BUILDING COMPETENCE OF MANAGERS FOR COMPANIES IN DIGITAL TRANSFORMATION

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Abstract: Trends in business management caused by Industry 4.0 implementation and related to COVID-19 restrictions brought up new challenges. Consequently, increasing digitalization triggered a modern concept of people management accelerating new managerial skills. Digital transformation requires new strategies in training, reskilling, and upskilling. The aim of this paper is to review managerial skills in companies in digital transformation, to identify the gap between current and future competence recognized by HR leaders. By analysis of the gap, we aim to be able to recognize the need for upskilling or reskilling of managers in companies in Slovakia. The study indicates that when companies innovate to move forward in their digital transformation process, it is data protection, networking and data processing that they focus on. Within the study HR leaders have identified it is both, way of thinking as well as attitude that needs to be shaped for building future managerial competence. The study also implies that future upskilling needs to focus on competence to interact and future reskilling on competence to data processing, as these competencies are contextual to digitalization.

Keywords: reskilling, upskilling, digitalization

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1 Introduction

Nowadays Industry 4.0 is often discussed in the context of digitalization on the business management level and influence all industries and each enterprise in the world. Industry 4.0 platform has arisen from a project of German government in 2011 and since then it is present in all countries. As a consequence of its implementation to the business process, the way of managing people, business culture and job positions has significantly changed (Mihai & Cretu, 2019).

One of the most important challenges of the business transformation process is the training of employees and managers. Human capital is the key actor of business processes, and it is essential for them to adjust skills and competencies in accordance with the digital revolution. It can be deduced that the newly arisen state requires revaluation of the traditional competencies' concepts on the existing positions. Digital competencies of managers and equally their subordinates have become more important than ever. Therefore, managerial skills are the main subject of our research. All these challenges are more topical for the reason of digital revolution on the labor market (Weber, Büttgen & Bartsch, 2022).

All the identified adjustments were accelerated in the early 2020 due to the COVID-19 spread which has caused even bigger changes. It has affected all departments of businesses, mainly HR, and top management. Digital era is characterized by exponential usage of technologies, and it covers the entire industries, sectors, and regions. Concept of virtual teams and cloud systems need to be even more examined and create an easier way for changes implementation (Singh, Agrawal & Modgil, 2021).

Our examination is oriented on reskilling and upskilling of managers as this topic is very up-to-date due to many authors. These concepts should help enterprises to provide their managers with necessary skills. The future of management is developing towards leadership, and therefore in this paper we focus on the trend of leadership skills development.

2 Literature Review

People management nowadays, along with reskilling and upskilling concept of traditional skills, is one of the most important components of HRM and one of the most discussed topics in the management field. Many authors mention the need for skills transformation due to digitalization. Moreover, as we mentioned before, the main actors of business turning into digital process are managers who act as leaders of the change and are those who needs to be upskilled and reskilled first.

2.1 Employee related innovations

To see the context of the development of future managerial competence, we find relevant to include technological innovations into the research of skills. This includes knowledge about the Industry 4.0 concept which is closely linked to digitalization which is currently a widely discussed topic. Moreover, COVID-19 spread caused huge changes and accelerated the digitalization process and therefore it is important to examine this phenomenon, too.

Analytics is a modern tool for decision-making and it is an increasingly important factor in enterprise performance management. HR analytics is a present result as well as essential in digitally transforming companies. Kuriakose (2021) states that the implementation of analytics in HR improves the performance of organizations and contributes to higher business gains.

Big Data potential is a commonly discussed phenomenon of the current period of digitalization. This concept is being adopted by many companies worldwide as they realize its added value to the business processes. Authors emphasise HR predictive analytics to explain the potential of Big Data in HR (Shah, Irani & Sharif, 2017). The use of digital forms has been accelerating during COVID-19 pandemic, as the reaction to a turbulent, uncertain business environment with unstable conditions of the physical environment, humans included. From the employees' perspective, the digital trends include online communication during the pandemics as it replaced the face-to-face form of communication due to multiple regulations and social distancing. Blanchard (2021) mentions the usage of online platforms during COVID-19 by employees as the work turned virtual for a long period of time and is still present partially.

In this context, we recognize technological innovations related to remote work and enabling interactions in conditions of social distancing, forced by

the pandemic, or as a form of the digital workplace. We also focused on the impact of technological innovations in the employee-related data processing. For understanding the gap in managerial competence for their upskilling and reskilling, we recognize relevant the context to technological innovations related to employees. Therefore, we include following research question.

RO1: What is the level of employee-related technological innovations by digitalization?

2.2 Managerial skills for digital era

In the context of managerial positions there are many studies identifying skills perceived as the key reflection of the digitalization era. Initially, there have been identified critical thinking, ability to solve problems, networking, collaboration, agility, adaptability, effective oral and written communication, evaluation, and analyses of information (analytical thinking or so-called information literacy), creativity and imagination (Kumar & Komal, 2021; Chakma & Chaijinda, 2020; Sousa & Wilks, 2018).

Further research of Industry 4.0 done by numerous authors recognizes that new skills are needed, mainly digital literacy focusing on the ICT skills. Entrepreneurial skills along with the mentioned digital ones are accompanied by communication and teamwork ability. Furthermore, specifically for the HR departments strategic thinking is commonly cited by researchers (Mihai & Cretu, 2019; Sisthembiso, 2020).

Study of the author Manakhova et al. (2020) points out the relevancy of life-long learning which should be an essential part of society 4.0. High turnover, as a consequence of digitalization, and cost-savings should be made use of in a form of higher investments in the reskilling and professional training programs. The requirement for continuing education is acknowledged also by WEF. The basic skills essential for current job positions have rapidly changed and furthermore, more than 133 million of new positions have arisen (Manakhova et al., 2020; Siaous, Zou & Zhao, 2020).

Additionally, authors mention effective handling of impersonal meetings and online communication due to COVID-19 and social distancing. The topic of upskilling and reskilling is often discussed in relation to the coronavirus restrictions. Businesses need to take into account that new training should be implemented to the business policies (Bennet & Mcwhorter, 2021). Because

of the social and physical distance, it is necessary to learn how to work in an online space and add creativity and soft skills to the training of employees. In the context of remote work, employees are recommended to be trained in online platforms. Other stated skills include agility of learning and in the instances of managers, systematic future planning is likewise cited (Schlegel & Kraus, 2021; Cordes & Weber, 2021).

Even the biggest companies such as Henkel, L'Oréal, Voith, PwC and Amazon launched upskilling programs to ensure new skills and thus prepare themselves for the digital future. We anticipate that this trend applies to the employees as well as mangers (Kraus et al., 2022). The key activity and turning point of the digital transformation is primarily education and training of employees (Kane et al., 2019).

As previously mentioned, currently the skills in general should be changed or updated not only of the staff but mainly of the managers who are the leaders of change. Fully developed HR department oriented towards innovations and new trends is a precondition for leadership development. That is why this chapter focuses on leaders who manage people in digital era.

Leaders can help the transformation in three ways. The first factor is sharing their experience with employees. Secondly, continuing learning and clearly articulated vision to make sure new leaders have the ability to learn from their own mistakes. The research of authors (Kane et al., 2019) was oriented on skills for leading people in digital era. The mostly mentioned were transformation vision, orientation to the future, and openness for the changes.

Considering the reconstructed management of staff, the leadership styles have overcome notable metamorphoses compared to the traditional forms. Before the start of Industry 4.0 transactional leadership was predominantly enforced and now authors highlight transformational management. Similarly, as with employees, managers should be digitally literate and in addition have a clear digital vision. New-found skills include a quick failure skill which represents the ability to fail, admit a mistake, and learn from it. Moreover, managing diverse teams and connecting opportunities with individual employees through immediate communication are mentioned (Schiuma, 2021; Jagger, 2020).

In the figure 1, we illustrate a summary of managerial skills for successful implementation of digitalization according to the gathered information from authors.

Figure 1: Summary of Industry 4.0 managerial skills
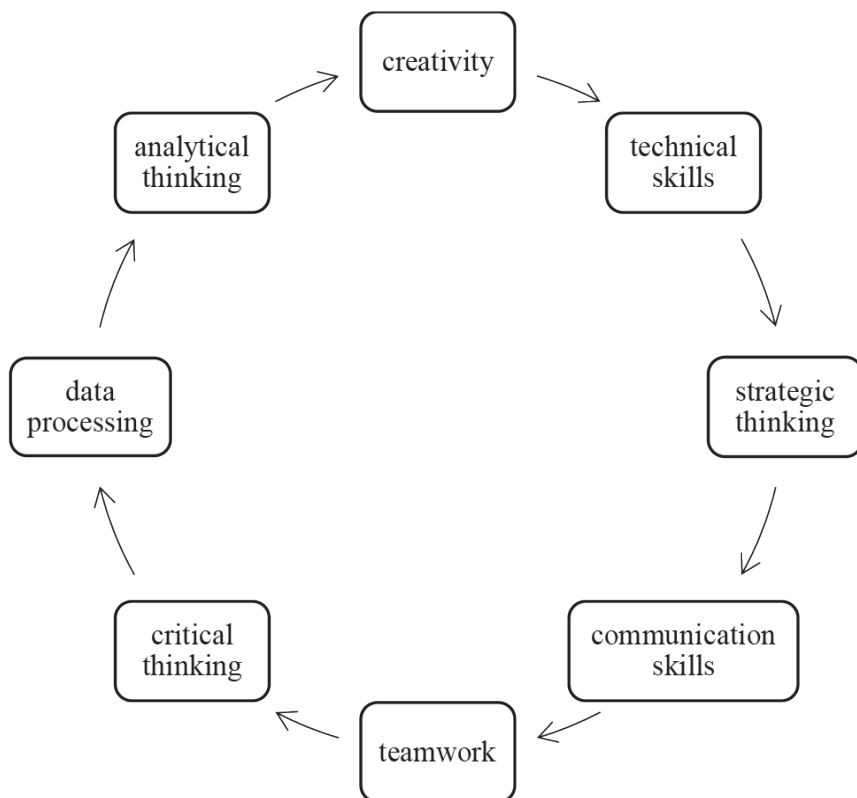
Source: own processing

Handling digital leadership is a complex task requiring numerous competencies and is efficient with upskilled and reskilled managers. The author created digital leadership excellence framework which shows the skills of digital leader in four of his/her roles. These include reflexive leader, independent creator of changes, digital curator, intelligent decision-maker (Reinhardt, 2020).

The authors mention individual tools and activities which should be done by the management. From those that were not mentioned before we can include tracking the competencies and the necessity of employees' development, diversity management, supporting learning and trainings, mentoring, flexibility, and talent management (Kuchciak & Warwas, 2021).

Based on the above-mentioned studies and synthetizing the findings into key managerial skills for future competence of managers, we see relevant to review the importance as well as current application of these skills in Slovak

companies. Identifying the gap, between what companies see needs to be build and what they already have, we will be able to create valuable implication for HRD (Human Resources Development) practice. Therefore, we include the following research question.

RO2: What is the gap in managerial skills in terms of digital transformation?

3 Methods

The aim of this paper is to review managerial skills in companies in digital transformation, to identify the gap between current and future competence. By examination of the gap, we aim to be able to recognize the need for upskilling or reskilling of managers in companies in Slovakia.

The research was done by questionnaire distributed to HR leaders of companies in Slovakia. The questionnaire has been developed by academics with expertise in HRM, who are members of the academic community platform, Slovak Academic Association of People Management (SAAPM). The questionnaire has been developed to measure the complexity of digitalization in HRM practice in Slovakia. Therefore, the questionnaire consists of eight sections covering desired topics of focus, which are subject of a change in HRM in companies in their digital transformation.

Table 1: Questionnaire structure

Values	Values for HR strategy
Modern concepts of HRM	Innovations in HRM processes and methods
Human capital	Measurements of HRM processes
	Performance of the HRM system
Competence	Competencies of managers
	Competencies of employees
Digital innovations	Employee-related digital innovations
	Customer–related digital innovations

Source: own processing

To search for the answer to RO1, we have created the index of digitalization (DI), by including variables listed in the table below. Based on previous studies and the literature review, we assume that managers' competence changes align with

employee-related technological innovations. Therefore, before identification of the gap in managerial skills in terms of digital transformation, we need to address digitalization. To create a digitalization index (DE) we made an average value of employee-oriented technological innovations. We included data processing-related innovations, such as biometric data, big data, quick data, and predictive data. We also included interaction-related innovations, such as platforms for remote work and networking. In the questionnaire Likert used a five level scale to measure the current status of the application technological innovations (DE) as well as to measure the importance of these innovations for the future (DEX). We examined the level of applied digital innovations with variables in Table 2.

Table 2: Components of the index of digitalization

Digitalization of analog data	DE1
Digitalization of biometric data	DE2
Digital networking platforms	DE3
Big Data analyses	DE4
Quick analytics	DE5
Predictive analytics	DE6
Data protection	DE7
Social media	DE8
Platforms for remote work	DE9

Source: own processing

In terms of these trends the need of reskilling and upskilling started to be significant in the context of newly needed skills. Identification of these skills was the base of our research. We have included skills, which have been recognized by previous research as components of managerial competence in digital transformation, also referred to as future skills. We included way of thinking related skills, such as critical thinking, analytical thinking, and strategic thinking. We also included knowledge related ones, such as data processing and technical. We also included attitude-related skills, such as teamwork, creativity and communication.

Table 3: Managerial skills

Data processing	CM1
Critical thinking	CM2
Creativity	CM3
Analytical thinking	CM4
Strategic thinking	CM5
Technical skills	CM6
Teamwork	CM7
Communication skills	CM8

Source: own processing

In the questionnaire, Likert used five level scale to measure the current status of the application of managerial skills as well as to measure the importance of the skill for the future managerial competence. Firstly, we examined what HR leaders identify as the current skills of managers which are perceived as already developed and used by managers. Secondly, we asked what HR leaders see as important for the future about the same skills but in the context of building their future managerial competence. In this way, we were able to identify the gap in the current status in comparison with their importance for the future. Consequently, we will be able to identify the gap for upskilling and reskilling of managers.

The subject of our research were 841 enterprises from all Slovak regions. 256 of them are micro sized, 174 small sized, 176 medium sized and finally, 235 enterprises were large sized. According to the business sector, 272 enterprises are from production sector, 403 of them provide services and 166 belongs to other sectors. From the point of view of ownership 540 enterprises are domestic and the remaining 301 are of foreign origin. Respondents were HR leaders of companies included into the survey pool.

Our research was conducted in companies in Slovakia in the period of 2019-2021. This period of time captures the boost of digitalization caused by pandemic. We have distributed the questionnaire to HR leaders in companies in Slovakia. We have collected the data by a combination of on-line questionnaire survey and both on-line and personal meetings.

4 Results and discussion

The impact of digitalization on competency is indicated in a number of sources. Competency has been recognized as an element of competence that is contextual to a setting or role (Moghabghab et al., 2018), therefore we see it relevant to examine the competence of managers, which enables them to retain the managerial competency in digital work environment. Although digital competence is shown to enable efficient work (Oberländer, Beinicke & Bipp, 2020), the most common competence concepts include knowledge, skills, abilities, and personal characteristics (Krumm, Mertin & Dries, 2012; Campion et al., 2011.). For companies operating within a digitized environment, the digital competencies of their employees and managers are becoming of crucial importance (Ngoasong, 2017). Specific competencies are needed to create value (Ratajczak-Mrozek, Wieczerzycki & Hauke-Lopes, 2021), digital tools and technologies lead to competence (Potemkin & Rasskazova, 2020) .

To answer the RO1 we have analyzed the index of digitalization (DE=3,335), (DEX=3,45). We see that companies are progressing on their way towards digital transformation. We recognize technological innovations in building platforms for interactions and data protection as the most important now as well as for the future of companies. The most remarkable gap between the current and future status has been identified in data-processing-related innovation, which is Big Data analysis.

Table 4: Components of index of digitalization DE

Technological innovation		Application	Imporantace
Digitalization of analog data	DE1	3.53	3.7
Digitalization of biometric data	DE2	2.98	3.14
Digital networking platforms	DE3	3.58	3.65
Big Data analyses	DE4	2.84	3.08
Quick analytics	DE5	3.34	3.51
Predictive analytics	DE6	3.04	3.23
Data protection	DE7	4.33	4.28
Social media	DE8	3.14	3.25
Platforms for remote work	DE9	3.24	3.27

Source: own processing

To answer the RO2 we have analyzed the content of current as well as future competence of managers reviewing skills related to thinking, knowledge and attitudes. The results also show, that HR leaders in companies recognize high importance of skills related to the way of thinking, such as analytical skills, strategic skills and critical thinking. We also see high importance in attitude-related skills such as communication and teamwork. HR leaders have identified technical skills and data processing ability as competence that has already been involved in training and development programs, therefore there is medium importance of these skills for the future as well as the smaller gap between the current state and future importance.

Table 5: Difference between real and future skills of managers

SKILLS OF THE MANAGERS		Application	Importance	Delta
Data processing	CM1	3.64	3.8	0.16
Critical thinking	CM2	3.79	3.4	-0.39
Creativity	CM3	3.78	4	0.22
Analytical thinking	CM4	4.09	4.23	0.14
Strategic thinking	CM5	3.93	4.15	0.22
Technical skills	CM6	3.74	3.87	0.13
Teamwork	CM7	4.05	4.22	0.17
Communication skills	CM8	3.95	4.15	0.2

Source: own processing

The results indicate that the most important skills of managers for their future according to HR leaders, are teamwork, analytical thinking, strategic thinking, and communication. Delta between important in future and already applied skills show the source for identification needs for upskilling and reskilling programs.

Surprisingly, we see critical thinking as a skill of future competence that HR leaders in companies identify as already developed. We also see technical skills as a component of competence for the future, where companies identify the lowest gap between the future and current state. The greatest gap has been identified in strategic thinking, creativity and communication.

Table 6: Levels of real and future skills of managers

SKILLS OF THE MANAGERS	REAL APPLICATION IN THE ENTERPRISES					IMPORTANCE FOR THE FUTURE OF THE ENTERPRISE				
	1	2	3	4	5	1	2	3	4	5
Data processing	8.32	9.5	20.1	29.1	32	7.37	5.23	18.19	27.23	39.83
Critical thinking	3.92	6.78	22.95	36.15	29.6	2.62	4.76	17.7	30.56	42.69
Creativity	2.97	6.54	24.6	32.2	32.8	2.85	5.11	16.5	30.44	43.28
Analytical thinking	1.3	3.92	17.95	34	41.97	1.55	2.97	13.3	24	56
Strategic thinking	3.69	6.42	18.9	31.63	38.6	3.09	4.04	13.08	24.85	53.03
Technical skills	6.66	9.5	18.9	28.66	35.31	6.9	6.18	15.7	25.2	44
Teamwork	2.26	4.64	1.66	34.13	41.38	1.78	2.73	12.6	25.68	54.93
Communication skills	2.38	6.42	20	33	38	2.02	4.52	13.2	27	51.25

Source: own processing

The table above shows the differences considering all levels of scale used for measurements of ideal and real applications of managers' skills. A positive number means, that there is a gap between what enterprises see as important and is not ready to apply yet. With this finding we can conclude that in the examined enterprises in Slovak republic there is a need for change and improvement. This gap analysis will enable companies to focus their reskilling and upskilling programs on components of managers' competence, that fit to what is recognized as important for the future.

As we look at the results of various levels measured, the research shows that HR leaders in more than 50 percent of companies identified teamwork as the skill of managers with the highest importance for the company future as well as strategic thinking and communication skills.

Table 7: Gaps in the real and future skills

SKILLS OF THE MANAGERS	THE GAP BETWEEN IDEAL AND REAL APPLICATION IN THE ENTERPRISES				
	1	2	3	4	5
Data processing	-0.95	-4.27	-1.91	-1.87	7.83
Critical thinking	-1.3	-2.02	-5.25	-5.59	13.09
Creativity	-0.12	-1.43	-8.1	-1.76	10.48
Analytical thinking	0.25	-0.95	-4.65	-10	14.03
Strategic thinking	-0.6	-2.38	-5.82	-6.78	14.43
Technical skills	0.24	-3.32	-3.2	-3.46	8.69
Teamwork	-0.48	-1.91	10.94	-8.45	13.55
Communication skills	-0.36	-1.9	-6.8	-6	13.25

Source: own processing

We expected differences occurring because we are aware that not all enterprises are ready for the implementation of Industry 4.0. Moreover, the concept is relatively new and not all enterprises invested money in reskilling and upskilling. Furthermore, employees in Slovakia could be resistant to changes which would result in insufficient skills level important for digitalization.

Creativity as a skill can be perceived as a tool very helpful for managers. This particular ability can be boosted by each person individually not only at the workplace but in personal life, too, mainly by maintaining physical or creative activities in free time. There are many workshops and courses to give the space to people to become creative and awaken them. However, many authors mention that creative workplace might help in reaching better job performance in general.

Analytical, critical, and strategic thinking are predominantly inborn abilities of an individual. These traits nevertheless can be learned by trainings and hard work and along with data processing could be improved by numerous tasks or role plays. We consider the skill of teamwork as an important part of new set of skills for Manager 4.0 and perceive this ability to be empowered only by a lot of practice and applying this type of work into the work process.

Another skill mentioned and examined in the enterprises is communication. In the current period we face many challenges in this area as a lot of
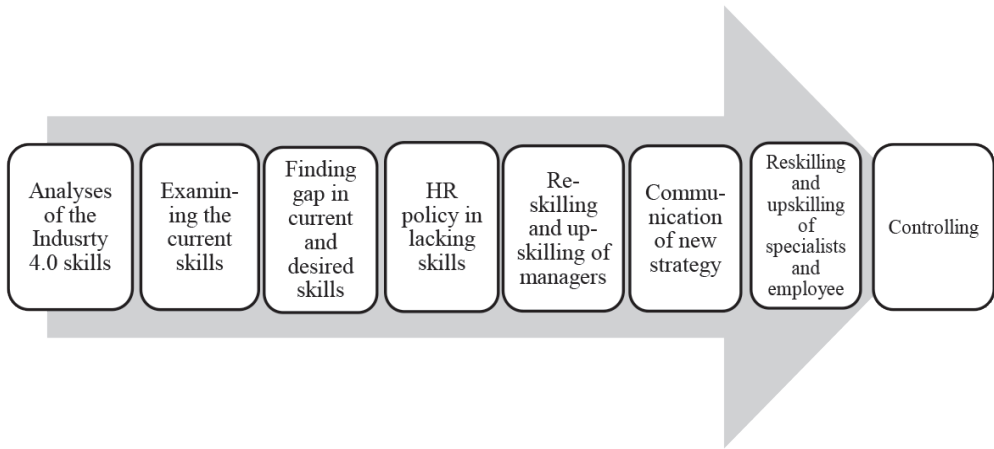
communication process takes place online, so the face-to-face form starts to disappear, and it becomes less personal. It can be challenging for managers as well and that is why there is a need to not only learn how to communicate properly but to manage impersonal communication via the Internet and various media, including social media. Technical skills should be upgraded mostly by professional trainings or courses based on the specific type of task it is required for.

Open communication from the top management can be a great tool for handling this situation. Another significant factor is that managers are the role models for their employees and leadership in HR is also very important factor as its relevancy increases. Only when the mangers are skilled enough, they can lead the way for the employees. Managers act also as employees' helpers on the path to better digital literacy.

Human resources are the most valuable asset of all enterprises worldwide and they should be given the most attention. The skills of the employees and mostly managers are very important when executing a certain profession and function in the company. When gaps exist management should undertake several steps to make sure all requirements and expectations are met correctly.

The study has several practical implications. First, our findings indicate that technological innovations that companies find reasonable for their digital transformation are to support interactions between employees and data protection. When companies innovate to move forward in their digital transformation process, it is data protection, networking and data processing that they focus on. HR leaders have identified Big data analysis as their major challenge. Platforms for remote work, interactions and networking are both current content as well as future desire in digital transformation. Second, it is both, the way of thinking as well as the attitude that need to be shaped for building the future competence to manage employees. HR leaders of these companies have recognized the way of thinking-related skills to use the data processing as well as attitude-related skills to communication and teamwork. Another managerial implication of this study is that future upskilling needs to focus on competence to interact and future reskilling on competence to data processing, as these competencies are contextual to digitalization.

Based on the research and stated facts we suggest a model of reskilling and upskilling in the organizations due to the digitalization phenomenon along with COVID-19 existence. The model of the steps is illustrated in the Figure2.

Figure 2: Reskilling and upskilling procedure

| Analyses of the Indusrty 4.0 skills | Examining the current skills | Finding gap in current and desired skills | HR policy in lacking skills | Re-skilling and up-skilling of managers | Communication of new strategy | Reskilling and upskilling of specialists and employee | Controlling |

Source: own processing

The limitation of the survey is that it was done in 2020 when COVID-19 has already been spread but the restrictions started only in March. Knowing this trend, we can assume that the acceleration of digitalization then was just in the beginning and the situation could have changed until now. The remote work concept has been implemented to the strategies of many businesses which caused companies to train managers in the mentioned skills which would lead to their improved level. Meanwhile, the situation in the examined enterprises might have changed slightly or enormously. Sometimes even a small change in the business strategy of HR department can reduce the discrepancies in skills of their employees.

All skills play significant role in people management, but we need to add that they vary according to various countries and specific organizations. Some of the enterprises are very individual when we look at them from the point of view of the sector in which they operate. For instance, the results might be different in services which are generally more digitalized and have higher potential to digitize their processes in comparison with agriculture. This is just one of the examples. Slight differences can also be observed in smaller versus larger enterprises as larger ones usually have more financial resources to finance the investments into digital business transformation.

As the research was done in the Slovak republic, the application can only be recommended to Slovak business environment. Other countries might reach different results. Another limitation of the research is that we examined less

than 1000 enterprises and the research can only be valid in the context of managers.

5 Conclusion

In conclusion, we can say that the platform Industry 4.0 became part of our lives. Socio-economic trends caused significant shift from the world we knew before digitalization started. The pandemic influenced the development as well and according to specialists it not only had negative but also positive effects such as acceleration of digital transformation. Both these circumstances affected enterprises on various levels.

As most of the businesses have overcome changes vague skills need to be revised. Given the stated knowledge and previously mentioned facts from this paper, it is clear that there are still gaps present in the managerial skills which they possess and those they will need for the future to perform an improved managerial role of 4.0.

In this paper we provided a closer look to why reskilling and upskilling of workforce and mainly managers are relevant and desired. We did this by examining these practices on a theoretical level and their perception of foreign authors.

In addition, we examined enterprises from various sectors, regions and of different sizes. We determined the existing gaps in the skills which should be considered in the future. Lastly, we suggested a model of possible actions that would be appropriate for the enterprises in the reskilling and upskilling programs.

We fulfilled the aim of this paper by finding the gaps between the skills that are still insufficient or need further attention. By constructing a model of the differences, we provided a closer look and suggestion on which skills the examined enterprises in Slovakia should focus more. Moreover, we enriched this model with a complementary procedural scheme suggesting a managerial implication of how they should deal with the discrepancies. This could be done by numerous steps including reskilling and upskilling model to their business policies in the HR management field.

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