor confidence. The appropriate solution remains a moderate coordinated approach of all current legislative initiatives in the framework of the implementation of the NIS 2 directive into the Czech legal system, not an isolated approach to partial amendments.

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Implementation of the NIS 2 Directive and its impact on the obliged persons

ABSTRACT

The Directive on measures to achieve a high common level of cybersecurity in the European Union, known as NIS 2 Directive should be adopted by the end of 2022 at the latest. The NIS 2 Directive expands the scope of regulation by adding new sectors according to their importance to the economy and society and introduces a clear limit on the size of obliged persons. In particular, the project will examine in detail the process of the implementation of the NIS 2 Directive in the Czech Republic and other Member States and analyse the impact on obliged entities.

KEYWORDS

Cyber security; NIS 2 Directive; Key Word

JEL CLASSIFICATION

K20



Labour taxation in Europe – Possible implications from pre-covid era

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* 1. Introduction

Inhabitants of countries around the globe face difficult times. The start of this decade changed the world and its economy and brought new challenges for countries to overcome. Leaving aside all past limitations for the social life of billions of people around the world, we can see serious economic damage as an aftermath of the global pandemic. Governments have used extreme restrictive measures at times to stop the spread of the coronavirus among the population. However, this has resulted in a paralysis of economic activity that has created economic and social tensions. Certain industries in the economy were forced to stop their businesses, leaving employers, employees, and freelancers with a great deal of uncertainty. Governments in many developed countries tried to prevent a rapid spike in unemployment by subsidies and other fiscal stimuli.

These actions eased the situation for people at such times but created an additional burden for the government budget. Moreover, the economic downturn from this era resulted in a decline in tax revenues as consumption was limited and labour incomes and corporate profits have fallen. This represents a significant challenge for policymakers as the public budgets of developed countries were

in severe imbalance long before the coronavirus outbreak hit the world. Governments currently have a task to find appropriate measures of fiscal consolidation to prevent even deepen accumulation of public debts.

A proven source of revenue is the taxation of income, more specifically labour taxes on workers. However, excessive taxation in form of a tax burden can have an adverse effect on the whole labour market, which was already affected by the pandemic. A thorough analysis of possible consequences should be done prior to any changes in the labour taxation setting by any responsible policymaker. Labour taxes may have a distortionary effect on both sides of the labour market. This can be exhibited by a decrease in the employment rate and/or possibly by an increase in the unemployment rate.

However, multi-country comparative research on labour taxation can be challenging for economists. The taxation system of each country consists of many characteristics such as tax deductions, tax exemptions or tax credits. Some countries use progressive tax rates with numerous tax brackets while other countries simplify with a proportional tax scheme. Another challenge is additional payments above income tax for employees who also contribute to social security or health in-



surance. Therefore, it is extremely difficult to compare tax systems of real economies with so many systematic disparities. This issue is tackled by this article.

The aim of this article is to provide additional contribution to the empirical evidence of labour taxation and its possible effect on employment and unemployment in specific European countries. The scientific benefit of this contribution is threefold.

First, the dataset consists of 26 developed countries in Europe in the period of 2000 to 2019. This represents comprehensive and the latest pre-covid empirical evidence. The second benefit is the division of the employment rate into the extensive part (employment level), and the intensive part (average work hours in a year). The focus of this research is extended to the unemployment rate as well. Previous authors of scientific literature focused on either employment or unemployment, not both. This, however, means a loss of information. The extensive employment rate and unemployment rate do not necessarily need to be the exact opposite. This approach may show a scenario of people leaving the labour market entirely. Third, labour tax progressivity is also considered beside the overall tax burden, as the impact of taxation may be diverse on people with different income levels. The tax wedge indicator is used in this paper as it presents unifying statistics, which can be also used to determine the level of progressivity of labour taxes among multiple countries. Benefits of the tax wedge indicator can be seen for example in Hodge and Hickman (2018).

This paper has the following structure. The second chapter contains an overview of the related empirical literature, chapter three explains data and methodology, and chapter four includes the econometrical results. General remarks, conclusion and aim of future research can be found in chapter five.

2. Empirical literature review

Scientific literature offers many examples of previous empirical studies. These are focused on labour taxation and possible repercussion on the labour market or economic growth. Authors tried to describe the relationship between these variables using mainly regression models with unemployment or employment rate as a dependent variable and certain tax indicators as an independent variable.

Alesina and Perotti (1997) presented a theoretical model. They econometrically confirmed its outcome on 14 OECD countries. Welfare (redistribution) efforts, which are funded by an increase in labour taxes, elevated unit labour costs. This results in a loss of competitiveness and eventually in a fall in employment across the whole domestic economy.

Another example of a panel study is Daveri and Tabellini (2000). They also examined 14 OECD countries in the time period 1965–1991. They have added labour market institutions as explanatory variables. The main characteristic, by which they could divide units of their datasets, was the competitiveness of the labour market. Based on the power or concentration of unions in selected countries, a strong negative correlation between labour taxation and employment was found. This effect was stronger in continental Europe against the rest of OECD. Daveri and Tabellini (2000) calculated a negative effect of ten percentage point increase in labour taxation to lower the employment rate between 4 and 5.5 percentage points.

Some authors also checked effect of tax progressivity in the labour market. Lehmann et al. (2016) estimated that more progressive taxation of labour can improve employment, specifically, the employment of low-skilled workers. Tax progressivity has also an unemployment-reducing effect while overall labour taxation has a deepening effect on unemployment. They also found an adverse effect of tax progressivity on the overall productivity per worker. They quantified that one percentage point increase in progressivity, which

can be imagined as a half percentage point decrease in low-income workers' tax wedge and a half percentage point increase in high-income workers' tax wedge simultaneously, to boost employment by 1.01 percentage point.

Öztürk (2021) examined the effects of tax wedge and social security contribution on the unemployment rate in European transitioned economies. He used causality and cointegration analyses to find possible causality effects rather than quantify the effect itself. His estimates showed that both tax wedge and social security contribution can cause a rise in unemployment. The degree of this effect is different for individual transition economies. The studies above show a summary of empirical papers within the scope of labour taxation.

3. Methodology and data

The methodology in this study follows the previous empirical studies, mainly Lehman et al. (2016) and Zimčík (2019) with few modifications. The latest possible pre-covid dataset is used to obtain the most recent results in this field. Annual data from the period 2000–2019 is used. The dataset contains 26 European countries¹, which are all member countries of OECD. This selection helps mitigate differences as countries across the European continent are quite heterogeneous. OECD members should have more similarities as they consist of the most advanced economies. This selection also helps with the data collection as OECD contains economies for which statistical data are easily accessible. The source of data collected is therefore OECD Statistics.²

3.1 Data

Three indicators of the labour market are examined in this study. This approach is helpful to better capture the possible effects of income taxation on the participants in this market. Traditionally, in these types of studies, economists have only observed the employment rate expressed as the ratio of employed individuals to the working population. The employment rate measures so-called **extensive employment**.

The second indicator is the number of average annual hours in actual work per worker. It's called intensive employment and shows how many hours on average workers spend in their jobs. Intensive employment can be also used to determine the productivity of an average worker. A difference can be found in certain countries, which are characterized by highly extensive but low-intensive employment and conversely.

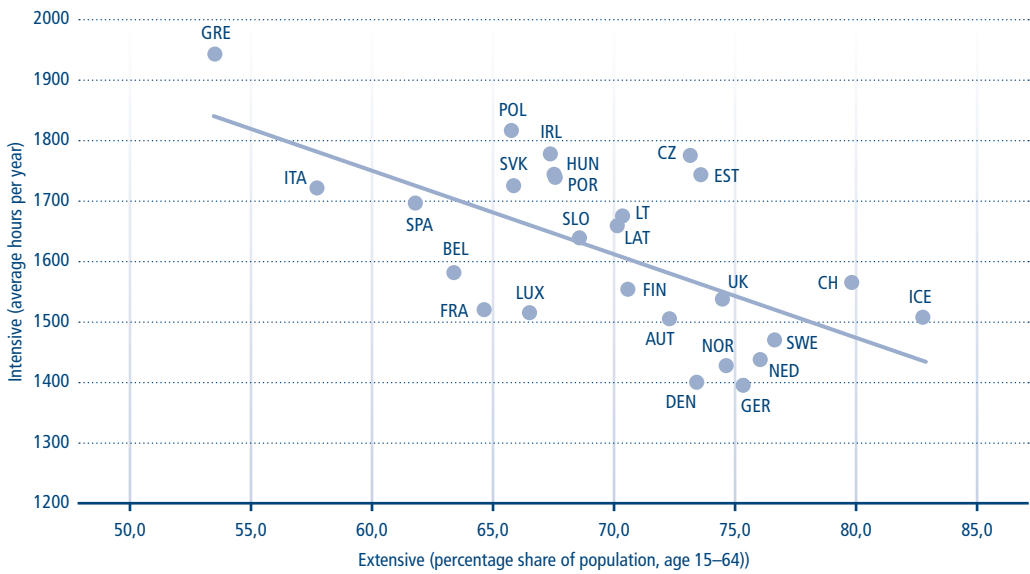
A preliminary analysis of input data showed an interesting behaviour. There is an evident inverse relationship between the two forms of employment. Figure 1 illustrates this relationship as it shows average values of extensive and intensive employment for individual countries. Most of the countries have extensive employment in levels between 60 % and 80 % while having intensive employment between 1400 and 1800 hours per year on average. A negative correlation is visible in figure 1 using a linear trend.

The last indicator of the labour market is the **unemployment rate**. This indicator is also used as a dependent variable in this research. Observing both the unemployment rate and extensive employment provides a complete picture of the situation in labour markets in European countries. We may follow if drops in extensive employment are offset by a rise in the unemployment rate. This

¹ List of countries in alphabetical order: Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom.

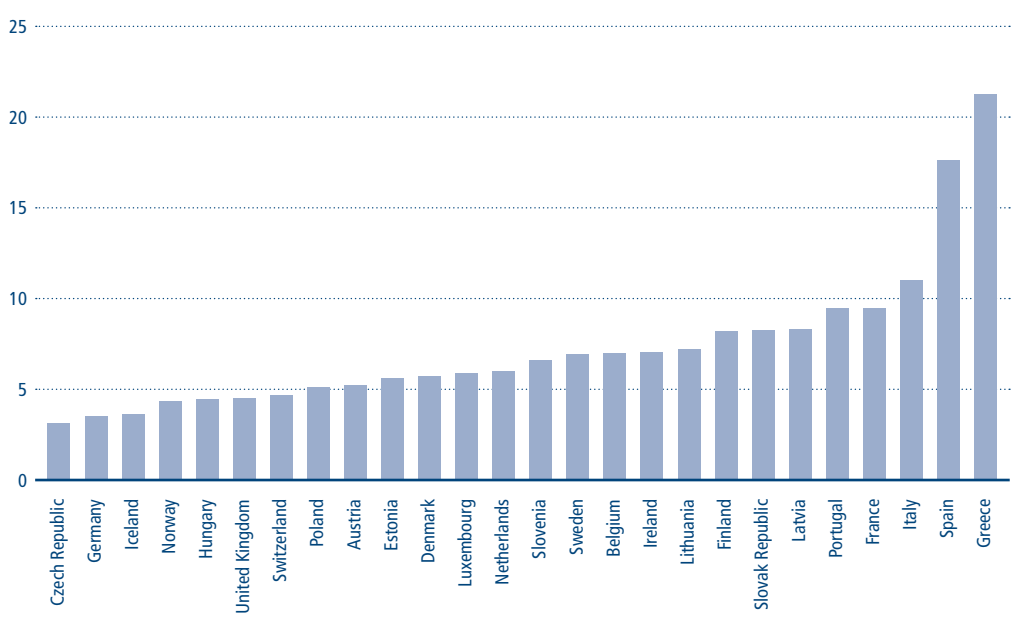
² Available online at <https://stats.oecd.org/>

Figure 1 » Extensive and intensive employment (average 2015–2019)



Source: OECD Statistics, 2017, own calculations

Figure 2 » Unemployment rate (average 2015–2019)



Source: OECD Statistics, own calculations

would suggest that companies are laying off their employees, who end up as job seekers. However, if it is not the case and drops in extensive employment are not accompanied by the rise of unemployment, this means that people are leaving the labour force entirely. Such people may even start to work outside the official labour market without the necessity to pay taxes. This is a case of the shadow economy as described in Buček (2017).

The situation in respective labour markets is very different for each economy. Figure 2 shows the disparity in the unweighted average unemployment rate in 2015–2019. We can see that in the five-year period before covid, several countries were struggling with a significant level of unemployment, such as Greece, Spain, and Italy. The Czech Republic and Germany are exactly opposite examples with an unemployment rate well below the 5 % threshold. This disparity means that labour taxation may have a different effect in a subset of countries with a higher unemployment rate as the situation there is already unfavourable.

Labour market indicators mentioned above are used as dependent variables in this research paper. To measure effects of labour taxation on the labour market, we need to also use tax variables. Instead of using the personal income tax (PIT), the **tax wedge indicator** is used in this paper. Measuring income taxation using a tax wedge has certain advantages over other indicators. The tax wedge is defined by OECD (2017) as:

“...the ratio between the amount of taxes paid by a worker and the corresponding total labour cost for the employer.”

A big advantage is the composition of tax wedge, which includes PIT, payroll tax and social security contributions of any kind. Tax systems across such a multinational community of separate countries are complex and rather difficult to compare with each other. The tax wedge helps to compare the situation across a set of countries. The second benefit is the ability to perfectly illustrate the government's intention of fiscal policy in the case of income taxation. Contradict to PIT rev-

enue, the tax wedge is not influenced by economic performance, business cycle or inflation.

However, there are also some limitations to this statistical measure. The complexity of social and/or health systems in some countries causes a limitation of tax wedge because workers' payments to health insurance or social security contribution do not need to go through the government budget, but rather through specialized private funds. The tax wedge also does not consider the non-wage income of individuals. These missing aspects inflict discrepancies, so a certain degree of prudence is needed when interpreting tax wedge values or comparing selected European countries. Besides mentioned limitations, the tax wedge provides a comparison simplification of comprehensive tax systems in the most developed economies and can be used to examine both cross-section and time-series data analysis.

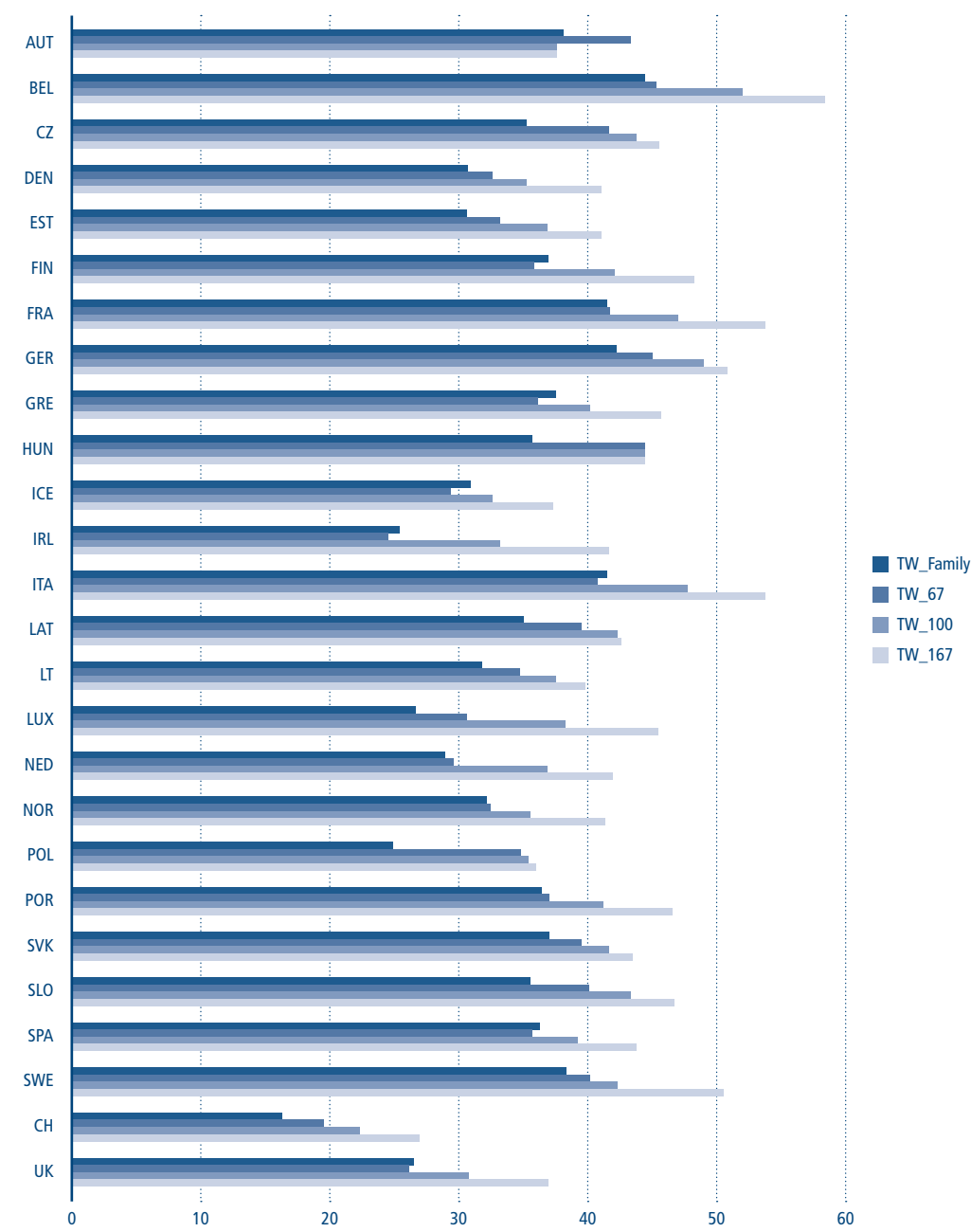
Tax wedge can be calculated for different workers or worker groups based on their gross salary. The most standardized tax wedge is calculated for an average single worker (a single person at 100% of average earnings) without children. In this research, we rather focus on the tax wedge for families. More precisely the two-earner married couple, one at 100% of average earnings and the other at 67%, with two children. This approach should better capture the impacts on a traditional family where both adults are workers.

The tax wedge indicator can also help to approximate a level of labour tax progressivity. This is due to the fact that it is calculated for workers with a different gross wage. We can then compare tax wedge on different ends of the wage distribution spectrum. For this purpose, we also check the tax wedge on a single worker with 167% average earnings and a single worker with only 67% average earnings. Figure 3 illustrates these tax wedges for selected economies.

There are four bars for each country in figure 3. The leftmost column represents the tax wedge for a two-earner married couple one at 100% of average earnings and the other at 67%, with two chil-



Figure 3 » Tax wedge for different representative workers based on their income (2019)



Source: OECD Statistics

dren. We label this variable as TW_Family. Then there are bars representing the single worker without children who has 67% of average earnings (TW_67) and the one with 167% average earnings (TW_167). To get a better baseline, figure 3 also shows a single worker without children who has exactly 100 % of the average income (TW_100).³ Variable to approximate tax progressivity of labour taxes is designated as Prog in this paper. The method of calculation of this variable is shown in equation 1:

$$Prog_{i,t} = \frac{TW_{167,i,t}}{TW_{67,i,t}} \times 100 \quad (1)$$

Based on this visualisation, you can get a better idea about overall tax burden comparison, level of tax progressivity and tax deductions for children. Hungary, for example, does not show any indication of tax progressivity as the tax wedge is identical for different wage levels. Other countries such as Belgium, Italy and Sweden show a high degree of labour tax progressivity. Tax deductions for children decrease the tax wedge by a considerable amount in many countries. Notably, this is the case for Poland, which shows only minimal progressivity tendencies.

Two control variables are also added as explanatory variables as they are present in previous empirical studies. These are control variables for real economic growth and inflation. The last explanatory variable, union density, is connected to labour market characteristics. Union density is expressed as a ratio of employees who are members of unions. This represents the power of employees for wage and benefit negotiations with employers.

3.2 Estimation technique

Table 1 contains designation and descriptive statistics for each variable used in this paper to summarize the data collected.

Several approaches are available to properly process the input data. A cross-section analysis can be used to observe the vector of units, and countries in this case, but only in a single time period. Time-series analysis focuses exclusively on one unit (country) for a long period of time. The third option is the use of the panel data approach as it offers many advantages. The panel data approach provides an excellent opportunity to study data internationally and over a long-time horizon. Furthermore, panel data can control for heteroge-

Table 1 » Descriptive statistics of used variables

Variable	Mean	Minimum	Maximum	Label
Employment rate (%)	67.13	48.79	84.64	Emp
Average annual working hours	1647	1371	2025	Hours
Unemployment rate (%)	8.18	2.00	27.47	U
Real GDP per capita growth (%)	1.85	-14.46	23.22	GDP
CPI inflation (%)	2.27	-4.48	15.4	CPI
Tax wedge (%)	35.29	15.43	50.93	TW_Family
Tax progressivity	123.8	100	177.4	Prog
Union density (%)	33.61	4.5	93.3	UD

Source: Own calculation

³ Kindly note that TW_100 is listed here only as a visual baseline. The research in this paper uses TW_Family as an explanatory variable as it is more suitable.

neity caused by different formal and informal structures within each economy. Baltagi (2013) highlighted these advantages as he states that panel data offers more informative data, more efficiency, and more degrees of freedom. The dataset used in this study has overall 26 cross-section units with 20 temporal observations for each unit.

The two-way fixed-effect panel estimator was used as a method of linear regression estimation. It presents many benefits such as different intercepts for individual units (countries). Hausman test was performed for all three regressions and the null hypothesis regarding common intercept was rejected in all three cases. The fixed-effect estimator is then more efficient and unbiased than the random-effect estimator, see Baltagi (2013) for a comprehensive review of the panel data estimation.

Input data needs to have a proper quality for the panel estimation. Time-series component of panel data may cause an issue with non-stationarity. This has been checked using the augmented Dickey-Fuller test for unit-root presence. Unit root in levels was found in all dependent variables, tax variables and union density. Additional testing showed that these variables are stationary in the

first differences. Hence all these variables were transformed into first differences.⁴ The final econometric equation has the following form:

$$d_y_{i,t} = \alpha_i + \beta_1 GDP_{i,t} + \beta_2 CPI_{i,t} + \beta_3 d_{TW_Family}_{i,t} + \beta_4 d_{Prog}_{i,t} + \beta_5 d_{UD}_{i,t} + \mu_{i,t} \quad (2)$$

where α_i is a common intercept, $\mu_{i,t}$ denotes the unobservable individual-specific effect and remainder disturbances. $d_y_{i,t}$ denotes a first difference of the dependent variable. The results of the estimation can be seen in the next chapter.

4. Empirical estimation

The coefficient estimation of the panel regression is listed in table 2. Three regressions were run for a different dependent variable. Coefficients for independent variables can be seen in columns two to four. Robust (HAC) standard errors were used for estimation to rectify results of possible heteroscedasticity and autocorrelation.

Coefficients for control variables are as expected as GDP has a positive correlation with extensive employment and intensive employment and a neg-

Tax progressivity has also an unemployment-reducing effect while overall labour taxation has a deepening effect on unemployment. They also found an adverse effect of tax progressivity on the overall productivity per worker. They quantified that one percentage point increase in progressivity, which can be imagined as a half percentage point decrease in low-income workers' tax wedge and a half percentage point increase in high-income workers' tax wedge simultaneously, to boost employment by 1.01 percentage point. A reverse effect was found in the case of unemployment as a higher tax wedge deepens the unemployment rate. This particular result shows a tendency where excessive labour taxation, in form of either higher personal income tax or higher social security contribution, harms the demand side of the labour market. A higher tax wedge means higher employment costs for employers.

⁴ You can notice the prefix "d_" in transformed variables.

Table 2 » Coefficient estimation using fixed-effects panel estimator⁵

Dependent variable	d_Emp	d_Hours	d_U
Const.	0.234 (1.632)	-8.748*** (-3.280)	0.034 (0.261)
GDP	0.215*** (4.103)	2.263*** (3.302)	-0.273*** (-4.641)
CPI	-0.031 (-0.625)	-0.664 (-0.932)	0.089 (1.804)
d_TW_Family	-0.135* (-1.938)	-0.522 (-0.500)	0.162** (2.599)
d_Prog	-0.024* (-1.988)	-0.384 (-0.961)	0.019 (1.407)
d_UD	-0.055 (-1.620)	1.232** (3.241)	0.059 (1.035)
LSDV R ²	0.577	0.345	0.634
D-W statistics	1.630	1.990	1.438
n	403	403	403

Source: Own calculation

ative correlation with the unemployment rate. Okun's law predicts such behaviour as higher economic activity is accompanied by higher employment and a lower unemployment rate.

The tax wedge variable is negatively correlated with extensive employment while having a positive correlation with the unemployment rate. There is no statistically significant relationship between tax wedge and intensive employment. According to these results, an increase in the family tax wedge by 10 percentage points is associated with a decrease in the employment rate by 1.35 percentage points. Furthermore, the same effect should increase the unemployment rate by 1.62 percentage points. The size of these two coefficients is similar. An increase in tax wedge causes the same drop in extensive employment, which is

offset by a rise in the unemployment rate. This indicates that companies are laying off their employees, who end up as job seekers (unemployed). Hence there is no evidence of tax wedge to cause people to leave the job market entirely in favour of the shadow economy or simple inactivity.

The second tax variable was an approximation for labour tax progressivity. There is only a statistically significant result for extensive employment. An increase in tax progressivity is accompanied by lower extensive employment. However, this effect is rather small as the coefficient is only -0.024. The last variable is union density. Estimation did not show any significant association with either extensive employment or unemployment rate. There is, however, a significant positive correlation with intensive employment. The coefficient for this varia-

⁵ Note: The method of estimation is the two-way fixed-effect panel estimator. Values inside parentheses are respective t-statistics for the coefficients above. Symbols (*), (**) and (***) represent the significance levels 90%, 95% and 99%, respectively. All coefficients and statistics are round up to three decimal points.

ble means that 1 percentage point increase in union density is accompanied by higher average working hours in the economy, more specifically a 1.232-hour increase.

The bottom three rows in table 2 show statistics regarding the estimation itself. The coefficient of determination is over 0.5 in the case of extensive employment and unemployment rate. The result for intensive employment is lower, only 0.345 meaning that independent variables can explain only a third of the variance in the dependent variable. Durbin-Watson statistics are around two in all three regressions meaning that there should not be present any negative or positive autocorrelation. The last row shows the number of observations, which is 403. Please note that this is due to the first difference transformation and some missing values for union density statistics. These are all results from the panel estimation. The next chapter concludes this research and contains several remarks regarding obtained results.

5. Conclusion

Taxation of labour income is an important policy of governments in developed economies. Not only the fact, that revenues from this type of tax have a dominant role in public budgets, but policymakers need to consider a possible negative effect of taxation on all individuals within the labour market. The purpose of this article is to provide additional empirical evidence of labour taxation given influence towards employment in a set of 26 European countries in the period 2000–2019. There is a relatively consistent opinion among economists about this subject in favour of the negative effect of excessive taxation on the labour market.

Using the two-way fixed-effect panel estimator,

several interesting results were obtained showing a negative effect of increases in tax wedge on the employment rate. A reverse effect was found in the case of unemployment as a higher tax wedge deepens the unemployment rate. This particular result shows a tendency where excessive labour taxation, in form of either higher personal income tax or higher social security contribution, harms the demand side of the labour market. A higher tax wedge means higher employment costs for employers. This can lower employment in the whole economy, as the labour force is too expansive. We can derive this conclusion as a drop in employment was accompanied by a higher unemployment rate in our estimation.

This also presents a recommendation to policymakers. Especially in countries, which are heavily affected by unemployment, it would be unwise to drastically increase labour taxation. Many countries in Europe experience also issues with public finances, especially during and after the recent pandemic. The need for fiscal consolidation may force governments to use all means to correct public finance imbalances, but this needs to be carefully considered to avoid any adverse effects causing economic issues in the future.

This study presents an insight into taxation problematics in the labour market. The finding showed a common trend among observed European countries in favour of lowering the income tax burden to promote employment. Unfortunately, not all results can be applied to each country because of the unique specifics of each labour market and development, but countries can be divided into more homogenous groups with close similarities to obtain additional empirical evidence. This can be the subject of the following research.

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Labour taxation in Europe — Possible implications from pre-covid era

ABSTRACT

The aim of this paper is to examine and compare labour taxation in developed economies in Europe. Labour taxation is an important source of monetary funds towards the public budget, which is currently tightened across the whole of Europe. It also represents a significant burden for their taxpayers — employees but also employers. This paper empirically examines the possible impacts of labour taxation on the labour market in selected economies. This may provide useful information for any policy-makers with respect to labour taxation settings in current turbulent times.

KEYWORDS

Employment; Europe; Labour market; Taxation

JEL CLASSIFICATION

C23; E24; H24; O11



Mathematics as an analytical tool for the economy, applied management, and business

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* 1. Introduction

In this article, we focus on the selected mathematical aspect and principles. We present some of them in the concept of mathematics and as well in the concepts of a — necessary tool and need for economists, applied managers, and businesses. We show the meeting point where economists and managers meet together. Mathematics provides many important tools for economics and other business fields. Practical applications typically focus on checking accounts, price discounts, mark-ups, and markdowns; payroll calculations, simple and compound interest, consumer and business credit, and mortgages. Further, the focus is on mathematical analyses, e.g. in financial markets, business management, psychological training, and so on. We explore mathematics, statistics, economics, and psychology within a management context. Business mathematics is mathematics used by commercial enterprises to record and manage business operations. Commercial organizations use mathematics in accounting, inventory management, marketing, sales forecasting, and financial analysis. Mathematics for management aims to show how to use mathematics to understand economics

and business management. Therefore, as applications of the mathematical concepts, examples, will be drawn from important topics in economics and business. It means motivation comes from the real world and real economic situations and businesses. Learning math helps employees analyze and solve problems—abilities that most employers value. And math teaches other important practices, including how to approach tasks methodically, pay attention to detail, and think abstractly. Some number-focused occupations, such as accountants and cost estimators, are obvious.

Mathematics typically used in commerce includes elementary arithmetic, elementary algebra, statistics, and probability. For some management problems, more advanced mathematics — calculus, matrix algebra, linear programming, times series, and derivation calculus — may be used. By using mathematical models, researchers can identify underlying patterns and trends in data and develop more accurate predictions of future outcomes. This can lead to more informed policy decisions and a better understanding of social dynamics. The most important point is, math is about problem-solving, critical thinking, and problem-decision making. Numerous mathematical techniques

were assembled to help solve various problems and questions of management. Here arose a concrete discipline called Management Science. It incorporated various techniques — mathematical programming, linear algebra, network methods, queuing theory, stochastic processes, statistics, recursive relations, and computer simulation to attack various management problems. We can freely tell that management science has as its philosophy the solving of a problem (Sondermann, 2006).

We develop and present a bridge for knowledge, competence, and understanding of how mathematical and statistical skills can be applied to improve business objectives. Math is an integral part of creating economic projections. It allows an economist to perform calculations on economic data, often using the principles of calculus to assess potential changes in the data over time. — What kind of math is used in economics? Calculus is the most common type of math found in economics. Calculus includes the use of various formulas to measure limits, functions, and derivatives. Many economists use different calculus when measuring economic information. The basic mathematical point for managers is basic calculus.

Calculus is a fundamentally different type of math than other math subjects. It is dynamic, whereas other types of math are static. **Calculus** is the mathematical study of continuous change. Calculus is used in physics, engineering, statistics, and even in life sciences and economics. It deals with rates of change and motion. It has two main branches (Sondermann, 2006; Benetti, 2000):

1. Differential Calculus: Deals with rates of change of a function. Explains a function at a specific point
2. Integral Calculus: Deals with areas under the graph of a function. It gathers a total quantity of a function over a range.

First of all, we introduce concrete mathematical topics in detail. Finally, we show its real applications in concrete economical areas and sub-areas. We focus on the two analytical “tools”: “derivation” and “Taylor series”. Finally, we illustrate their

direct applications in economy and business management.

2. Derivation

The derivative of the mathematical analysis (calculus) basic concepts include. The derivation is named after Sir Isaac Newton (1642–1727) and Gottfried Wilhelm Leibniz (1646–1716). Long century they were outstanding mathematicians and contributed significantly to the development of the science of mathematics. The derivative is a huge achievement in mathematics, as it is used by all sciences and has become indispensable in all areas of life. With the help of derivable functions, we can model the phenomena occurring in the physical world, with the derivation we can perform a real function test. The derivative shows the extremes of the function. They also describe the behavior of the function and can be defined at and around the point. We can find out that within a given interval the function is either ascending or descending and we can calculate the inflection points. This mathematical operation models the rate of change of a given function and the change in velocity (acceleration). The derivative provides an opportunity for local and global analysis of the function but also serves as a basis for the mathematical formulation of many physical laws. In general, whenever we want to study or determine the rate (first-order derivative) or acceleration (second-order derivative) of a change, we can do it with the help of the derivation (Csoz et al., 2021).

The derivation is a widely used method of analysis in economics and plays an extremely important role in economic analyses at both the microeconomic and macroeconomic levels. An important step in the development of functional concept analysis was the writing of a special power series named after Brook Taylor (1685–1731). He was an English professor of mathematics who introduced not only derivability and integrability, power series analysis, and continuity analysis into calculus history.



The derivative of a function is the rate of change of the function's output relative to its input value. Given $y=f(x)$, the derivative of $f(x)$, denoted $f'(x)$ (or $df(x)/dx$), is defined by the following limit:

$$f'(x) = \frac{\Delta y}{\Delta x} = \lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h}$$

The definition of the derivative is derived from the formula for the slope of a line. Recall that the slope of a line is the rate of change of the line, which is computed as the ratio of the change in y to the change in x . Geometrically, the derivative is the slope of the line tangent to the curve at a point of interest. It is sometimes referred to as the instantaneous rate of change. Typically, we calculate the slope of a line using two points on the line. This is not possible for a curve, since the slope of a curve changes from point to point.

Economy — is a science that studies, analyzes, and describes the way people use scarce, limited resources with alternative uses to produce goods and services and how these various goods and services are distributed and exchanged with each other to best satisfy their needs. It also deals with the business activities of individuals and the entire society, money, banks, and also the world economy. It is considered the oldest art and the youngest of the sciences. — there is an organized system of production, distribution, and consumption of goods in society. Every economy has to solve three basic economic problems — what to produce, how to produce, and for whom to produce, (Hult and Lindkog, 2007; Pliska, 1997).

The science that deals with the economy is called economics. Micro and macroeconomics, their common fields of study general economic theory can be divided from different points of view, depending on whether it examines individual economic phenomena or subjects and processes at the national economic level. We distinguish between macroeconomics and microeconomics. Macroeconomics (macro=large) analyzes the national economy as a whole and explains the mechanism of its functioning. It deals with the total pro-

duction of goods and services, the inflation rate, the unemployment rate, the price level, the amount of money in circulation, etc. Microeconomics analyzes and describes the behavior of individual market subjects, i.e. individuals, households, entrepreneurs, and companies. Microeconomics e.g. explains the price formation process of individual types of goods, the mutual relationship between supply and demand for individual goods, etc. It helps individuals, households, or companies to solve problems in such a way that their activity brings the greatest possible usefulness and the highest possible satisfaction. Figuratively, we can say that while macroeconomics examines the entire forest, microeconomics is interested in the individual trees in it. Macroeconomics and microeconomics condition and influence each other, every economic phenomenon has macroeconomic and microeconomic aspects. A concrete example for counting and defining marginal costs asks for derivation (Benetti, 2020): The terms consumption, production, and exchange arise from the activities of these subjects. Consumption is the main impulse for the existence and development of production, and exchange represents exchange (for example roll for money). The basis of the investigation of microeconomics is mainly the determination of the optimum and the search for equilibrium. To theirs, the so-called help us in determining economic models that show the relationships between the selected variables.

In these models, we often encounter a derivative that expresses how the change that occurs in one variable will affect the change of another variable. When solving optimization problems, we use local extrema and zero points of the necessary derivative function. In the case of market balance analysis, we use supply and demand analysis. The forms of economic functions are based on practice through some long-term research or measurement. Marginal costs: Marginal costs are defined as the change in a firm's total costs caused by a change in volume output by one unit. They can be expressed as the derivative of the total costs ac-

cording to the variable Q : $MC(Q) = (TC)'(Q)$, where $TC(Q)$ total costs required for the production of Q units of the given product and $MC(Q)$ marginal costs defined as the first derivative of total costs concerning to the variable Q .

3. Taylor and MacLaurin series

A very natural extended way of derivation leads to another level of derivation (Benetti, 2020). We come into another mathematical analytical tool: Taylor and Maclaurin series (Pike and Ross, 2003; Sondermann, 2006). The topic of the present study is to investigate the applicability of the Taylor series, which can also be used for market analysis in stock exchange trading. First of all we introduce the mathematical aspects and background of Taylor and MacLaurin series.

We introduce the general concept of an approximation. Now approximations are almost everywhere. Most phenomena in the real world are so complex that solving them exactly is not possible. That's where approximations come into consideration. For instance, you may come across an equation involving very complex expressions, integrals with very complex expressions, etc. One easy way to get to the answer is to replace the complex expressions with their Taylor series expansions. And that gives you a handle to control the trade-off between accuracy and computational complexity — the more terms of the expansion you include, the better the accuracy of the answer, but the harder it gets to solve the resulting problem. And this basic idea is used in most engineering — designing buildings, machines, electronic appliances, modeling fluid dynamics (which is used in rocket designing), economy, etc. all use these kinds of approximations. But what is used in practice is a truncated series, in which case it is an approximation to the function.

One of the most used tools in mathematics is functions since they are the ones that allow you to model the behavior of many things. Most of the time, the functions that are used are very complex

and that is why people usually work with simpler approximations. There are many types of approximations, among them **Taylor polynomials** (Csosz et al., 2021; Duffy, 2006).

Sometimes to avoid working with very complex functions, mathematicians and economists use approximations. The most commonly used approximation is the linear or first-order approximation.

Given a function $f(x)$, the **linear approximation** of $f(x)$ at the point $x = c$ is given by the function

$$L(x) = f(c) + f'(c)(x - c).$$

So, how we can get a better approximation that works for values farther away? We can think the linear approximation works because you know the rate of change at a point, if you knew how the rate of change varies (i.e., the second derivative), that might provide you more information about what the function is like. In general, if you knew how “all” the derivatives of the function behave, you could know exactly what the function is like. That is the idea behind **Taylor polynomials**.

Let us state the definition of the Taylor polynomial. Let f be a function with at least n derivatives at $x = c$. (Zakon, 2004). Then, the n^{th} -order **Taylor polynomial centered at $x = c$** is given by

$$T_n(x) = f(c) + \frac{f'(c)}{1!}(x - c) + \frac{f''(c)}{2!}(x - c)^2 + \dots + \frac{f^{(n)}(c)}{n!}(x - c)^n.$$

This polynomial of degree n has the property that $T_n^{(k)}(c) = f^{(k)}$ for $k = 0, \dots, n$, and approximates $f(x)$ near $x = c$.

Note that the first-degree Taylor polynomial is the same as the linear approximation. There is a special case when $x = 0$ because it is much easier to write. Let f be a function with at least n derivatives at $x = 0$. Then, the n^{th} — order Maclaurin polynomial centered at $x = 0$ is given by

$$M_n(x) = f(0) + \frac{f'(0)x}{1!} + \frac{f''(0)x^2}{2!} + \dots + \frac{f^{(n)}(0)x^n}{n!}.$$

It is worth mentioning that the Taylor polynomials allow you to approximate any function using



the powers of x . We note that the more derivatives, the more accurate the approximation we get.

Second Degree Taylor Polynomial

A particular case is when you want to approximate a function using the second derivative.

Let f be a function with at least 2 derivatives at $x=c$. The **second-degree Taylor polynomial**, or **quadratic approximation**, centered at $x=c$ is given by the function

$$\frac{f'(c)}{1!}(x-c) + \frac{f''(c)}{2!}(x-c)^2.$$

The Third Degree Taylor Polynomial

You could also approximate a function using the third derivative. Let f be a function with at least 3 derivatives at $x=c$. The **third-degree Taylor polynomial**, or **cubic approximation**, centered at $x=c$ is

$$T_3(x) = f(c) + \frac{f'(c)}{1!}(x-c) + \frac{f''(c)}{2!}(x-c)^2 + \frac{f'''(c)}{3!}(x-c)^3.$$

The basic fact about Taylor's series

(Zakon, 2004):

- The formula is based on the derivatives of the function, the center point, and the power functions. To see the whole formula, take a look at our Taylor Polynomials article.
- It is used to approximate a complex function with simpler functions and thus estimate the values of the function at points where it is difficult to evaluate.
- A Taylor polynomial takes a fixed number n of derivatives to estimate a function, while a Taylor series takes all the derivatives to estimate a function.
- The degree of a Taylor polynomial is given by the highest derivative used to estimate the function.
- Taylor polynomials are used to approximate complex functions and allow you to calculate values that are difficult to compute.
- Since Taylor series include all the derivatives of a function, it is necessary to find the pattern that the derivatives follow.

- Is Maclaurin the same as Taylor? Both the series expansions are very similar to each other. That is in fact, the Maclaurin series is nothing else but a special case of the Taylor series.
- A Maclaurin series is a special occurrence of the Taylor Series where the series is constructed around $x=0$. Maclaurin series are generally used if able to. For example, you can estimate $f(x) = \sin x$ with a Maclaurin series.
- Taylor series is used to evaluate the value of a whole function in each point if the functional values and derivatives are identified at a single point. The representation of Taylor series reduces many mathematical proofs. The sum of the partial series can be used as an approximation of the whole series.
- A Maclaurin series can be used to approximate a function, find the antiderivative of a complicated function, or compute an otherwise uncomputable sum. Partial sums of a Maclaurin series provide polynomial approximations for the function.
- What is meant by Maclaurin series?
- A Maclaurin series is a function that has expansion series that gives the sum of derivatives of that function. The Maclaurin series of a function. Function $f(x)$ up to order n may be found using Series. $[f, x, 0, n]$
- The difference between a Taylor polynomial and a Taylor series is the former is a polynomial, containing only a finite number of terms, whereas the latter is a series, a summation of an infinite set of terms, any number of which (including an infinite number) may be zero.
- Whereas a Taylor Series attempts to approximate a function locally about the point where the expansion is taken, a Fourier series attempts to approximate a periodic function over its entire domain. That is, a Taylor series approximates a function pointwise and a Fourier series approximates a function globally.
- What is the difference between Taylor and Maclaurin polynomials? Taylor's polynomial is an approximation of a function f about $x=a$, while

Maclaurin's polynomial is an approximation of f about $x=0$. Thus Maclaurin's polynomial is a special case of Taylor's.

- The Taylor series of functions are extremely useful in many, many fields of science and engineering.
- They allow you to closely approximate function values of functions that do not have closed-form definitions.
- They allow you to easily solve some integrals and differential equations, by allowing you to work out individual powers separately and recombine the results.
- There are many more applications. And all of them are used by real people in the real world ... whatever that may mean.
- What does the Maclaurin series (or more generally, the Taylor series) of a function give you? It is the polynomial *approximation* of the function at a particular point.

3. Application of Taylor polynomial in economy

Economic and financial mathematics uses elements of mathematical analysis (N-dimensional space, rows, series, derivation, integration), probability calculus, and linear algebra (vector, linear system of equations, programming) in all areas of economics. We just give a note about the EUR/USD or any kind of money exchange rate. (Fabozzi, 2004; Cont, 2010).

The central topic of economic analysis is the tracking and forecasting of changes, which in this case means the mathematical modeling and functional analysis of exchange rate changes. The present value (PV) can be determined using two methods:

- a. Static method: the first generally accepted method is revaluation, which means that the value of security must be reassessed whenever the interest rate changes.
- b. Dynamic method: a method that practically uses mathematical analysis, called "duration

convexity approximation". This method uses the **Taylor polynomial approach** to calculate the change in the maturity of a bond (linear) using a first- and second-order derivative to a level and to determine the continuous exchange rate sensitivity of securities by calculating small (non-linear) changes in interest rates. The first and second-order derivatives occupy a very important place in the display of price sensitivities, the first derivative of the long-term bond function denotes the yield sensitivity — Macaulay index — expressed as a percentage change in price, the second derivative bond.

In a mathematical sense, a change in the exchange rate of securities means the full differential, also known as the derivative, of the change function. In economic and financial theory, the rate of change of the price function is calculated using the Taylor polynomial. In calculus, the **Taylor formula provides a method of how to give an approximation with an n-th degree polynomial to any function**, chosen starting point x . Moving away from the starting point, the approximation becomes more and more inaccurate, the degree of inaccuracy can be deduced from a residual.

The Taylor polynomial formula is a very suitable analytical tool. The importance of stock market portfolio management cannot be overemphasized, and changes in interest rates and the rate of change must be taken into account when calculating risk values. Generally, the second-order approach is used, in which case the Taylor formula gives an approximate value as a function of the change in the interest rate given for a change in the value of a stock exchange trading product (financial instrument). In these cases, we calculate an unchanged interest rate and the formula indicates the price sensitivity of the asset:

The main object of the empirical research undertaken is to analyze the cyclicity of the market using the Taylor polynomial, on the EUR/USD currency pair traded on the international foreign exchange market, respectively trying to predict future movements of the EUR/USD currency pair,



based on historical data, using econometric methods (polynomial average). There can be determined – determined two lines:

1. It is possible to determine by the Taylor polynomial the trend of the price between the EUR/USD currency pair.
2. The future trend, and the cyclicity of the EUR/USD currency pair can be predicted using the polynomial average.

Application in Forex:

The FOREX (FOREIGN EXCHANGE MARKET) is the international foreign exchange market. In general, goods and services produced in one country must be paid for in the currency of that country.

The methods used in this kind of research are: 1. data collection (downloading data from a specialist service provider's website); 2. structuring the data, entering it into software; 3. data conversion, conversion into, time series, formatting; 4. converting data into information and graphical representation a; 5. research, application of mathematical and statistical calculation formulas, derivation; 6. power series, graphical representation, creation of a univariate quantitative projective model that starts from the past as a single variable (decomposition).

Types of moving averages and trends in the stock market analysis:

The basic idea of calculating moving averages is to produce the trend as a dynamic average of the original data set. It is a very common application in the practice of stock market analysis because it is simple and fast to calculate. The disadvantage is that the time series produced in this way is shorter and contains much less data than the original sample number, so in the case of a very short time series, the trend cannot be indicated. By averaging, we reduce the role of random effect but ensure that the trend is maintained. The linear trend for linear trend functions we use the least squares method, we look for a function for which the sum of squares of the difference between the observed and the val-

ues calculated by the model is minimal (least squares method)

$$\sum_{i=1}^n e_i^2 = \min$$

In the case of a linear trend, the degree of change between periods shows a certain constancy. Simple Moving Average (SMA): A simple arithmetic moving average gives equal weight to all the data in the set. The close time window attaches equal importance to the entire length of each element, which calculated the simple arithmetic average:

$$SMA(j) = \frac{1}{n} \sum_{i=j-n}^j X_i$$

– simple moving average, n – number of elements, X – the actual value at the given time.

Exponential Moving Average – EMA (Exponential Moving Average): The exponential moving average is more sensitive to newer data than the simple moving average, attaches more importance to data closer to the present, the past data decreases by an exponential rate in direct proportion to the distance, which reduces the lag, but still delays the indicator. The real purpose of moving averages is to filter out short-term noise while determining the trend, as fluctuation can disturb the line of the averages:

$$EMA = [P - EMA_{n-1}] \times 2/n + EMA_{n-1}; n \geq 2$$

Impulse is an energetic indicator of the movement trend, the percentage change in change that is the difference between today's price and past price: **momentum = actual price – x past price**. The rate of change (the rate of change), expresses the percentage proportion to this change:

$$ROC = \frac{MOMENTUM}{past\ price} = \frac{close\ today - close\ n\ days\ ago}{close\ n\ days\ ago}$$

The momentum of the examined device is shown by the moving average.

4. Taylor series in risk evaluation

Financial corporates are always faced with various kinds of risk. Generally, risk itself can be defined as the degree of uncertainty about future net returns. While there are many sources of financial risk, the most prominent is market risk which estimates the uncertainty of future earnings, due to market changes. Therefore value-at-risk (VaR) has become an important tool in measuring portfolio risk. Most commonly, VaR can be defined as the maximum potential loss that will occur over a given time horizon (under normal market conditions) with a certain confidence level α . In other words, it is a number that indicates how much an institution can lose with probability α over a given time horizon. The reason VaR become so popular nowadays is that it successfully reduces the market risk associated with any portfolio to just a single number, which is the loss associated with a given probability.

Value at risk (VaR) is a statistic that quantifies the extent of possible financial losses within a firm, portfolio, or position over a specific time frame. This metric is most commonly used by investment and commercial banks to determine the extent and probabilities of potential losses in their institutional portfolios. For more details see (Alexander, 2008a, 2008b, 2008c, 2008d; Haugh, 2016).

Risk managers use VaR to measure and control the level of risk exposure. One can apply VaR calculations to specific positions or whole portfolios or use them to measure firm-wide risk exposure:

- Value at risk (VaR) is a way to quantify the risk of potential losses for a firm or an investment.
- This metric can be computed in three ways: the historical, variance-covariance, and Monte Carlo methods.
- Investment banks commonly apply VaR modeling to firm-wide risk due to the potential for independent trading desks to unintentionally expose the firm too highly correlated assets.

Risk management: managers manage risks so that the existence of the company itself is not

threatened. In this context, within management, we talk about the so-called corporate risk management. Its task is to evaluate the probability of occurrence of risks in management business and manage, respectively limit the negative consequences of those undergoing treatment risk. From the point of view of entrepreneurs and managers, we distinguish two types of risks:

1. insurable — e.g. inventory insurance, workers insurance, insurance machines, equipment.
2. uninsurable — the risk of acquiring customers for new products, the risk of enforcement in new markets, and the risk of competition with competitors on the domestic market. When evaluating the risks of the company, we proceed according to the basic risk factors.

Company management proceeds with the following steps in risk analysis: revealing risks; evaluation of causes and the probability of their occurrence/value of causes/; evaluation of possible consequences and damages; assessment of risk reduction options; assessment of the impact of risk on the costs and profit of the company

With the help of Taylor series, there is a possibility to count some risk factors of the business management. What are the ways to calculate Value at risk (VaR): Value at Risk (VaR) is a statistic that is used in risk management to predict the greatest possible losses over a specific time frame. VAR is determined by three variables: period, confidence level, and the size of the possible loss. There are three methods of calculating Value at Risk (VaR) including the historical method, the variance-covariance method, and the Monte Carlo simulation. What is the role Taylor series in risk? This refers to one of the most fundamental quantitative applications in risk finance, which is to say the Taylor Series expansion. It is a pattern that applies to options (delta-gamma), bonds (duration-convexity), and even portfolio VaR (marginal VaR).

A Taylor series is a representation of a function as an infinite sum of terms that are calculated from the values of the function's derivatives at a single point. **Then the corresponding value is the cur-**



rent value of the risk factor. This leads to understanding the problem of existing Delta-Gamma approximation in calculating VaR. To understand the problem of existing Delta-Gamma approximation in calculating VaR we can do the following steps: there is a possibility to obtain the closed-form solution for the finite difference approximations of first and higher-order derivatives based on Taylor series.

There is famous delta-gamma formula to estimate the VaR of an option position. One of the most fundamental quantitative applications in risk finance is to say the **Taylor Series expansion**. It is a pattern that applies to options (delta-gamma), bonds (duration-convexity), and even portfolio VaR (marginal VaR). Why do we do this? **Rather than re-price complex positions, we use the first (and second, if needed) partial derivatives to approximate the potential loss given a shock to a primitive risk factor(s).** Our go-to example would be a vanilla bond. Rather than reprice the bond, we can approximate the price change given an assumption of a shock to the yield, where negated dollar duration, $\delta P / \delta y$, is the first derivative concerning yield. For more details see (Brealey et al., 2005; Dempster, 2022).

The Taylor expansion is one of the fundamental methods used in risk management, and is used in different ways in financial markets. It is also used to approximate the movement in value of a derivatives contract, i.e., an option on a stock. The equation then becomes:

$$\Delta P = f'(S)\Delta S + \frac{1}{2}f''(S)\Delta S^2 + \dots$$

Where S is the price of the underlying asset and the first derivative is called the delta and the second derivative is called the gamma. The expansion is also useful in a situation where some financial instruments are involved. If there are N different bonds and there are certain units of each bond and then the first derivative would be the sum of the units of each bond multiplied by the first derivative of the value of the bond. In financial markets, par-

ticipants would like to measure the effect of changes in the price of the bond due to changes in yield. This enables better risk management of financial assets as the impact of asset values is determinable. Recomputing the value of the bond using the changed yield comes across as an obvious solution. However, in practice, a method called the Taylor series expansion can be used for this purpose. This expansion represents a non-linear relationship between the yield and price of a bond around its initial value.

$$P_1 = P_0 + f'(y_0)\Delta y + \frac{1}{2}f''(y_0)\Delta y^2 + \dots$$

The other way of stating what the Taylor expansion implies is to assume that the price function can be written in polynomial form, i.e.:

$$P(y + \Delta y) = a_0 + a_1\Delta y + a_2\Delta y^2$$

Where the coefficients are unknown when Δy is set to 0 the result gives a_0 . If the derivative of both sides is taken and Δy is set to 0 then we derive a_1 , the first derivative concerning y_0 and the next step gives $2a_2 = f''(y_0)$. In this context, the derivative refers to the mathematical expression and has nothing to do with the financial product derivative. The first derivative measures the duration and the second derivative measures the convexity and there are situations where there is more than one variable in this equation. The term $f'(\cdot)$ is the first derivative of the price concerning the yield and the term $f''(\cdot)$ refers to the second derivative of the price concerning the yield of the function $f'(\cdot)$ which has an initial value. The Taylor expansion is an infinite expansion with increasing powers of Δy of which only the first two terms are used by industry practitioners as they are good indicators of asset price changes relative to other assumptions made for valuing financial assets. The convexity term is negligible for very small price changes.

5. Conclusion

Mathematics is a tool for economists as well as managers and applied managers. It provides an important approach to the analysis of various life, everyday as well as economic processes. In this article, we analyze mathematical tools such as deri-

vation and Taylor's advice. We show their real applications in economics, in microeconomics, as well as in terms of money exchange, forex trading, and risk calculation in investing. It also plays an important role in the processing of economic phenomena and the prediction of data, as well as the prediction of various economic crises.

Mathematics typically used in commerce includes elementary arithmetic, elementary algebra, statistics, and probability. For some management problems, more advanced mathematics — calculus, matrix algebra, linear programming, times series, and derivation calculus — may be used. By using mathematical models, researchers can identify underlying patterns and trends in data and develop more accurate predictions of future outcomes. Financial corporates are always faced with various kinds of risk. Generally, risk itself can be defined as the degree of uncertainty about future net returns. While there are many sources of financial risk, the most prominent is market risk which estimates the uncertainty of future earnings, due to market changes. Therefore value-at-risk (VaR) has become an important tool in measuring portfolio risk. Most commonly, VaR can be defined as the maximum potential loss that will occur over a given time horizon (under normal market conditions) with a certain confidence level.

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Mathematics as an analytical tool for economy, applied management, and business

ABSTRACT

In this contribution we focus on the mathematical aspect and principles in economy. We deal and introduce them in the concept of mathematics and as well in the concepts of a necessary tool and need for economy, applied management and business. First of all, we introduce concrete mathematical topics in details. Finally, we show its real applications in the concrete economical areas and sub-areas. Mathematics provides many important tools for economics and other business fields. Practical applications typically focus on checking accounts, price discounts, markups and markdowns; payroll calculations, simple and compound interest, consumer and business credit, and mortgages. As well different mathematical analyses, e.g. in financial markets, business management, psychological training and so on. We explore mathematics, statistics, economics, and psychology within a management context. We develop and present – a bridge for knowledge, competence and understanding of how mathematical and statistical skills can be applied to improve business objectives. Math is an integral part of creating economic projections. It allows an economist to perform calculations on economic data, often using the principles of calculus to assess potential changes in the data over time. What kind of math is used in economics? Calculus is the most common type of math found in economics. Calculus includes the use of various formulas to measure limits, functions, and derivatives. Many economists use different calculus when measuring economic informations.

KEYWORDS

Mathematics; Economical Applications; Tylor series; MacLaurinov series

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