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NATIONAL UNION OF EMPLOYERS

TRANSITION TO NEW JOBS AND DIGITALIZATION IN TWO INDUSTRIAL SECTORS (IN TRADE AND FOOD SECTOR) IN SLOVAKIA

ANALYSIS | 2022

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SUMMARY

Almost all sectors of the economy have been significantly affected by the development of digitization and automation in recent decades, bringing with it a significant acceleration and streamlining of production, elimination of unnecessary downtime or reduction of production errors. In the introductory chapter, we focused on the development of the different stages of the industrial revolution which is now entering its fifth stage.

The third and fourth industrial stages were key in terms of digitization and automation. Digitalization and automation have played key roles in the third and fourth industrial revolutions. In the case of the third industrial revolution, we are talking about Industry 3.0, which is characterized by the involvement of computers, robotics and automation within production. The fourth industrial revolution, referred to as Industry 4.0, is characterized by the great development of the Internet, data analytics and connectivity between participants. In Chapter 1, we further clarified digitalisation, its trends, the point where digitalisation itself is part of digital transformation. It is so, because transformation means doing things in a new digital way. Digital transformation intensively uses digital technologies and its main objective is to increase process efficiency; to better manage risks or to discover new ways to use existing technologies and knowledge. Automation itself is the process of creating and applying (using) technology to produce and deliver goods and services with minimal human intervention. The aim of automation is to minimize the workload or to replace the human factor by a machine or application, especially in lower value-added activities or activities of a monotonous nature. We also focus on the topic of artificial intelligence and machine learning, discussing in more detail the 4 basic types of automation and the advantages and disadvantages of automation in general.

In the second chapter, we focused on the evolution of digitalisation in the European Union, drawing on secondary data. The aim of this chapter was to present the real state of digital adoption in EU countries compared to other countries such as the US. By digital adoption we mean the ability of countries or enterprises to adopt innovations and digital technologies. Digital adoption is measured by the Digital Adoption Index (DAI), which consists of three sub- indices, each measuring the digital adoption of firms, the population and the government. Within this index, the results of which were available for 2014 and 2016 (more recent data are not published on the World Bank website), we can conclude that Slovakia's level of digital adoption has increased between 2014 and 2016, but we are still significantly behind Austria, Germany and even the Czech Republic. If we consider only the digital adoption of business entities in Slovakia in comparison to their competitors, our businesses lag behind businesses in Austria, the Czech Republic, Germany and even Poland in the value of this index. A more up-to-date view of the development of digitalisation is provided by the EIBIS Corporate Digitalisation Index, which also compares the level of digital adoption between EU countries and the US countries from different perspectives. The index consists of six components: digital intensity,
digital infrastructure, investment in software and data, investment in organizational and business process improvement, use of a strategic monitoring system and digital outlook. Slovakia, together with countries such as Germany, Slovenia, Italy and France, is ranked among the moderate countries which are characterized by a higher level of digital intensity. On the other hand, comparing Slovakia to other countries, Slovakia has a smaller share in this index of the remaining components of the index. By comparison, countries such as Denmark, the Netherlands, Hungary and the Czech Republic are better off in terms of digital adoption according to this index. Slovakia is also below the EU average according to the value of this index. For a long time, several experts have pointed out the very poor structure of Slovakia's economy, which is poorly oriented towards development and research, ie sectors with higher added value, where the level of digitization would also be significantly higher.
We are also lagging very far behind in the digitization of public administration. To conclude the second chapter, we also mention the need to address a number of issues at the national level, such as tax policy, labor relations, consumer protection, privacy and cyber security, in the context of promoting digitization in Slovakia.

In the third chapter of our analysis, we focused on conducting a survey among business entities in Slovakia that operate in the food and trade sectors through a primary survey conducted using the questionnaire method and structured interviews. Through these two tools we wanted to identify jobs in the sectors under study that are threatened by automation and digitalization, or to identify risks, challenges and opportunities in the transformation of jobs in the food and trade sectors. At the same time, we aimed to find out what skills and competencies are currently present in each job position and how stakeholders expect them to change in the future due to the impact of digitalization and automation.

As part of the questionnaire-based survey method, we approached representatives of individual businesses in both sectors via email communication and asked them to complete two types of questionnaires. One type was addressed to employers (company management) and the other was addressed to employees. Both questionnaires for each sector are annexed to this analysis (Annexes 1 to 4). In the case of data collection by questioning in the form of a structured interview, we approached representatives of each entity electronically and conducted these interviews in person or via an online meeting. The structured interview questions are presented in Annex 5.

In the case of the questionnaire survey, we approached 110 food sector businesses by mail, of which only 31 participated (a return rate of 28.18%), and in the case of the trade sector businesses, 117 were approached, of which 30 participated (a return rate of 25.64% in this case). In total, we were able to obtain 30 completed questionnaires in the trade sector and 31 in the food sector for employers. For the employee questionnaires, we asked as many employees as possible to complete them - for the questionnaires for employees working in the trade sector, we obtained 880 responses from employees in 30 different job roles, and for the questionnaires for employees in the food sector, this amounted to 1,053 responses from employees in 34 different job roles. Details of the results of the questionnaire survey are given in subchapter 3.1 and are included in the annexes (Annexes 6 to 25). We were able to conduct a total of 17 structured interviews, of which 9 respondents were from the trade and 8 respondents from the food industry.

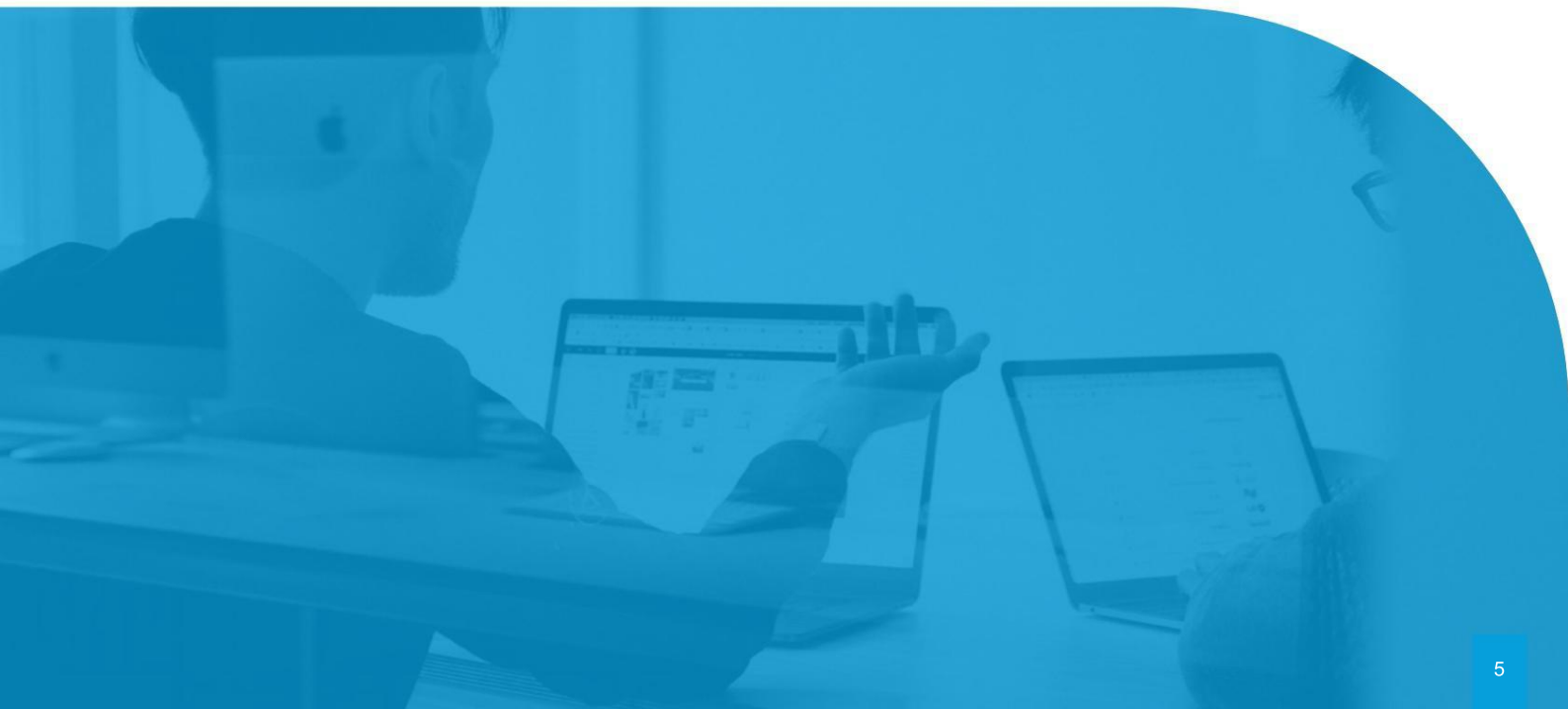
On the basis of the results of the survey carried out using the questionnaire method and a structured interview, we can conclude that neither in the case of the food processing or trade sector clearly employers nor employees have identified jobs that should disappear in Slovakia as a result of digitization and/or automation. Rather, from the results we were able to obtain in both forms, we can conclude that in the case of some jobs (in administration, or even in production), the introduction of digitization and automation may lead to a partial reduction in the number of employees in the jobs in question, but only to a minimal extent to their complete disappearance.
Rather, the competent expect that some less skilled jobs will not be performed directly by their employees but will be outsourced.

In spite of the above, several employees from the business sector expressed the belief that there may be job losses due to digitization in the next 5 years in the positions of cleaners, cashiers, security guards, facilities managers or maintenance or secretarial staff. In the case of employees in the food sector, they see a potential risk of job losses due to digitalisation in warehouse clerks, secretaries, cleaners, technicians in agriculture and food processing, and possibly also administrative staff. Interestingly, as many as 88% of employers from the trade sector and 80.65% from the food sector reported that they undertake employee training on the new skills required by digitization and automation only sporadically or irregularly. Employers in both sectors indicated that they consider it important for companies to use e.g., big data analytics or IoT or smart sensors in the future in order to increase the efficiency of digitalization. In the case of the business sector and, to a lesser extent, in the food sector, they also consider it important to develop cloud computing or robotics and automation in the company. To a lesser extent, employers from both sectors see room for the use of blockchain or biotechnology devices or 3D printing. Up to 80% of employers in the trade sector and 64% of employers in the food sector reported that their employees perceive digitalisation and process automation rather positively, while up to 90% of employers in the trade sector further reported that their employees are interested in further training in ICT.

In the final part of the questionnaire, employers were given the opportunity to select the jobs that are most represented in their job structure and to identify the importance of the selected skills and competencies in these jobs. In the case of employers in the food sector, these were warehouse workers, producers and processors, tasters, drivers, clerical workers and buyers. Within warehouse workers, respondents considered physical stamina and endurance, manual skills, time management, a sense of responsibility or complex problem solving to be most important. In the future, they expect physical stamina and endurance, manual skills, flexibility, time management or information evaluation, creativity or complex problem solving to grow in importance for this position. Conversely, some respondents expect a decline in importance for complex problem-solving skills, mathematics, literacy, social sensitivity, or working independently. For employees working in manufacturing or processing, respondents consider physical stamina and endurance, manual skills, time management, and a sense of responsibility or autonomy at work to be important. In the future, they expect to see an increase in the importance of physical resilience and endurance (physical resilience is key to coping with demanding job responsibilities), manual skills, or in literacy or negotiation and communication skills. Conversely, they expect a decline in flexibility, active listening or management skills. In the case of the chauffeur job, respondents consider qualities such as physical stamina and endurance, flexibility, time management, autonomy, or foresight and planning skills to be important. In the future, they expect an increase in physical resilience, manual skills, autonomy, sense of responsibility or time management, flexibility or complex problem solving, and conversely a decrease in critical thinking, manual skills or creativity. In the case of clerical workers, they consider analytical thinking, complex problem solving, information evaluation, time management or sense of responsibility to be the most important. For this job, they expect the importance of complex problem-solving skills, critical thinking, literacy, time management or active listening or anticipation and planning to grow in the future. Conversely, they expect a decline in importance for management skills, flexibility or creativity or physical resilience. For the last job, buyers identified negotiation and communication, evaluating information, math skills, persuasiveness, complex problem solving or time management,
or independence as the most important skills identified. In the future, the importance of negotiation and communication skills, persuasiveness, as well as analytical thinking, planning, a sense of responsibility, and evaluating information
are expected to grow within this job role. Conversely, some respondents expect a decline in the importance of mathematical skills, manual skills and empathy.

In the case of employers in the food sector, the positions were clerical workers, sales representatives, warehouse workers and sales assistants. Within the clerical workers group, literacy, information evaluation, sense of responsibility, autonomy, mathematical skills where appropriate and flexibility were identified as important qualities. Less important were creativity, management skills, empathy and critical thinking. In the future, they expect time management, information evaluation, sense of responsibility, analytical thinking, or complex problem solving to increase in importance within this job. Conversely, some respondents expect a decline to a lesser extent for persuasiveness or creativity, or for social perceptiveness, information evaluation or sense of responsibility. In the case of sales representatives, qualities such as a sense of responsibility, negotiation and communication skills, persuasiveness are considered important, while empathy, social perception or evaluation of information are considered less important. In the future, they expect growth in negotiation and communication skills, active listening and learning, foresight and the ability to plan, independent work, time management, analytical thinking or complex problem solving. A slight decrease in importance for change is expected by some respondents for manual skills, literacy, physical resilience or creativity. The third largest occupational group was warehouse workers, for whom physical stamina and endurance, manual skills, complex problem solving, sense of responsibility, or foresight and planning were cited as the most important qualities. Management skills, creativity, critical thinking or evaluating information, or mathematical skills were considered less important by respondents.
In the future, all respondents expect physical stamina and manual skills to grow in importance, complemented by a growing sense of responsibility, foresight and the ability to plan and time management. Conversely, a decline is expected to a lesser extent by respondents for literacy, mathematical skills, persuasiveness, social perceptiveness or empathy and foresight. For the last job position, salesperson, respondents consider qualities such as negotiation and communication skills, active listening and learning, physical stamina, manual skills or a sense of responsibility to be most important. The least important skills for this job position are considered to be literacy, management skills, critical thinking or time management. In the future, they expect to see an increase in the importance of negotiation and communication skills, or persuasiveness, physical resilience, complex problem solving, flexibility, active listening and learning, time management or foresight. To a lesser extent, respondents expect a decline in skills such as empathy, literacy, numeracy, information evaluation, management skills, social perceptiveness or autonomy at work.

Employees in both sectors consider it important to master digital skills and competencies for their job performance, focusing on gathering, using and storing information, digital communication on the Internet, creating digital content (working with simple databases), interpreting and presenting digital content. Both groups of employees consider skills and competences related to the use of safety equipment, the operation of computer-controlled tools, machines and equipment, or planning, control and logging skills to be less important. Around the same number of employees in both sectors think that the development of digitalisation and automation has had a positive impact on the labor market, as they have been able to free themselves from more work thanks to digitalisation and automation. On the other hand, 42% of respondents from the trade sector (in contrast, 8.93% of respondents from the food sector) perceive the impact of digitalisation on the labor market favorably because they have always tried to keep up with technological developments. Only slightly less than 0.4% of the respondents consider the impact of digitization on the labor market as negative because their professional skills and competences have proved to be insufficient due to the impact of digitization. Only 6.92% of employees in trade and 9.78% of employees in the food sector said that digitization and automation had made them redundant in their jobs, with half of both groups finding a job in a company where their expertise and skills were needed. 30.16% of employees in trade have found a new job in a completely different position and around 14% of employees in both sectors have directly developed new digital skills to increase their human potential.



In the final part of the questionnaire, employees were given the opportunity to assign importance to the qualities and skills that are important for their job and also to identify those whose importance will increase or decrease in the coming period due to digitization and automation. More detailed results for individual jobs are presented in the annexes (annexes 17 to 19 for employees in the food sector and annexes 23 to 25 for employees in the trade sector).

Within the food processing sector, employees consider the skills or competencies needed to perform their jobs to be important in the form of a sense of responsibility, as well as literacy, manual skills, persuasiveness, empathy, foresight and the ability to plan. In the future, they expect to see an increase in the importance of active listening and active learning, complex problem-solving, flexibility, a sense of responsibility, foresight and the ability to plan, and persuasiveness. Conversely, a smaller percentage of respondents said they expect a decline in importance for creativity, manual skills, negotiation and communication skills, physical resilience, and working independently.

Within the business sector, employees consider skills or qualities necessary for their jobs to be important, such as a sense of responsibility, working independently, foresight and the ability to plan, time management, and complex problem solving. In the future, they expect an increase in the importance of a sense of responsibility, active listening and learning, flexibility, time management, foresight and planning and manual skills. A decline in importance is attributed by some respondents to skills such as empathy, time management, persuasiveness, physical stamina and endurance, and mathematical skills.

From the results of the structured interviews, we would like to list some key opinions and views from our perspective. In the opinion of the respondents, the increased use of ICT such as mobile phones and tablets can have a positive impact on the company's economic growth, especially with regard to reducing the time needed to process orders, or they consider it very important to increase activity on social networks in the future.

In the case of employers in the food sector, they see potential for change in the introduction of new technologies in the field of robotics and automation, especially of production processes (some respondents, also among traders, told us that they also encounter robotics in their activities, but only to a very small extent at the level of warehouses and distribution). Respondents from both industries indicated that the state in which the digital transformation process is currently in their company is difficult to identify, as it is an ongoing process for them, in which they try to reflect the trends of the time. While the majority of respondents from the food industry sector reported that the COVID-19 pandemic has accelerated the implementation of new technologies and process automation, less than half of respondents in the retail sector confirmed this trend. This was mainly due to the implementation of various digital tools enabling more flexible execution of work tasks, the transition from paper to electronic distribution of information and the increased use of online tools for communication. We believe that this difference between the sectors is also due to the fact that these tools were more intensively used in the trade sector even before the outbreak of the COVID-19 pandemic compared to the food industry, or that the impact of the COVID-19 pandemic resulted in downtime in the production process due to sick leave of employees who fell ill due to COVID-19.

As barriers to digitalization and automation, employers more or less uniformly stated in the interviews that the biggest obstacles are high procurement costs, lack of free financial resources for investment in this area and the time- consuming implementation of new technologies in the production/production process (associated with the need for time for employees who, in addition to their normal work duties, would need to have a certain amount of time allocated for the acquisition of new skills and competencies, which represents a cost increase on the part of business entities) .

In terms of required skills and competences, respondents do not expect a significant change in relation to digitization and/or automation. The requirements for employees are already adapted to these trends and they need to have certain skills and competencies. According to the responses of the managers, in each company the employees are able and willing to acquire new skills and competencies.

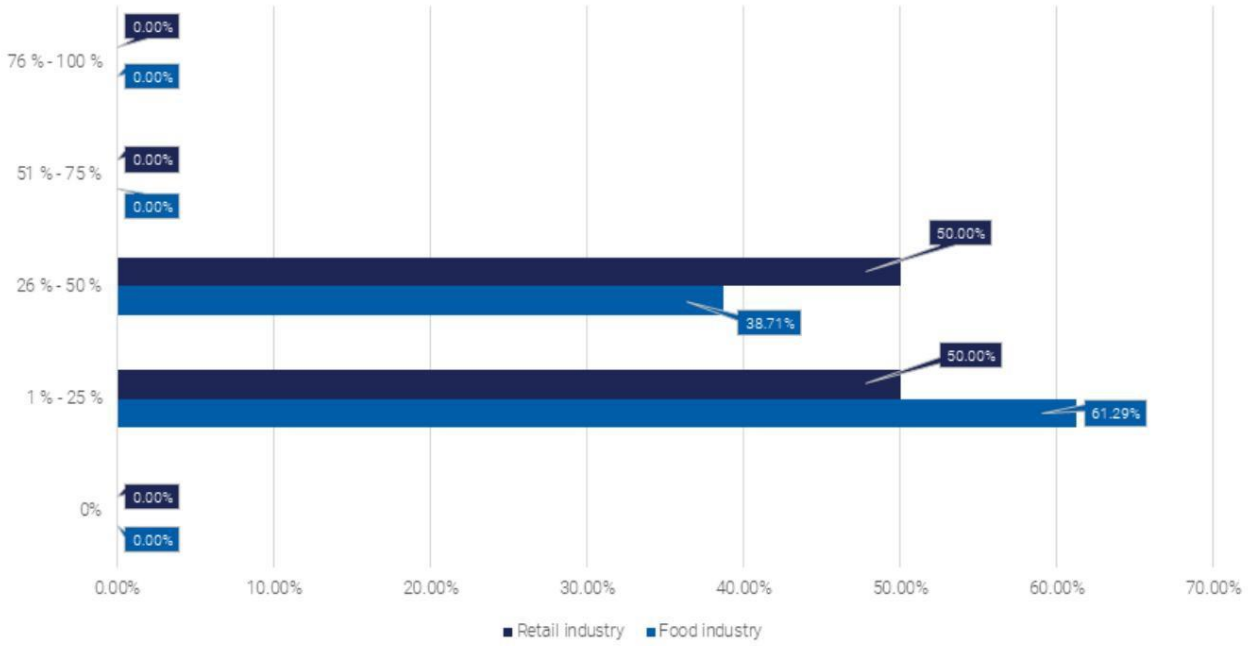
In terms of a change in the structure of the workforce as a result of digitization and automation, this is more likely to be anticipated by representatives of the food industry. In commerce, the job roles of employees may change, but a change in structure is generally not expected. If jobs are to disappear, they are also more likely to disappear in the food industry, but probably not in trade. Due to the impact of digitization and automation, representatives of both sectors expect that time savings in the work activities of individual employees may become even more intense.

Finally, we would like to point out that both the trade and food sectors differ significantly from traditional manufacturing industrial sectors and industries where the level of automation and digitization has been very pronounced for a long period of time. Significant job losses are therefore not to be expected in these two sectors. As the interviews with employers also showed, they expect some jobs to disappear in the future due to outsourcing or, due to the impact of digitization and automation, a reduction in the number of employees in some production, administration or maintenance positions, but none of the respondents could predict in advance whether this would happen in one, two- or five-years' time.

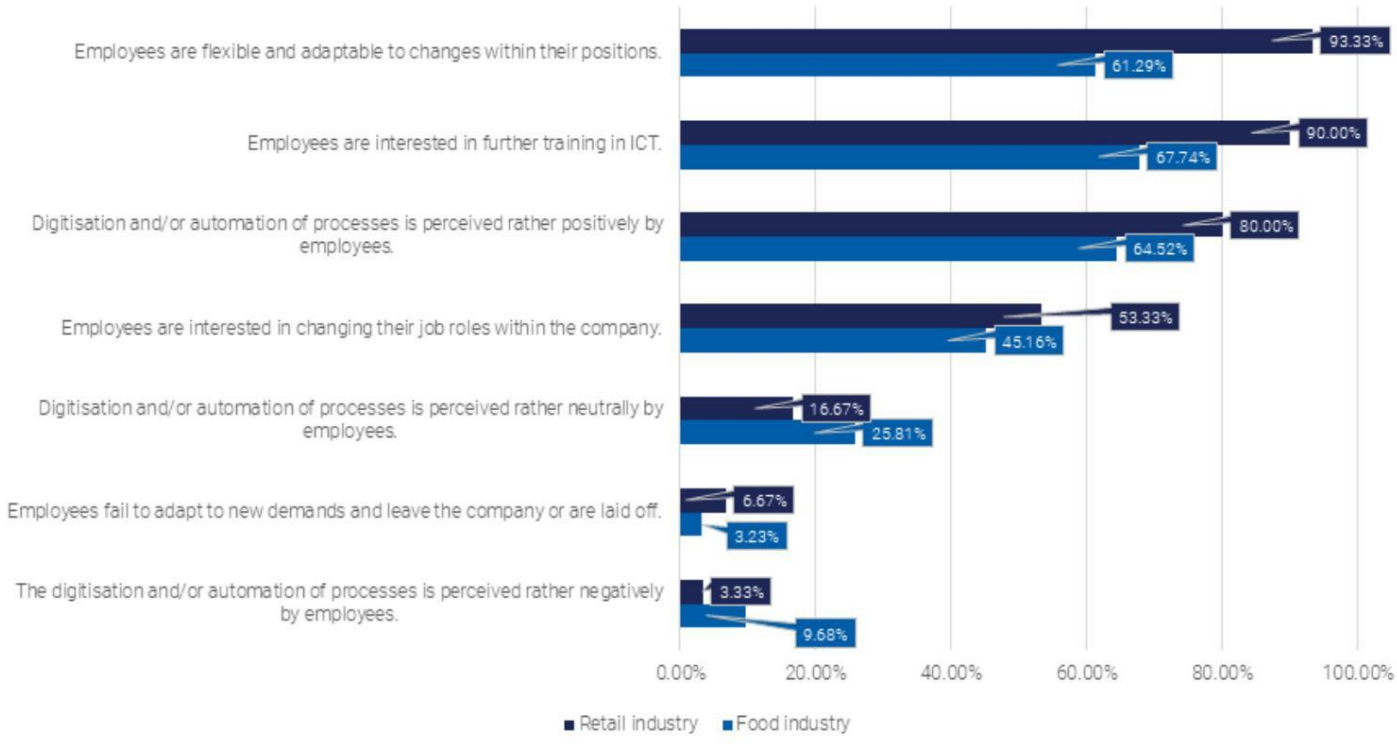
Figures with Results

(Source: Own processing)

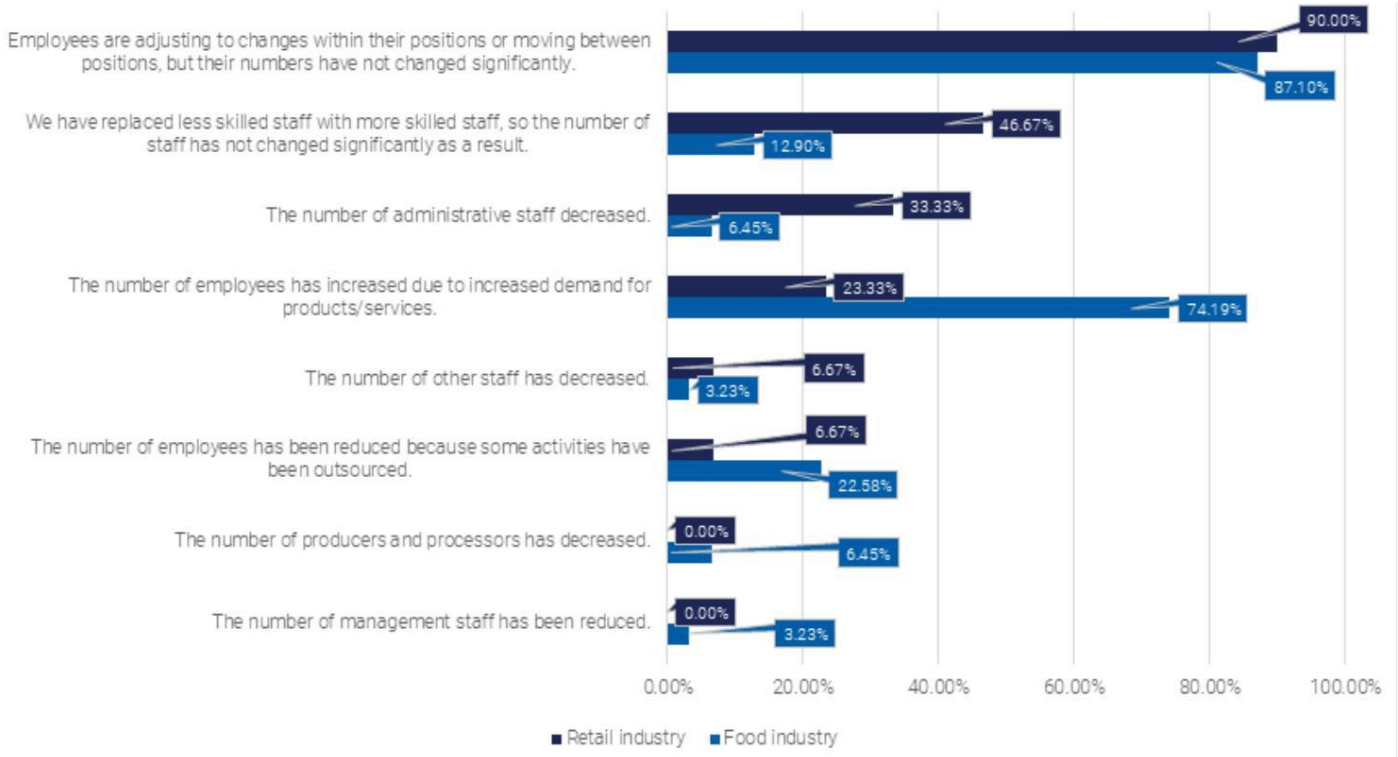
A. PROPORTION OF PROCESSES OUT OF THE TOTAL NUMBER OF PROCESSES IN THE COMPANY BY EMPLOYER(S) THAT ARE AFFECTED BY DIGITISATION AND/OR AUTOMATION.



B. EMPLOYEES' REACTION TO A CHANGE IN JOB TASKS OR TO THE REQUIREMENT TO ACQUIRE NEW SKILLS AND COMPETENCES AS A RESULT OF DIGITISATION AND PROCESS AUTOMATION, BY EMPLOYER



C. IMPACT OF DIGITALIZATION AND PROCESS AUTOMATION ON THE NUMBER OF EMPLOYEES IN COMPANIES BY EMPLOYERS



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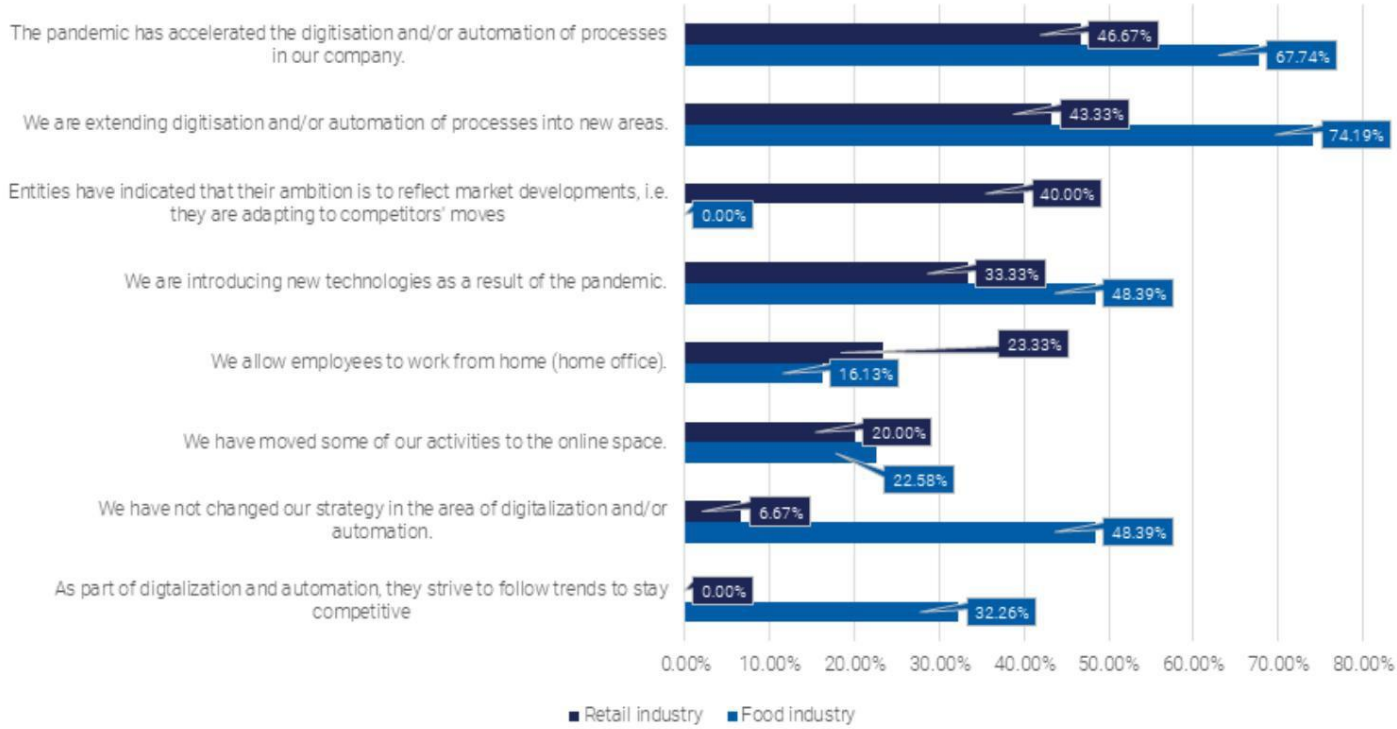
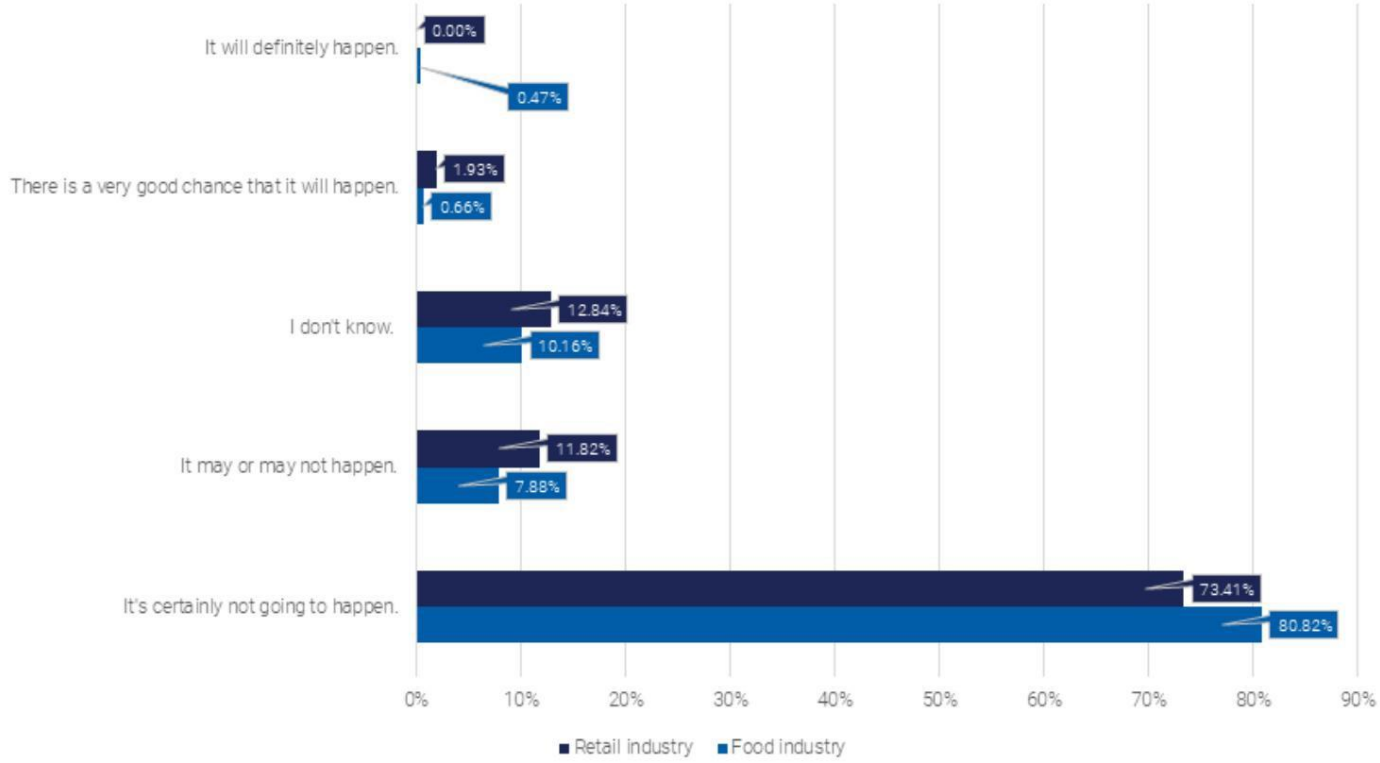


E. EMPLOYERS' VIEWS ON THE INTENSITY OF EMPLOYEE TRAINING ON NEW SKILLS REQUIRED BY DIGITALISATION AND PROCESS AUTOMATION, BY EMPLOYER



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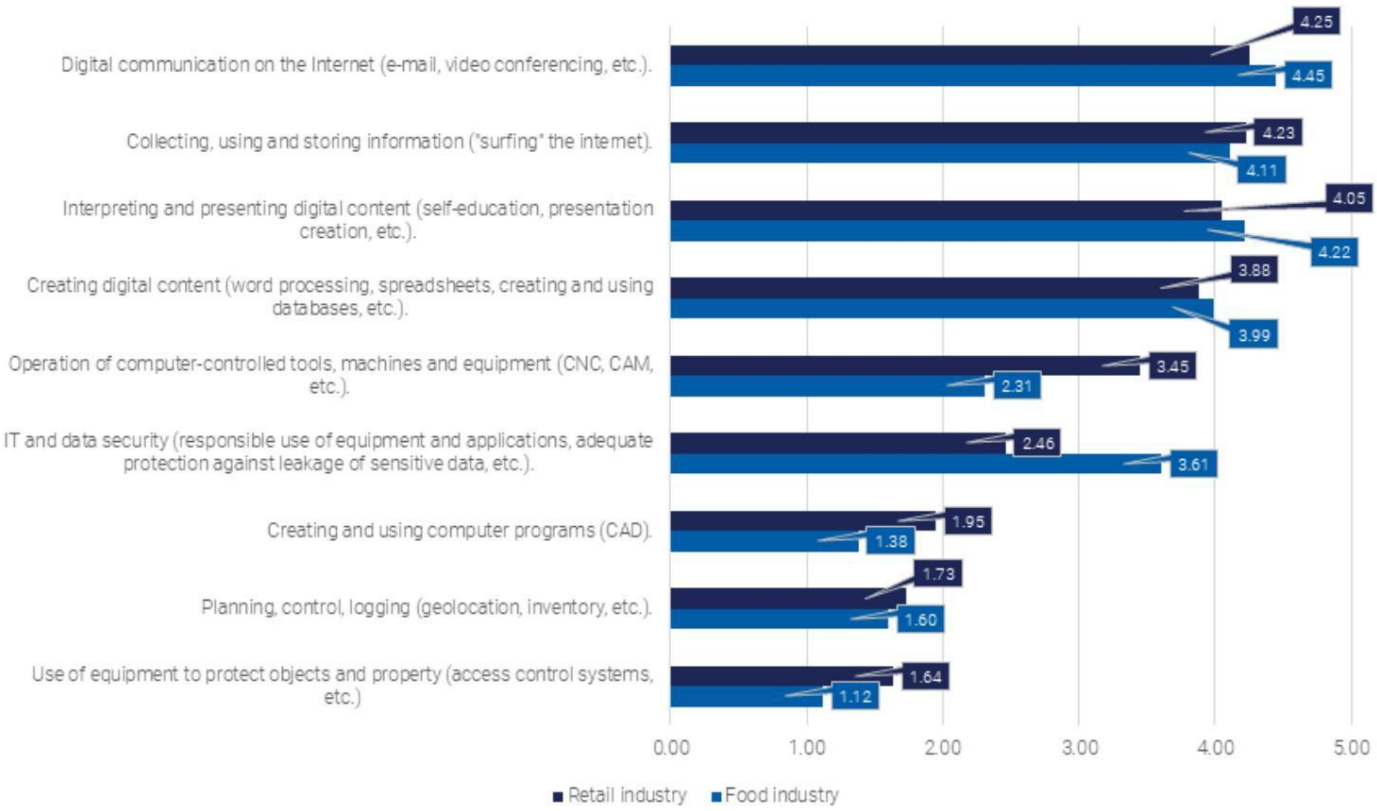

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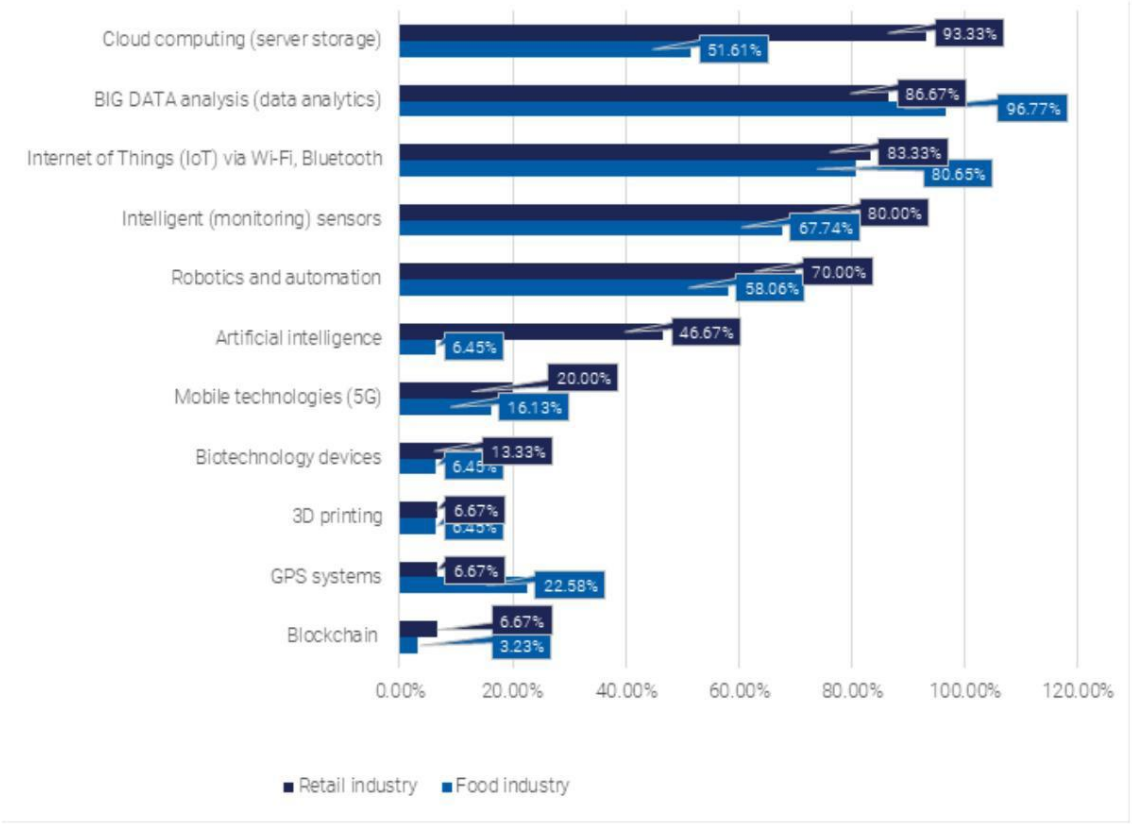

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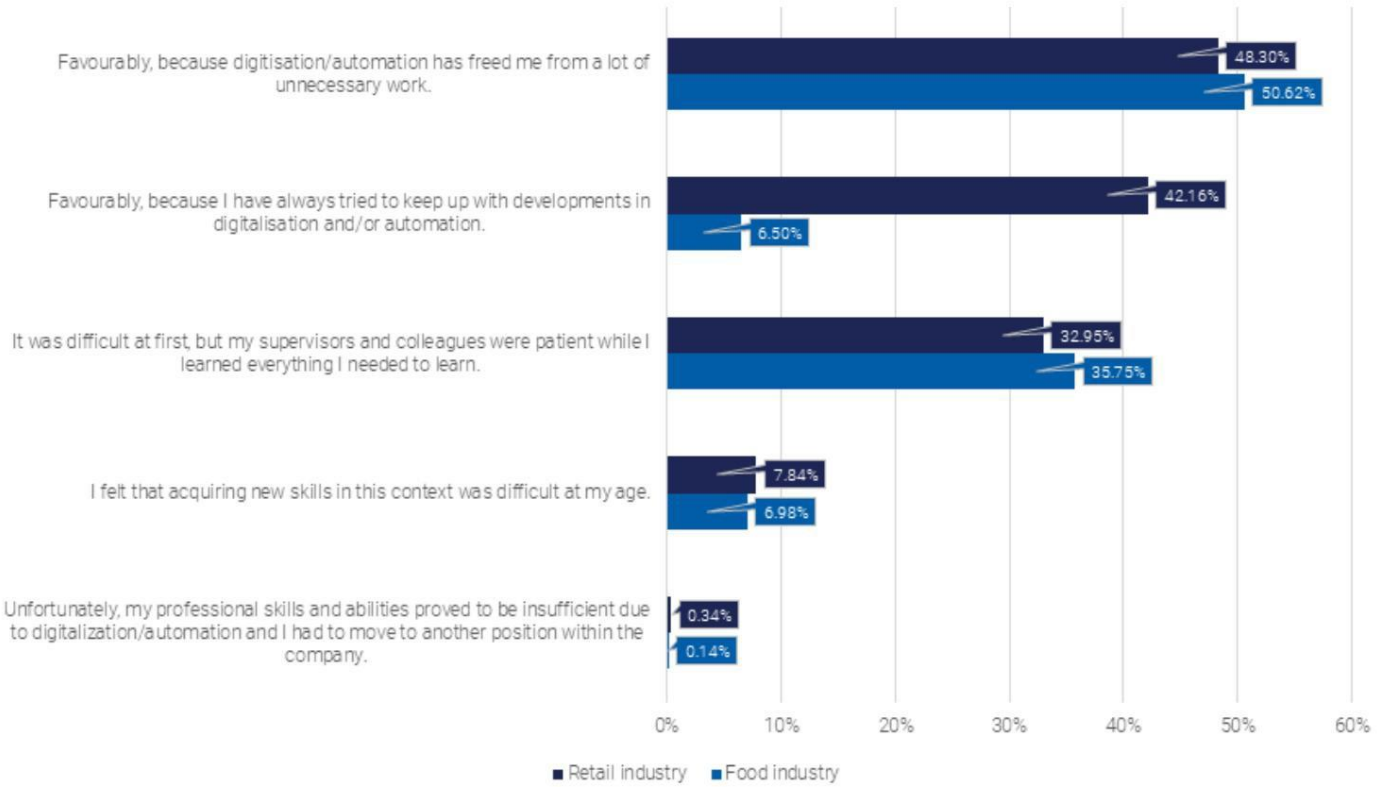
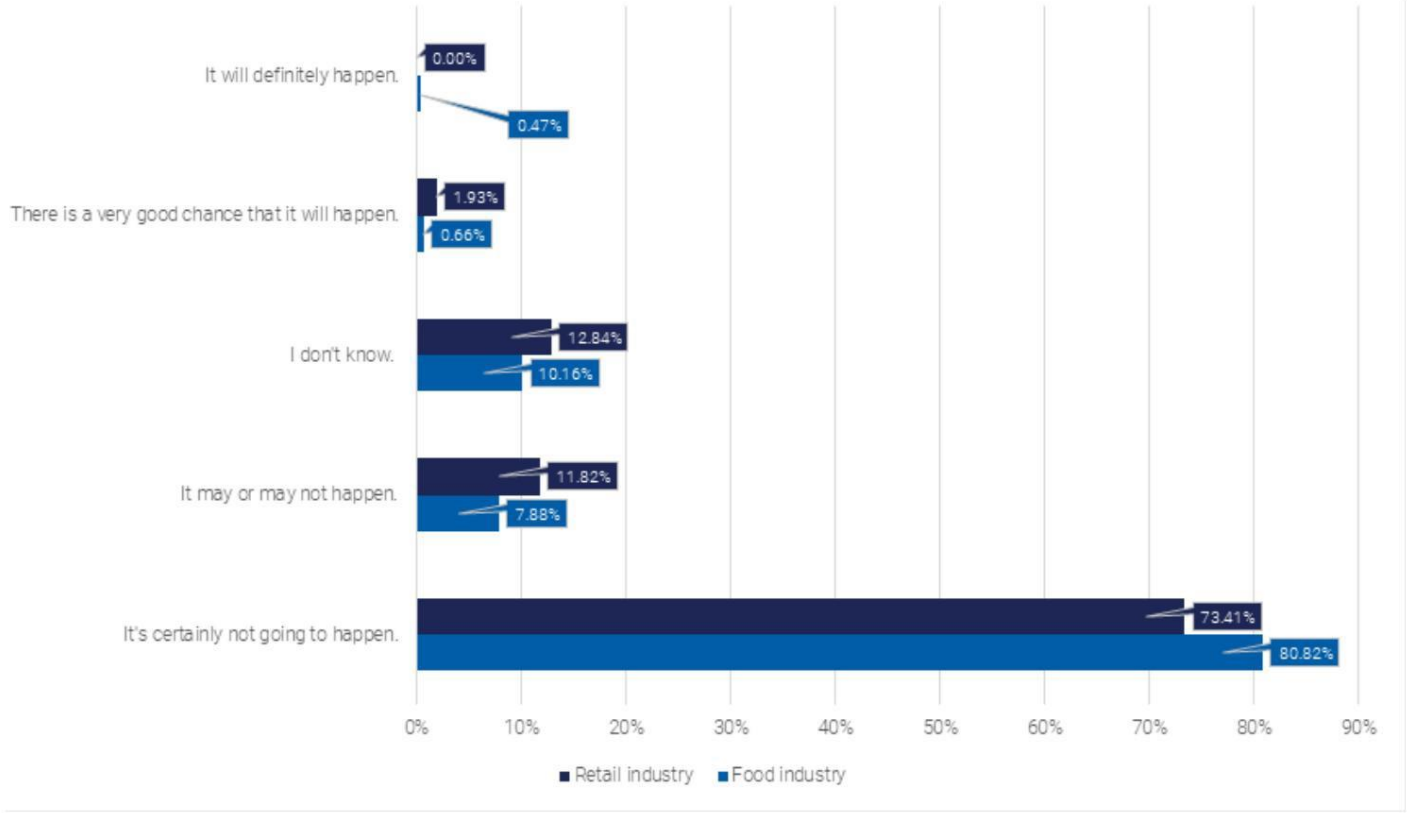


I. TO WHAT EXTENT DO EMPLOYEES EXPECT THEIR CURRENT POSITION AND ASSOCIATED JOB PERFORMANCE TO BECOME REDUNDANT IN THE NEXT 5 YEARS DUE TO DIGITALISATION AND AUTOMATION



INTRODUCTION

Globalization, which we have been witnessing especially in the economic (business) field at the level of companies or entire countries for several decades, is closely connected with the exponential development of information and communication tools and technologies. It was the progress in the electronic industry, represented by computers and later supplemented by the influence of the development of the Internet, that very significantly accelerated the informatization of the industry in the early 1970s. This period is considered to be the beginning of the third industrial revolution, also known as Industry 3.0. During this period, digital technologies began to be gradually used to a greater extent in production by introducing several automated systems directly on the assembly line. A significant breakthrough occurred just before the beginning of the new millennium (between 1995 and 2000), when the Internet was fully developed and changed the way people, households and companies communicated and exchanged information with each other. We refer to this period, which lasts until the present day, as the fourth industrial revolution (Industry 4.0), which can be considered as an era of intelligent machines, storage systems and production equipment that can autonomously exchange information, trigger actions and control each other without human intervention.

We can observe an exponential increase in the use of technologies, especially in industrial production, over the last 15 years, while during the last decade it has gradually spread to other manufacturing and non-manufacturing sectors and industries, including service sectors. Thanks to the Internet of things, intelligent sensors and the development of cloud computing, it was possible to monitor and measure individual parts of production processes, collect data about them, archive them, analyze them and take measures that can lead to a reduction in error rates, to the elimination of downtime or more effective checks. Currently, several economists, including important international institutions, are coming with information that nowadays we can slowly talk about the beginning of the fifth industrial revolution (Industry 5.0), which will be characterized by an even more intensive use of digital technologies, but with an effort to achieve social goals above employment and economic growth framework. The fifth industrial revolution will try to respect the limits of our planet within the production processes, especially in the limited resources it has.

In the introductory part of the study, we deal in more detail with the historical genesis in the field of digitization and automation, including their impact on the economy from a theoretical point of view. We summarize the development of industry in the world from the first to the youngest fifth industrial revolution. This excursion will allow us to better understand what was characteristic of individual industrial revolutions. Furthermore, within this chapter, we are dedicated to defining digitization and automation, i.e., two phenomena that are behind major changes in the personal and work spheres of many entities. Digitization, on the one hand, means the conversion of analog data into a digital electronic format, but on the other hand, it also works with them, using analytical tools to generate overviews and actionable findings to mitigate risk and support the efficiency of future industrial or other projects. In the case of digitalization, we also deal with the phenomenon of digital transformation, which follows on from digitalization itself. Automation can instead be understood as the process of creating and applying (using) technologies for the production and delivery of goods and services with minimal human intervention. Even in the case of digitization and automation, we present real practical examples of how they are currently integrated into the sphere of production or services in practice, either through the use of sensors or artificial intelligence or machine learning technologies.

In the second chapter of the study, we analyze the development in the field of digitization in the European Union in more detail, especially with regard to digital adoption in EU countries in comparison with the USA. By the term digital adoption, we can understand the process of adopting digital technologies, in which an individual acquires the ability to fully perform digital processes for specific purposes. At the same time, digital adoption can also be understood as a mechanism of change and learning, which enables individuals on the one hand to understand the potential of digital resources and on the other hand accept and use these resources to achieve their goals and to make full use of each technology to support innovation and optimize processes.

In the third supporting chapter of the study, we present the results of primary applied research carried out by the interview method using questionnaires and structured interviews between representatives of business entities that operate in the food industry and trade sector in Slovakia. The survey through questionnaires was aimed at employees and employers who operate in these industries, and structured interviews were conducted with representatives of management staff (chief executives, directors, etc.) of individual companies.

The aim of this research was to find out to what extent jobs in these two sectors are threatened by the impact of digitization at present, or in which jobs this risk may appear in the future. Through this survey, we seek to better understand the risks to which employees in various job positions in these industries are exposed to the effects of digitization and/or automation.

1. WHAT DO DIGITALIZATION AND AUTOMATION OFFER US WITH RESPECT TO THE HISTORICAL DEVELOPMENT OF THE INDUSTRY?

For several decades, the world has witnessed several industrial revolutions supported by increasing innovations and discoveries in the world of technology. Information can be quickly transmitted from one person to another despite their geographical location on Earth. Digitization has completely changed the way people work, bank, shop and do business. Small and medium-sized enterprises, corporations and government agencies have incorporated technology and digitization into their activities, which bring efficiency and significantly reduce operating costs.

The terms digitization and automation are very often considered synonymous on a theoretical level, but in their practical interpretation we come across fundamental differences in their meaning. In the following subchapters, we will therefore look in more detail at the meaning of digitization and automation, their definitions, developments in recent years and the impact on the industry itself. The next chapter will also include trends in these two areas, which we will draw from secondary sources in the form of research that has been carried out in the given area recently.
Undoubtedly, the global crisis associated with the pandemic related to the COVID-19 disease played a big role in the case of digitization and automation of processes in enterprises, which forced many enterprises to intensify the introduction of new modern elements of management, digitization of data and processes so that they could function effectively even in this difficult situation (we will deal with it in the next chapter).

1.1 Historical development in the field of industry

In the next subchapter, we will look in more detail at the historical development and characteristics of the individual stages of the industrial revolution, which is currently entering its fifth stage. In this chapter, we will be based on the works of authors such as Sheth (2018), Demir, Doven and Sezen (2019), Melnyk et al. (2019), Yavari and Pilevari (2020) or Xu et al. (2021), who in their research devoted themselves to mapping the history of the development of individual industrial revolutions and the transformation from the fourth industrial revolution to the fifth.

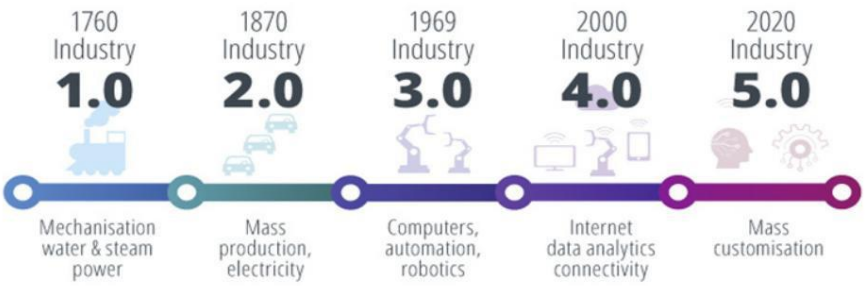


Figure 1
Development of the industrial revolution from Industry 1.0 to Industry 5.0

Source: www.platforme.com

The emergence of the first industrial revolution (Industry 1.0), which was characterized by the introduction and use of new production processes using water and steam, which made it possible to produce a larger amount of various goods and create a better standard of living for some entrepreneurs and employees, dates back from 1760 to 1784. The period of the first industrial revolution is also characterized by the period of industrialization, in which the textile industry and transport were mainly transformed. As part of this revolution, coal or steam were used as fuel sources to drive machines, which thus found their use directly in production. The machines thus enabled faster and simpler production and created space for various kinds of innovations in the field of technological procedures, production processes or types of machines, which could thus be used precisely in industrial production. The second industrial revolution (Industry 2.0) is very often referred to as a technological revolution, which originated mainly in Great Britain, USA and Germany and its beginning dates back to 1870. This period was characterized mainly by the introduction of new technologies, mainly thanks to electricity, electronic and mechanical equipment and automobiles. This period was significantly influenced by the development of electricity-powered machines, which came to be used as the primary energy source, and machines powered by it were much more efficient to operate and maintain (in terms of costs and effort) compared to water and steam-based machines.

Therefore, the first electrotechnical and mechanical devices and automobiles began to be created in this period. During this period, the first assembly lines were also built. Thye contributed even more to the efficiency of the production processes of serial production, while the mass production of goods with the use of the assembly line became a standard practice during this period, which we encounter in production places even today. As part of this stage, it was also about increasing the efficiency of production equipment (with the same inputs, I can produce the same amount either cheaper or I need lower inputs for the same number of produced products). Likewise, in this period, various techniques such as division of labor, "just-in-time" production or lean production principles were implemented into the production management process, which led to an improvement in the company's quality and performance. The beginning of the third industrial revolution (Industry 3.0) dates back to 1970, approximately 100 years after the second industrial revolution. It can be characterized by advances in the electronics industry, which was characterized by the invention and production of various electronic devices, including transistors and integrated circuits, which substantially automated machines, resulting in reduced effort, increased speed, greater accuracy, and in some cases, they even completely replaced the human. This period was also characterized by the introduction of several automated systems directly on the assembly line, which had the task of performing human tasks, i.e. replacing some activities that until then were performed only by humans (although the tasks themselves were performed by the line independently, people continued to supervise this process). . It is the invention of the so-called programmable logic controllers (from the English Programmable Logic Controllers - abbreviated PLC) can be described as groundbreaking in this period, as it significantly contributed to automation using electronics. The integration of electronic hardware into production systems also created a demand for software systems enabling the implementation and use of electronic devices, which in turn influenced the development and development of software engineering. In addition to hardware control, software systems also enabled many management processes, such as corporate resource planning, inventory management, shipping logistics, product flow planning, and tracking their movement within the plant. The entire industry was further automated with the help of electronics and information technologies (from the English information technologies - abbreviated IT).

Since then, automation processes and software systems have continued to evolve with the advances in the electronics and IT industry. Pressure to further reduce costs has forced many manufacturers to relocate to low-cost countries. Dispersion of the geographical location of production led to the creation of the concept of supply chain management and contributed even more intensively to the world globalization.

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The start of the fourth industrial revolution (Industry 4.0) is associated with the boom in the Internet and telecommunications industry during the 1990s, especially at the beginning of the new millennium, which represented a revolution in the way companies, governments or people were connected and exchanged information. The fourth industrial revolution can also be characterized as the era of intelligent machines, storage systems and production equipment that can autonomously exchange information, trigger actions and control each other without human intervention. This exchange of information is made possible by the Industrial Internet of Things - abbreviated IIoT). **Key elements of Industry 4.0 include:**

- **cyber physical system (from the English Cyber-physical system) – it is a mechanical device that is controlled by computer algorithms,**
- **the Internet of Things (from the English Internet of Things - abbreviated IoT) – these are connected networks of machinery and vehicles with computerized sensing, scanning and monitoring,**
- **cloud computing — network hosting and data backup off-site, or it can also be understood as the implementation of calculations and data processing in the online space, to which all authorized persons can access without time limit at any time and**
- **cognitive computing (from English Cognitive computing) — these are technological platforms that use artificial intelligence (from English Artificial Intelligence - abbreviated AI).**

In addition to the four aforementioned key elements of Industry 4.0, it is possible to mention the elements of big data, electric vehicles and 3D printing in the recent period. It was during the fourth industrial revolution that the level of globalization of the whole world reached its highest level, mainly because of the interconnection through the Internet. Not only did people have the opportunity to know what was happening on the other side of the world, but at the same time it allowed companies to open branches in countries that were several thousand kilometers away from their headquarters and at the same time to have an almost continuous overview of the functioning of production without having to actually be in the given country, which ultimately led to the interconnectedness of the economies of these countries. Systems that have been developed and are intensively used within Industry 4.0 to share, analyze and lead intelligent actions for various processes in individual entities, aim to enable more efficient management and control of machines used in production or logistics. Thanks to them, the systems should be able to continuously monitor, detect and predict malfunctions and propose preventive or corrective measures, thereby ensuring better preparedness and lower downtime for industries. The same dynamic approach can be transferred to other aspects of the industry, such as logistics, production planning, optimization of production times, quality control, capacity utilization and efficiency improvement. At the same time, the role of these systems is for the industry to be completely virtually visualized, monitored and controlled from a remote location, thus adding a new dimension to the production process. It places machines, people, processes and infrastructure in a single network loop, thanks to which the overall management is highly efficient.

Currently, more and more academicians and leaders from the business sphere or from important international organizations and institutions are starting to talk about the gradual transition from the fourth to the fifth industrial revolution (Industry 5.0), which should smoothly follow on from the fourth. As stated by the European Commission (2021), the concept of Industry 5.0 is intended to provide a vision for an industry whose only goal is efficiency and productivity, and at the same time to strengthen the role and contribution of industry to society. It puts the welfare of the worker at the center of the production process and uses new technologies to ensure prosperity beyond jobs and growth while respecting the planet's production limits. It complements the already mentioned concept of Industry 4.0 in that research and innovation are specifically used in the transition to a sustainable, human-centered and resilient industry. Within the framework of Industry 5.0, demands will be placed on technologies that are related to balancing advanced digitization, collection, storage, but especially analysis of big data and artificial intelligence, and at the same time it will be necessary to emphasize their role, which they will play in solving new, emerging requirements in industrial, social and environmental area. On the one hand, Industry 5.0 aims to increase and improve the automation of production processes and at the same time ensure the reuse of human hands and minds in the industrial framework. It is expected that people and devices will cooperate more intensively with each other to improve the conditions and efficiency of the production process or production itself. The main characteristic of Industry 5.0, which is also pointed out by the European Commission (2021), will therefore be the mass adaptation of production processes to the individual needs of people (the need to satisfy the high demand of consumers for individualized products is growing), which, especially on a larger scale in the field of services, can already be observed in this need is observed to a lesser extent, especially in the case of more luxurious types of goods in the industrial area. At the same time, the European Commission (2021) states that the fifth industrial revolution will be based on three basic elements and will focus on people (from English Human-centric), sustainability (from English Sustainable) and resistance (from English Resilient). The ambition of the Industry 5.0 will therefore be to strive to achieve social goals beyond the scope of jobs and growth, in order to become a durable provider of prosperity by the fact that production respects the limits of our planet, especially in the limited resources we have and puts the well-being of workers in the industry at the center of the production process.

1.2 Digitization

The term digitization is understood by several authors such as Hellsten and Puaunu (2020), Mentsiev et al. (2020) or Reis et al. (2020) as the process of converting analog data in hard copy to a digital electronic format.
It is therefore a matter of moving information stored in paper form (e.g., records about patients or clients) into a digital format (e.g., records will be stored in cloud databases with which several people can work in parallel, while in the case of printed materials the data can only be used by one person). At the same time, digitization makes it possible to use analytical tools to generate insights and actionable findings to mitigate risk and support the efficiency of future industrial or other projects. Abroad, two English terms are distinguished in connection with digitization - digitization and digitalization. Digitization of the brand is the process of digitalizing existing data (conversion of the already mentioned analog data (stored on paper) into digital form), and digitalization represents the ability of digital technology to capture and evaluate data in order to make better business decisions and thus enable the development of new business models. We can therefore conclude that digitization represents the first step towards automation, because information (inputs) must be available and processable by any automation technology even before the automation process itself.

Digitization itself is an important step towards digital transformation and has a huge impact on products, services and people.

It significantly affects the way value is created in business and affects the very change of the organization's culture. The term digital transformation itself represents the adoption of digital technology by society, and its main goal is efficiency, value and inventiveness. Digital transformation further represents the ability of business entities to quickly adapt to changes when necessary, through the intelligent use of technology and information. According to
Schallmo and Williams (2018) or Pereira et al. (2022) digital transformation is a deep and accelerating transformation of business activities, processes, competences and models in order to take full advantage of the changes and opportunities brought by digital technologies and their impact on the whole society in a strategic and prioritized
way. According to the authors mentioned above, the main goal of digital transformation is to increase the productivity and creativity (through decision-making, connectivity, innovation and reasoning) of individuals. Technologies such as smart devices, cloud computing, big data and analytics, social media and networks, cognitive computing and artificial intelligence provide unprecedented access to sources of knowledge, information and insights, which lead to greater innovation and better outcomes. In addition to radically expanding the reach of organizations, digital transformation seeks to use the possibilities and opportunities offered by new technologies, faster, better and more innovatively. Because of this, effective strategies recognize that the end goal will continue to shift, as true digital transformation is an ongoing journey, just like change and digital innovation.
Digital transformation is driving many organizations to become agile businesses that are set up to quickly detect, respond and adapt to changes in the expectations and demands of consumers and employees in the wider business environment.

Digitization is also part of the digital transformation. As mentioned by Verhoef et al. (2021), in the case of digital transformation we can talk about the transformation of business activities, processes, products and models in order to fully utilize the opportunities of digital technologies. The main goals include increasing efficiency, better risk management or discovering new possibilities for their monetization. Simply put, digital transformation means doing things in a new (digital) way. Digital transformation is more about people than technology, as it requires organizational change that is customer-centric, supported by leadership, driven by radical challenges to corporate culture and the use of technology that empowers employees.

We can already state nowadays that digital technologies will become more and more important for the production process in the future. We can therefore assume that over time production processes will become even more capital- and technology-demanding not only in advanced economies, but also in less developed (developing) economies. It is very likely that economically and capital stronger business entities will have more available resources to accelerate the use of digital technologies even more significantly. The increasing capital and technological intensity of production has a significant impact on the international competitiveness of all countries of the world. It is increasingly possible to observe that companies increasingly use robots, computers and machines, while developing countries with a high share of the labor force lose their decisive competitive advantage - cheap labor. At the same time, it is possible to observe the improving situation of competitive rich industrial countries, which are able to finance the costs of the digital transformation better, which, as we stated in chapter 1.1., started with Industry 3.0 and continues today as part of Industry 4.0.

The digital economy, which is based on digital computer technologies, but is very often seen as doing business through Internet and web-based markets, is also very closely linked to digitization. The digital economy also saw development in the period of digital transformation, when information became more accessible and more quickly distributed not only within one business entity or household, but also across entities and subjects within one holding, city, country, continent or the whole world.
Digitization itself is very closely connected with automation, which we will discuss in the next subsection. A company striving for digitization can use automation to update work tasks or transform entire business processes. Companies have already saved employees time in their daily work thanks to the first technological improvements, but there are still a large number of routine tasks (administrative or otherwise) that very often reduce employee productivity. Enterprises that implement the automation of complex processes can partially free their employees from the daily care of these administrative duties and allow them to devote their unique expertise, skills or talent to projects that are interesting to them and that the company considers strategically advantageous and important. It can be assumed that the automation of these routine activities will help employees to focus more on their main job function, increase their productivity and open opportunities to acquire new skills.

1.3 Automation

Automation represents, according to Frohm et al. (2008), Goldberg (2012), Parviainen et al. (2017) or Roto, Palanque and Karvonen (2018) the process of creating and applying (using) technologies for the production and delivery of goods and services with minimal human intervention. Automation therefore represents the transformation of a work process, procedure or device into automatic rather than human operation or control. It is therefore not a transfer of human functions to machines, but involves a deep reorganization of the work process, during which human and machine functions are redefined. In an industrial context, automation can be defined as a technology that refers to the use of mechanical, electrical/electronic and computer systems to control a manufacturing process. In its beginnings, automation relied on mechanical and electromechanical control devices, while in the last five decades the computer has gradually become the leading means of automation, therefore it is possible to combine modern automation with computerization. The term computerization was first used by Simon Nora and Alain Minc in their publication "The Computerization of Society: A report to the President of France" in 1980, while later in 1987 Minc replaced the word "computerization" with the term "informatisation". Rogers (2000) defined informatization as the process through which new communication technologies are used as means of further development as a nation becomes increasingly an information society. Informatization de facto meant the development of the use of information technologies such as computers, and later mobile phones and tablets on a large scale by ordinary consumers.

Usually, automation is used to minimize work or to replace human activity or the human factor (or its direct involvement in activities with lower added value or especially in the case of repetitive activities. Automation is currently more or less present in practically all sectors of the economy, the most widespread it is in manufacturing, public services, transport and security. In the case of business entities in production, most of them use some kind of automated process in the form of robotic assembly lines. Human input is only required to define and supervise processes, while the assembly of various components is left to machines which automatically transform raw materials or components into finished products. In the technological field, the impact of automation is increasing rapidly, both at the software/hardware and machine level. The implementation of new technologies of artificial intelligence (from English Artificial Intelligence - abbreviated AI) and machine learning (from English Machine Learning - abbreviated ML) is currently making rapid progress in the development of this field.

By the implementation of automation technologies, techniques and processes, it is possible to improve the efficiency, reliability and/or speed of many tasks that were previously performed by humans. In practice, we distinguish 4 basic types of automation:

- **basic**
- **process**
- **integration and**
- **artificial intelligence (AI).**

In the case of basic automation, simple, basic tasks are taken over and are subsequently automated.
This level of automation is about digitizing work, using tools to streamline and centralize routine tasks. We can further divide it into business process management (from the English Business Process Management - abbreviated BPM) and automation of robotic processes (from the English Robotic Process Automation - abbreviated RPA). Instead, process automation focuses on the management of processes for their uniformity and transparency. This is usually handled by specialized software and business applications. Using process automation can increase productivity and efficiency in your business. It can also provide a new perspective on business challenges and suggest potential solutions to their implementation. Process automation can be divided into process mining (from the English Process mining) and workflow automation (from the English Workflow automation). Integrative automation is used to enable machines to imitate human tasks and repeat actions defined for them by humans. One example is the "digital worker", which is a software robot that is trained to work with humans to perform specific tasks. It has a specific set of skills, and such software robots can also be "hired" to work in teams. The last and at the same time the most complex type and level of automation is artificial intelligence (AI) automation. It means that machines can "learn" and make decisions based on past situations they have encountered and analyzed. For example, in customer service, virtual assistants can reduce costs while empowering both customers and human agents, creating an optimal customer service experience.

As mentioned by Becker et al. (2012), Mendes et al. (2016) or Paschek, Luminosu and Draghici (2017), business process management uses methods to discover, model, analyze, measure, improve and optimize business strategy and individual processes. Business process management follows the entire process, which is repeatable, from its beginning to the end, in contrast to task and project management, which only focus on individual and especially one-time partial tasks. Through continuous process reengineering, organizations can streamline their overall workflows, which result in increased efficiency and savings of costs. By incorporating advanced analytics, activity monitoring, and decision management capabilities, business process management suites are able to coordinate people, systems, and information and material to achieve business results. As a result, they have been particularly useful in accelerating digital transformation strategies. In practice, we distinguish 3 main types of business process management, which focus on:

- **integration (integration centric) – this is a focus on processes that do not require extensive human involvement, are more dependent on APIs (application programming interfaces) and mechanisms that integrate data across systems, such as human resources management (from the English human resource management - abbreviated HRM) or customer relationship management (from the English customer relationship management - abbreviated CRM),**
- **human (human centric) - focuses on human involvement, usually where approvals are required, with intuitive user interfaces with drag- and-drop functionality, enabling teams to assign tasks to different roles, making it easier for individuals to take responsibility for individual parts throughout the process and**
- **documents (document centric) - focuses on a specific document, such as a contract - when a company buys a product or service, this contract must go through various forms and rounds of approval to create an agreement between the client and the seller.**

By the application of business process management, organizations can improve their operations, which lead to better business results. To achieve these results, they should fully understand the BPM life cycle, which consists of five basic steps – process design, model, execution, monitoring and optimization. As part of the process proposal, it is necessary to outline milestones, appropriately define individual tasks within the entire process and assign responsible persons to them. Within the model, it is necessary to create a visual presentation of the entire process, specify details such as time schedule, task description or data flow in the process. Next, it is necessary to conduct
a proof of concept and test the new system on a sample. The team continues to monitor the process, tries to acquire

and identify information to improve the process itself and its individual parts, and finally, the optimization of the process itself follows, which represents conceptual adjustments that are aimed at the improvement of the process. The benefits of business process management include increased efficiency and cost savings, improved employee and customer experience, more scalable processes, greater transparency, and less dependence on development teams. The biggest advantage is that business users can be quickly and easily integrated into these tools, which as a result increases the automation of processes throughout the company.

According to authors such as Chakraborti et al. (2020), Choudhary and Karmel (2022) or Athaur, Ingram and Wellens (2022) robotic process automation, also known as software robotics, uses automation technologies to imitate tasks performed by human workers in the back-office (e.g. extracting data, filling out forms , moving files, etc.). It combines APIs and user interface (UI) interactions to integrate and perform repetitive tasks between business and productivity applications. By deploying scripts that emulate human processes, RPA tools complete the autonomous execution of various activities and transactions across unrelated software systems. It is a form of automation that uses rules-based software to perform business process activities in high volume, freeing up human resources to prioritize more complex tasks.

The basic functions of software tools of robotic process automation include the need for basic programming knowledge to create automation scripts, integration with business applications, and last but not least, organization and management, including configuration, monitoring, and security.

The advantage of RPA is also their use in cases where it is necessary to access information through older systems that can be integrated with other applications through front-end integrations, which allows them to behave similarly to an employee who performs normal work activities (such as logging in, copying and pasting information from one system to another). Currently, the competitiveness of RPA tools is being expanded by the so-called intelligent automation by the incorporation of sub-disciplines of artificial intelligence, such as machine learning, natural language processing by a machine (computer) and computer vision. Thus, even the process
of automation is starting to focus more on learning and thinking, especially by training its algorithms using data, which allows the software to perform tasks faster and more efficiently. There are several advantages and challenges of robotic process automation. Among the advantages we can include not requiring programming skills (it uses simpler ways to teach the software to do what the employee needs), relatively quick cost savings (relatively in a short time it will reduce the workload of employees and those employees can be reassigned or relocated to another job, which leads to increasing labor productivity and reducing costs), higher customer satisfaction (robotic automation can work almost continuously unlike the work that is performed by employees - e.g. chatbot), improvement of employee morale (people can focus on more thoughtful and strategic decisions due to the fact that they no longer have to do very often monotonous and repetitive work with a heavy workload), last but not least better accuracy and lower error rate (programmed robots designed to comply with specific work procedures and rules can limit the occurrence of errors, especially in work activities that require accuracy) and the use of existing software without the need to change them (software robots do not cause any disruption to basic systems, because they work on the presentation (front end) layer of existing applications). Despite the fact that robotic process automation has the main goal to help businesses grow, experts and academics point to certain challenges that are related to organizational culture, technical issues and scaling. On the one hand, robotic automation reduces the need for human capital when performing certain work activities, but in parallel it stimulates the need to solve more important tasks, which allows employees to devote themselves to more strategies and creativity. There is also greater pressure on the business entities themselves, which must support learning and innovation culture, because the work tasks of employees are changing and it is necessary more than ever to educate their employees and invest in training programs and thus prepare teams for ongoing changes in priorities or the tasks themselves. The second key challenge is the difficulty of scaling robotic processes. The execution of certain processes that are to be automated are influenced in each company by their own internal regulations and standards, therefore in some cases it is necessary to use several robots instead of one to automate them (the process itself very often consists of several simultaneous operations that are regulated by internal regulations or rules organizations).

2. DIGITALIZATION IN THE EUROPEAN UNION

It is clear that in order to achieve sustainable growth, European countries must use the potential of digital technologies. The digital revolution has already affected industries, changed production processes and affected the way a lot of people live and work nowadays. However, other of these changes are just beginning. According to a survey done by the European Investment Bank (EIB, 2021), most European companies believe that the COVID-19 pandemic will further accelerate the use of digital technologies. In the current conditions of global innovation and a rapidly changing technological environment, it is crucial for European companies to become leaders in the use of digital technologies, otherwise Europe risks becoming entrenched in its position as a follower. Although the adoption and implementation of digital technologies by companies in the European Union is improving, it is still not catching up with the United States as a whole. While only 27% of businesses in the United States have not adopted any advanced digital technologies by 2020, it was 37% of businesses in the European Union. The difference is particularly pronounced in the construction industry. The proportion of construction firms that do not implement digital technologies is 60% in the EU, compared to only 23% in the US. The difference in the rate of digital adoption between EU and US firms is further 12 percentage points in services, 6 percentage points in the infrastructure sector and 3 percentage points in manufacturing.

The rate of digital adoption is strongly dependent on the size of companies, with larger companies showing higher rates of digital adoption compared to smaller ones. In the EU, 40% of micro-enterprises (5 to 9 employees) have implemented at least one digital technology, while 75% of large companies (more than 250 employees) are considered fully digital.
The relationship between the company size and the rate of digital adoption can be observed in all of the sectors. The fact that micro and small and medium-sized enterprises are considered the backbone of the European economy (they represent 99% of all businesses and more than two thirds of employment in the EU) can be a significant disadvantage for accelerating the implementation of digital technologies (in the US, businesses with less than 250 employees represent only 40% of total employment). The reason is probably the fragmentation of the market throughout the European Union, especially in the service sector. According to Revoltello et al. (2020), if policymakers want to close the digital adoption gap between the EU and the US, they must also pay attention to eliminating structural barriers to digitization investments.
As mentioned by Veuglers et al. (2019) large digital companies invest more in innovation. Firms that actively invest in research and development introduce innovations that are new to the country or the world market. Non-digital companies are more likely to be passive in this regard and do not invest resources in the development and implementation of new products, services and processes. EU companies lag behind in digital innovation not only behind the USA (GAFAM companies – Google, Amazon, Facebook, Apple, Microsoft are all American), but also behind China, especially in terms of the number of applications for patents for the so-called technologies. Industry 4.0 and this gap has been increasing over time (EIB, 2021). At the same time, it is true that companies that file patents in the field of artificial intelligence tend to grow significantly faster (Alderucci et al., 2020).

Digital transformation is especially important for companies that want to succeed in the competitive struggle in international markets. Digital companies tend to be more productive and at the same time more likely to export their products and services to other countries. Companies that are progressing with digital transformation are more dynamic and grow faster compared to those companies that lag behind in digitalization (Rückert et al., 2020). At the same time, the results of the analysis of the European Investment Bank EIBIS (EIB, 2021) indicate that due to higher productivity and economic power, digital companies tend to pay higher wages.

According to the OECD, despite the fact that digital technologies offer significant potential to increase labor productivity, its growth has declined sharply in recent decades. The slowdown in productivity growth has several partially interrelated causes, some of which are related to the global financial crisis and its consequences, others are of a more structural nature (e.g., the decline in business dynamics and the poor performance of companies with low productivity). The aggregate productivity gains from digitization have not been large enough to offset these adverse effects. The OECD has identified several weaknesses in key factors and policies. One of them is the fact that digital technologies are characterized by strong complementarity:

- **between the technologies themselves,**
- **in relation to companies' capabilities and assets, such as technical and managerial skills, organizational capital, innovation and financial capacity, and**
- **in relation to policies which support economic competition and efficient redistribution of resources in the economy.**

As a result of these shortcomings, the gains from digitization have not been evenly distributed among companies. Companies that have better access to key technical, managerial and organizational skills benefit more than other companies. As a rule, these firms already tended to be more productive than average in the past, and digitization contributed to increasing their lead. It is these facts that result in the digital polarization of both companies and the countries themselves. While some EU countries are at the forefront of digital transformation, others are lagging behind. The negative risks for the labor market and economic growth due to digitization and automation are therefore not evenly distributed, and the least developed regions of the EU are most at risk.

Many economists agree that digital technologies can have an impact on employment, wages, the demand for ICT (Information and Communication Technology) skills and the polarization of jobs due to digitization and automation (Acemoglu and Autor, 2011; Autor, 2015; EIB, 2018; Frank et al., 2019; Acemoglu and Restrepo, 2020).
Companies that invest in digitization tend to also invest in human capital to support the further education of their employees, among other things, also in the field of ICT skills. Digital companies are also more optimistic about the creation of new jobs that will be created due to digitization. At the same time, it is likely that some jobs will disappear due to digitization and automation. Also, for this reason, it is necessary to continue to analyze the introduction of digital technologies in individual sectors of the economy in Slovakia as well.
The ability of countries to adopt innovations and digital technologies is globally measured by the so-called digital adoption index (hereinafter referred to as "DAI"). The DAI measures countries' digital adoption across three dimensions of the economy: people's digital adoption, government's digital adoption, and business's digital adoption. The index covers 180 countries on a scale of 0 to 1. It emphasizes the "supply side" of digital adoption to maximize coverage and simplify theoretical linkages. The total DAI is a simple average of the three sub-indexes. Each sub-index contains the technologies which are needed by the relevant agent to support development in the digital era: increasing productivity and accelerating economic growth for business, expanding opportunities and improving well-being for people, and increasing the efficiency and accountability of service delivery for government. DAI was quantified by the World Bank in 2014 and updated in 2016 for the purpose of the “World Development Report 2016: Digital Dividends” to help policymakers design a digital strategy with tailored policies to support digital adoption for different user groups (The World Bank, 2016).

On the basis of the available data, we can compare digital adoption in the countries with which Slovakia neighbors and with the economically strongest state of the European Union - Germany.

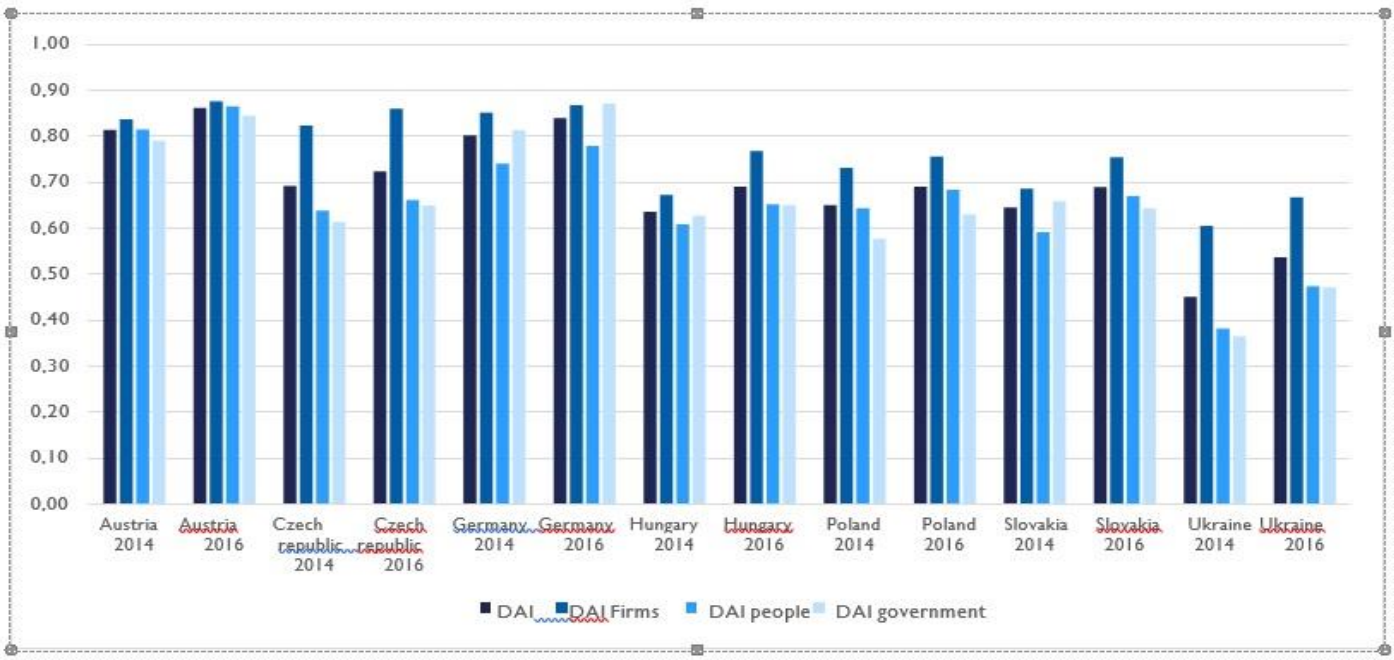


Figure 2
DAI Digital Adoption Index, comparison of selected countries in 2014 and 2016
Source: own processing based on World Bank data, available at: https://www.worldbank.org/en/publication/wdr2016/Digital-Adoption-Index

We can see from the graph that, compared to the countries selected by us, Slovakia lagged behind Austria, Germany and the Czech Republic in the ability to adopt digital technologies in the monitored period. In 2016, Poland and Hungary showed approximately the same digital adoption index value as Slovakia. Ukraine showed significantly lower values of the aggregate index. Similar to other countries, the value of the index in Slovakia grew faster between 2014 and 2016 in the business sector. Paradoxically, the digital adoption index of the government decreased between 2014 and 2016 in our country. The development in Austria is interesting, where the digital adoption of all three sectors is increasing more or less evenly.

Another more narrowly focused indicator is the corporate digitalisation index (Corporate Digitalisation Index, EIB, 2021), which indicates the degree of digital adoption in the European Union and the United States of America from different points of view. This composite index summarizes indicators on digitization as well as the evaluation of companies that operate in the field of digital infrastructure and investments. The corporate digitization index consists of six components: digital intensity, digital infrastructure, investments in software and data, investments in improving organizational and business processes, use of a strategic monitoring system, and digital outlook. It is based on data from business entities that were collected by the European Investment Bank in 2020. The EIB Business Digitization Index makes it possible to create groups of countries as fronturrers, strong, moderate and modest, according to the assessment of digitization by companies. Based on the value of the index, the best digital countries are Denmark and the Netherlands, followed by Finland, Sweden, Belgium and Malta.

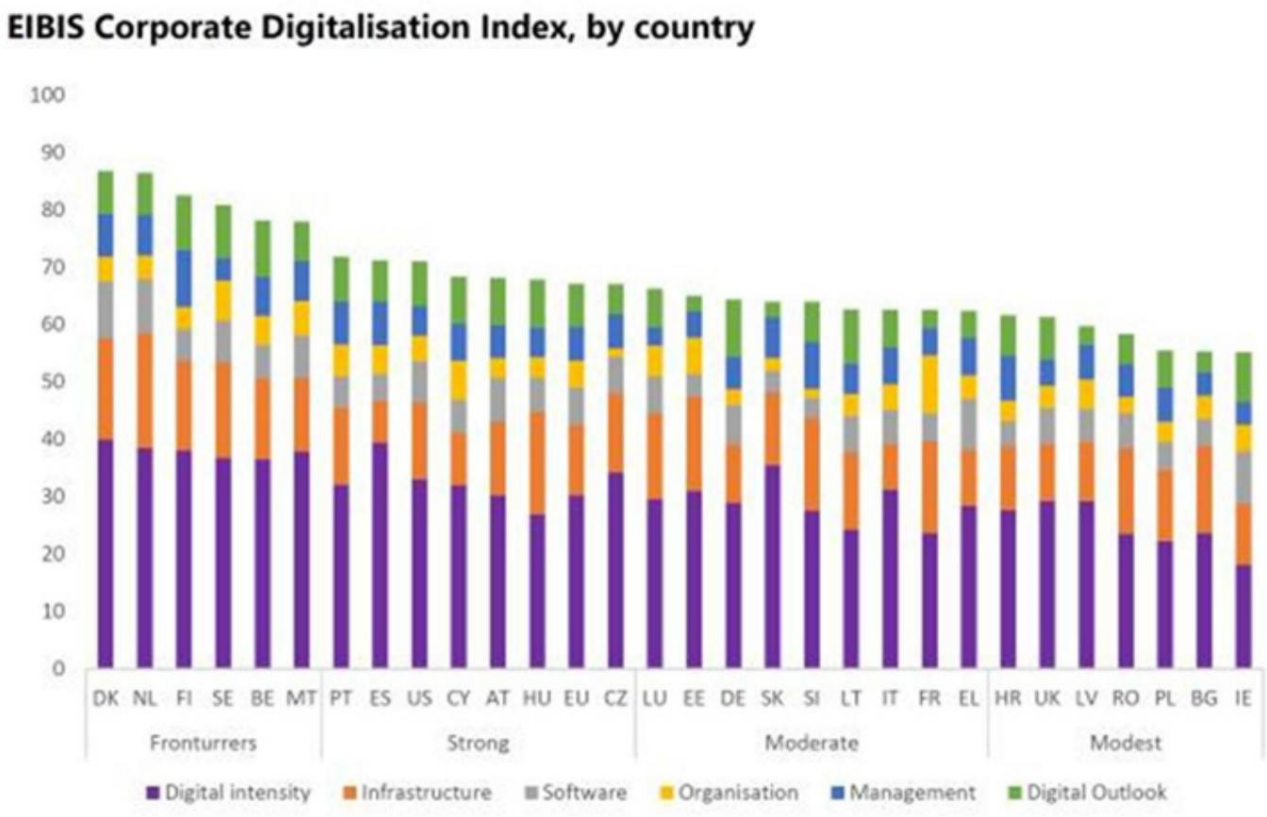


Figure 3
EIBIS Corporate Digitalisation Index, country comparison in 2020
Source: EIB (2021), available at: https://www.eib.org/en/press/all/2021-273-eib-corporate-digitalisation-index- 2020-2021-most-eu-countries-are-trailing-the united-states-in-digitalisation

In terms of digital adoption Slovakia, together with Luxembourg, Estonia, Germany, Slovenia, Latvia, Italy, France and Greece, is among the "moderate" countries. Among the countries neighboring Slovakia, in 2020 Hungary was ranked among the "strong" countries and even overtook the Czech Republic. In addition to Hungary and the Czech Republic, this group also includes neighboring Austria and other countries such as Portugal, Spain, the United States of America and Cyprus. The average value of the index of business digitization also ranks the European Union as an integration grouping of countries among "strong" countries in terms of digital adoption, which means that the value of the EIBIS index of Slovakia is below the EU average. In addition to Poland and Ukraine as our neighbors, the worst digital countries and thus described as "modest" are also Croatia, Lithuania, Romania, Bulgaria and Ireland.

Nevertheless, digitization and automation should more than ever be an opportunity and not a threat.
According to the European Investment Bank, it is necessary for the EU to focus primarily on three elements: a supportive ecosystem, appropriate financial support for investments in digital technologies and a vision to deal with the imbalances in the EU, which may become even larger due to the impact of the COVID-19 pandemic.
Effective policy guidance, better conditions to support investments in digital transformation and the implementation of measures that are aimed to improve the digital skills of workers through vocational training will be particularly needed by the European Union. According to the EIB (2021), the EU should also focus on creating more new leaders in digital sectors while at the same time ensuring that its digital innovators maintain their leadership.

Similar recommendations are also formulated by the OECD (2021), which emphasizes that policies play a key role in the support of an effective and inclusive digital transformation by ensuring that key factors are supported and the following priorities are met:

- **acquiring and improving skills within the education system and vocational training, focusing on cognitive, technical and managerial skills that are key to the digital adoption of economies,**
- **ensuring adequate access to high-speed Internet by stimulating investments in infrastructure to improve coverage in rural and remote areas and, through reforms, to support competition in the telecommunications sectors with the aim of reducing the prices of services that are provided,**
- **supporting the efficient redistribution of labor and capital between and within companies by eliminating administrative obstacles in establishing businesses and facilitating the transition between jobs,**
- **addressing new competition challenges, such as the dynamics of online platform markets, by strictly enforcing existing competition policy instruments and reviewing regulations to reduce switching costs between platforms and ensure a level playing field for different types of service providers;**
- **reducing financial constraints that hinder digitization by removing market failures in financing young innovative companies and the bias towards equity financing that exists in most tax systems and**
- **moving to more digital public sector services by expanding the range of these services available online and making more information and data available to the public.**

These policies complement each other, which indicates that a comprehensive approach is needed from the EU, but also by national governments. In addition, broader issues related to digitization such as tax policy, labor relations, consumer protection, privacy protection and cyber security also need to be addressed. The Slovak Republic faces the mentioned challenges and it can be assumed that it will face them even more intensively in the near future. From the above-mentioned comparison, it is clear that Slovakia is below the EU average in terms of digital adoption. Also, for this reason, it is necessary to pay increased attention to the study of digitization and automation of the economy and its impact on the labor market, on the demand for work and its supply in terms of the ability to adapt to new conditions, the demand for new skills and competences.

3. SURVEY METHODOLOGY AMONG THE ENTITIES IN FOOD AND TRADE SECTORS

In connection with the objective of the analysis, it was necessary to determine the relevant work methodology. Already in the first chapter, we dealt with theoretical starting points and a brief historical-logical genesis within the framework of technological development in the field of industry in general. We used the method of literary research and define the basic terms which are related to the subject of the investigation and the set goal. In the second chapter, based on the available secondary data, we analyzed the level of digitization in the European Union as a whole and in individual countries. Using the method of comparison and standard description with the use of graphic displays, we described the current state.

The supporting part of the study is the third analytical part. As part of it, we carried out a quantitative and qualitative survey. The object of our investigation were companies that operate in the territory of Slovakia in two selected sectors, namely in the food sector and in the trade sector. The subject of the investigation was the job positions that we identified in these industries and which are or will be potentially affected by the process of automation and/or digitization that is constantly taking place in these industries. As part of the quantitative survey, we used the interview method using a questionnaire that was intended for both the owner or the management staff, but also for the employees of the approached companies. The results of a questionnaire survey that was conducted among owners or managers provided us with data and information from the "employer" perspective. In order to find out the perception of the impact of digitization and/or automation on job positions subjectively by employees, we asked employees in these positions to fill in a second questionnaire. We divided both questionnaires into 3 parts - identification of the subject/respondent, digitization and automation in the company, and skills and competences that are required by individual positions and the meaning of which can and probably will change in the future due to digitization and/or automation. For the purposes of international comparison, when identifying adequate job positions in both investigated sectors, we used the Statistical Classification of Employment SK ISCO-08, which represents the national classification of employment based on the international ISCO-08 classification. In it, job classifications are divided into 10 classes according to the criteria (tasks and activities) that were established by the International Labor Organization (ILO). Its purpose is, for example, statistical surveys and support for the development of national classifications.

When choosing skills and competences, we proceeded from professional literature and already conducted surveys in this area. We were also interested in the opinion of employers' on modern trends in this area, how employers and employees approach digitization and automation, whether they are able to adapt to new trends, work with employees and provide training for them, or whether they replace existing workers due to digitization and automation in different positions by others.

Both questionnaires were available online, and to increase the return rate, we addressed potential respondents in two rounds over the course of two weeks. In total, we approached 227 business entities February, of which 110 were in the food sector and 117 in trade sector. As part of participating in the questionnaire survey, we received a response from 30 entities in the case of business entities operating in the trade sector, which represents a 25.64% rate of return. In the case of the food sector, we recorded a response from 31 entities, which represents a questionnaire return rate of 28.18% (slightly higher than in the case of trade).
The number of completed questionnaires that were distributed to employees in the trade sector reached the level of 880 responses, while the number of job positions from which we managed to get feedback was 30. In the case of the food sector, we managed to get 1,053 responses from employees who work in this sector, while respondents represented 34 different job positions within this sector according to the ISCO-08 classification. The questionnaires that were used to collect data from employees and employers as part of our research are listed in the Annexes 1 to 4. Data collection took place electronically during February 2022.

Key to completing the overall picture of the development and impact of digitization and/or automation on the food sector and trade sector was a qualitative survey that was conducted using structured interviews with managers, directors, or other management staff of selected business entities in both sectors.
The aim of the structured interviews was to identify the main trends in the field of digitization and/or automation in companies, technologies that can positively affect their economic growth and obstacles that companies encounter in this regard. We also investigated whether the COVID-19 pandemic influenced/accelerated the digitization and/or automation of processes and which skills and competences, according to competent people, will be crucial for the functioning of companies in the future.

During the period of data collection, we completed 17 interviews in total (9 respondents in the trade - of which were 4 representatives of micro-enterprises, 4 representatives of small enterprises and 1 representative of a medium-sized enterprise in terms of number of employees and 8 respondents in the food sector - of which were 4 representatives of small enterprises and 4 representatives of medium-sized enterprises in terms of number of employees). Data collection in this form was also carried out during February 2022. The content of the structured interviews in the form of questions that were asked to the respondents is presented in Annex 5. The contacts we used are personal, based on mutual trust and respect for pre-established rules. From the point of view of the vast majority of the interviewed companies, the topic of introducing digital technologies is part of the know-how that needs to be protected. For this reason, the condition of conducting personal interviews was the adherence to the anonymity of all respondents. We processed the results of the analysis using a graphical descriptive method. In the final part of the presented study, we summarized the findings and formulated general conclusions by using the synthesis method. We conclude that we have fulfilled the set goal of the survey.
When making the content and structure of the questions as part of the quantitative and qualitative survey among subjects in selected sectors, we also based the so-called Lean Research framework, which focuses on guiding and improving field research with people and communities in the context of international development and humanitarian work.

4. SURVEY RESULTS

In the following chapter, we gradually present the results of the survey among business entities (employers and employees) who operate in the food sector and trade sector in Slovakia. This chapter also includes the results and summaries of the findings from the structured interviews. In this chapter, in addition to verbal interpretation, the results and findings are also presented graphically through images and tables, while the tables in particular are presented in the annexes of this analysis.

4.1 Results of the survey among employers in the food sector in Slovakia

Within the structure of the answers, that we managed to get from employers in the food sector, 48.39% (15) of the answers were provided directly by company directors (chief executives), 41.94% (13) of the answers were provided from managers and the rest 9.68% (only 3) of the answers were from other people with other job positions (according to the answers given in the questionnaire, they were e.g., financial managers, partners or division heads). If we take a closer look at the structure of the answers according to the sector in which the companies operated, up to 93.55% (in absolute terms 29) of the answers came from companies that work in industrial production - food production and only 6.45% (only 2) operated in the alcoholic beverage industry (our respondents did not include companies from the industry of non-alcoholic beverages, production of mineral waters or other bottled waters).
In the case of companies from the industrial production sector - food production, 27.59% (8) of them are engaged in the processing and preservation of meat and meat products, 17.24% (5) of them in the production of dairy products, 13.79% (4) of them to the production of baked goods and flour products, 10.34% of them (3) to the processing and canning of fish, crustaceans and molluscs and to the processing and canning of fruits and vegetables, and 6.90% (2) of them each to three areas - the production of vegetable and animal oils and fats, production of mill products, starch and starch products and production of other food products.

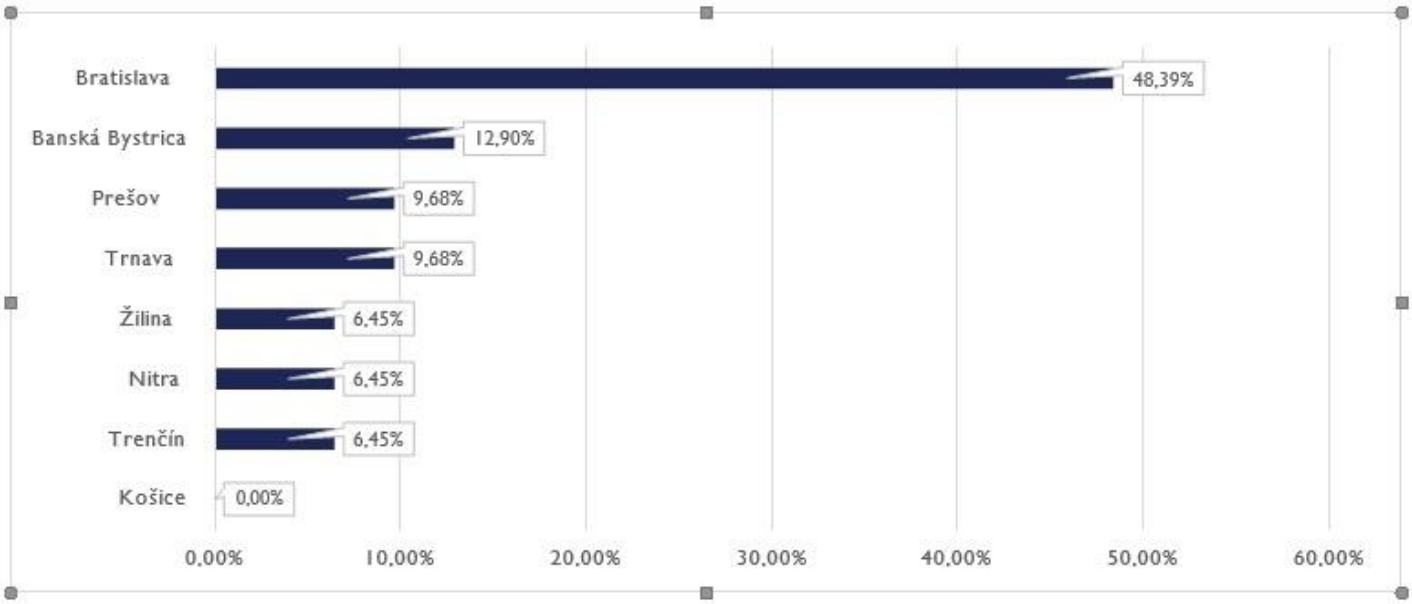


Figure 4
Structure of respondents in the form of employers in the food industry sector in Slovakia by region
Source: Own processing.

In the figure above, we present the structure of responses from employers who operate in the food sector according to the region in which they are located. The largest number of respondents, up to 48.39% (15), were from Bratislava region, 12.90% of respondents (4) were from Banská Bystrica region, and the rest was approximately proportionally divided between Trnava and Prešov regions (3 respondents) and Žilina, Nitra and Trenčín regions (2 respondents each). Only from the Košice region we did not have a representative among the respondents in this case.

The figure below shows the structure of the respondents according to the number of employees. The largest number of respondents, 35.48% (11), employed from 250 to 999 employees, 32.26% (10) employed from 50 to 249 employees. On the contrary, companies with 1 to 9 employees were missing among the respondents.

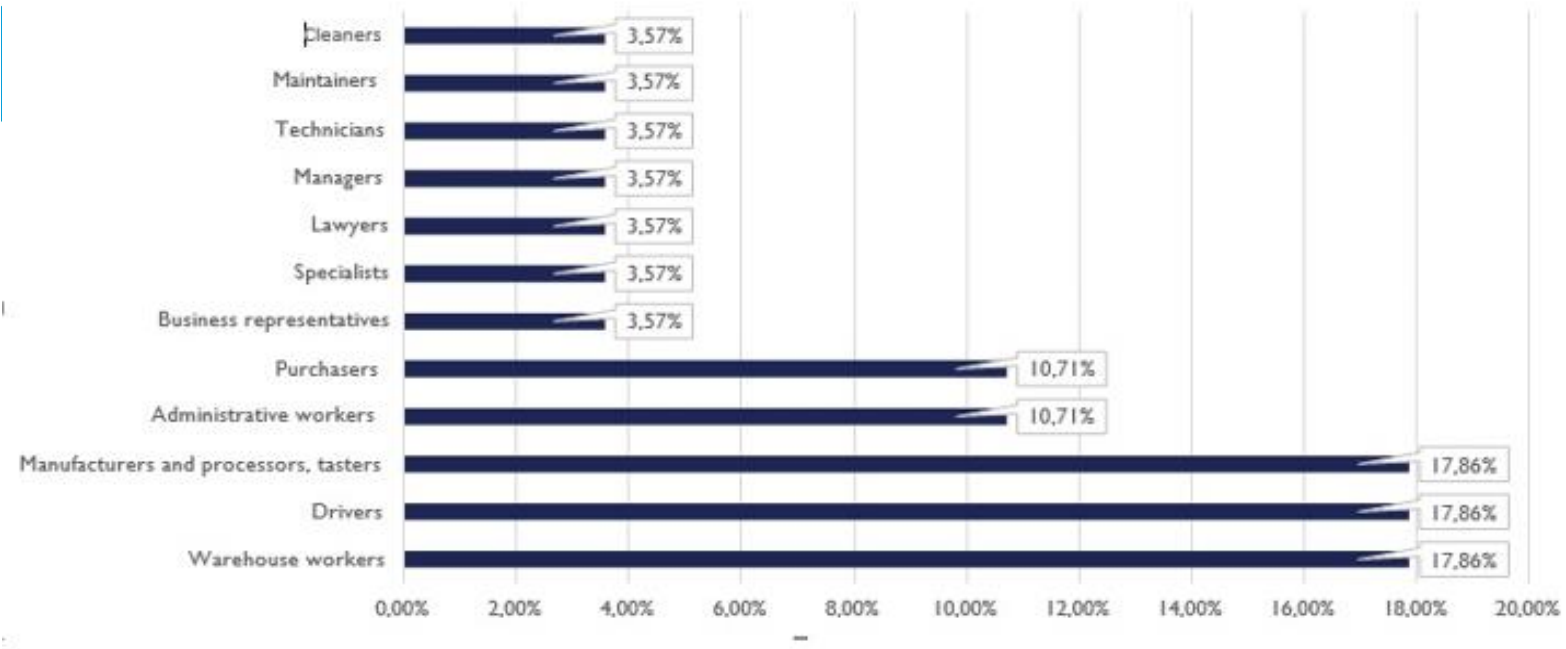


Figure 5
Approximate structure of employees according to job positions in enterprises operating in the food sector in Slovakia **Source: Own processing.**

As part of the structure of the employees, in one of the questions we asked the employers what kind of representation in relative terms individual job positions have. As part of the questionnaire survey, the respondents gave us intervals for each job position (not a specific share), so we subsequently normalized the results so that they gave a total of 100% share (in this question we asked about a simplified structure of job positions, while we were mainly concerned with identifying job positions divided into managerial, head, administrative and operative). The largest representation
in the structure of employees is those who are engaged in production and processing, or tasters together with employees working in the warehouse or drivers (or dispatch) (17.86%), the second largest group (with a share of 10.71%) was
made up of administrative workers and buyers and the remaining job positions had approximately the same representation (approx. 3.57%). This last group included management staff (managers), professional staff (specialists), sales representatives, lawyers, technicians, maintenance workers or cleaners.

From the point of view of the ownership structure, among the respondents, 64.52% of entities had ownership capital from Slovakia and only 35.48% of entities (approximately one third) were business entities with foreign capital.

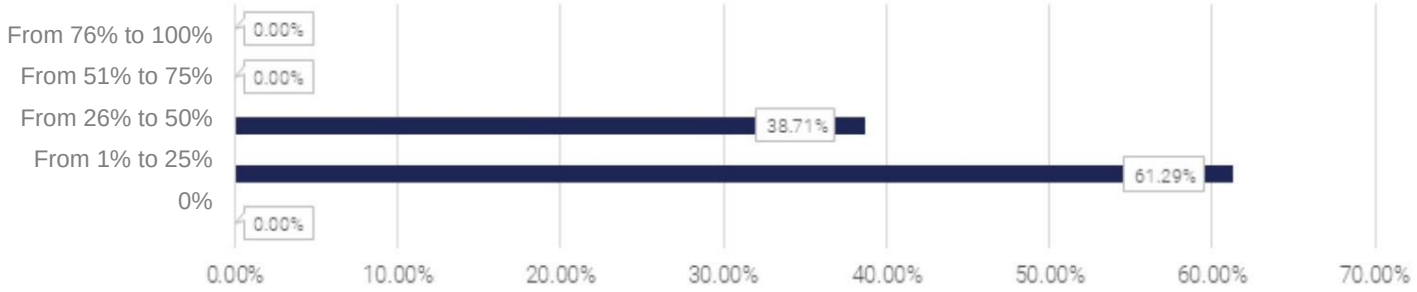


Figure 6
Estimate of the share of processes by employers in the food industry sector in Slovakia from their total number in the company, which are affected by digitization and/or automation.

Source: Own processing.

In the part of the questionnaire in which we deal with digitalization and automation in the company, 61.29% of respondents told us that from 1 to 25% of processes in the respective company are affected by digitalization and automation, and only 38.71% of respondents said that up to 26 to 50% of processes in their companies are affected in various ways by digitization and automation.

In the next question, for which you can find more detailed results processed graphically in Annex 6, we asked the respondents to express their opinion to what extent and how significantly digitization and/or automation affects a particular
job position in their company, while they had to answer on a scale from 1 to 5 (where 1 represents "it does not affect me at all" and 5 represents "it affects me a lot"). Average score for all job positions marked by all subjects, had a value of 3,04, which we can interpret as a medium value (in companies there are working positions that are more or less affected by digitization and automation). Employers identified 34 job positions, of which system administrators are most significantly affected by digitization and automation, information and communication technology operation technicians, managers working in the field of research and development, technicians in agriculture and food industry, managers in the field of finance, masters in food production or building administrators and subsequently also employees in the production or processing of raw materials. On the contrary, lawyers are the least affected, administrative staff in the field of human resources or the president, general director or executive of the company, possibly a cleaner. At the same time, the respondents said that they expect a more significant impact of automation in the future and digitization for jobs directly in the production or processing of raw materials, buyers and the same in the case system administrators.

In the table, which is part of the Annex 7, we present the impact of digitization and/or automation on the workload of employees in individual positions that were identified by the respondents. Up to 90.32% of respondents expect that the workload of system administrators and technicians will change significantly, especially under the influence of an even stronger integration of information systems with production processes. Approximately 45% of respondents expect a significant impact on managers in managerial positions in production, as well as on foremen (supervisors) in food production, buyers, employees in the field of research and development or employees in the field of finance. On the contrary, they expect a significantly smaller impact of automation and digitization in the future on the workload of company managers, employees in HR and human resources, storekeepers, drivers and cleaners. On the contrary, among the positions that could disappear in the future, they included the positions of administrative workers in the field of accounting or human resources, and especially cleaners.

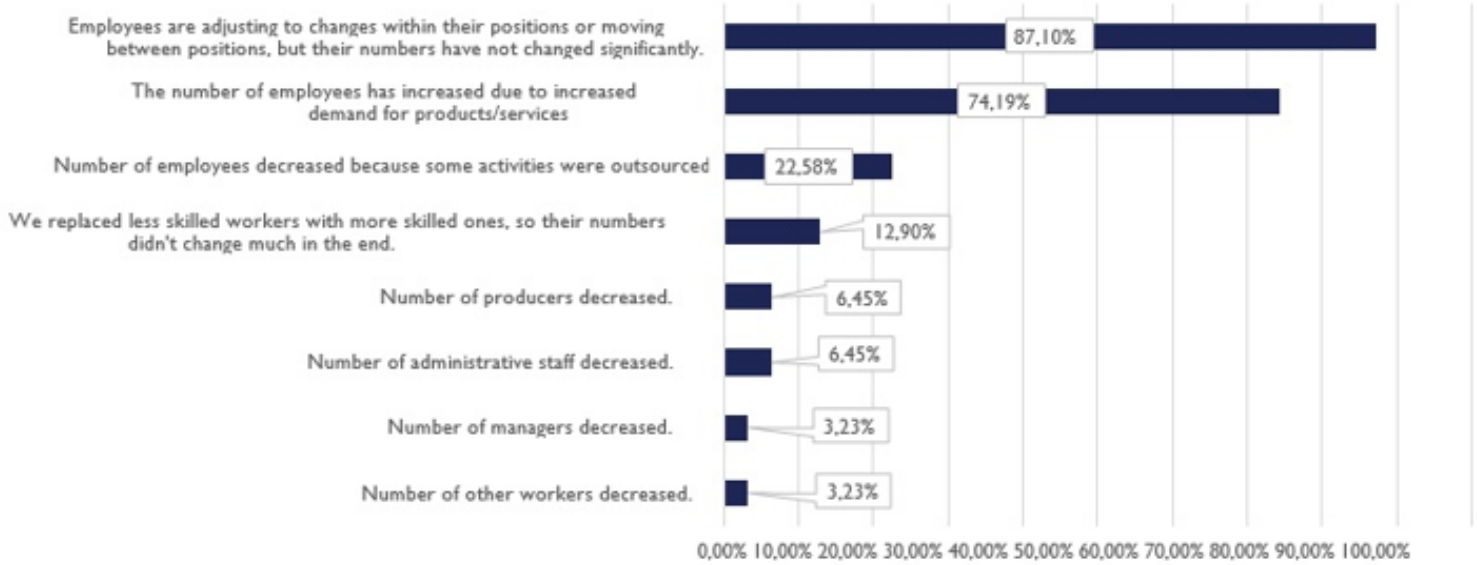


Figure 7

The impact of digitization and/or automation of processes on the number of employees in companies operating in the food industry sector in Slovakia

Source: Own processing.

To the question of the impact of digitalization and automation on the total number of employees in the company, 87.10% of respondents answered that the number of employees has not changed significantly, as employees adapt to changes within their positions, or are able and especially willing to move between work positions. At the same time, 74.19% of the respondents said that they saw an increase in the number of employees in the food sector due to the increased demand for their products. 22.58% of respondents said that the number of employees has also partially decreased, mainly due to the outsourcing of some activities that were linked to their previous automation or digitization and it was therefore not necessary to employ employees. Only 12.90% of respondents said that they replaced less qualified workers with more qualified ones. Only a few respondents said that they had noticed a decrease in the number of employees in individual job positions.

As many as 64.52% of employers said that employees perceive digitization and automation of processes rather positively (25.81% neutral and only 9.68% of respondents perceive it negatively). According to 67.74% of employees, they are interested in further education in the field of information and communication technologies, up to 61.29% of employees are adapting to changes within their positions, and according to 45.16% of respondents, employees are interested in changing their job position due to a change in work tasks.

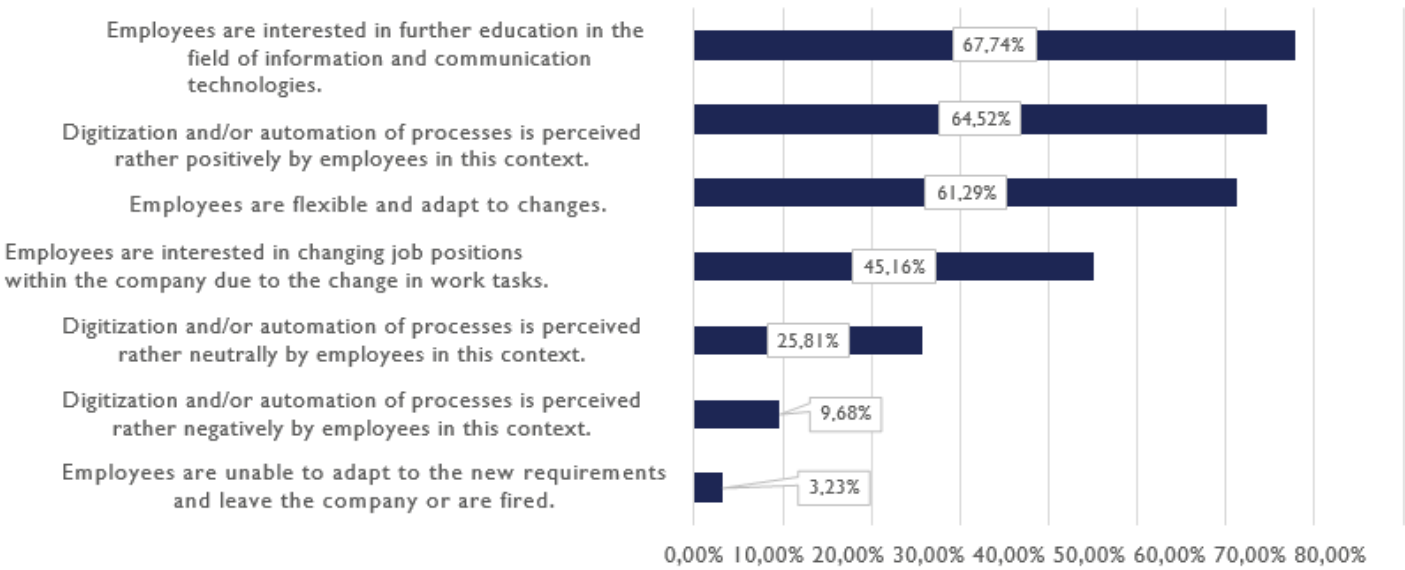


Figure 8

Reaction of employees working in enterprises in the food sector in Slovakia to changes in work tasks as a result of digitization and/or automation of processes, or as their reaction to the requirement to acquire new skills and competences

Source: Own processing.

Almost three-quarters of respondents said that as a result **of the COVID-19 pandemic,** they expanded digitization and automation of processes into new areas, 67.74% of respondents further stated that the pandemic itself accelerated digitization and automation of processes. A total of 48.39% respondents said that they introduced new technologies as a result of the pandemic, but did not significantly change their strategy in this area. 32.26% of respondents further added that in the field of digitization and automation during the pandemic, they mainly watched how the competition reacted to the situation and tried to be inspired by the measures introduced by other business entities in this area. 22.58% of respondents said that they moved some activities to the online space and 16.13% of respondents said that they allowed selected employees to work from home.

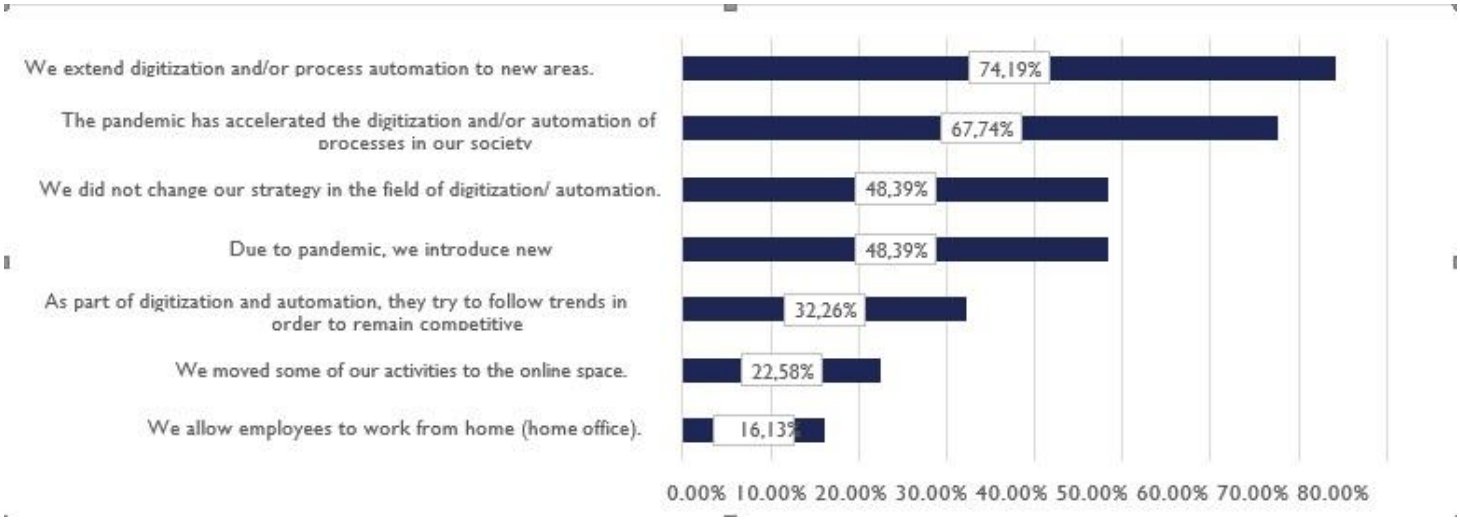


Figure 9
Change of strategy in the framework of digitization and/or automation in enterprises that operate in the food sector in Slovakia as a result of the COVID-19 pandemic

Source: Own processing.

When asked how often the company conducts employee training in connection with new skills, up to 80.65% of respondents said that they conduct training sporadically or irregularly (3.23% of respondents do not conduct it at all) and only 16.13% of respondents conduct it regularly (4 or more times a year).

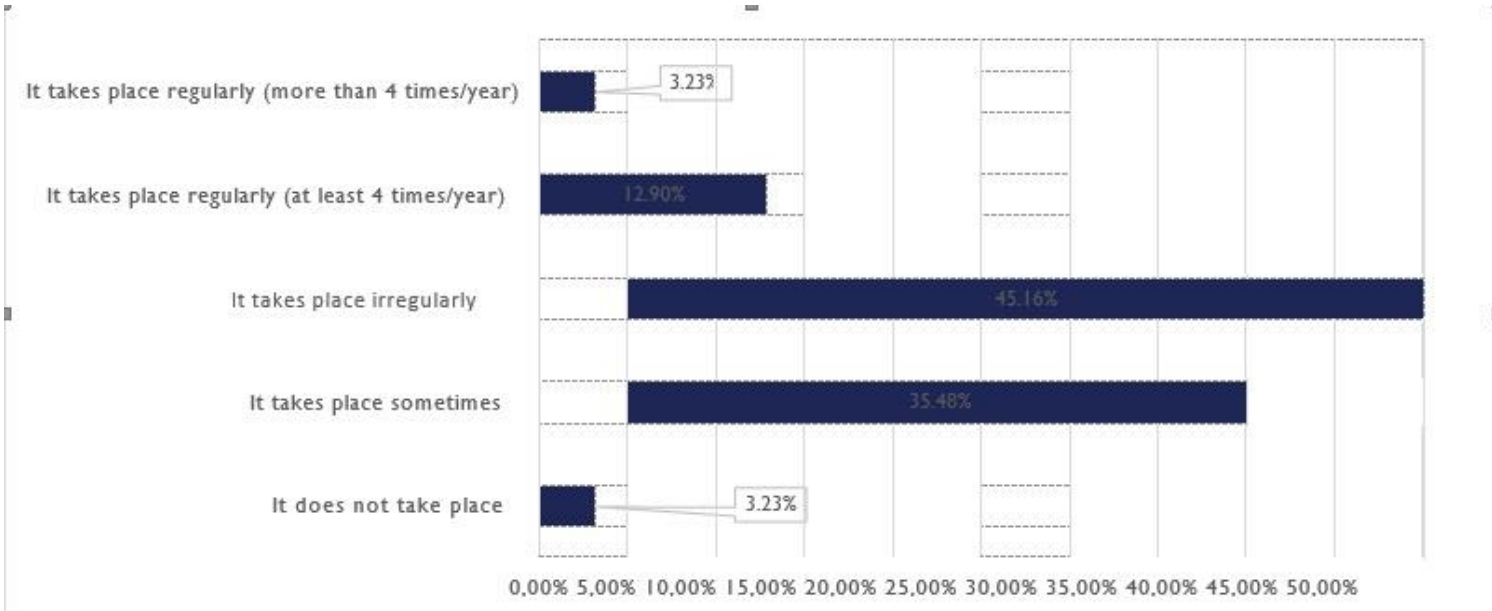


Figure 10
Change of strategy in the framework of digitization and/or automation in enterprises that operate in the food sector in Slovakia as a result of the COVID-19 pandemic

Source: Own processing.

One of the key questions of our questionnaire was the question of whether respondents consider it important in their company to use selected technologies in order to increase the efficiency of digitization (answers to this question are provided in the table in Annex 8). Among the respondents, up to 96.77% of them consider it important for their company to adopt and use data analysis (big data), 80.65% of respondents consider the use of the Internet of Things (IoT) to be important, the use of smart sensors is considered important by two thirds of respondents (67.74%) and over 50% of respondents expressed their belief in the importance of using cloud computing and robotics with automation. To a lesser extent, respondents also consider the use of GPS systems, mobile technologies (5G), artificial intelligence, blockchain, biotechnological devices and 3D press to be important, while it was precisely with these types of technologies that the respondents were most unsure and could not give a clear answer.

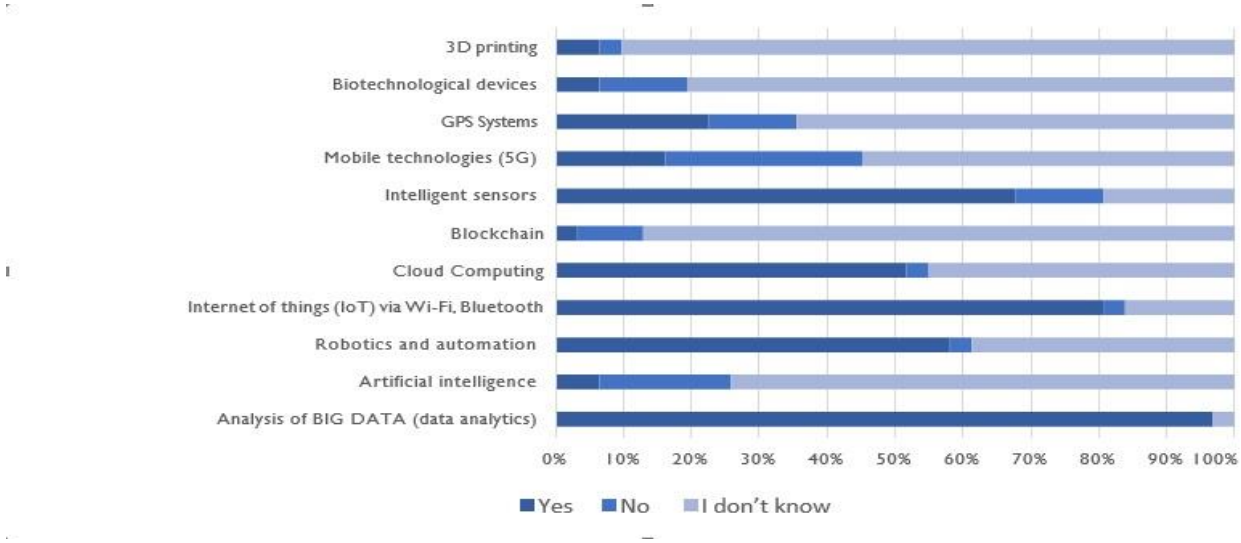


Figure 11

The importance of using the mentioned technologies in your company in order to increase the efficiency of digitization in the food sector

Source: Own processing.

In the third and last part of the questionnaire that was focused on skills, the respondents had to indicate the two job positions that have the largest representation in their companies in the food sector. The most numerous respondents were warehouse workers, producers and processors, tasters, drivers, administrative workers and buyers. For each job position, it was necessary to assign the importance of the listed qualities/skills on a scale from 1 to 5 (with 1 representing the "least important skill" and 5 representing the "very important skill", or "the skill that is necessary to perform the given profession"), while for each the characteristics should then also state the assumption of growth or decline in its importance for the given job position in the future.

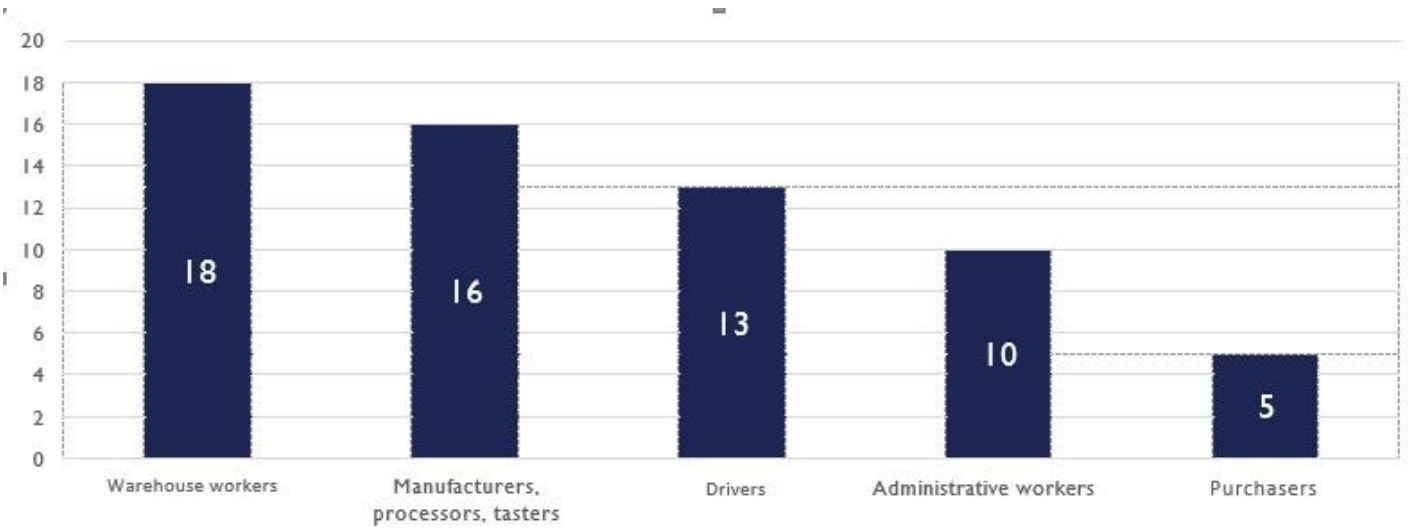


Figure 12

Number of jobs in the food sector listed in the skills section of the questionnaire

Source: Own processing.

In Annexes 9 to 11, we present the results of assigning the importance of individual qualities/ skills to individual job positions, including the expected growth or decline in their importance in the future. Among warehouse workers, the respondents consider physical resistance and endurance, manual skills, time management, a sense of responsibility and complex problem solving to be the most important. In the future, they expect an increase in the importance of physical endurance and endurance, manual skills, flexibility, team management or information evaluation, creativity or complex problem solving in this position. On the contrary, some respondents expect a decrease in the importance of skills in the area of complex problem solving, mathematics, literacy, social sensitivity or independent work. In the case of employees who work in production or processing, respondents consider physical resistance and endurance, manual skills, time management, in terms of responsibility or independence at work to be important. In the future, they expect an increase in the importance of physical endurance and endurance (physical endurance is key for handling demanding work duties), manual skills, possibly literacy or negotiation and communication skills. On the contrary, they expect a decrease in flexibility, active listening, or management skills. In the case of the driver job, the respondents consider important qualities such as physical resistance and endurance, flexibility, time management, independence or foresight and the ability to plan things. In the future, they expect an increase in physical endurance, manual skills, independence, sense of responsibility or time management, flexibility or complex problem solving, and on the contrary, a decrease in critical thinking, manual skills or creativity. In the case of administrative workers, they consider analytical thinking, complex problem solving, information evaluation, time management or a sense of responsibility to be the most important. In this job position, they expect the importance of the ability to solve complex problems, think critically, literacy, time management or active listening or foresee and plan to grow in the future. On the contrary, they expect a decrease in importance in the case of managerial skills, flexibility or creativity or physical endurance. In the case of the last job position, buyers identified negotiation and communication, information evaluation, mathematical skills, persuasiveness, complex problem solving, time management or independence as the most important identified skills. In the future, the importance of negotiation and communication skills, persuasiveness, analytical thinking, planning, sense of responsibility, and evaluation of information is expected to grow within this job position. Conversely, some respondents expect a decrease importance in the case of mathematical skills, manual skills and empathy.

4.2 Results of the survey among employers in the trade sector in Slovakia

In the case of respondents in the trade sector, 76.67% of respondents had the position of director (chief executive) of the company and 23.33% had the position of manager. Within the sectoral structure, 63.33% of the respondents were from the wholesale sector and 36.67% of the respondents were from the retail sector (in both cases excluding motor vehicles and motorcycles). In the case of wholesale trade, most respondents (36.84%) specialized in the area of wholesale mediation, 21.05% were engaged in other specialized wholesale trade, 15.79% in household goods, 10.53% each in food, beverages and tobacco, and IT equipment and communications equipment and only 5.26% were engaged in trade with other machines, devices and accessories. In the case of retail business entities, 36.36% focused on retailing food, beverages and tobacco in specialized stores, 27.27% were represented by retail entities with other household goods and outside stores, stands and markets (Internet retail) and 9, 09% of them were entities with IT and communications equipment.

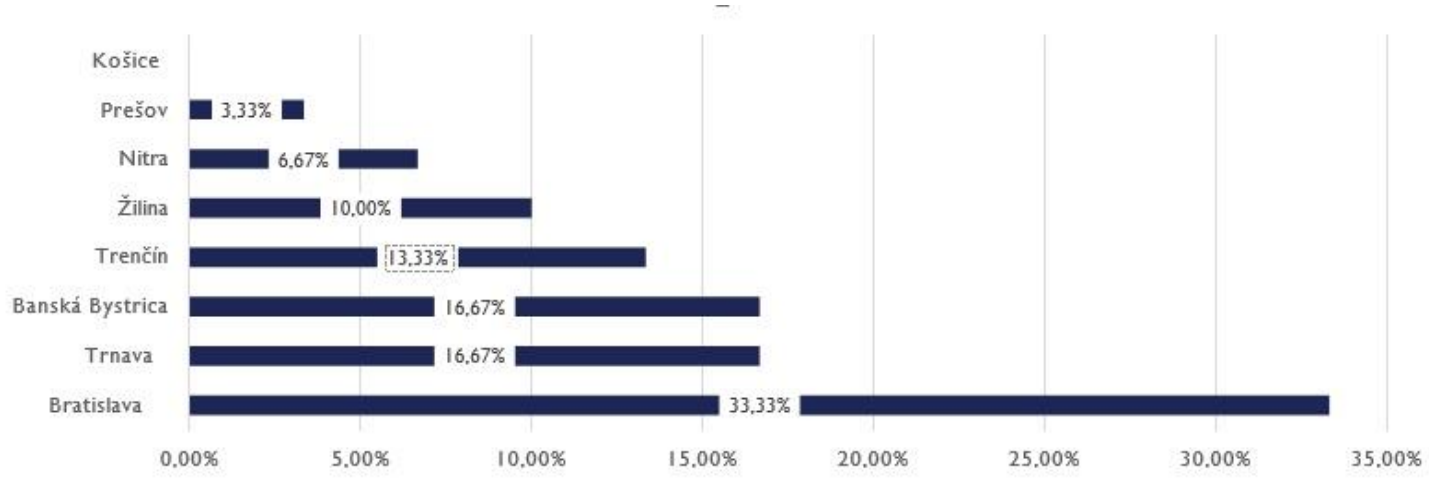


Figure 13

Structure of respondents in the form of employers in the trade sector in Slovakia by region.

Source: Own processing.

The largest number of subjects (10) among the respondents is again from the Bratislava region (33.33%), with 5 respondents (16.67% each) represented by the Trnava and Banska Bystrica regions, with 4 respondents (13.33%) followed by the Trenčin region, with 3 (10.00%) Žilina region, with 2 (6.67%) Nitra and 1 (3.33%) Prešov regions.

The figure below shows the structure of the respondents according to the number of employees. The largest number of respondents (36.67% (11)) belong to companies with 50 to 249 employees, 33.33% (10) of respondents employ from 20 to 49 employees, 13.33% (4) of respondents employ 250 to 999 people, 10.00% (3) of respondents employ 10 to 19 employees and only 6.67% (2) of respondents employ more than 1000 employees.

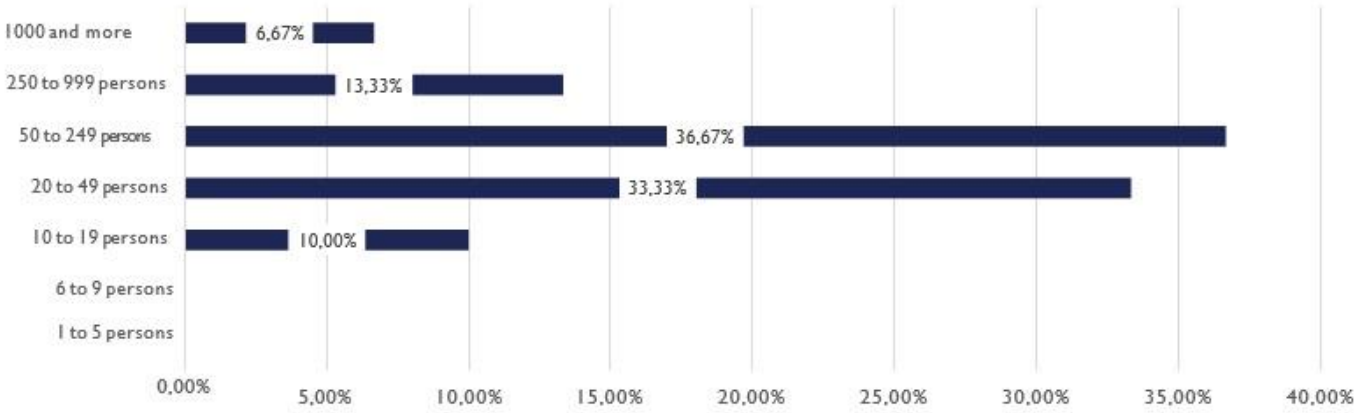


Figure 14

Structure of respondents in the form of employers in the trade sector in Slovakia according to the number of employees.

Source: Own processing.

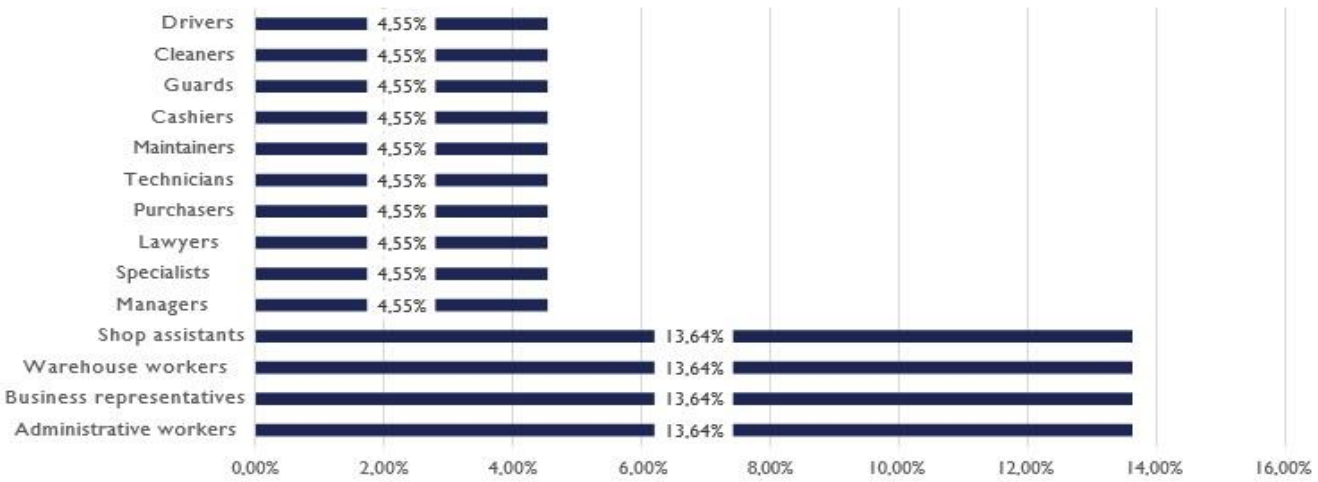


Figure 15

Approximate structure of employees according to job positions in enterprises operating in the trade sector in Slovakia.

Source: Own processing.

From the data in the figure above, which informs about the structure of employees (in a simplified form), we can conclude that the largest representation in companies that operate in this sector are administrative workers, sales representatives, warehouse workers and shop assistants (corresponding to 13.64% share) and the remaining job positions have a smaller share. As in the case of the structure of job positions in the food industry sector, we also present a normalized share in this case.

In terms of ownership, 90.00% (27) of respondents are from Slovakia (domestic owner) and only 10.00% (3) are from abroad. In the second part of the questionnaire, we can state that based on the answers from the respondents, half of the respondents estimated that from 1 to 25% of the processes are affected by digitization and computerization, and the remaining half of the respondents estimate that from 26 to 50% of the processes are affected by digitization and automation.

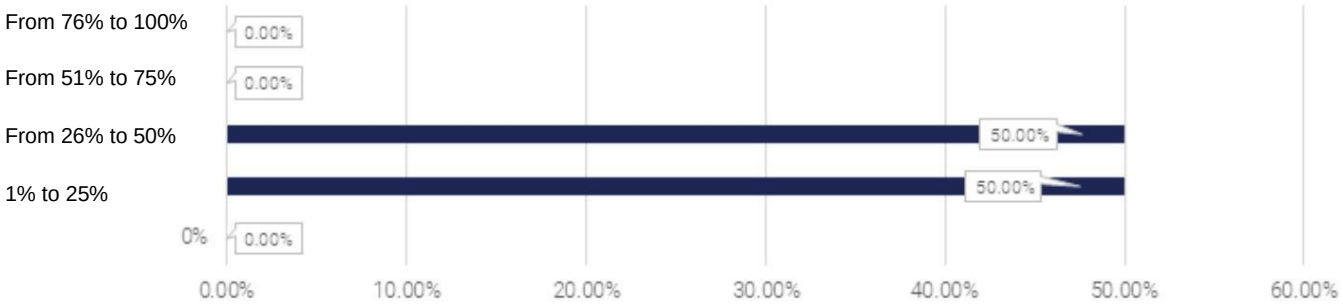


Figure 16
Estimate of the share of processes by employers in the trade sector in Slovakia out of their total number in the company that are affected by digitization and/or automation.

Source: Own processing.

According to respondents from the trade sector, digitalization and automation of job positions such as system administrators, strategy and planning managers, warehouse workers, wholesale and retail managers, and buyers are most affected. On the contrary, it least affects the managers of the companies themselves, lawyers, cleaners or managers from the field of advertising and public relations and from the field of human resources. More detailed information with the results of the impact of digitization and automation on selected job positions according to the estimate of employers in enterprises from the trade sector in Slovakia can be found in Annex 12.
In Annex 13, we present a list of positions with an indication of the impact of digitization and automation on the workload, respectively, the work tasks of the employees in the listed positions. According to the answers of the respondents, they expect the biggest changes in work tasks due to digitization and automation in the case of managers in the field of strategy and planning, system administrators, or specialists in the field of accounting, but especially also managers in wholesale and retail. As a result of automation and digitalization, a very small percentage of respondents anticipate the disappearance of job positions such as cleaner, cashier, salesperson, security guard, administrative worker in the field of human resources, specialist in the field of HR or education and development of human resources. However, in the case of the remaining job positions, the majority of respondents are convinced that automation and digitization will not significantly affect and change the work tasks in the other job positions.

As part of the impact of digitization and automation

of processes on the number of employees in the company, up to 90.00% of respondents said that employees can adapt to changes within their job positions or move between them, while the total number of employees has not changed significantly. Approximately 46.67% of respondents said that they replaced less qualified workers with more qualified ones. About a third of the respondents said that the number of administrative workers decreased, according to 23.33% of the respondents there was an increase in the number of employees due to the increased demand for their products or services, and 6.67% of the respondents said that there was a decrease in the number of employees due to the outsourcing of some activities.

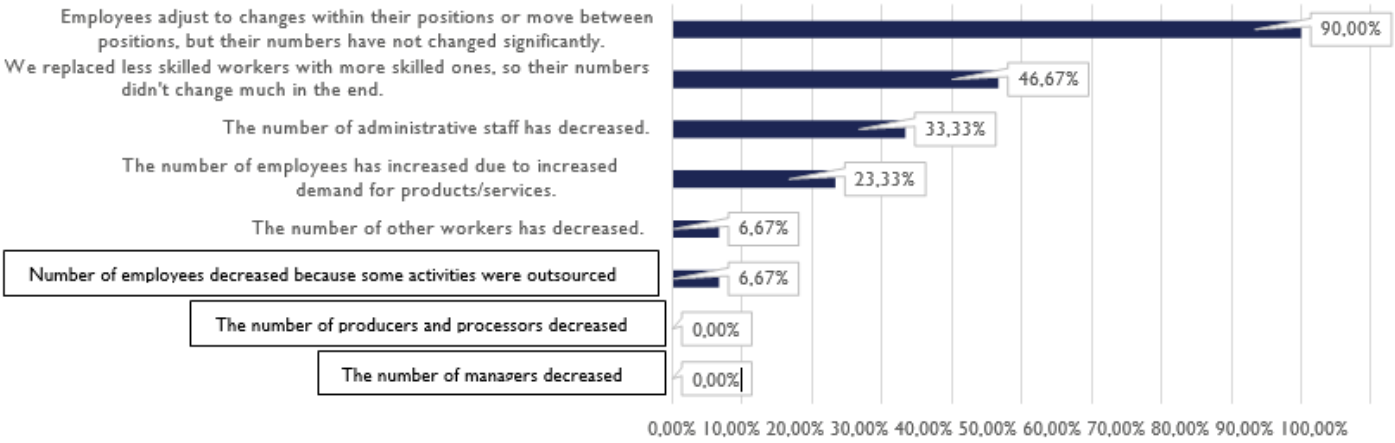


Figure 17

The impact of digitization and/or automation of processes on the number of employees in companies that operate in the trade sector in Slovakia

Source: Own processing.

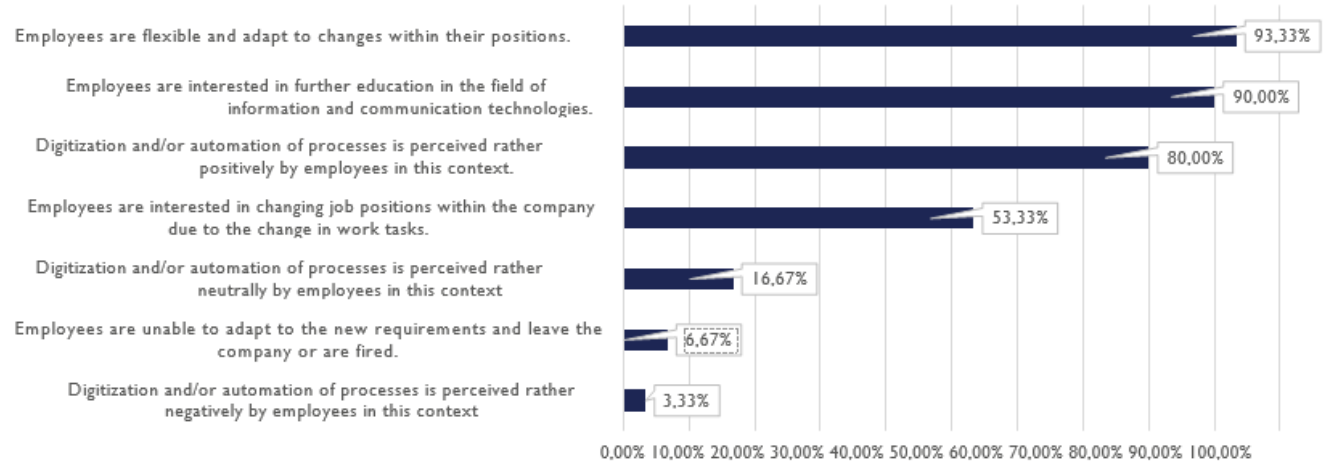


Figure 18

The reaction of digitization and/or automation of processes, or their reaction to the requirement of acquiring new skills and competences of employees working in companies in the trade sector in Slovakia to a change in work tasks as a result

Source: Own processing.

Another question was about the reaction of employees to the change in work tasks as a result of digitalization and automation, or acquiring new skills and competences. As many as 80.00% of respondents said that employees perceive digitalization rather positively, 16.67% of respondents think that it is rather neutral, and only 3.33% of respondents think that digitalization is perceived by employees negatively. As many as 93.33% of respondents think that employees are flexible and adapt to changes within their positions, while 90.00% of employees are interested in further education in the field of information and communication technologies. 53.33% of employees are interested in changing job positions within the company due to the change in work tasks. Only 6.67% of respondents said that employees are unable to adapt to new requirements and are leaving companies.

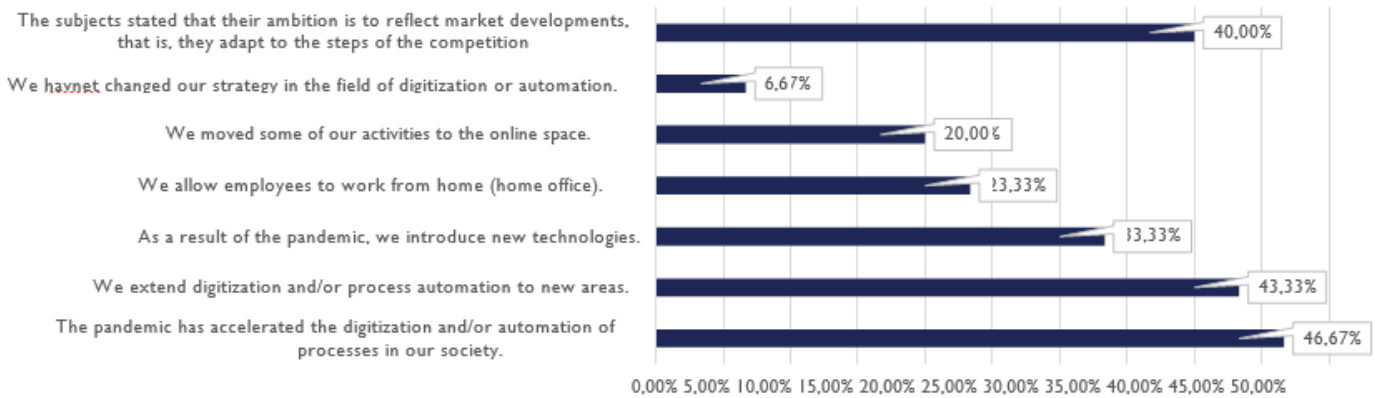


Figure 19

Change of strategy in the framework of digitization and/or automation in companies that operate in the trade sector in Slovakia as a result of the COVID-19 pandemic

Source: Own processing.

When asked whether the company's digitalization and automation strategy has changed as a result of the COVID-19 pandemic, 46.67% of respondents said that the pandemic accelerated the digitization and automation of processes in the company. 43.33% of respondents think that there has been an expansion of digitalization and automation of processes to new areas. Approximately 40% of the business entities stated in the other option that, within the initial phase, they tried to apply knowledge from the market and draw ideas from other business entities, which, as long as they worked, they used them in their company as well. 33.33% of respondents said that they introduced new technologies as a result of the pandemic, 23.33% of business entities allowed employees to work from home and only 6.67% of respondents said that they did not change their digitization and automation strategy at all.

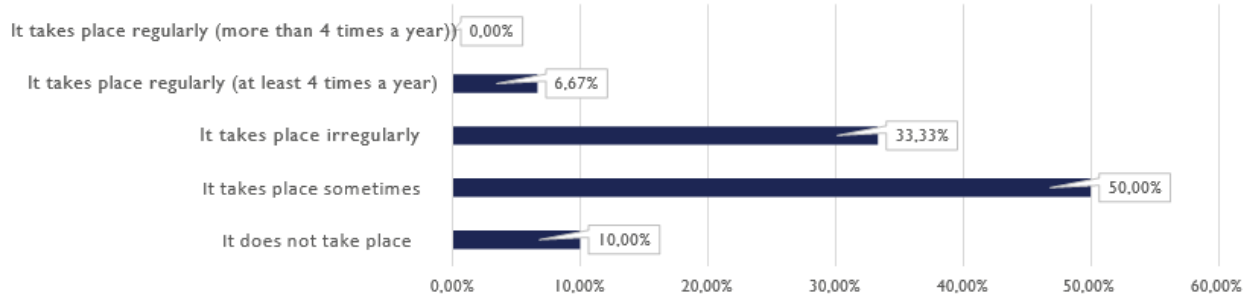


Figure 20

Change of strategy in the framework of digitization and/or automation in companies that operate in the trade sector in Slovakia as a result of the COVID-19 pandemic

Source: Own processing.

Approximately 83.33% of respondents stated that they only sporadically or irregularly train employees in relation to new skills. Only 10% of respondents do not conduct any training at all, and only 6.67% conduct training for their employees regularly at least 4 times a year.

In Annex 14, we present the results in the form of aggregated answers to the question which technologies used to increase automation and digitalization are considered important by individual companies. Up to 93.33% consider Cloud computing technology important, along with Big data analysis (86.67%), the Internet of Things (83.33%) and intelligent sensors (80.00%) or robotics and automation (70.00%). 90.00% of respondents consider 3D printing technology to be unimportant, 66.67% of respondents consider biotechnology devices unimportant, 63.37% of respondents consider GPS systems unimportant and 60.00% of respondents consider blockchain technology unimportant. The most uncertain statements (I don't know option) were in the case of mobile technologies (5G) (63.33%), artificial intelligence (33.33%) or the already mentioned blockchain (33.33%).

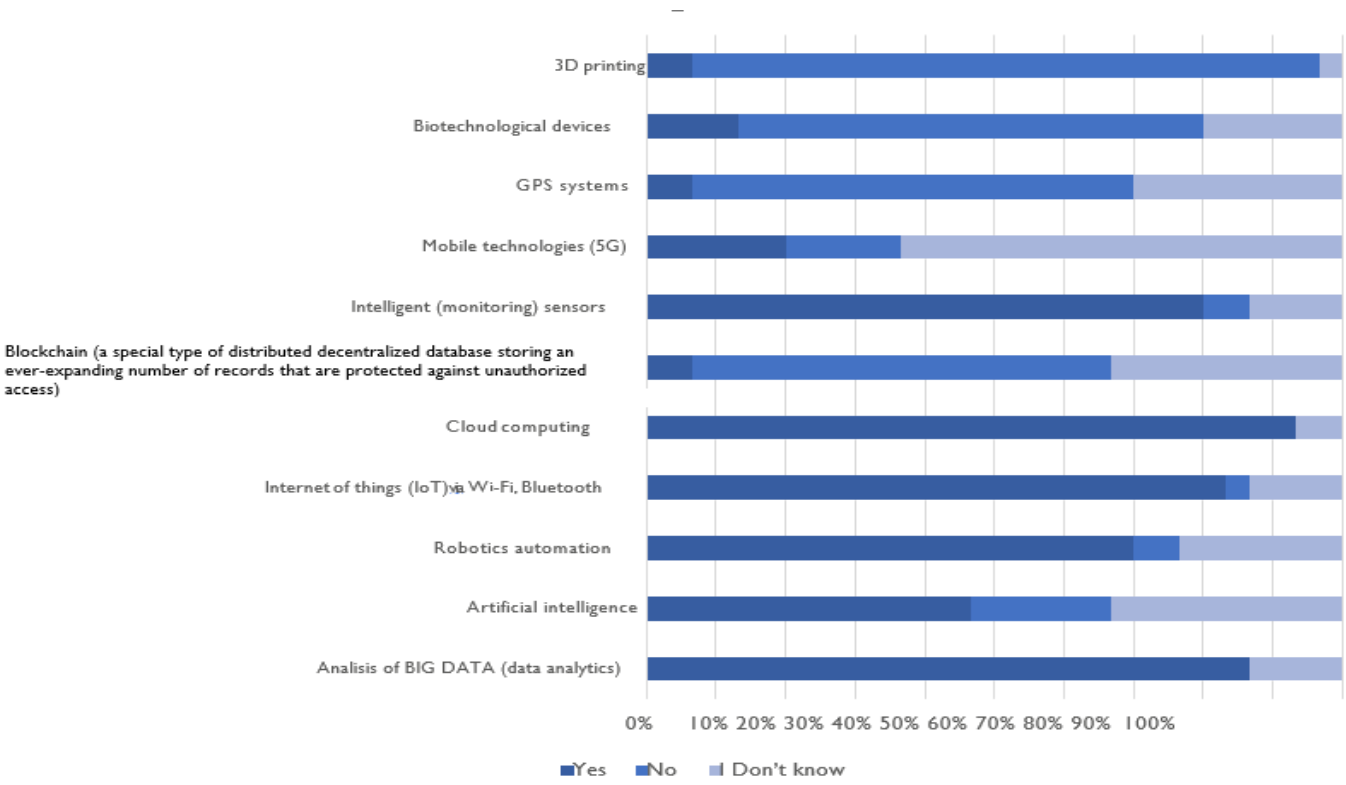


Figure 21

The importance of using the mentioned technologies in your company in order to increase the efficiency of digitization in the food sector

Source: Own processing.

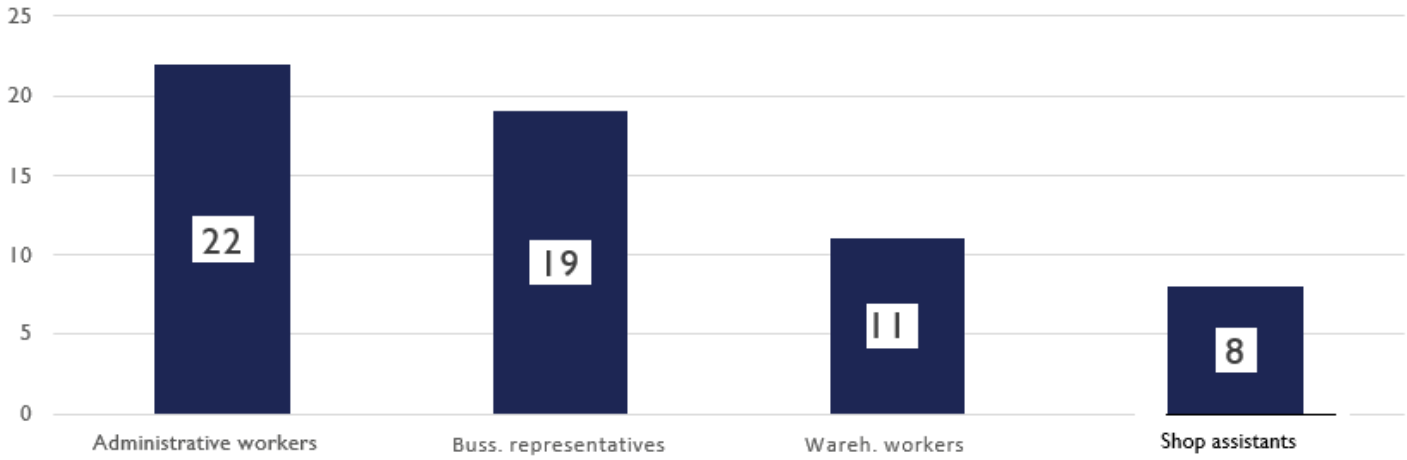


Figure 22

Number of jobs in the trade sector listed in the skills section of the questionnaire

Source: Own processing.

In Annexes 15 to 17, we present the results of the third part of the questionnaire that was focused on skills, in which the respondents from the ranks of the employers had to indicate the two job positions that have the largest representation in their companies
in the trade sector. In our case, it was the job positions of administrative workers, sales representatives, warehouse workers and shop assistants.

In this case, too, the respondents had to assign the importance of the mentioned qualities/skills on a scale from 1 to 5 (with 1 representing the "least important skill" and 5 representing the "very important skill" or "a quality that is necessary to perform the given profession"), while for each the quality they should then also state the assumption of growth or decline in its importance for the given job position in the future. Within the group of administrative workers, literacy, information evaluation, sense of responsibility, independence, math skills and flexibility were identified as important characteristics. Among the less important ones were creativity, management skills, empathy and critical thinking. In the future, within this job position, they expect an increase in the importance of time management, information evaluation, sense of responsibility, analytical thinking and complex problem solving. Conversely, some respondents expect a smaller decrease in persuasiveness or creativity, or social sensitivity, information evaluation or sense of responsibility. In the case of sales representatives, they consider qualities such as a sense of responsibility, negotiation and communication skills, persuasiveness to be important, and empathy, social perception or information evaluation to be less important. In the future, they expect the growth of negotiation and communication skills, active listening and learning, foresight and the ability to plan, independent work, team management, analytical thinking and complex problem solving.
Some respondents expect a slight decrease in importance for the change in the case of manual skills, literacy, physical endurance or creativity. The third most numerous work group was warehouse workers, for whom the most important qualities were physical endurance and endurance, manual skills, complex problem solving, a sense of responsibility or foresight and planning. Respondents consider management skills, creativity, critical thinking or information evaluation or mathematical skills to be less important. In the future, all respondents expect an increase in the importance of physical endurance and manual skills, supplemented by an increase in the sense of responsibility, foresight and the ability to plan and time management. On the contrary, the respondents expect a decrease to a lesser extent in the case of literacy, mathematical skills, persuasiveness, social sensitivity or empathy or foresight.

In the case of the last job position, shop assistant, the respondents consider the most important qualities such as negotiation and communication skills, active listening and learning, physical endurance, manual skills or a sense of responsibility. Literacy, management skills, critical thinking and time management are among the least important in the case of this job position. In the future, they expect an increase in the importance of negotiation and communication skills, possibly persuasiveness, physical endurance, complex problem solving, flexibility, active listening and learning, team management or foresight. To a lesser extent, respondents expect a decline in skills such as empathy, literacy, mathematical skills, information evaluation, management skills, social sensitivity or independence at work.

4.3 Results of a survey among employees in the food sector in Slovakia

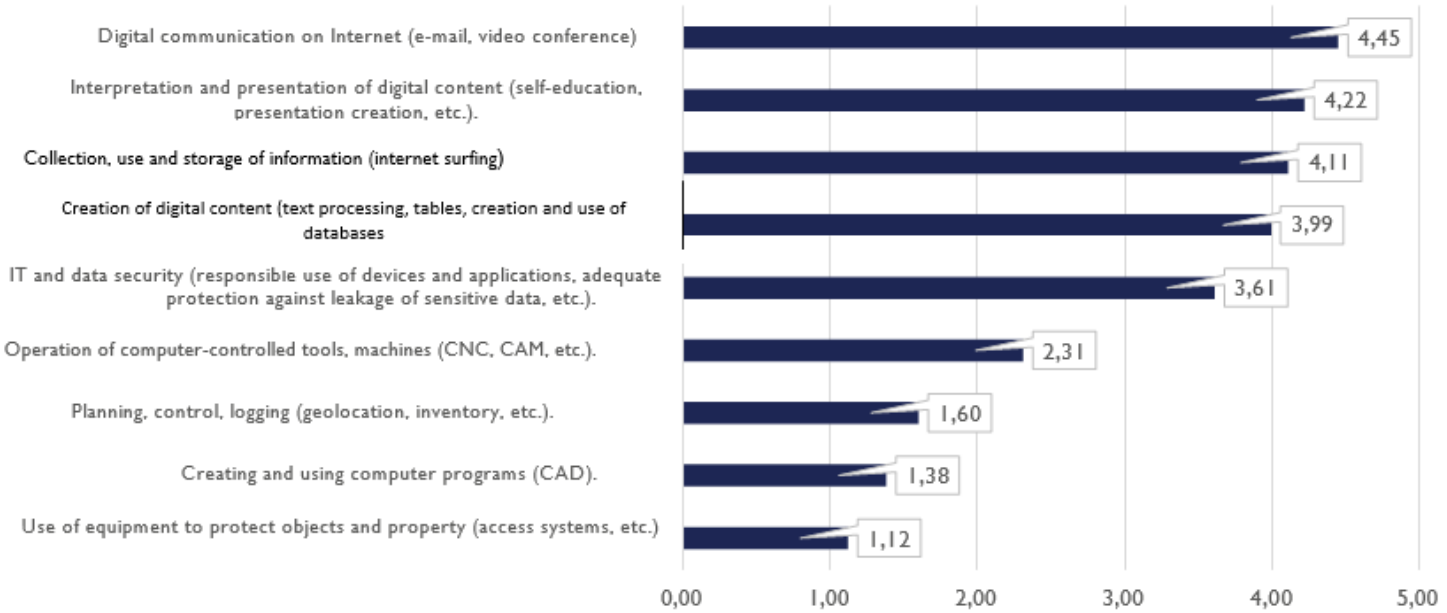
In the case of the survey among employees in the food sector, we managed to get the already mentioned 1,053 answers from respondents from employees from 34 job positions. As part of the basic description of the data that we managed to collect, we can state that the structure of the respondents from the ranks of employees copies approximately the same structure of the employers who filled out the questionnaire devoted to employers.

In our case, 32,86% of respondents were from companies with 250 to 999 employees, 31.91% were from respondents from companies with 50 to 249 employees, 20,51% respondents were from companies with 20-49 employees, 11,78% of respondents were from companies with 1,000 or more employees and only 2.94% of respondents were from companies with 10 to 19 employees (even in this case there were no respondents from companies with fewer than 10 employees). In terms of structure, 55.08% of respondents were men and 44,92% were women. As for the age structure, at most 38,18% of respondents were between the ages of 36 and 45, 31,91% between the ages of 46 and 55, 18,52% of respondents were between the ages of 26 and 35, 9,88 % of respondents were under the age of 25 and the remaining 1,52% of respondents were between the ages of 56 and 65.

If we look in more detail at the number of years of employment, then most respondents had worked in individual positions from 16 to 25 years (41.03%), from 5 to 15 years it was 35,33% of respondents, 19,28% of respondents had worked for 25 years, and only 4.37% reported having worked for less than 5 years.

From the point of view of the educational structure, 51% of the respondents had a grammar school or secondary school education with a high school diploma, 32,29% of them had a first-, second- or third-degree university education, 9.50% a secondary school or vocational school lasting less than 4 years and to a lesser extent respondents with completed doctoral studies or extension or post-baccalaureate studies were represented, rarely those with elementary school. You can find a clear structure of the job positions whose representatives were respondents in our questionnaire processed and listed in Annex18.

In the part of the questionnaire devoted to digitization and automation in the company (Annex 19), all respondents mentioned, as part of the importance of digital skills and competences necessary for the performance of their work, skills related to the collection, use and storage of information, digital communication, interpretation and presentation of digital content. They consider less important the skills and competences related to the use of equipment for the protection of objects and property, the direct creation and use of computer programs or planning, control and logging.



The question related to the impact of digitization and automation on the development of the labor market was answered by up to 69,52% of respondents who think that thanks to digitization and automation they got rid of unnecessary work activities, while slightly less than 50,00% of respondents say that initially it was difficult, but colleagues and superiors were patient and helped them learn everything necessary. Less than 10% of respondents said that acquiring new skills and abilities will be difficult at their age, and at the same time they perceive the impact of digitization and automation on the labor market, because they always tried to keep up with the development of new technologies. Only 9,78% of respondents (103) said that due to digitization and automation, their work in the company was made redundant, while of these respondents, up to 51,46% of them found work in a company where their expertise and skills were needed (they did not have to learn new ones), 25,24%of them are currently working in a field where no special expertise and skills are required, 13,59% developed their digital skills and 9.71% of respondents completely changed their profession and learned with new things.

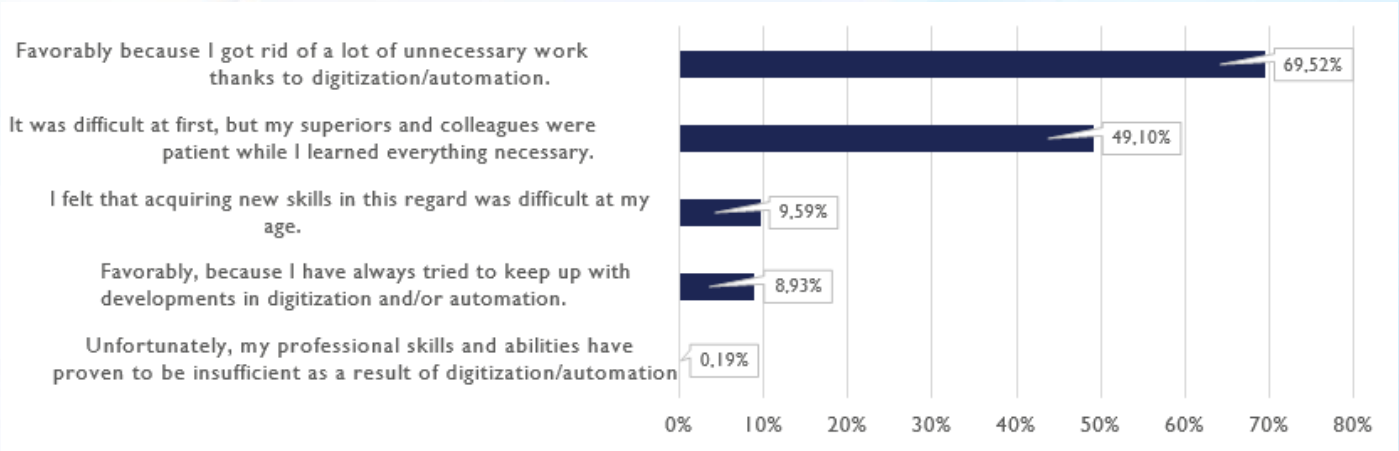


Figure 24
The impact of digitization and/or automation on the current perception of the labor market by employees in the food sector in Slovakia

Source: Own processing.

The figure below presents the expectations of the respondents that are related to the fact that their current job position will be redundant or disappear within 5 years (in the future). Almost 81,00% of respondents do not think that their job position is threatened, 7,88% admit it slightly, but do not expect it. 10% of respondents do not know and approximately only 1% of respondents expect that this could happen (more detailed answers according to individual job positions can be found in Annex 20). The group of those who assume that their job position could disappear within a 5-year horizon includes a smaller percentage of respondents in the positions of warehouse workers, agricultural technicians, secretaries, administrative workers in the field of human resources or cleaners.

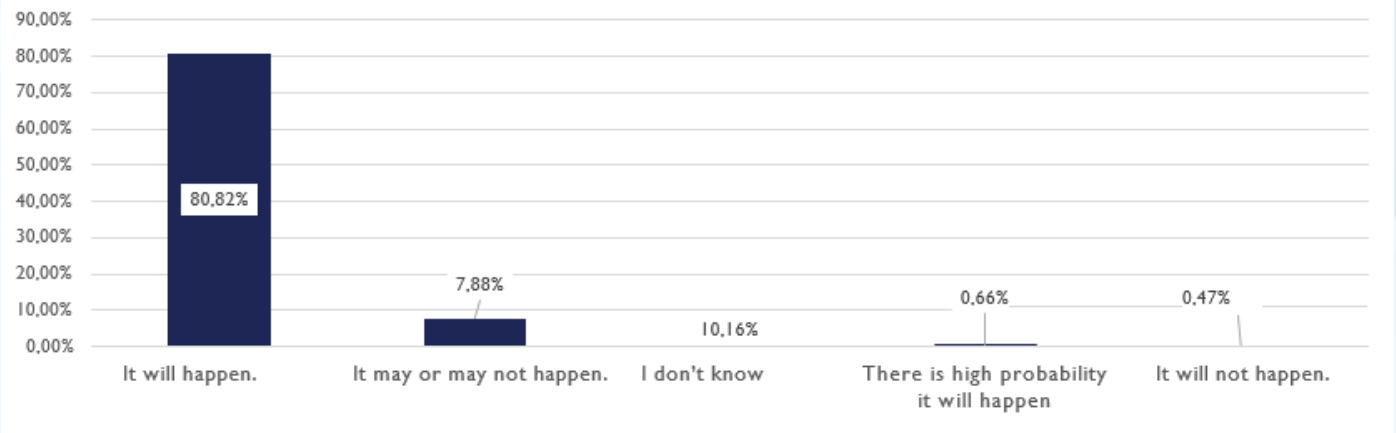


Figure 25
Expectation that within 5 years their current job position will be redundant and disappear

Source: Own processing.

In the third chapter, we conducted a survey that was focused on skills that are important for individual job positions (annex 21), including growth (annex 22) or decline (annex 23) of their importance in the future with regard to the development of digitization and automation. We will present the results of this questionnaire in more detail in an aggregated form in the summary and conclusion of this analysis. The skills and qualities that employees consider important on average include literacy, manual skills, a sense of responsibility, foresight and the ability to plan, or persuasiveness and empathy. Looking to the future, employees on average expect an increase in the importance of the ability to actively listen and learn, to have a sense of responsibility, to further strive to be foresight and able to plan, or to be flexible and to solve problems comprehensively. On the contrary, they expect a decrease in skills such as creativity, independent work, manual skills, negotiation and communication skills, and to a small extent, a decrease in physical resistance and endurance.

4.4 Results of the survey among employees in the trade sector in Slovakia

Within the trade sector, we managed to get feedback from 880 employees for a total of 30 job positions. The largest number of respondents, up to 36,48%, were from companies that employ from 50 to 249 employees, 33,75% of respondents were employed in companies with 20 to 49 employees, 13.30% of respondents in companies with 250 to 999 employees, 10,23% of respondents from companies with 10 to 19 employees and even 6.25% of respondents from companies with more than 1,000 employees.

In the case of the structure of respondents by gender, there were slightly more women (50.45% share) than men (49.55% share). Most respondents 37,27% were aged between 36 and 45, 30,00% of respondents aged 26 to 35, 19,43% aged between 46 and 55, 8,98% of respondents were under 25 and only 4,32% of respondents aged from 56 to 65. Approximately 59% of the respondents worked in the respective job position from 5 to 15 years, almost 30% of the respondents worked from 16 to 25 years, less than 8% worked for less than 5 years and less than 4% worked for more than 25 years.

From the point of view of the educational structure, less than 49% of the respondents had a grammar school or secondary school education with a high school diploma, 41.70% of them had a first, second or third degree university education, 3.86% of the respondents had a doctorate as their highest education, 2,39% a secondary school, or vocational school lasting less than 4 years, and to a lesser extent, respondents with completed extension or post-secondary studies were represented, rarely only with elementary school. A clear and detailed structure of the respondents' job positions with the aggregated results of their answers is presented in Annex 24.

In Annex 25, we present the structure of the importance of digital skills and competences that are necessary for the performance

of their work by employees as respondents in the trade sector. In the opinion of the respondents, it is very important to master digital skills and competences that are aimed at digital communication on the Internet, interpretation and presentation of digital content, gathering, consumption and storage of information or creation of digital content. They identified as less important the skills aimed at the use of equipment for the protection of objects and property, or planning, control and logging. At the same time, the respondents expressed in an open question that the skill in the form of digital literacy in the context of rapid adaptation to new technologies, the acquisition of the already mentioned skills aimed at creating digital content through the creation of automation tools in-house using available software will be very important in the trade sector.

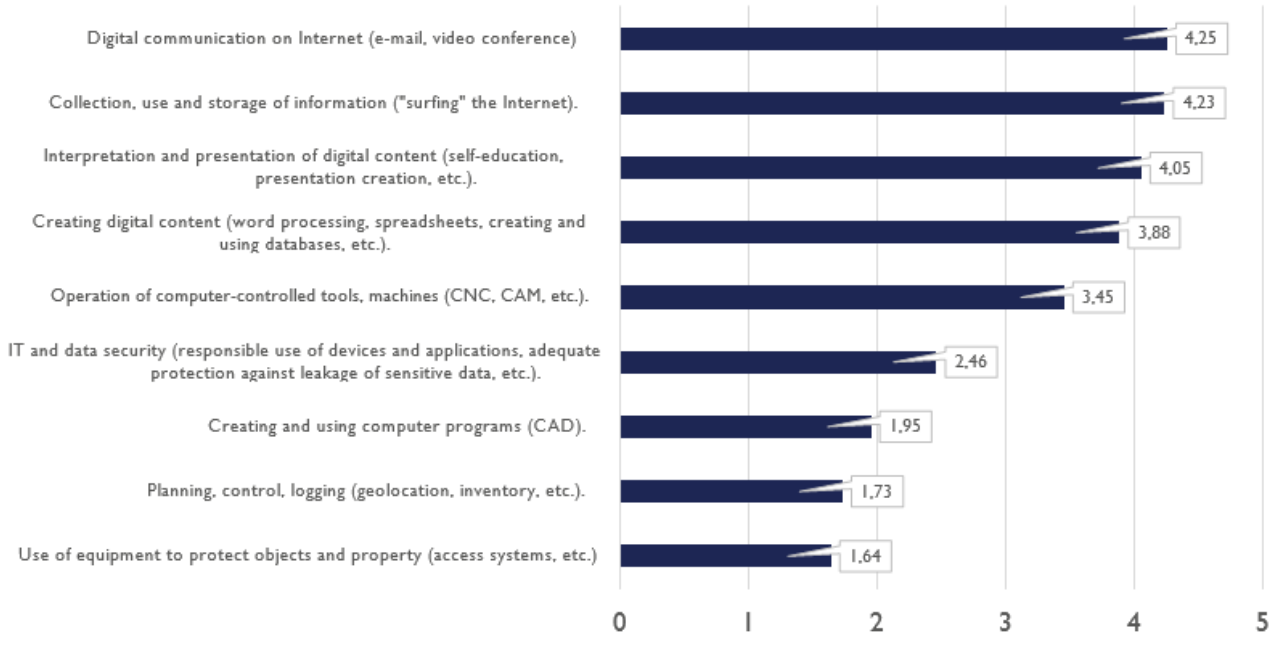


Figure 26

The importance of the following digital skills and competencies when performing your job in the trade sector in Slovakia

Source: Own processing.

As many as 48,30% of respondents perceive the positive impact of digitization and automation on the labor market so far, because it has helped them to save time while performing monotonous work activities, and 42,16% of respondents perceive the positive impact of digitalization because they try to keep up with current trends and technologies. About a third of the respondents said that at first it was difficult for them to get used to modern technologies and innovations brought about by digitization and automation, but colleagues and superiors played a very big role by helping them. Only 7,84% of respondents said that at their age it was difficult to acquire new skills. And only 0,34% of respondents said that they had to move to another job position, as their professional skills and abilities were not sufficient.

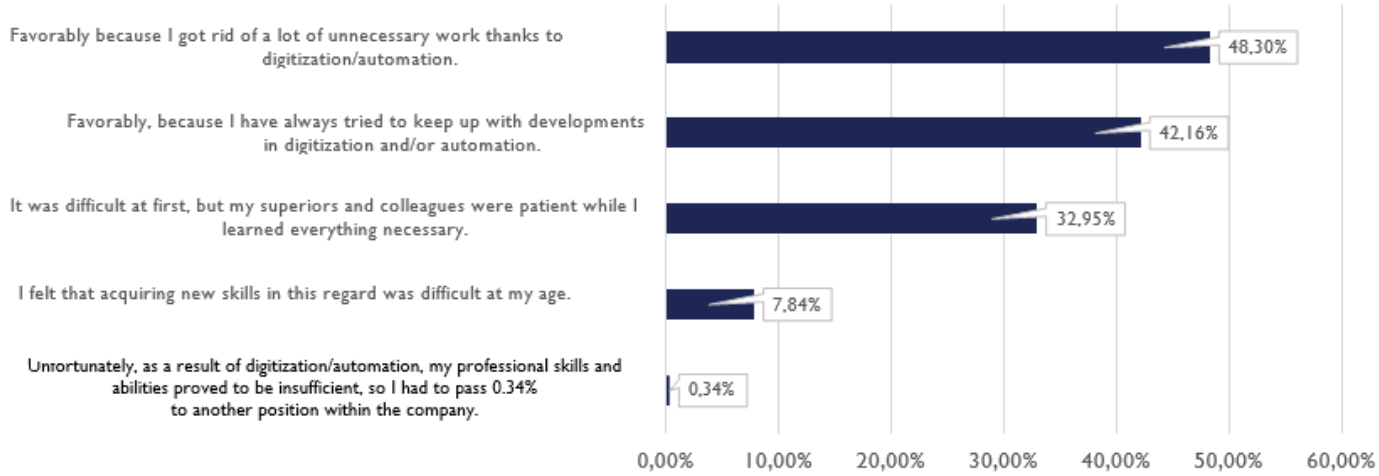


Figure 27

The impact of digitization and/or automation on the current perception of the labor market by employees in the trade sector in Slovakia

Source: Own processing.

Only 6,92% of respondents (63) said that due to digitization and automation, their job position has become redundant. Of this number, 52,38% of respondents said that they found a job in another company where their current skills and abilities were needed. Less than a third of respondents (30,16%) said they acquired new skills and abilities and found a new job in a different field, and 14.29% of respondents said they subsequently developed new digital skills. Only 3,17% of respondents said they started working in an area where no special expertise or skills were required.

The figure below shows the structure of respondents' answers to the question to what extent they expect that their current job position will be redundant and disappear in the future within a 5-year horizon. Of all respondents, 73,41% think that it will definitely not happen. 11,82% of respondents think that it may or may not happen. 12,84% of respondents were not sure and only 1,93% of respondents think that it is very likely that their job position will disappear. According to the results, which are detailed in Annex 26, job positions such as secretaries, facility managers & maintenance workers, cashiers, security guards, cleaners or, to a lesser extent, buyers and specialists in the field of advertising and marketing belong to this group.

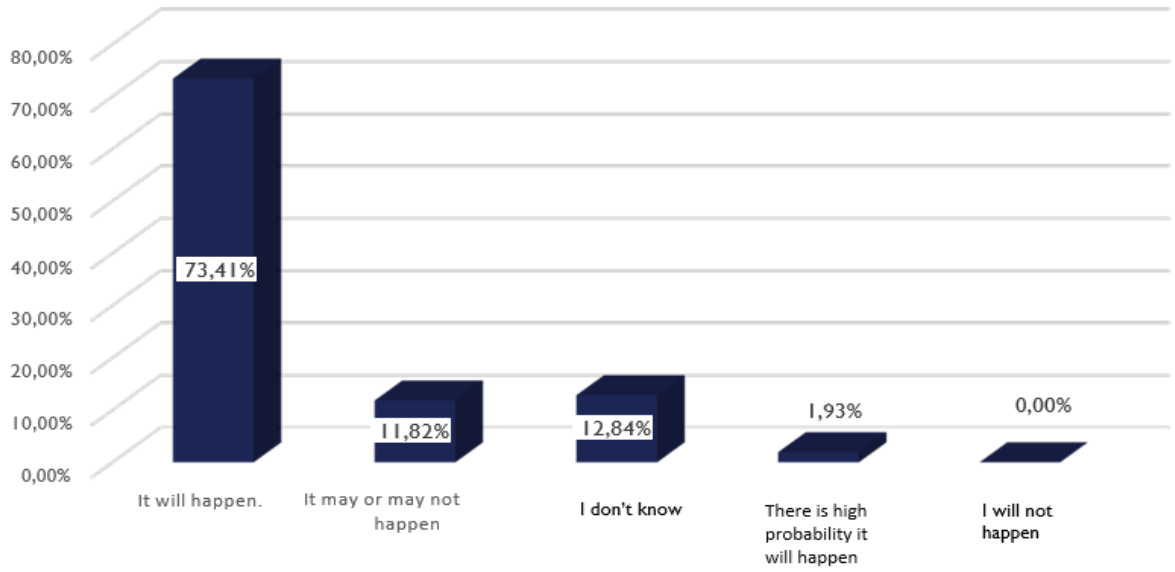


Figure 28

Expectation that within 5 years their current job position will be redundant and disappear

Source: Own processing.

4.5 Results of structured interviews

As part of the primary data collection, we contacted representatives of companies in the trade and food industry using the interview method in the form of a structured interview. The contacts we used are personal, based on mutual trust and respect for pre-established rules. From the point of view of the vast majority of the interviewed companies, the topic of introducing digital technologies is part of the know-how that needs to be protected. For this reason, the condition of conducting personal interviews was the adherence to the anonymity of all respondents.

In both sectors, we approached managers - directors, executives or managers in various fields. During the period of data collection, we completed a total of 17 interviews (9 respondents in the trade - of which 4 representatives were from micro-enterprises, 4 representatives were from small enterprises and 1 representative was from a medium-sized enterprise in terms of number of employees and 8 respondents in the food industry - of which 4 representatives were from small enterprises and 4 representatives from medium- sized enterprises in terms of number of employees). The questions we asked the respondents from both sectors were the same (listed in Annex 5) and that is why we decided to evaluate this part of the survey together.

In the beginning, we found out what, according to the respondents, are the main trends that will positively affect the economic growth of the company in the next three to five years. All respondents in both sectors agreed that the economic growth of the company depends above all on the demand for products and services, which will not decrease, or grow. This is closely related to macroeconomic development and the purchasing power of the population in Slovakia.
The majority of respondents in both sectors expect a positive development in the national economy. Representatives of the food sector more often stated that economic growth in their company will also depend on the overall political situation, the government's policy itself and its impact on the company's overall costs. Some fear a further increase in the minimum wage, which may primarily affect employment in the sector. Trade representatives more often stated that economic growth in their company can positively affect the expansion of the assortment and the minimization of costs. Although the question is formulated in such a way that the respondents comment on trends with a positive impact, some of the representatives of both sectors also indicated the possible negative effects of the constantly changing legislation not only in Slovakia, but also within the EU and the growing demands for the modernization of the technologies used.

In the second question of the interview, we focused precisely on the identification of technologies that can positively affect economic growth in the company, regardless of procurement costs. The store representatives presented standard ICT technologies (PCs, mobile phones, tablets). Many of them cited increasing activity in the online space on the websites and social networks of companies as a condition for success. Representatives of the food industry stated more often that the introduction of new technologies in the field of robotics and the automation of some processes (mainly in production) can positively affect economic growth in the company.
In the next part of the interview, we found out what phase of digital transformation companies are currently in.
We positively assess that each of the respondents from both surveyed sectors stated that the digital transformation is an ongoing process in which they try to "keep up with the times". It is a dynamic field that brings constant changes and managers are aware of the necessity of adapting to new trends. According to our expectations, the answers also showed that in the food sector automation is associated with robotization and implemented to a greater extent than in commerce (this is also evident from the previous question), although even in the case of commercial companies, especially at the level of warehouses and distribution, we meet with a certain degree of robotization.

Another question we asked was whether the COVID-19 pandemic affected/accelerated digitization and/or automation in the companies that were part of the survey. Here, the answers of the respondents in the monitored sectors differed. While the majority of respondents from the food sector stated that the COVID-19 pandemic has accelerated the implementation of new technologies and automation of processes, less than half of the respondents confirmed this trend in the trade.
It was primarily about the implementation of various digital tools enabling more flexible performance of work tasks, transition from paper form of information distribution to electronic and more intensive use of online tools for communication. We believe that this difference between the sectors also arose because these tools were used more intensively in trade even before the outbreak of the COVID-19 pandemic compared to the food sector, or because of the impact of the COVID-19 pandemic, there were downtimes in the production process due to work incapacity of employees who fell ill with COVID-19.

In relation to the short- and medium-term goals of companies in the field of digitization and/or automation, respondents in both sectors were either general in their answers (monitoring and reflecting on current trends) or could not comment on this question. From the answers, we got the impression that, apart from planned changes in technology due to obsolescence, the surveyed companies do not have a planned strategy in this area. According to the managers interviewed, none of the in participating companies plans to speed up the digitization of work tasks or the automation of processes.

When asked what obstacles the respondents encounter in connection with digitization and automation, all of them unanimously stated that the biggest obstacle is high procurement costs, a lack of free financial resources for investments in this area, and the time-consuming implementation of new technologies in the production/ production process (combined with the need for time for employees who, in addition to normal work duties, would need to have a certain amount of time set aside for acquirement of new skills and competences, which represents an increase in costs on the part of business entities). We did not identify any other obstacles.

In the next part of the interview, we focused on the structure of the workforce in companies and on the demand for new skills and competencies of employees. From the point of view of the change in the structure of the workforce as a result of digitalization and automation, representatives of the food sector rather expect this.

Employees' work roles may change in the store, but a change in structure is generally not expected. If jobs will disappear, then also more likely in the food sector, probably not in trade sector. Due to the influence of digitization and automation, representatives of both sectors expect that time savings in the work activities of individual employees can be even more intense. This can lead to a reduction in the need for a certain number of employees in the respective job position (instead of five employees, only 3 will be needed), since, for example, through robotization or automation of processes, a smaller number of employees will be sufficient to perform partial or entire parts of the processes compared to the situation before the introduction of digitization and automation.

In terms of required skills and competences, respondents do not expect a significant change in relation to digitization and/or automation. Currently, the requirements for employees are adapted to these trends and they must have certain skills and competencies. According to the managers' answers, employees in every company are able and willing to acquire new skills and competences. In this context, all companies carry out more or less regular training and further professional education of their employees.

In smaller companies, this education is carried out on an individual level.

Addressed company representatives identified the following key skills and competencies in the future: communication skills, flexibility, foresight, ability to coordinate activities and ICT skills.

5. SUMMARY AND CONCLUSION

In recent decades, almost all economic sectors have been significantly affected by the development of digitization and automation, which bring with them a significant acceleration and efficiency of production, elimination of unnecessary downtime or reduction of production errors. In the introductory chapter, we focused on the development of individual stages of the industrial revolution, which is currently entering its fifth stage. The third and fourth industrial revolutions were key from the point of view of digitization and automation. In the case of the third industrial revolution, we are talking about Industry 3.0, which is characterized by involvement of computers, robotization and automation into the production. The fourth industrial revolution, referred to as Industry 4.0, is characterized by the great development of the Internet, data analytics and connectivity between participants. In the first chapter, we deal with digitalization and its trends in more detail, while digitalization itself is a part of digital transformation, because transformation means doing things in a new digital way. As part of the digital transformation, digital technologies are used very intensively, and its main goal is to increase the efficiency of processes, manage risks better, or discover new possibilities of using existing technologies and knowledge. Automation itself represents the process of creation and application of (using) technologies for the production and delivery of goods and services with minimal human intervention. The goal of automation is to minimize the workload or replace the human factor with a machine or application, especially in activities with a lower added value or activities of a monotonous nature. We also pay attention to the topic of artificial intelligence and machine learning; we discuss in more detail the 4 basic types of automation and the advantages and disadvantages of automation in general.

In the second chapter, we focus on the development of digitization in the European Union, based on secondary data. The aim of this chapter was to approximate the real state of digital adoption in EU countries compared to e.g., USA. By digital adoption we understand the ability of countries or companies to adopt innovations and digital technologies. Digital adoption is measured by the Digital Adoption Index (DAI), which consists of three sub-indices, each measuring digital adoption by businesses, the population and government. Within this index, the results of which were available to us for the years 2014 and 2016 (newer data are not published on the World Bank's website), we can state that the level of digital adoption in Slovakia increased between 2014 and 2016, but we are still significantly behind Austria, Germany and also the Czech Republic. If we were to take into account only the digital adoption of business entities in Slovakia compared to the competition, our companies lag behind business entities in Austria, the Czech Republic, Germany and Poland in the value of this index. A more up-to-date view of the development of digitization is provided by the EIBIS Corporate Digitalization Index, which also compares the level of digital adoption between EU and US states from different points of view. This index consists of six components: digital intensity, digital infrastructure, investments in software and data, investments in improving organizational and business processes, use of a strategic monitoring system and digital outlook. Together with countries such as Germany, Slovenia, Italy and France, Slovakia is included among moderate countries, which are characterized by a higher level of digital intensity, but compared to other countries, we have a smaller share in this index from the remaining components of the index. For comparison, according to this index, countries such as Denmark, the Netherlands, Hungary, and the Czech Republic are better in in terms of digital adoption. According to the value of this index, Slovakia is also below the EU average. For a long time, several experts point to the very poor structure of Slovakia's economy, which is poorly oriented towards development and research, i.e., industries with higher added value, where the level of digitization would also be significantly higher. We are also significantly behind in the digitization of public administration. At the end of the second chapter, we also mention the need to solve several issues at the national level, such as tax policy, labor relations, consumer protection, privacy protection and cyber security, within the framework of supporting digitalization in Slovakia.

As part of our analysis, in the third chapter, we focused on conducting a survey among business entities in Slovakia that operate in the food and trade sectors through a primary survey that was conducted by the interview method using questionnaires and structured interviews. Through these two tools, we wanted to identify in the monitored sectors job positions threatened by automation and digitization, or to identify risks, challenges and opportunities in the transformation of job positions in the food and trade sectors. At the same time, our ambition was to find out what skills and competencies are currently present in individual job positions and how those involved expect them to change in the future due to digitization and automation.

As part of the survey method using questionnaires, we contacted representatives of individual business entities in both sectors through electronic mail communication with a request to fill in two types of questionnaires. One type was for the employer (company management) and the other was for the employee. Both questionnaires for each of the sectors are attached to this analysis (annexes 1 to 4). In the case of data collection by interviewing in the form of a structured interview, we contacted representatives of individual business entities electronically and completed these interviews in person or through an online meeting. The questions in the framework of the structured interview are listed in Annex 5 In the case of the questionnaire survey, we addressed by email 110 business entities from the food sector, of which only 31 entities participated (questionnaire return rate at the level of 28.18%) and in the case of business entities from the trade sector 117 subjects were interviewed, of which 30 subjects participated in the survey (the return rate in this case was 25.64%). In total, in the case of employers, we managed to get 30 completed questionnaires in the trade sector and 31 in the food industry sector. In the case of questionnaires for employees, we requested that they be filled out by as many employees as possible - in the questionnaires for employees working in the trade sector, we git as many as 880 responses from employees from 30 different job positions, and in the questionnaires for employees in the food industry, there were 1,053 responses from employees in 34 different job positions. Detailed data on the results of the questionnaire survey are presented in subsection 3.1. and are part of the annexes (annexes 6 to 25). As part of the structured interviews, we managed to conduct a total of 17 interviews, of which 9 respondents were from trade sector and 8 respondents were from food sector.

Based on the results of the survey that was carried out by the method of questioning using questionnaires and in the form of a structured interview, we can state that even in the case of the food or trade sectors, neither employers nor employees have clearly identified job positions that should disappear in Slovakia as a result of digitization and/or automation.

From the results that we managed to obtain in both survey forms, we can conclude that in the case of some job positions (within administration, possibly also in production), the introduction of digitization and automation may lead to a partial reduction in the number of employees in the given job positions, but only at least to their complete extinction. The competent ones rather expect that some less qualified job positions will not be performed directly by their employees, but will use outsourcing to fulfill their tasks.

Despite the above-mentioned fact, several employees from the trade sector expressed their belief that there may be a loss of jobs due to digitization in the next 5 years in the positions of cleaners, cashiers, security guards, facility managers or maintenance workers or secretaries.

In the case of employees from the food sector, they see a potential risk in the disappearance of jobs as a result of digitization for storekeepers, secretaries, cleaners, technicians in agriculture and the food sector, and possibly also administrative workers. It is interesting that up to 88% of employers from the trade sector and 80.65% from the food sector stated that they train employees in connection with the new skills required by digitization and automation only sporadically, or irregularly. Employers in both sectors stated that they consider it important that companies in the future use e.g., big data analysis, or the Internet of Things, or intelligent sensors in order to increase the efficiency of digitization. In the case of the trade sector and, to a lesser extent, in the food sector, they consider it important to develop the field of cloud computing or the field of robotics and automation in the company. To a lesser extent, employers from both sectors see importance in the use of blockchain, or biotechnological devices or 3D printing. Up to 80% of employers from the trade sector and 64% of employers from the food industry stated that their employees perceive digitization and automation of processes rather positively, while up to 90% of employers in the trade further stated that their employees are interested in further education in the field of information and communication technologies.

In the final part of the questionnaire, employers had the opportunity to choose the job positions that have the largest representation in their job structure and to identify the importance of the selected skills and competences in these positions. In the case of an employer from the food sector, these were the positions of warehouse workers, producers and processors, tasters, drivers, administrative workers and buyers.
Among warehouse workers, the respondents consider physical resistance and endurance, manual skills, time management, a sense of responsibility and complex problem solving to be the most important skills. In the future, they expect an increase in the importance of physical endurance and endurance, manual skills, flexibility, team management or information evaluation, creativity or complex problem solving in this position.
On the contrary, some respondents expect a decrease in the importance of skills in the area of complex problem solving, mathematics, literacy, social sensitivity or independent work. In the case of employees who work in production or processing, respondents consider physical resistance and endurance, manual skills, time management, in terms of responsibility or independence at work to be important. In the future, they expect an increase in the importance of skills such as physical endurance and endurance (physical endurance is key for handling demanding work duties), manual skills, possibly literacy or negotiation and communication skills. On the contrary, they expect a decrease in flexibility, active listening, or management skills.

In the case of the driver job, the respondents consider physical resistance and endurance, flexibility, time management, independence or foresight and the ability to plan to be important. In the future, they expect an increase in physical endurance, manual skills, independence, sense of responsibility or time management, flexibility or complex problem solving, and on the contrary, a decrease in critical thinking, manual skills or creativity. In the case of administrative workers, they consider analytical thinking, complex problem solving, information evaluation, time management or a sense of responsibility to be the most important. In this job position, they expect the importance of the ability to solve complex problems, think critically, literacy, time management or active listening or foresee and plan to grow in the future.
On the contrary, they expect a decrease in importance in the case of managerial skills, flexibility or creativity or physical endurance. In the case of the last job position, buyers identified negotiation and communication, information evaluation, mathematical skills, persuasiveness, complex problem solving, time management or independence as the most important identified skills. In the future, the importance of negotiation and communication skills, persuasiveness, analytical thinking, planning, sense of responsibility, and evaluation of information is expected to grow within this job position. Conversely, some respondents expect a decrease in importance in the case of mathematical skills, manual skills and empathy.

In the case of an employer from the food sector, the positions involved administrative workers, sales representatives, warehouse workers and salespeople. Within the group of administrative workers, literacy, information evaluation, sense of responsibility, independence, math skills and flexibility were identified as important characteristics. Among the less important ones were creativity, management skills, empathy and critical thinking. In the future, within this job position, they expect an increase in the importance of time management, information evaluation, sense of responsibility, analytical thinking and complex problem solving. Conversely, some respondents expect a smaller decrease in persuasiveness or creativity, or social sensitivity, information evaluation or sense of responsibility.
In the case of sales representatives, they consider qualities such as a sense of responsibility, negotiation and communication skills, persuasiveness to be important, and empathy, social perception or information evaluation to be less important. In the future, they expect the growth of negotiation and communication skills, active listening and learning, foresight and the ability to plan, independent work, team management, analytical thinking and complex problem solving. Some respondents expect a slight decrease in importance for the change in the case of manual skills, literacy, physical endurance or creativity. The third most numerous work group was warehouse workers, for whom the most important qualities were physical endurance and endurance, manual skills, complex problem solving, a sense of responsibility or foresight and planning. Respondents consider management skills, creativity, critical thinking or information evaluation or mathematical skills to be less important. In the future, all respondents expect an increase in the importance of physical endurance and manual skills, supplemented by an increase in the sense of responsibility, foresight and the ability to plan and time management. On the contrary, the respondents expect a decrease to a lesser extent in the case of literacy, mathematical skills, persuasiveness, social sensitivity or empathy or foresight. In the case of the last job position, shop assistant, the respondents consider the most important qualities such as negotiation and communication skills, active listening and learning, physical endurance, manual skills or a sense of responsibility. Literacy, management skills, critical thinking and time management are among the least important in the case of this job position. In the future, they expect an increase in the importance of negotiation and communication skills, possibly persuasiveness, physical endurance, complex problem solving, flexibility, active listening and learning, team management or foresight. To a lesser extent, respondents expect a decline in skills such as empathy, literacy, mathematical skills, information evaluation, management skills, social sensitivity or independence at work.

Employees in both food and trade sectors consider it important to master digital skills and competencies for the performance of their job position focused on the collection, use and storage of information, digital communication on the Internet, creation of digital content (working with simple databases), interpretation and presentation of digital content. Both groups of employees consider the skills and competences related to the use of safety equipment, the operation of computer-controlled tools, machines and equipment, or skills focused on planning, control and logging to be less important. About the same number of employees in both sectors think that the development of digitization and automation affects the labor market favorably, because they had the opportunity to get rid of more work thanks to digitization and automation. On the other hand, 42% of respondents from the trade sector (in contrast, 8,93% of respondents from the food sector) perceive the impact of digitization on the labor market favorably because they have always tried to keep up with technological developments. Only slightly less than 0,4% of respondents consider the impact of digitization on the labor market to be negative, because their professional abilities and skills have been shown to be insufficient due to the impact of digitization. Only 6,92% of retail workers and 9,78% of food workers said they had been made redundant as a result of digitization and automation, with half of both groups finding work in a company where their expertise and skills were needed. 30,16% of retail employees found a new job in a completely different job position and around 14% of employees in both sectors directly developed new digital skills to increase their human potential.

In the final part of the questionnaire, employees had the opportunity to assign importance to the characteristics and skills that are important from the point of view of their job content, and also to determine those whose importance will increase or decrease in the following period due to the impact of digitization and automation. We present more detailed results for individual job positions in the annexes (Annexes 17 to 19 for employees in the food sector and Annexes 23 to 25 for employees in the trade sector). Within the food sector, employees consider important skills or competences needed in the performance of their professions in the form of a sense of responsibility, as well as literacy, manual skills, persuasiveness, empathy, foresight and the ability to plan. In the future, they expect the importance of active listening and active learning, complex problem solving, flexibility, sense of responsibility, foresight and the ability to plan and persuasiveness to grow. Conversely, a smaller percentage of respondents said they expect a decrease in importance for creativity, manual skills, negotiation and communication skills, physical endurance and independent work.

Within the trade sector, employees consider skills or qualities needed in the performance of their professions, such as a sense of responsibility, independent work, foresight and the ability to plan, time management and complex problem solving to be important. In the future, they expect an increase in the importance of a sense of responsibility, active listening and learning, flexibility, team management, foresight and the ability to plan and manual skills. Some of the respondents attribute the decline in importance to skills such as empathy, time management, persuasiveness, physical endurance and perseverance, or mathematical skills.

From the results of the structured interviews, we allow ourselves to state some of the key positions and opinions from our point of view. In the opinion of competent people, a more significant use of ICT such as mobile phones and tablets can have a positive impact on the economic growth of the company, especially with regard to shortening the period of processing orders, or they consider it very important to increase activity on social networks in the future. In the case of employers in the food sector, for a change, they see potential in the introduction of new technologies in the field of robotics and automation, especially in production processes (some respondents from the ranks of traders told us that they also encounter robotization in their activities, but only to a very small extent at the level warehouses and distribution). Respondents from both industries stated that the current state of the digital transformation process in their company is difficult to identify, because for them it is an ongoing process in which they try to reflect the trends of the time. While the majority of respondents from the food sector stated that the COVID-19 pandemic has accelerated the implementation of new technologies and automation of processes, less than half of the respondents confirmed this trend in the trade. It was primarily about the implementation of various digital tools that enable more flexible performance of work tasks, transition from paper form of information distribution to electronic and more intensive use of online tools for communication. We believe that this difference between the sectors also arose because these tools were used more intensively in trade even before the outbreak of the COVID-19 pandemic compared to the food industry sector, or because of the impact of the COVID-19 pandemic, there were downtimes in the production process due to incapacity for work employees who fell ill with COVID-19.

As barriers to digitization and automation, the employers more or less unanimously said in the interviews that the biggest obstacles are high procurement costs, lack of free financial resources for investments in this area and time-consuming implementation of new technologies in the production/production process (connected with the need for time for employees, who, in addition to normal work duties, would need to have a certain amount of time set aside to acquire new skills and competences, which represents an increase in costs on the part of business entities).
In terms of required skills and competences, respondents do not expect a significant change in relation to digitization and/or automation. Currently, the requirements for employees are adapted to these trends and they must have certain skills and competences. According to the managers' answers, employees in every company are able and willing to acquire new skills and competences.

From the point of view of the change in the structure of the workforce as a result of digitalization and automation, representatives of the food sector rather expect this. Employees' work roles may change in the store, but a change in structure is generally not expected. If jobs will disappear, then also more likely in the food sector, probably not in trade sector. Due to the influence of digitization and automation, representatives of both sectors expect that time savings in the work activities of individual employees can be even more intense.

In conclusion, we would like to point out that the trade and food sectors are significantly different from traditional manufacturing industrial sectors and industries, in which the level of automation and digitization has been very significant for a long time. In the case of these two industries, it is therefore not possible to expect significant losses of jobs. As also shown by the interviews with employers, they expect the disappearance of some jobs in the future due to their outsourcing, or possibly a reduction in the number of employees in some jobs in production, administration or maintenance due to digitization and automation, but none of the respondents could accurately predict in advance whether it will happen in a year, two or five years.

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7. ANNEXES

Annex 1 - Questionnaire for employees in the food sector in Slovakia

Questionnaire accompanying text:

Hello,
nowadays digital transformation is becoming more and more present in the life of each of us. It changes the way we communicate and work, thus significantly affects our job positions. Digitization can generally be defined as the process of converting analog documents (text, image, sound, audio, video) into digital format or the direct creation of documents in digital form. Automation involves the use of machines or computers instead of people to do work.

We are a team of researchers who are involved in research that is aimed at analyzing the impact of digitization and automation on work tasks and identifying the most vulnerable jobs within the food sector. We are kindly asking you to fill in the questionnaire, which is intended for employees in various job positions. Filling out the questionnaire will take approx. 10 minutes. Your help is crucial to the success of this research. Thank you in advance for your cooperation, which we greatly appreciate!

Questions:

I. Identification

1. Company name (OPTIONAL) .....

2. Number of employees of the company
- 1-5 persons
- 6-9 persons
- 10-19 persons
- 20-49 persons
- 50-249 persons
- 250-999 persons
- 1000 or more persons

3. Choose your gender:
- male
- female

4. State your age
- up to 25 years old
- from 26 to 35 years old
- from 36 to 45 years old
- from 46 to 55 years old
- from 56 to 65 years old
- over 65 years old

5. Choose your highest completed education:
- no education (those who have not completed primary school education)
- elementary school (all grades); 1-4. year of eight-year high school; special schools
- Vocational schools (with a duration of less than 4 years), education in practical skills (1-year)
- gymnasium, vocational schools (all with a duration of at least 4 years), 8 annual gymnasium as long as the 8th year is completed, conservatory (Year 4), extension study for schools (2 years), post-baccalaureate education (less than 2 years)
- extension study, post-baccalaureate education more than 3 years, qualification studies, conservatories (if is completed higher than the year 4) higher vocational schools
- bachelor's, master's, engineering studies
- doctor and doctoral studies

6. State the position you work in:

- President, CEO, Executive
- Manager in the field of finance
- Manager in the field of human resources
- Manager in the field of strategy and planning
- Manager of administrative and support activities not specified elsewhere
- Manager in the field of business
- Manager in the field of marketing
- Manager in the field of advertising and public relations
- Manager in the field of research and development
- Manager in industry - food production
- Specialist in accounting and financial control
- Specialist in strategy and development
- Specialist in HR
- Specialist in training and human resource development
- Specialist in advertising and marketing
- Analyst
- System administrator, information and communication technology operation technician, web technician
- Lawyer
- Specialist in accounting (payroll accountant, calculation, price and cost worker)
- Foreman (supervisor) in food production
- Technician in agriculture and food industry
- Inspector of hygiene, environment and health at work - food inspection
- Sales representative
- Purchaser
- Administrative accounting worker
- Administrative worker in the field of human resources
- Secretary
- Warehouse worker
- Facility manager, maintenance worker
- Manufacturer of bakery and confectionery products
- Processor of meat and fish and similar production
- Manufacturer of milk products
- Processor of fruit, vegetables
- and other plant products (mostly manual)
- Taster and quality tester of food and beverages
- Worker in the field of private security – security guard
- Cleaner
- Driver
- Other (specify what): ....

7. State the number of years you have worked in this position:

- less than 5 years
- from 5 to 15 years
- from 16 to 25 years
- over 25 years

II. Digitization/automation in the company

8. On a scale from 1 to 5, rate the importance of the following digital skills and competencies in performing your job, with 1 being "not at all important" and 5 being "very important".

- Collection, use and storage of information ("surfing" the Internet).
- Digital communication on the Internet (e-mail, video conference, etc.).
- Creating digital content (word processing, spreadsheets, creating and using databases, etc.).
- Interpretation and presentation of digital content (self- education, presentation creation, etc.).
- Planning, control, logging (geolocation, inventory, etc.).
- Operation of computer- controlled tools, machines and equipment (CNC, CAM, etc.).
- Creating and using computer programs (CAD).
- Use of devices to protect objects and property (access systems, etc.)
- IT and data security (responsible use of devices and applications, adequate protection against leakage of sensitive data, etc.).

9. If you consider other digital skills and competences to be necessary for the performance of your job to be important or less important, please indicate what they are and rate them on a scale from 1 to 5 as in the previousquestion.
....

10. How has the development of digitization and/or automation affected your current perception of the labor market?
You can choose multiple answers.
• Favorably because I have always tried to keep up with developments in digitization and/or automation.
• Favorably because I got rid of a lot of unnecessary work thanks to digitization/automation.
• It was difficult at first, but my superiors and colleagues were patient while I learned everything necessary.
• I felt that acquiring new skills in this regard is difficult at my age.
• Unfortunately, my professional abilities and skills turned out to be insufficient as a result of digitization/automation, so I had to move to another position within the company
• Other, please specify ....

11. Have you ever found yourself in a situation where the development of digitization/automation made the work you did in the past redundant?
• Yes
• No

12. If so, what did you do?
• I learned a new profession.
• I developed my digital skills.
• I found a job in a company that required my expertise and skills.
• I work in an area where no special expertise and skills are required.
• Other, specify ....

13. In your opinion, in the next 5 years, what is the chance that your current position and your work performance associated with it will become redundant at your current workplace due to the development of digitization and/or automation?
• It definitely won't happen.
• It may or may not happen.
• I do not know.
• There is a high probability that this will happen.
• It will definitely happen.
• It definitely won't happen.
• It may or may not happen.
• I do not know.
• There is a high probability that this will happen.
• It will definitely happen.

II. Skills

14. On a scale from 1 to 5, indicate how important the listed characteristics and skills are for the performance of your work, with 1 representing "not important at all" and 5 representing "essential for the performance of my profession."
• Physical endurance and endurance
• Literacy
• Mathematical skills
• Information evaluation
• Manual skills
• Negotiation and communication skills
• Persuasiveness
• Managerial skills
• Complex problem solving
• Critical thinking
• Social sensitivity
• Analytical thinking
• Active listening, active learning
• Flexibility
• Creativity
• Empathy
• Time management
• Sense of responsibility
• Independent work
• Foresight and ability to plan
• Other ....

15. Choose the qualities/skills whose importance in your opinion will GROW in the future in relation to your position (multiple answers are possible):
• Physical endurance and endurance
• Literacy
• Mathematical skills
• Information evaluation
• Manual skills
• Negotiation and communication skills
• Persuasiveness
• Managerial skills
• Complex problem solving
• Critical thinking
• Social sensitivity
• Analytical thinking
• Active listening, active learning
• Flexibility
• Creativity
• Empathy
• Time management
• Sense of responsibility
• Independent work
• Foresight and ability to plan
• Other ... .

16. Choose the qualities/skills whose importance in your opinion will DECREASE in the future in relation to your position (multiple answers are possible):
• Physical endurance and endurance
• Literacy
• Mathematical skills
• Information evaluation
• Manual skills
• Negotiation and communication skills
• Persuasiveness
• Managerial skills
• Complex problem solving
• Critical thinking
• Social sensitivity
• Analytical thinking
• Active listening, active learning
• Flexibility
• Creativity
• Empathy
• Time management
• Sense of responsibility
• Independent work
• Foresight and ability to plan
• Other... .....

17. Here you can provide your feedback on the questionnaire or add some information.
....

Annex 2 - Questionnaire for employers in the food sector in Slovakia

Questionnaire accompanying text:

Hello,
nowadays digital transformation is becoming more and more present in the life of each of us. It changes the way we communicate and work, thus significantly affects our job positions. Digitization can generally be defined as the process of converting analog documents (text, image, sound, audio, video) into digital format or the direct creation of documents in digital form. Automation involves the use of machines or computers instead of people to do work.

We are a team of researchers who participate in research that is aimed at analyzing the impact of digitization and automation on work tasks and identifying the most vulnerable job positions in the food sector in Slovakia. We are kindly asking you to fill in the questionnaire, which is intended for directors (chief executives) and managers in various fields. Filling out the questionnaire will take approx. 25 minutes. Your help is crucial to the success of this research. Thank you in advance for your cooperation, which we greatly appreciate!

Questions:

I. Identification

1. Company name (OPTIONAL) .....

2. State your position in the company:
• Director (chief executive) of the company
• Manager
• Other, write: ....

3. Sector in which the company operates
• Industrial production – food production
• Production of alcoholic beverages
• Production of non-alcoholic beverages; production of mineral waters and other bottled waters

4. Within industrial production - food production, you focus/specialize in:
• Processing and canning of meat and meat products
• Processing and canning of fish, crustaceans and molluscs
• Processing and canning of fruits and vegetables
• Production of vegetable and animal oils and fats
• Production of dairy products of products
• Production of mill products, starch and starch products
• Production of bakery and flour products
• Production of other food products
• Production and preparation of animal feed
• Other..... .....

5. Within the production of alcoholic beverages, you focus/specialize in:
• Distilling, treatment and mixing of alcohol
• Production of grape wine
• Production of apple wine and other fruit wine
• Production of other non-distilled fermented beverages
• Production of beer
• Production of malt
• Other ....

6. Within the production of non-alcoholic beverages, you focus/specialize in (specify in more detail):
....

7. Region in which the company has headquarters:
• Bratislava
• Trnava
• Trenčín
• Nitra
• Žilina
• Banská Bystrica
• Prešov
• Košice

8. Number of employees of the company:
• 1 to 5 persons
• 6 to 9 persons
• 10 to 19 persons
• 20 to 49 persons
• 50 to 249 persons
• 250 to 999 persons
• 1000 or more persons

9. What is the structure of employees in the company (distribute 100% between the positions represented in your company)?
• Management staff (managers)
• Professional staff (specialists)
• Administrative staff
• Sales representatives
• Lawyers
• Buyers
• Technicians
• Producers and processors, tasters
• Warehouse workers
• Maintenance workers
• Guards
• Cleaners
• Drivers

10. The majority owner of the company (company) is:
• Domestic owner (from Slovakia)
• Foreign owner (from abroad) • State

II. Digitization/automation in the company

11. State your estimate of the proportion of processes out of their total number in the company that are affected by digitization and/or automation.
• 0%
• from 1% to 25%
• from 26% to 50%
• from 51% to 75%
• from 76% to 100%

12. and 13. On a scale from 1 to 5, state your estimate of how much digitization and/or automation affects a specific job position in your company, with 1 representing "not at all" and 5 representing "most of all".
If the given position does not exist in your company, mark it in the last column of the table.
• President, CEO, executive
• Manager in the area of finance
• Manager in the area of human resources
• Manager) in the area of strategy and planning
• Manager of administrative and support activities not specified elsewhere
• Manager in business
• Manager in marketing
• Manager in advertising and public relations
• Manager in research and development
• Manager in industry – food production
• Manager in the field of accounting and financial control

- Specialist in strategy and development
- Specialist in HR
- Specialist in training and human resources development
- Specialist in advertising and marketing
- Analyst
- Systems administrator, IT and communication technology operation technician, web technician
- Lawyer
- Specialist in of accounting (payroll accountant, calculation, price and cost worker)
- Foreman (supervisor) in food production
- Technician in agriculture and food industry
- Inspector of hygiene, environment and health at work - food inspection
- Sales representative
- Purchaser
- Administrative worker in accounting
- Administrative worker in the field of human resources
- Secretary
- Warehouse worker
- Facility manager, maintenance worker
- Manufacturer of bakery and confectionery products
- Processor of meat and fish and similar production
- Manufacturer of milk products
- Processor of fruits, vegetables and other plant products (mostly manual)
- Taster and quality of food and n drinks
- Worker in the field of private security - security guard
- Cleaner
- Driver

14. In your opinion, which of the above positions will be even more affected by digitization and/ or automation in the future? Specify it. ..... .

15. and 16. Indicate how, in your opinion, digitization and/or automation affects the workload, or job duties of the worker in the above position:

- President, CEO, chief executive
- Manager in the area of finance
- Manager in the area of human resources
- Manager in the area of strategy and planning
- Manager administrative and support activities not specified elsewhere
- Manager in the field of business
- Manager in the field of marketing
- Manager in the field of advertising and public relations
- Manager in the field of research and development
- Manager worker in industry - food production
- Manager in accounting and financial control
- Specialist in strategy and development
- Specialist in HR
- Specialist in training and human resource development
- Specialist in advertising and marketing
- Analyst
- System administrator, information and communication technology operation technician, we business technician
- Lawyer
- Specialist in accounting (payroll accountant, calculation, price and cost worker)
- Foreman (supervisor) in food production
- Technician in agriculture and food industry
- Inspector of hygiene, environment and health at work - food control
- Business representative
- Purchaser
- Administrative employee in accounting
- Administrative employee in the field of human resources
- Secretary
- Warehouse worker
- Facility manager, maintenance man
- Manufacturer of bakery and confectionery products
- Processor of meat and fish and similar production
- Manufacturer of milk products

- Processor of fruit, vegetables and other plant products (mostly manual)
- Taster and quality tester of food and beverages
- Worker in the field of private security - security guard
- Cleaner
- Driver

17. How did digitization and/or process automation affect the number of employees in the company? You can mark more than one answer.
- Employees are adapting to changes within their positions or moving between positions, but their numbers have not changed significantly.
- We replaced less qualified workers with more qualified ones, so their numbers did not change significantly in the end.
- The number of employees decreased because some activities were outsourced.
- The number of management staff has decreased.
- The number of administrative workers has decreased.
- The number of producers and processors decreased.
- The number of other workers has decreased.
- Number of employees increased due to increased demand for products/services.
- Other, please specify: .....

18. How do employees generally react to changing work tasks as a result of digitization and/or automation of processes, or how do they react to the requirement to acquire new skills and competencies? You can mark more than one answer.
- Digitization and/or automation of processes is perceived rather negatively by employees in this context.
- Digitization and/or automation of processes is perceived rather positively by employees in this context.
- Digitization and/or automation of processes is perceived rather neutrally by employees in this context.
- Employees are interested in further education in the field of information and communication technologies.
- Employees are flexible and adapt to changes within their positions.
- Employees are interested in changing job positions within the company due to the change in work tasks.
- Employees are unable to adapt to the new requirements and leave the company or are fired.
- Other, please specify: .....

19. Indicate how the strategy within the scope of digitization and/or automation in your company has changed as a result of the COVID-19 pandemic? You can mark more than one answer.
- The pandemic accelerated the digitization and/or automation of processes in our company.
- We extend digitization and/or process automation to new areas.
- As a result of the pandemic, we are introducing new technologies.
- We allow employees to work from home (home office).
- We have moved some of our activities to the online space.
- We have not changed our strategy in the field of digitization and/or automation.
- Other, please specify: ....

20. Indicate to what extent the training of employees in connection with new skills required/will be required by digitization and/or automation of processes takes place in your company?
- 1 – does not take place at all
- 2 – takes place sporadically
- 3 – takes place irregularly
- 4 – takes place regularly (at least 4 times a year)
- 5 – takes place regularly (more than 4 times a year)

21. Do you consider it important that your company uses the below-mentioned technologies to increase the efficiency of digitization?
- BIG DATA analysis (data analytics)
- Artificial intelligence
- Robotics and automation
- Internet of things (IoT) via Wi-Fi, Bluetooth
- Cloud computing (storage on a server)
- Blockchain (a special kind of distributed decentralized database storing an ever-expanding number of records, which are protected against unauthorized intervention)
- Intelligent (monitoring) sensors
- Mobile technologies (5G)

• GPS systems
• Biotechnological devices
• 3D printing

22. If you consider the use of other technologies to increase the efficiency of digitization in your company to be important, please state what they are. .....

III. Skills

23. State the FIRST job position that is most represented in your company.
.....

24. For the FIRST job above, rate the importance of the listed qualities/skills on a scale of 1 to 5, with 1 being "not at all important" and 5 being "essential to performing this profession".
• Physical endurance and endurance
• Literacy
• Mathematical skills
• Information evaluation
• Manual skills
• Negotiation and communication skills
• Persuasiveness
• Managerial skills
• Complex problem solving
• Critical thinking
• Social sensitivity
• Analytical thinking
• Active listening, active learning
• Flexibility
• Creativity
• Empathy
• Time management
• Sense of responsibility
• Independent work
• Foresight and ability to plan

25. For the FIRST job position mentioned above, indicate for each quality/skill whether you anticipate an INCREASE in its importance, a DECREASE in its importance, or choose NO CHANGE if you do not anticipate any change in importance.
• Physical endurance and endurance
• Literacy
• Mathematical skills
• Information evaluation
• Manual skills
• Negotiation and communication skills
• Persuasiveness
• Managerial skills
• Complex problem solving
• Critical thinking
• Social sensitivity
• Analytical thinking
• Active listening, active learning
• Flexibility
• Creativity
• Empathy
• Time management
• Sense of responsibility
• Independent work
• Foresight and ability to plan

26. State the SECOND job position that is most represented in your company.
....

27. For the SECOND job above, rate the importance of the listed qualities/skills on a scale of 1 to 5, with 1 being "not at all important" and 5 being "essential to perform this profession".

- Physical endurance and endurance
- Literacy
- Mathematical skills
- Information evaluation
- Manual skills
- Negotiation and communication skills
- Persuasiveness
- Managerial skills
- Complex problem solving
- Critical thinking
- Social sensitivity
- Analytical thinking
- Active listening, active learning
- Flexibility
- Creativity
- Empathy
- Time management
- Sense of responsibility
- Independent work
- Foresight and ability to plan

28. For the SECOND job position mentioned above, indicate for each quality/skill whether you anticipate an INCREASE in its importance, a DECREASE in its importance, or choose NO CHANGE if you do not anticipate any change in importance.

- Physical endurance and endurance
- Literacy
- Mathematical skills
- Information evaluation
- Manual skills
- Negotiation and communication skills
- Persuasiveness
- Managerial skills
- Complex problem solving
- Critical thinking
- Social sensitivity
- Analytical thinking
- Active listening, active learning
- Flexibility
- Creativity
- Empathy
- Time management
- Sense of responsibility
- Independent work
- Foresight and ability to plan

29. Here you can provide your feedback on the questionnaire or add some information

....

Annex 3 - Questionnaire for employees in the trade sector in Slovakia

Questionnaire accompanying text:

Hello,
nowadays digital transformation is becoming more and more present in the life of each of us. It changes the way we communicate and work, thus significantly affects our job positions. Digitization can generally be defined as the process of converting analog documents (text, image, sound, audio, video) into digital format or the direct creation of documents in digital form. Automation involves the use of machines or computers instead of people to do work.

We are a team of researchers who participate in research that is aimed at analyzing the impact of digitization and automation on work tasks and identifying the most vulnerable job positions in the food sector in Slovakia. We are kindly asking you to fill in the questionnaire, which is intended for directors (chief executives) and managers in various fields. Filling out the questionnaire will take approx. 10 minutes. Your help is crucial to the success of this research. Thank you in advance for your cooperation, which we greatly appreciate!

Questions:

I. Identification

1. Company name (OPTIONAL) .....

2. Number of employees of the company
- 1-5 persons
- 6-9 persons
- 10-19 persons
- 20-49 persons
- 50-249 persons
- 250-999 persons
- 1000 or more persons

3. Choose your gender:
- male
- female

4. State your age
- up to 25 years old
- from 26 to 35 years old
- from 36 to 45 years old
- from 46 to 55 years old
- from 56 to 65 years old
- over 65 years old

5. State your highest completed education:

- no education (those who have not completed primary school education)
- elementary school (all grades); 1-4. year of eight-year high school; special schools
- vocational schools (with a duration of less than 4 years), education in practical skills (1-year)
- gymnasium, vocational schools (all with a duration of at least 4 years), 8-year gymnasium as long as the Year 8 is completed, conservatory (Year 4), extension study for schools (2 years), post-baccalaureate education (less than 2 years)
- extension study, post-baccalaureate education more than 3 years, qualification studies, conservatories (if is completed higher than the Year 4) higher vocational schools
- bachelor's, master's, engineering studies
- doctor and doctoral studies

6. State the position you work in:
- President, CEO, Executive
- Manager in the field of finance
- Manager in the field of human resources
- Manager in the field of strategy and planning
- Manager of administrative and support activities not specified elsewhere
- Manager in the field of business
- Manager in the field of marketing
- Manager in the field of advertising and public relations
- Manager in the field of research and development
- Manager in industry - food production
- Specialist in accounting and financial control
- Specialist in strategy and development
- Specialist in HR
- Specialist in training and human resource development
- Specialist in advertising and marketing
- Analyst
- System administrator, information and communication technology operation technician, web technician
- Lawyer
- Specialist in accounting (payroll accountant, calculation, price and cost worker)
- Foreman (supervisor) in food production
- Technician in agriculture and food industry
- Inspector of hygiene, environment and health at work - food inspection
- Sales representative
- Purchaser
- Administrative accounting worker
- Administrative worker in the field of human resources
- Secretary
- Warehouse worker
- Facility manager, maintenance worker
- Manufacturer of bakery and confectionery products
- Processor of meat and fish and similar production
- Manufacturer of milk products
- Processor of fruit, vegetables
- and other plant products (mostly manual)
- Taster and quality tester of food and beverages
- Worker in the field of private security – security guard
- Cleaner
- Driver
- Other (specify what): ....

7. State the number of years you have worked in this position:
- less than 5 years
- from 5 to 15 years
- from 16 to 25 years
- over 25 years

II. Digitization/automation in the company

8. On a scale from 1 to 5, rate the importance of the following digital skills and competencies in performing your job, with 1 being "not at all important" and 5 being "very important".
- Collection, use and storage of information ("surfing" the Internet).
- Digital communication on the Internet (e-mail, video conference, etc.).
- Creating digital content (word processing, spreadsheets, creating and using databases, etc.).
- Interpretation and presentation of digital content (self- education, presentation creation, etc.).
- Planning, control, logging (geolocation, inventory, etc.).
- Operation of computer- controlled tools, machines and equipment (CNC, CAM, etc.).
- Creating and using computer programs (CAD).
- Use of devices to protect objects and property (access systems, etc.)
- IT and data security (responsible use of devices and applications, adequate protection against leakage of sensitive data, etc.).

9. If you consider other digital skills and competences necessary for the performance of your job to be important or less important, please indicate what they are and rate them on a scale from 1 to 5 as in the previous question.
……

10. How has the development of digitization and/or automation affected your current perception of the labor market? You can mark multiple answers.

- Favorably because I have always tried to keep up with developments in digitization and/or automation.
- Favorably because I got rid of a lot of unnecessary work thanks to digitization/automation.
- It was difficult at first, but my superiors and colleagues were patient while I learned everything necessary.
- I felt that acquiring new skills in this regard is difficult at my age.
- Unfortunately, as a result of digitization/automation, my professional abilities and skills proved to be insufficient, so I had to move to another position within the company.
- Other, please specify.....

11. Have you ever found yourself in a situation where the development of digitization/automation made the work you did in the past redundant?

- Yes
- No

12. If so, what did you do?

- I learned a new profession.
- I developed my digital skills.
- I found a job in a company that required my expertise and skills.
- I work in an area where no special expertise and skills are required.
- Other, specify .....

13. In your opinion, in the next 5 years, what is the chance that your current position and your work performance associated with it will become redundant at your current workplace due to the development of digitization and/or automation?

- It definitely won't happen.
- It may or may not happen.
- I do not know.
- There is a high probability that this will happen.
- It will definitely happen.
- It definitely won't happen.
- It may or may not happen.
- I do not know.
- There is a high probability that this will happen.
- It will definitely happen.

III. Skills

14. On a scale from 1 to 5, indicate how important the listed characteristics and skills are for the performance of your work, with 1 representing "not important at all" and 5 representing "essential for the performance of my profession."

- Physical endurance and endurance
- Literacy
- Mathematical skills
- Information evaluation
- Manual skills
- Negotiation and communication skills
- Persuasiveness
- Managerial skills
- Complex problem solving
- Critical thinking
- Social sensitivity
- Analytical thinking
- Active listening, active learning
- Flexibility
- Creativity
- Empathy
- Time management
- Sense of responsibility
- Independent work
- Foresight and ability to plan

15. Choose the qualities/skills whose importance in your opinion will grow in the future in relation to your position (multiple answers are possible):

- Physical endurance and endurance
- Literacy
- Mathematical skills
- Information evaluation
- Manual skills
- Negotiation and communication skills
- Persuasiveness
- Managerial skills
- Complex problem solving
- Critical thinking
- Social sensitivity
- Analytical thinking
- Active listening, active learning
- Flexibility
- Creativity
- Empathy
- Time management
- Sense of responsibility
- Independent work
- Foresight and ability to plan
- Other ... .

16. Choose those qualities/skills, the importance of which in your opinion will decrease in the future in relation to your position (multiple answers are possible):

- Physical endurance and endurance
- Literacy
- Mathematical skills
- Information evaluation
- Manual skills
- Negotiation and communication skills
- Persuasiveness
- Managerial skills
- Complex problem solving
- Critical thinking
- Social sensitivity
- Analytical thinking
- Active listening, active learning
- Flexibility
- Creativity
- Empathy
- Time management
- Sense of responsibility
- Independent work
- Foresight and ability to plan
- Other ... .

Annex 4 - Questionnaire for employers in the trade sector in Slovakia

Questionnaire accompanying text:

Hello,
nowadays digital transformation is becoming more and more present in the life of each of us. It changes the way we communicate and work, thus significantly affects our job positions. Digitization can generally be defined as the process of converting analog documents (text, image, sound, audio, video) into digital format or the direct creation of documents in digital form. Automation involves the use of machines or computers instead of people to do work.

We are a team of researchers who participate in research that is aimed at analyzing the impact of digitization and automation on work tasks and identifying the most vulnerable job positions in the food sector in Slovakia. We are kindly asking you to fill in the questionnaire, which is intended for directors (chief executives) and managers in various fields. Filling out the questionnaire will take approx. 10 minutes. Your help is crucial to the success of this research. Thank you in advance for your cooperation, which we greatly appreciate!

Questions:

I. Identification

1. Company name .....

2. State your position in the company:
• Director (chief executive) of the company
• Manager
• Other, enter: .....

3. Sector in which the company operates:
• Wholesale and retail trade and repair of motor vehicles and motorcycles
• Wholesale trade except motor vehicles and motorcycles
• Retail trade except motor vehicles and motorcycles

4. As part of the wholesale and retail trade and repair of motor vehicles and motorcycles, you focus/specialize in:
• Sale of motor vehicles
• Repair and maintenance of motor vehicles
• Sale of motor vehicle parts and accessories
• Other ....

5. As part of wholesale, apart from motor vehicles and motorcycles, you focus/specialize in:
• Wholesale brokerage
• Wholesale of agricultural raw materials and live animals
• Wholesale of food, beverages and tobacco
• Wholesale of household goods
• Wholesale of IT and communications equipment- ICT
• Wholesale of other machines, equipment and accessories
• Other specialized wholesale
• Non-specialized wholesale
• Other .....

6. As part of the retail trade, apart from motor vehicles and motorcycles, you focus/specialize in:
• Retail trade in non-specialized stores
• Retail trade in food, beverages and tobacco in specialized stores
• Retail trade in fuel in specialized stores
• Retail trade in informatics and communications equipment - ICT in specialized stores
• Retail sale of other household goods in specialized stores
• Retail sale of goods for culture and recreation in specialized stores
• Retail sale of other goods in specialized stores

• Retail trade in stands and markets
• Retail trade outside stores, stands and markets (on the internet)
• Other .....

7. Region in which the company has headquarters:
• Bratislava
• Trnava
• Trenčín
• Nitra
• Žilina
• Banská Bystrica
• Prešov
• Košice

8. Number of employees of the company
• 1 to 5 persons
• 6 to 9 persons
• 10 to 19 persons
• 20 to 49 persons
• 50 to 249 persons
• 250 to 999 persons
• 1000 or more persons

9. What is the structure of employees in the company (distribute 100% between the positions represented in your company)?
• Management staff (managers)
• Professional staff (specialists)
• Administrative staff
• Sales representatives
• Lawyers
• Buyers
• Technicians
• Warehouse workers
• Maintenance workers
• Sellers
• Cashiers
• Guards
• Cleaners
• Drivers

10. The majority owner of the company (company) is:
• Domestic owner (from Slovakia)
• Foreign owner (from abroad)
• State

II. Digitization/automation in the company

11. State your estimate of the proportion of processes out of their total number in the company that are affected by digitization and/or automation.
• 0%
• from 1% to 25%
• from 26% to 50%
• from 51% to 75%
• from 76% to 100%

12. and 13. On a scale from 1 to 5, state your estimate of how much digitization and/or automation affects a specific job position in your company, with 1 representing "not at all" and 5 representing "most of all".
If the given position does not exist in your company, mark it in the last column of the table.

- President, CEO, executive
- Manager in the area of finance
- Manager in the area of human resources
- Manager in the area of strategy and planning
- Manager of administrative and support activities not specified elsewhere
- Manager in trade
- Manager in marketing
- Manager in advertising and public relations
- Manager in wholesale and retail
- Specialist in accounting and financial control
- Specialist in the field of strategy and development
- HR specialist
- Human resources training and development specialist
- Advertising and marketing specialist
- Public relations specialist
- Analyst
- System administrator, information and communication technology operation technician, web technician
- Lawyer
- Professional worker in the field of accounting (payroll accountant, working to calculations, prices and costs)
- Sales representative
- Buyer
- Administrative employee in accounting
- Administrative employee in the field of human resources
- Secretary
- Warehouse worker
- Facility manager, maintenance man
- Salesperson (in small shops, boutiques)
- Head of business operations
- Salesperson
- Cashier
- Worker in the field of private security - guard
- Cleaner
- Driver

14. In your opinion, which of the above positions will be even more affected by digitization and/or automation in the future? Name it. .....

15. and 16. Indicate how, in your opinion, digitization and/or automation affects the workload, or job duties of the worker in the particular job position:

- President, CEO, executive
- Manager in the field of finance
- Manager in the field of human resources
- Manager in the field of strategy and planning
- Manager administrative and support activities not specified elsewhere
- Manager in the field of trade
- Manager in the field of marketing
- Manager in the field of advertising and public relations
- Manager in wholesale and retail
- Specialist in the field of accounting and financial control
- Specialist in strategy and development
- Specialist in HR
- Specialists in training and human resource development
- Specialist in advertising and marketing
- Specialist in public relations
- Analyst
- System administrator, information and communication technician technologies, web technician
- Lawyer
- Specialist in areas of accounting (payroll accountant, employee of calculations, prices and costs)
- Sales representative
- Buyer

• Administrative employee in accounting
• Administrative employee in the field of human resources
• Secretary
• Warehouse worker
• Facility manager, maintenance worker
• Merchant (in small shops, boutiques)
• Head of business operation
• Salesperson
• Cashier
• Private security worker - security guard
• Cleaner
• Driver

17. How did digitization and/or process automation affect the number of employees in the company? You can mark more than one answer.
• Employees are adapting to changes within their positions or moving between positions, but their numbers have not changed significantly.
• We replaced less qualified workers with more qualified ones, so their numbers did not change significantly in the end.
• The number of employees decreased because some activities were outsourced.
• The number of management staff has decreased.
• The number of administrative workers has decreased.
• The number of producers and processors decreased.
• The number of other workers has decreased.
• Number of employees increased due to increased demand for products/services.
• Other, please specify: .....
•

18. How do employees generally react to changing work tasks as a result of digitization and/or automation of processes, or how do they react to the requirement to acquire new skills and competencies?
You can mark more than one answer.
• Digitization and/or automation of processes is perceived rather negatively by employees in this context.
• Digitization and/or automation of processes is perceived rather positively by employees in this context.
• Digitization and/or automation of processes is perceived rather neutrally by employees in this context.
• Employees are interested in further education in the field of information and communication technologies.
• Employees are flexible and adapt to changes within their positions.
• Employees are interested in changing job positions within the company due to the change in work tasks.
• Employees are unable to adapt to the new requirements and leave the company or are fired.
• Other, please specify: .....

19. Indicate how the strategy within the scope of digitization and/or automation in your company has changed as a result of the COVID-19 pandemic? You can mark more than one answer.
• The pandemic accelerated the digitization and/or automation of processes in our company.
• We extend digitization and/or process automation to new areas.
• As a result of the pandemic, we are introducing new technologies.
• We allow employees to work from home (home office).
• We have moved some of our activities to the online space.
• We have not changed our strategy in the field of digitization and/ or automation.
• Other, please specify: ....

20. Indicate to what extent the training of employees in connection with new skills required/will be required by digitization and/or automation of processes takes place in your company?
• 1 – does not take place at all
• 2 – takes place sporadically
• 3 – takes place irregularly
• 4 – takes place regularly (at least 4 times a year)
• 5 – takes place regularly (more than 4 times a year)

21. Do you consider it important that your company uses the below-mentioned technologies to increase the efficiency of digitization?
• BIG DATA analysis (data analytics)
• Artificial intelligence
• Robotics and automation
• Internet of things (IoT) via Wi-Fi, Bluetooth
• Cloud computing (storage on a server)
• Blockchain (a special kind of distributed decentralized database storing an ever-expanding number of records, which are protected against unauthorized intervention)
• Intelligent (monitoring) sensors
• Mobile technologies (5G)
• GPS systems
• Biotechnological devices
• 3D printing

22. If you consider the use of other technologies to increase the efficiency of digitization in your company to be important, please state what they are. .....

III. Skills

23. State the FIRST job position that is most represented in your company. .....

24. For the FIRST job above, rate the importance of the listed qualities/skills on a scale of 1 to 5, with 1 being "not at all important" and 5 being "essential to performing this profession".

• Physical endurance and endurance
• Literacy
• Mathematical skills
• Information evaluation
• Manual skills
• Negotiation and communication skills
• Persuasiveness
• Flexibility
• Creativity
• Empathy
• Time management
• Sense of responsibility
• Independent work
• Foresight and ability to plan

25. For the FIRST job position mentioned above, indicate for each characteristic/skill whether you anticipate an INCREASE in its importance, a DECREASE in its importance, or choose NO CHANGE if you do not anticipate any change in importance.
• Physical endurance and endurance
• Literacy
• Mathematical skills
• Information evaluation
• Manual skills
• Negotiation and communication skills
• Persuasiveness
• Managerial skills
• Complex problem solving
• Critical thinking
• Social sensitivity
• Analytical thinking
• Active listening, active learning
• Flexibility
• Creativity
• Empathy
• Time management
• Sense of responsibility
• Independent work
• Foresight and ability to plan

26. State the SECOND job position that is most represented in your company. .....

27. For the SECOND job above, rate the importance of the listed qualities/skills on a scale of 1 to 5, with 1 being "not at all important" and 5 being "essential to perform this profession".

- Physical endurance and endurance
- Literacy
- Mathematical skills
- Information evaluation
- Manual skills
- Negotiation and communication skills
- Persuasiveness
- Managerial skills
- Complex problem solving
- Critical thinking
- Social sensitivity
- Analytical thinking
- Active listening, active learning
- Flexibility
- Creativity
- Empathy
- Time management
- Sense of responsibility
- Independent work
- Foresight and ability to plan

28. For the SECOND job position mentioned above, indicate for each characteristic/skill whether you anticipate an INCREASE in its importance, a DECREASE in its importance, or choose NO CHANGE if you do not anticipate any change in importance.

- Physical endurance and endurance
- Literacy
- Mathematical skills
- Information evaluation
- Manual skills
- Negotiation and communication skills
- Persuasiveness
- Managerial skills
- Complex problem solving
- Critical thinking
- Social sensitivity
- Analytical thinking
- Active listening, active learning
- Flexibility
- Creativity
- Empathy
- Time management
- Sense of responsibility
- Independent work
- Foresight and ability to plan

29. Here you can provide your feedback on the questionnaire or add some information. .....

Annex 5 - Structured questionnaire for employers in the food and trade sectors in Slovakia

Position of the respondent: ....

1. In your opinion, what are the main trends that will positively affect the economic growth of the company in the next three to five years?

2. Which technologies do you think have the greatest potential to positively influence economic growth in the company?

3. In what stage of digital transformation do you think the company is currently?

4. Has the COVID-19 pandemic affected/accelerated the digitization and/or automation of processes in your company?

5. What are the company's short- and medium-term goals in the field of digitization and/or automation? Do you plan to speed up the digitization of work processes/automation of tasks within a 3-year horizon?

6. What obstacles do you encounter in connection with digitization and/or automation?

7. Do you expect a change in the workforce structure as a result of digitization and/or automation in the 3–5-year horizon?

8. Do you assume that new jobs will be created in connection with digitization and/or automation or that the job content of existing job positions change?

9. Do you assume that as a result of digitization and/or automation, some tasks within job positions will accumulate, or that some positions will disappear completely?

10. Do you expect a significant change in the required competencies and skills of employees in connection with digitization and/or automation of processes?

11. In your opinion, are the employees in the company able/willing to acquire new competencies and skills?

12. In this context, do you carry out further education, professional courses, workshops, etc.?

13. In your opinion, what will be the key skills/competences of employees in your company in the future?

Annex 6 - The impact of digitization and automation on the selected job positions according to the estimate of employers in enterprises from the food sector in Slovakia (1 represents "does not affect at all" and 5 represents "affects the most"

Source: Own processing.

Annex 7 - The impact of digitization and/or automation on changes in work tasks and the content of individual job positions in the food sector

Job position	Work tasks have changed significantly due to digitization/automation they don't change	Work tasks are changing significantly due to digitization/automation	It is true that work tasks will be fully automated and the position will expire
President, CEO, Executive	96.77%	3.23%	0.00%
Manager in the field of finance	77.42%	22.58%	0.00%
Manager in the field of human resources	80.65%	19.35%	0.00%
Manager in the field of strategy and planning	87.10%	12.90%	0.00%
Managing worker (manager) administrative and supportive activities elsewhere not specified	83.87%	16.13%	0.00%
Manager in the field of trade	93.55%	6.45%	0.00%
Manager in the field of marketing	90.32%	9.68%	0.00%
Manager in the field of advertising and public relations	87.10%	12.90%	0.00%
Manager in the field of research and development	67.74%	32.26%	0.00%
Manager in industry - food production	54.84%	45.16%	0.00%
Manager in the field of accounting and financial control	77.42%	22.58%	0.00%
Specialist in strategy and development	74.19%	25.81%	0.00%
Specialist in HR	93.55%	6.45%	0.00%
Specialist in the field of education and development of human resources	80.65%	9.68%	9.68%
Specialist in advertising and marketing	90.32%	9.68%	0.00%
System administrator, information and communication technology operation technician, web technician	9.68%	90.32%	0.00%
A lawyer	83.87%	16.13%	0.00%
Professional worker in the field of accounting (payroll accountant, employee calculations, prices and costs)	77.42%	22.58%	0.00%
Master (supervisor) in food production	64.52%	32.26%	3.23%
Technician in agriculture and food industry	64.52%	29.03%	6.45%
Sales representative	83.87%	16.13%	0.00%
Buyer	64.52%	32.26%	3.23%
Administrative worker in accounting	61.29%	12.90%	25.81%
Administrative worker in the field of human resources	64.52%	6.45%	29.03%
The secretary	90.32%	6.45%	3.23%
Warehouse worker	93.55%	3.23%	3.23%
Facility manager, maintenance worker	58.06%	19.35%	22.58%
Manufacturer of bakery and confectionery products	85.71%	14.29%	0.00%
Meat and fish processor and similar production	72.73%	27.27%	0.00%
Manufacturer of milk products	80.00%	20.00%	0.00%
Processor of fruits, vegetables and other plant products (mainly manual)	83.33%	16.67%	0.00%
Food and beverage taster and quality inspector	100.00%	0.00%	0.00%
Cleaning lady	48.39%	3.23%	48.39%
Driver	90.32%	9.68%	0.00%

Source: Own processing.

Annex 8 - The importance of using the mentioned technologies in your company in order to increase the efficiency of digitization in the food sector

	Yes	Not	I do not know
BIG DATA analysis (data analytics)	96.77%	0.00%	3.23%
Artificial intelligence	6.45%	19.35%	74.19%
Robotics and automation	58.06%	3.23%	38.71%
Internet of Things (IoT) via Wi-Fi, Bluetooth	80.65%	3.23%	16.13%
Cloud computing (storage on a server)	51.61%	3.23%	45.16%
Blockchain (a special kind of distributed decentralized database storing constantly expanding number of records that are protected against unauthorized access)	3.23%	9.68%	87.10%
Intelligent (monitoring) sensors	67.74%	12.90%	19.35%
Mobile technologies (5G)	16.13%	29.03%	54.84%
GPS systems	22.58%	12.90%	64.52%
Biotechnological devices	6.45%	12.90%	80.65%
3D printing	6.45%	3.23%	90.32%

Source: Own processing.

Annex 9 - The importance of the qualities/skills assigned to the respective job positions, including the growth/ decrease in their importance in the future in the food sector

		Workers in the warehouse	Drivers	Manufacturers and processors, tasters	Administrative workers	Buyers
Quality (skill) / average importance value		3.32	3.37	3.44	3.61	3.84
Physical endurance and endurance	3.80	4.21	4.12	4.19	2.91	3.58
Literacy	3.33	3.11	2.92	3.09	3.64	3.91
Mathematical skills	3.10	2.72	2.35	2.71	3.55	4.15
Evaluation of information	3.51	2.91	3.51	3.02	3.85	4.25
Manual skills	3.81	4.19	3.66	4.76	3.22	3.21
Negotiation and communication skills	3.39	2.56	3.25	2.81	3.76	4.59
Persuasiveness	3.24	2.23	3.31	2.59	3.67	4.41
Managerial skills	3.11	2.91	2.89	2.13	3.72	3.89
Comprehensive problem solving	3.91	3.72	3.37	4.18	4.05	4.24
Critical thinking	3.24	2.72	3.22	3.25	3.86	3.15
Social sensitivity	3.02	3.16	2.81	2.17	3.39	3.55
Analytical thinking	3.51	3.22	2.86	3.75	4.03	3.71
Active listening, active learning	3.77	3.68	3.76	3.61	3.87	3.91
Flexibility	3.63	3.51	3.93	3.22	3.90	3.58
Creativity	3.33	3.48	2.39	3.91	3.15	3.71
Empathy	3.31	3.08	3.38	3.34	3.21	3.55
Team management	4.16	4.28	4.39	4.22	3.95	3.97
A sense of responsibility	3.87	3.91	3.71	4.08	3.81	3.83
Independent work	3.62	3.22	3.88	3.91	3.25	3.84
Foresight and the ability to plan	3.61	3.55	3.61	3.84	3.36	3.67

Source: Own processing.

Annex 10 - Growing importance of qualities/skills for the future in the food sector

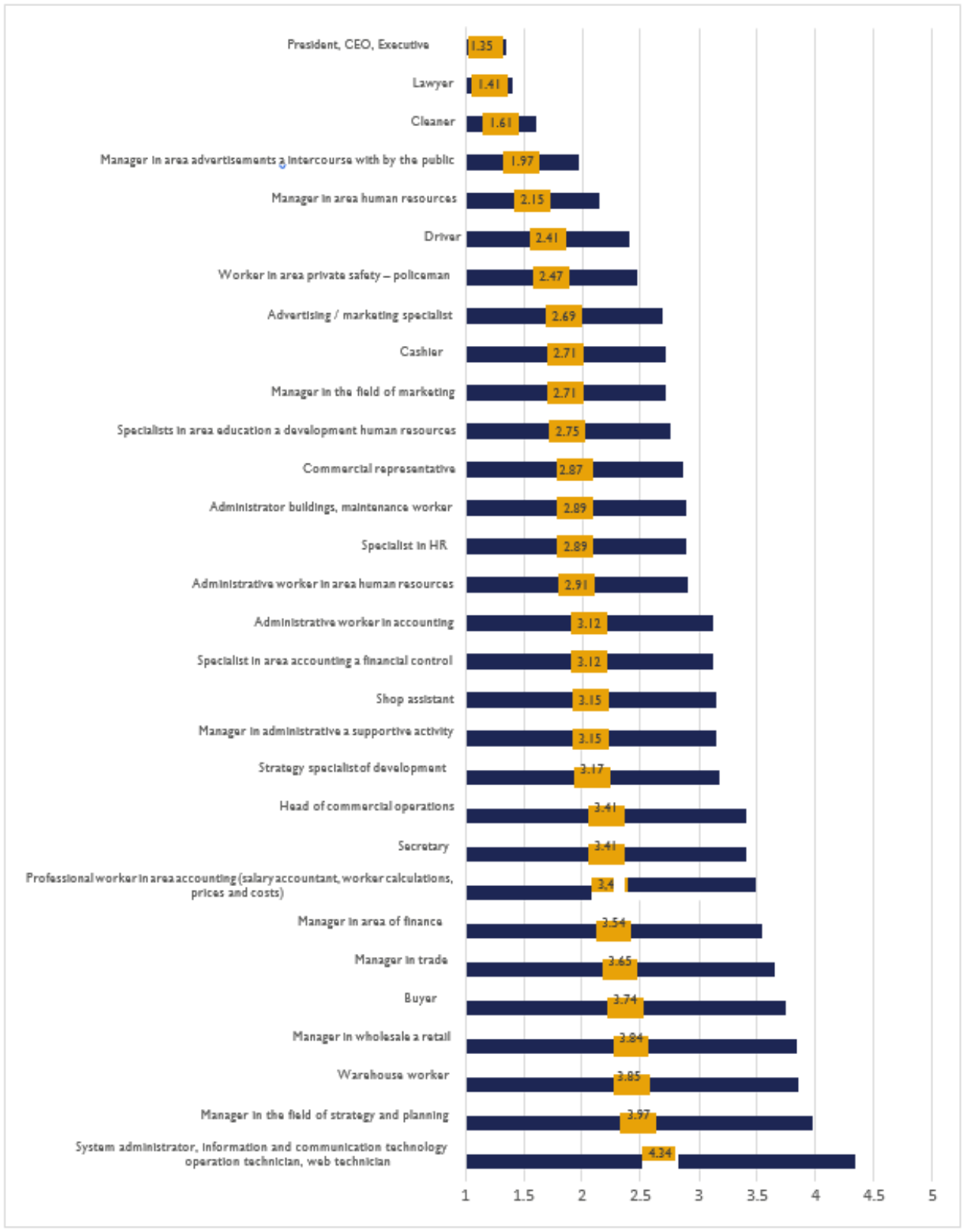
Growing importance of qualities/skills					
	Workers in the warehouse	Drivers	Manufacturers and processors, tasters	Administrative workers	Buyers
Physical endurance and endurance	100.00%	76.92%	93.75%	60.00%	80.00%
Literacy	38.89%	38.46%	81.25%	80.00%	80.00%
Mathematical skills	27.78%	7.69%	31.25%	70.00%	60.00%
Evaluation of information	66.67%	61.54%	75.00%	50.00%	80.00%
Manual skills	94.44%	76.92%	87.50%	60.00%	40.00%
Negotiation and communication skills	16.67%	53.85%	75.00%	70.00%	100.00%
Persuasiveness	27.78%	38.46%	56.25%	50.00%	100.00%
Managerial skills	5.56%	23.08%	31.25%	60.00%	60.00%
Comprehensive problem solving	66.67%	76.92%	75.00%	90.00%	80.00%
Critical thinking	55.56%	38.46%	62.50%	80.00%	40.00%
Social sensitivity	33.33%	69.23%	31.25%	30.00%	40.00%
Analytical thinking	38.89%	76.92%	50.00%	70.00%	80.00%
Active listening, active learning	61.11%	53.85%	50.00%	80.00%	80.00%
Flexibility	83.33%	76.92%	31.25%	30.00%	40.00%
Creativity	66.67%	23.08%	31.25%	40.00%	60.00%
Empathy	55.56%	38.46%	56.25%	50.00%	60.00%
Team management	83.33%	69.23%	75.00%	80.00%	60.00%
A sense of responsibility	27.78%	69.23%	75.00%	70.00%	80.00%
Independent work	16.67%	76.92%	31.25%	50.00%	40.00%
Foresight and the ability to plan	55.56%	46.15%	62.50%	80.00%	80.00%

Source: Own processing.

Annex 11 - Declining importance of characteristics/ skills for the future in the food sector

Decline in importance of qualities/skills					
	Workers in the warehouse	Drivers	Manufacturers and processors, tasters	Administrative workers	Buyers
Physical endurance and endurance	0.00%	0.00%	0.00%	10.00%	0.00%
Literacy	5.56%	0.00%	0.00%	0.00%	0.00%
Mathematical skills	11.11%	0.00%	6.25%	0.00%	20.00%
Evaluation of information	5.56%	7.69%	0.00%	0.00%	0.00%
Manual skills	0.00%	7.69%	0.00%	0.00%	20.00%
Negotiation and communication skills	0.00%	0.00%	0.00%	0.00%	0.00%
Persuasiveness	0.00%	0.00%	6.25%	0.00%	0.00%
Managerial skills	0.00%	0.00%	12.50%	20.00%	0.00%
Comprehensive problem solving	27.78%	0.00%	0.00%	0.00%	0.00%
Critical thinking	0.00%	15.38 %	0.00%	0.00%	0.00%
Social sensitivity	5.56%	0.00%	0.00%	0.00%	0.00%
Analytical thinking	0.00%	0.00%	0.00%	0.00%	0.00%
Active listening, active learning	0.00%	0.00%	12.50%	0.00%	0.00%
Flexibility	0.00%	0.00%	18.75%	10.00%	0.00%
Creativity	0.00%	7.69%	0.00%	10.00%	0.00%
Empathy	5.56%	0.00%	6.25%	0.00%	20.00%
Team management	0.00%	0.00%	0.00%	0.00%	0.00%
A sense of responsibility	0.00%	0.00%	0.00%	0.00%	0.00%
Independent work	5.56%	0.00%	6.25%	0.00%	0.00%
Foresight and the ability to plan	0.00%	0.00%	0.00%	0.00%	0.00%

Annex 12 - The impact of digitization and automation on selected job positions according to the estimate of employers in companies from the trade sector in Slovakia (1 represents "does not affect at all" and 5 represents "affects the most"



Source: Own processing.

Annex 13 - The impact of digitization and/or automation on changes in the work tasks and contents of individual job positions in the trade sector

Position	Work tasks do not change significantly due to digitization/automation	Work tasks are changing significantly due to digitization/automation	It is true that work tasks will be fully automated and the job position will disappear
President, CEO, Executive	76.67%	23.33%	0.00%
Manager in the field of finance	73.33%	26.67%	0.00%
Manager in the field of human resources	93.33%	6.67%	0.00%
Manager in the field of strategy and planning	53.33%	46.67%	0.00%
Manager of administrative and support activities not specified elsewhere	56.67%	36.67%	6.67%
Manager in the field of trade	73.33%	26.67%	0.00%
Manager in the field of marketing	90.00%	10.00%	0.00%
Managing worker in advertisements and communication with public	73.33%	23.33%	3.33%
Manager in wholesale and retail	60.00%	40.00%	0.00%
Specialist in accounting and financial control	70.00%	30.00%	0.00%
Specialist in strategy and development	66.67%	23.33%	10.00%
Specialist in HR	75.00%	0.00%	25.00%
Specialists in the field of education and development of human resources	83.33%	3.33%	13.33%
Specialist in advertising and marketing	73.33%	20.00%	6.67%
Systems administrator, information operation technician and of communication technologies, web technician	53.33%	46.67%	0.00%
A lawyer	30.00%	3.33%	0.00%
Professional worker in area accounting (salary accountant, worker calculations, prices and costs)	53.33%	36.67%	10.00%
Sales representative	73.33%	26.67%	0.00%
Buyer	80.00%	20.00%	0.00%
Administrative worker in accounting	66.67%	23.33%	10.00%
Administrative worker in the field of human resources	76.67%	6.67%	16.67%
The secretary	60.00%	33.33%	6.67%
Warehouse worker	80.00%	20.00%	0.00%
Facility manager, maintenance worker	76.67%	6.67%	16.67%
Head of business operations	73.33%	26.67%	0.00%
Salesman	93.33%	0.00%	6.67%
Cashier	83.33%	0.00%	16.67%
A worker in the field of private security - a policeman	76.67%	10.00%	13.33%
Cleaning lady	56.67%	0.00%	43.33%
Driver	83.33%	13.33%	3.33%

Source: Own processing.

Annex14 - The importance of using the below-mentioned technologies in your company in order to increase the efficiency of digitization in the trade sector

	Yes	Not	I do not know
BIG DATA analysis (data analytics)	86.67%	0.00%	13.33%
Artificial intelligence	46.67%	20.00%	33.33%
Robotics and automation	70.00%	6.67%	23.33%
Internet of Things (IoT) via Wi-Fi, Bluetooth	83.33%	3.33%	13.33%
Cloud computing (storage on a server)	93.33%	0.00%	6.67%
Blockchain (a special kind of distributed decentralized database storing constantly with expanding count records, which ones They are protected against unauthorized intervention)	6.67%	60.00%	33.33%
Intelligent (monitoring) sensors	80.00%	6.67%	13.33%
Mobile technologies (5G)	20.00%	16.67%	63.33%
GPS systems	6.67%	63.33%	30.00%
Biotechnological facilities	13.33%	66.67%	20.00%
3D printing	6.67%	90.00%	3.33%

Source: Own processing.

Annex 15 - The importance of the qualities/skills assigned to the respective job positions, including the growth/decrease in their importance in the future in the trade sector

		Administrative workers	Commercial representatives	Workers in warehouse	Sellers
Quality (skill) / average importance value		3.64	3.78	3.18	3.47
Physical endurance and endurance	3.79	3.15	3.76	4.35	3.89
Literacy	3.50	4.05	3.67	3.13	3.15
Mathematical skills	3.40	3.87	3.69	2.81	3.22
Evaluation of information	3.46	4.15	3.29	2.72	3.67
Manual skills	3.87	3.83	3.79	3.97	3.89
Negotiation and communication skills	3.60	3.71	4.12	2.46	4.11
Persuasiveness	3.56	3.49	4.31	2.61	3.83
Managerial skills	3.21	3.51	3.86	2.33	3.12
Comprehensive problem solving	3.66	3.67	3.91	3.82	3.22
Critical thinking	3.25	3.81	3.92	2.55	2.71
Social sensitivity	3.30	3.29	3.54	3.23	3.12
Analytical thinking	3.49	3.60	3.71	3.05	3.58
Active listening, active learning	3.81	3.76	3.69	3.66	4.11
Flexibility	3.60	3.39	3.85	3.48	3.69
Creativity	3.06	3.15	3.56	2.13	3.41
Empathy	3.19	3.25	3.23	2.92	3.37
Team management	3.63	3.97	4.11	3.33	3.11
A sense of responsibility	3.89	4.11	3.77	3.83	3.86
Independent work	3.42	3.43	3.92	3.43	2.91
Foresight and the ability to plan	3.67	3.66	3.83	3.69	3.48

Source: Own processing.

Annex 16 - Growing importance of qualities/ skills for the future in the trade sector

Growing importance o qualities/skills				
	Administrative workers	Sales representatives	Workers in the warehouse	Sellers
Physical endurance and endurance	59.09%	78.95%	100.00%	87.50%
Literacy	72.73%	84.21%	45.45%	62.50%
Mathematical skills	72.73%	73.68%	27.27%	50.00%
Evaluation of information	77.27%	68.42%	72.73%	50.00%
Manual skills	45.45%	63.16%	100.00%	75.00%
Negotiation and communication skills	68.18%	94.74%	63.64%	100.00%
Persuasiveness	40.91%	84.21%	54.55%	87.50%
Managerial skills	54.55%	63.16%	27.27%	62.50%
Comprehensive problem solving	72.73%	84.21%	72.73%	87.50%
Critical thinking	68.18%	78.95%	54.55%	62.50%
Social sensitivity	50.00%	63.16%	45.45%	50.00%
Analytical thinking	77.27%	84.21%	27.27%	62.50%
Active listening, active learning	59.09%	89.47%	72.73%	87.50%
Flexibility	54.55%	68.42%	63.64%	87.50%
Creativity	45.45%	63.16%	45.45%	62.50%
Empathy	50.00%	47.37%	54.55%	37.50%
Team management	86.36%	84.21%	81.82%	87.50%
A sense of responsibility	81.82%	78.95%	90.91%	75.00%
Independent work	54.55%	84.21%	72.73%	62.50%
Foresight and the ability to plan	63.64%	89.47%	81.82%	87.50%

Source: Own processing.

Annex 17 – Decline in the importance of qualities/ skills for the future in the trade sector

Decline in importance of qualities/skills				
	Administrative workers	Sales representatives	Workers in the warehouse	Sellers
Physical endurance and endurance	0.00%	5.26%	0.00%	0.00%
Literacy	0.00%	5.26%	18.18%	12.50%
Mathematical skills	0.00%	0.00%	18.18%	12.50%
Evaluation of information	4.55%	0.00%	9.09%	12.50%
Manual skills	0.00%	10.53%	0.00%	0.00%
Negotiation and communication skills	0.00%	0.00%	0.00%	0.00%
Persuasiveness	13.64%	0.00%	18.18%	0.00%
Managerial skills	0.00%	0.00%	0.00%	12.50%
Comprehensive problem solving	0.00%	0.00%	0.00%	0.00%
Critical thinking	0.00%	0.00%	0.00%	0.00%
Social sensitivity	9.09%	0.00%	18.18%	12.50%
Analytical thinking	0.00%	0.00%	0.00%	0.00%
Active listening, active learning	0.00%	0.00%	0.00%	0.00%
Flexibility	0.00%	0.00%	0.00%	0.00%
Creativity	13.64%	5.26%	0.00%	0.00%
Empathy	0.00%	0.00%	9.09%	25.00%
Team management	0.00%	0.00%	0.00%	0.00%
A sense of responsibility	4.55%	0.00%	0.00%	0.00%
Independent work	0.00%	5.26%	0.00%	12.50%
Foresight and the ability to plan	0.00%	0.00%	9.09%	0.00%

Source: Own processing.

Annex 18 - Structure of employees as respondents in the questionnaire intended for employees in companies from the food sector in Slovakia

Together	1053	100.00%
President, CEO, Executive	31	2.94%
Manager in the field of finance	32	3.04%
Manager in the field of human resources	31	2.94%
Manager in the field of strategy and planning	33	3.13%
Manager of administrative and support activities not specified elsewhere	31	2.94%
Manager in the field of trade	33	3.13%
Manager in the field of marketing	32	3.04%
Manager in the field of advertising and public relations	31	2.94%
Manager in the field of research and development	10	0.95%
Manager in industry - food production	35	3.32%
Specialist in accounting and financial control	35	3.32%
Specialist in strategy and development	19	1.80%
Specialist in HR	32	3.04%
Specialist in the field of education and development of human resources	32	3.04%
Specialist in advertising and marketing	31	2.94%
System administrator, information and communication technology operation technician, web technician	32	3.04%
A lawyer	10	0.95%
Professional worker in area accounting (salary accountant, worker calculations, prices a costs)	35	3.32%
Master (supervisor) in food production	35	3.32%
Technician in agriculture and food industry	31	2.94%
Sales representative	32	3.04%
Buyer	31	2.94%
Administrative worker in accounting	36	3.42%
Administrative worker in the field of human resources	32	3.04%
The secretary	35	3.32%
Warehouse worker	35	3.32%
Facility manager, maintenance worker	31	2.94%
Manufacturer of bakery and confectionery products	35	3.32%
Meat and fish processor and similar production	29	2.75%
Manufacturer of milk products	34	3.23%
Processor of fruits, vegetables and other plant products (mostly manual)	32	3.04%
Food and beverage taster and quality inspector	31	2.94%
Cleaning lady	34	3.23%
Driver	35	3.32%

Source: Own processing.

Annex 19 - Structure of the importance of digital skills and competencies necessary for the performance of employees' work as respondents in the questionnaire addressed to employees in companies from the food sector in Slovakia (1 indicates low importance and 5 the greatest importance)

Digital skill/ Average	2.98
Collection, use and storage of information (surfing on the Internet)	4.11
Digital communication on the Internet (e-mail, video conference, etc.).	4.45
Creating digital content (word processing, spreadsheets, creating and using databases, etc.).	3.99
Interpretation and presentation of digital content (self-education, presentation creation, etc.).	4.22
Planning, control, logging (geolocation, inventory, etc.).	1.60
Operation of computer-controlled tools, machines and equipment (CNC, CAM, etc.).	2.31
Creating and using computer programs (CAD).	1.38
Use of equipment to protect objects and property (access systems, etc.)	1.12
IT and data security (responsible use of devices and applications, adequate protection against leakage of sensitive data etc.).	3.61

Source: Own processing.

Annex 20 - Detailed structure of answers by profession to the question of whether they expect their job position to disappear in the next 5 years

Position	It's definitely not going to happen.	It may or may not happen.	I do not know.	There is high probability it will happen	It will definitely happen.
President, CEO, Executive	100.00%				
Manager in the field of finance	93.75%	6.25%			
Manager in the field of human resources	90.32%	9.68%			
Manager in the field of strategy and planning	81.82%	3.03%	15.15%		
Manager of administrative and support activities not specified elsewhere	83.87%		16.13%		
Manager in the field of trade	93.94%		6.06%		
Manager in the field of marketing	100.00%				
Manager in the field of advertising and public relations	90.32%		9.68%		
Manager in the field of research and development	100.00%				
Manager in industry - food production	91.43%		8.57%		
Specialist in accounting and financial control	77.14%		22.86%		
Specialist in strategy and development	84.21%		15.79%		
Specialist in HR	65.63%	3.13%	31.25%		
Specialist in the field of education and development of human resources	21.88%	15.63%	62.50%		
Specialist in advertising and marketing	96.77%		3.23%		
System administrator, information and communication technology operation technician, web technician	81.25%	9.38%	9.38%		
A lawyer	100.00%				
Specialist in the field of accounting (payroll accountant, calculation, price and cost worker)	68.57%	14.29%	17.14%		
Master (supervisor) in food production	91.43%	8.57%			
Technician in agriculture and food industry	80.65%	16.13%		3.23%	
Sales representative	87.50%	3.13%	9.38%		
Buyer	83.87%	9.68%	6.45%		
Administrative worker in accounting	69.44%	16.67%	13.89%		
Administrative worker in the field of human resources	65.63%	12.50%	15.63%	6.25%	
The secretary	88.57%		2.86%	8.57%	
Warehouse worker	51.43%	22.86%	11.43%		14.29%
Facility manager, maintenance worker	90.32%	6.45%	3.23%		
Manufacturer of bakery and confectionery products	88.57%	2.86%	8.57%		
Meat and fish processor and similar production	100.00%				
Manufacturer of milk products	82.35%	8.82%	8.82%		
Processor of fruits, vegetables and other plant products (mostly manual)	96.88%		3.13%		
Food and beverage taster and quality inspector	77.42%	19.35%	3.23%		
Cleaning lady	32.35%	47.06%	17.65%	2.94%	
Driver	77.14%	14.29%	8.57%		

Source: Own processing.

Annex 21 - Importance of skills/qualities within individual job positions in the food sector (1 indicates unimportant and 5 very important)

Skill	Average Value	Physical resistance and	Literacy	Mathematical skills	Evaluation of information	Manually skills	Negotiation and communicati	Convincingly _	Managerial skills	Comprehensive problem solving	Critical thinking	Social receptivity	Analytical thinking	Active listening: active learning	Flexibility	Creativity	Empathy	Team management	A sense of responsibilit y	Independent work	Foresight and the ability to plan
President, CEO, Executive	4.25	2.50	4.78	4.31	4.80	2.71	4.61	4.30	5.00	4.90	4.15	3.78	4.78	4.47	4.15	3.15	4.25	4.70	4.70	4.10	4.78
Manager in the field of finance	3.84	2.30	4.17	3.37	3.40	3.66	3.15	4.05	4.62	4.65	3.63	4.92	4.79	3.28	3.12	3.82	4.44	3.93	4.57	3.39	3.52
Manager in the field of human resources	3.79	3.00	4.55	3.35	2.87	4.78	4.12	4.69	3.50	3.26	4.46	4.42	4.11	3.30	2.97	4.69	4.53	3.69	3.21	3.35	2.86
Manager in the field of strategy and planning	3.61	2.70	4.22	3.21	3.58	4.82	4.11	3.71	3.46	3.02	3.58	3.18	2.52	3.87	4.44	4.61	2.57	3.25	4.10	2.64	4.59
Manager of administrative and support activities not specified elsewhere	3.56	1.70	4.99	4.49	2.70	3.17	2.98	4.10	3.33	3.47	2.59	4.05	3.05	3.23	4.85	3.41	3.41	3.80	4.69	4.20	2.95
Manager in the field of trade	3.73	2.00	3.96	3.63	3.63	4.50	2.60	3.10	3.75	4.59	4.38	3.74	4.14	4.85	2.77	3.70	3.32	4.34	4.34	2.62	4.54
Manager in the field of marketing	3.77	2.10	4.73	3.54	3.54	2.62	4.68	3.71	4.15	3.89	3.80	4.02	3.74	4.25	4.67	4.79	2.78	3.87	3.06	4.56	2.83
Manager in the field of advertising and public relations	3.51	1.70	3.06	2.85	3.68	4.58	3.65	4.13	4.03	3.15	3.96	4.00	3.93	2.70	2.82	4.14	3.13	3.25	3.70	4.18	3.46
Manager in the field of research and development	3.91	2.10	3.84	3.09	4.23	4.76	3.99	3.23	4.71	4.45	4.83	4.35	2.56	4.48	4.45	3.93	3.24	2.76	4.77	4.02	4.37
Manager in industry - food production	3.69	3.50	4.98	2.66	3.13	3.19	3.86	4.09	4.18	3.75	3.57	4.38	3.03	2.83	3.22	4.51	3.15	4.15	3.60	4.67	3.27
Specialist in accounting and financial control	3.77	2.10	4.36	3.30	3.83	4.41	4.37	4.15	3.93	4.72	3.57	4.69	3.82	2.70	2.88	2.66	4.81	3.86	3.89	3.05	4.34
Specialist in strategy and development	3.61	2.50	4.36	3.61	3.14	3.11	4.19	4.09	4.77	3.17	2.60	3.88	2.67	2.68	3.75	3.27	4.50	4.39	3.75	4.51	3.30
Specialist in HR	3.74	2.10	4.43	4.12	4.18	4.68	2.77	4.67	2.59	3.98	3.09	4.23	3.35	3.83	3.76	4.37	3.46	3.87	3.25	3.56	4.51
Specialist in the field of education and development of human resources	3.49	2.10	3.35	4.42	3.48	3.36	3.98	3.72	3.70	3.44	3.71	3.91	2.78	3.78	2.91	2.76	3.14	2.82	4.65	3.90	3.88
Specialist in advertising and marketing	3.59	1.90	3.54	3.43	2.94	3.25	3.75	3.24	2.99	3.62	3.16	4.62	2.95	3.90	4.16	3.66	4.54	4.42	4.51	3.67	3.57
System administrator, information and communication technology operation technician, web technician	3.87	3.20	4.77	3.50	2.94	4.82	3.83	3.43	3.21	4.12	3.81	4.10	3.26	4.54	4.28	3.44	4.68	4.13	3.59	4.31	3.49
A lawyer	3.52	1.70	3.29	3.40	3.48	3.49	3.53	3.92	2.69	4.06	4.10	2.50	2.99	4.84	3.87	2.98	3.16	4.67	3.31	3.62	4.77
Specialist in the field of accounting (payroll accountant, calculation, price and cost worker)	3.72	1.90	3.70	4.28	4.79	3.35	3.38	3.09	3.79	4.04	3.15	2.94	4.30	3.43	2.67	4.05	4.00	4.67	3.94	4.66	4.25
Master (supervisor) in food production	3.67	4.00	3.70	3.57	3.96	3.47	3.24	4.61	2.99	3.08	3.53	4.25	3.29	3.51	3.37	4.60	3.32	3.42	4.26	3.07	4.20
Technician in agriculture and food industry	3.65	4.20	4.36	3.05	4.61	4.54	2.72	3.38	4.12	2.58	3.10	3.87	2.56	3.57	2.66	4.62	4.61	4.09	3.79	3.26	3.23
Sales representative	3.38	3.50	4.10	3.18	3.03	3.68	3.52	2.51	3.27	3.82	3.13	2.59	2.59	4.45	2.81	2.82	2.92	3.65	4.12	3.42	4.53
Buyer	3.76	3.13	3.67	3.85	4.24	3.48	4.31	4.20	3.71	3.96	3.81	3.12	3.89	3.69	3.56	3.12	3.87	3.71	4.05	3.71	4.10
Administrative worker in accounting	3.75	1.90	3.04	4.60	3.62	3.74	4.48	3.93	4.14	2.69	4.76	4.08	4.12	4.84	3.91	2.96	4.55	2.76	3.91	3.60	3.45
Administrative worker in the field of human resources	3.92	2.30	4.22	4.17	3.63	3.34	3.05	4.70	4.60	3.42	4.35	2.85	3.98	4.56	4.82	4.59	4.14	3.76	4.17	3.95	3.77
The secretary	3.90	2.50	4.65	2.97	3.70	4.00	3.79	4.58	3.99	3.01	4.17	3.46	4.16	2.70	4.67	4.50	4.67	4.43	4.75	3.23	4.04
Warehouse worker	3.51	4.12	2.78	2.64	3.40	4.84	3.12	3.41	2.78	3.67	3.95	4.10	2.78	3.78	3.33	3.05	3.26	3.42	4.71	3.86	3.22
Facility manager, maintenance worker	3.66	4.10	3.78	3.58	4.77	3.35	4.25	4.30	3.48	3.73	3.18	2.66	3.07	4.28	3.48	2.91	3.68	3.75	4.21	3.47	3.15
Manufacturer of bakery and confectionery products	3.64	3.90	4.16	2.52	3.41	4.15	3.29	3.48	4.67	3.11	3.71	3.78	4.33	3.41	3.85	3.49	2.89	3.32	3.34	3.39	4.59
Meat and fish processor and similar production	3.82	4.50	4.47	3.36	3.17	4.31	4.02	3.14	3.03	2.51	3.50	3.43	4.08	3.62	3.73	4.17	4.67	4.68	3.25	4.60	4.23
Manufacturer of milk products	3.70	4.15	3.25	4.11	4.43	4.64	3.19	4.00	3.95	2.93	4.11	4.11	3.19	3.15	2.78	3.28	4.55	3.28	4.31	3.77	2.72
Processor of fruits, vegetables and other plant products (mostly manual)	3.76	4.30	3.58	3.19	2.84	4.27	2.86	4.08	2.79	4.44	3.71	4.00	3.50	3.97	4.45	4.28	3.44	3.64	3.64	3.41	4.83
Food and beverage taster and quality inspector	3.73	4.10	3.24	3.41	4.44	4.50	2.80	3.71	3.78	3.74	3.19	3.05	3.46	4.12	3.99	3.96	4.39	3.17	3.61	4.17	3.85
Cleaning lady	3.54	4.00	2.87	3.05	4.76	4.04	3.32	3.94	3.47	3.12	2.31	2.53	3.52	2.61	4.71	2.21	4.79	4.06	3.65	4.12	3.70
Driver	3.72	3.78	3.32	3.01	4.71	4.82	3.06	3.29	3.26	3.71	4.60	2.76	4.35	2.53	4.40	2.48	4.73	3.54	3.15	4.17	4.80

Source: Own processing.

Annex 22 - Expected growth in the importance of skills/ attributes within individual job positions in the future in the food sector

Skill _	Physical resistance and perseverance	Literacy	Mathematical skills	Evaluation of information	Manually skills	Negotiation and communication skills	Persuasiveness	Managerial skills	Comprehensive problem solving	Critical thinking	Social receptivity	Analytical thinking	Active listening: active learning	Flexibility	Creativity	Empathy	Team	The sense of responsibility	Independent work	Foresight and the ability to plan
Position / average value	77.82%	70.43%	73.22%	78.32%	72.18%	77.75%	78.84%	75.11%	79.37%	76.27%	75.71%	75.09%	81.70%	79.87%	77.51%	76.86%	78.59%	80.95%	64.88%	80.47%
President, CEO, Executive	80.65%	61.29%	67.74%	93.55%	32.26%	96.77%	87.10%	96.77%	96.77%	96.77%	80.65%	93.55%	96.77%	87.10%	93.55%	93.55%	96.77%	93.55%	22.58%	96.77%
Manager in the field of finance	71.88%	68.75%	96.88%	90.63%	43.75%	90.63%	93.75%	96.88%	96.88%	96.88%	90.63%	96.88%	90.63%	93.75%	84.38%	87.50%	96.88%	96.88%	53.13%	96.88%
Manager in the field of human resources	74.19%	87.10%	80.65%	96.77%	32.26%	90.32%	93.55%	96.77%	87.10%	96.77%	93.55%	96.77%	96.77%	96.77%	90.32%	96.77%	96.77%	96.77%	48.39%	96.77%
Manager in the field of strategy and planning	87.88%	78.79%	96.97%	66.67%	66.67%	93.94%	69.70%	78.79%	81.82%	78.79%	66.67%	72.73%	93.94%	93.94%	93.94%	69.70%	72.73%	87.88%	60.61%	90.91%
Manager of administrative and support activities not specified elsewhere	64.52%	67.74%	83.87%	67.74%	87.10%	67.74%	64.52%	67.74%	80.65%	77.42%	70.97%	64.52%	96.77%	64.52%	90.32%	93.55%	87.10%	64.52%	54.84%	77.42%
Manager in the field of trade	72.73%	60.61%	93.94%	63.64%	87.88%	93.94%	60.61%	75.76%	96.97%	87.88%	90.91%	90.91%	84.85%	75.76%	90.91%	72.73%	69.70%	81.82%	39.39%	78.79%
Manager in the field of marketing	71.88%	78.13%	65.63%	100.00%	78.13%	78.13%	75.00%	62.50%	90.63%	62.50%	75.00%	90.63%	65.63%	62.50%	90.63%	78.13%	65.63%	78.13%	78.13%	90.63%
Manager in the field of advertising and public relations	64.52%	67.74%	87.10%	70.97%	83.87%	83.87%	100.00%	83.87%	90.32%	100.00%	67.74%	77.42%	90.32%	87.10%	70.97%	80.65%	67.74%	70.97%	67.74%	70.97%
Manager in the field of research and development	100.00%	10.00%	80.00%	80.00%	50.00%	100.00%	30.00%	40.00%	50.00%	10.00%	100.00%	60.00%	40.00%	50.00%	60.00%	40.00%	90.00%	70.00%	60.00%	80.00%
Manager in industry - food production	74.29%	94.29%	57.14%	74.29%	65.71%	100.00%	57.14%	71.43%	94.29%	62.86%	57.14%	57.14%	65.71%	60.00%	71.43%	65.71%	80.00%	77.14%	34.29%	82.86%
Specialist in accounting and financial control	80.00%	91.43%	100.00%	88.57%	57.14%	65.71%	85.71%	77.14%	80.00%	100.00%	68.57%	57.14%	80.00%	82.86%	65.71%	60.00%	62.86%	91.43%	37.14%	62.86%
Specialist in strategy and development	31.58%	31.58%	68.42%	42.11%	10.53%	15.79%	84.21%	21.05%	5.26%	42.11%	21.05%	36.84%	15.79%	57.89%	78.95%	36.84%	10.53%	94.74%	36.84%	94.74%
Specialist in HR	84.38%	84.38%	78.13%	84.38%	90.63%	68.75%	62.50%	62.50%	78.13%	68.75%	90.63%	90.63%	71.88%	78.13%	87.50%	87.50%	90.63%	75.00%	34.38%	62.50%
Specialist in the field of education and development of human resources	93.75%	71.88%	75.00%	75.00%	93.75%	62.50%	90.63%	90.63%	78.13%	84.38%	84.38%	68.75%	87.50%	87.50%	62.50%	78.13%	96.88%	84.38%	25.00%	71.88%
Specialist in advertising and marketing	67.74%	64.52%	77.42%	70.97%	77.42%	83.87%	90.32%	90.32%	93.55%	87.10%	77.42%	83.87%	64.52%	74.19%	64.52%	67.74%	80.65%	90.32%	67.74%	83.87%
Systems administrator, information and communication technology operation technician, web technician	90.63%	75.00%	75.00%	78.13%	90.63%	62.50%	87.50%	65.63%	84.38%	87.50%	65.63%	65.63%	68.75%	81.25%	96.88%	87.50%	90.63%	78.13%	43.75%	93.75%
A lawyer	90.00%	80.00%	50.00%	90.00%	50.00%	100.00%	100.00%	60.00%	70.00%	90.00%	80.00%	50.00%	100.00%	70.00%	50.00%	40.00%	80.00%	100.00%	80.00%	80.00%
Professional employee in the field of accounting (payroll accountant, employee of calculations, prices and costs)	57.14%	80.00%	57.14%	57.14%	100.00%	57.14%	77.14%	80.00%	71.43%	57.14%	68.57%	62.86%	88.57%	68.57%	100.00%	94.29%	88.57%	57.14%	68.57%	62.86%
Master (supervisor) in food production	71.43%	85.71%	80.00%	71.43%	77.14%	74.29%	77.14%	60.00%	100.00%	82.86%	74.29%	57.14%	91.43%	71.43%	100.00%	91.43%	68.57%	88.57%	71.43%	88.57%
Technician in agriculture and food industry	70.97%	67.74%	70.97%	67.74%	64.52%	100.00%	87.10%	83.87%	77.42%	93.55%	70.97%	64.52%	74.19%	80.65%	70.97%	93.55%	70.97%	80.65%	74.19%	77.42%
Sales representative	84.38%	75.00%	90.63%	87.50%	78.13%	65.63%	62.50%	68.75%	65.63%	68.75%	65.63%	81.25%	90.63%	93.75%	78.13%	68.75%	81.25%	68.75%	90.63%	100.00%
Buyer	70.97%	87.10%	80.65%	87.10%	61.29%	100.00%	96.77%	90.32%	87.10%	83.87%	67.74%	93.55%	90.32%	83.87%	77.42%	93.55%	100.00%	96.77%	87.10%	100.00%
Administrative worker in accounting	55.56%	72.22%	58.33%	72.22%	86.11%	83.33%	69.44%	91.67%	77.78%	63.89%	75.00%	86.11%	83.33%	91.67%	55.56%	88.89%	80.56%	69.44%	66.67%	72.22%
Administrative worker in the field of human resources	71.88%	68.75%	84.38%	100.00%	75.00%	96.88%	81.25%	84.38%	87.50%	65.63%	71.88%	65.63%	100.00%	78.13%	100.00%	84.38%	96.88%	62.50%	75.00%	65.63%
The secretary	82.86%	94.29%	77.14%	60.00%	91.43%	82.86%	77.14%	91.43%	94.29%	74.29%	80.00%	60.00%	85.71%	82.86%	71.43%	57.14%	68.57%	60.00%	91.43%	62.86%
Warehouse worker	100.00%	37.14%	54.29%	82.86%	74.29%	62.86%	91.43%	77.14%	82.86%	62.86%	80.00%	97.14%	100.00%	82.86%	65.71%	94.29%	60.00%	74.29%	77.14%	60.00%
Facility manager, maintenance worker	80.65%	74.19%	100.00%	74.19%	67.74%	90.32%	83.87%	67.74%	83.87%	93.55%	93.55%	74.19%	90.32%	93.55%	90.32%	87.10%	83.87%	64.52%	100.00%	83.87%
Manufacturer of bakery and confectionery products	100.00%	80.00%	57.14%	91.43%	91.43%	71.43%	82.86%	94.29%	74.29%	94.29%	100.00%	91.43%	88.57%	74.29%	71.43%	57.14%	60.00%	91.43%	80.00%	60.00%
Meat and fish processor and similar production	93.10%	72.41%	82.76%	79.31%	86.21%	86.21%	68.97%	93.10%	68.97%	72.41%	72.41%	79.31%	79.31%	82.76%	75.86%	86.21%	100.00%	89.66%	100.00%	79.31%
Manufacturer of milk products	100.00%	100.00%	73.53%	79.41%	58.82%	76.47%	58.82%	67.65%	97.06%	58.82%	100.00%	88.24%	70.59%	85.29%	70.59%	76.47%	70.59%	100.00%	88.24%	88.24%
Processor of fruits, vegetables and other plant products (mostly manual)	78.13%	75.00%	71.88%	87.50%	93.75%	84.38%	84.38%	78.13%	62.50%	78.13%	78.13%	100.00%	93.75%	78.13%	65.63%	81.25%	78.13%	75.00%	87.50%	71.88%
Food and beverage taster and quality inspector	74.19%	67.74%	64.52%	93.55%	70.97%	67.74%	93.55%	77.42%	96.77%	77.42%	90.32%	74.19%	64.52%	93.55%	90.32%	83.87%	87.10%	70.97%	67.74%	83.87%
Cleaning lady	94.12%	41.18%	23.53%	38.24%	91.18%	29.41%	64.71%	50.00%	67.65%	55.88%	61.76%	38.24%	82.35%	82.35%	35.29%	67.65%	58.82%	85.29%	76.47%	73.53%
Driver	60.00%	42.86%	28.57%	100.00%	88.57%	60.00%	91.43%	60.00%	48.57%	80.00%	42.86%	85.71%	94.29%	88.57%	74.29%	71.43%	82.86%	85.71%	60.00%	94.29%

Annex 23 - Expected decline in the importance of skills/ qualities within individual job positions in the future in the food sector

Skill	Physical resistance and perseverance	Literacy	Mathematical skills	Evaluation of information	Manually skills	Negotiation and communication skills	Persuasiveness	Managerial skills	Comprehensive problem solving	Critical thinking	Social receptivity	Analytical thinking	Active listening, active learning	Flexibility	Creativity	Empathy	Team	The sense of responsibility	Independent work	Foresight and the ability to plan
Average	0.08%	0.00%	0.00%	0.00%	0.18%	0.19%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.40%	0.00%	0.00%	0.00%	0.29%	0.00%
President, CEO, Executive	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Manager in the field of finance	0.00%	0.00%	0.00%	0.00%	6.25%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Manager in the field of human resources	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Manager in the field of strategy and planning	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Manager of administrative and support activities not specified elsewhere	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Manager in the field of trade	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Manager in the field of marketing	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Manager in the field of advertising and public relations	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Manager in the field of research and development	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Manager in industry - food production	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Specialist in accounting and financial control	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Specialist in strategy and development	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Specialist in HR	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Specialist in the field of education and development of human resources	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Specialist in advertising and marketing	0.00%	0.00%	0.00%	0.00%	0.00%	3.23%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Administrator systems, technician ofoperations in informational a communication technology, web technician	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
A lawyer	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	10.00%	0.00%
Professional worker in area accounting (salary accountant, worker calculations, prices a costs)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Master (supervisor) in food production	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Technician in agriculture and food industry	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Sales representative	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Buyer	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Administrative worker in accounting	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Administrative worker in the field of human resources	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
The secretary	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Warehouse worker	2.86%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	14.29%	0.00%	0.00%	0.00%	0.00%	0.00%
Facility manager, maintenance worker	0.00%	0.00%	0.00%	0.00%	0.00%	3.23%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.23%	0.00%	0.00%	0.00%	0.00%	0.00%
Manufacturer of bakery and confectionery products	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	11.43%	0.00%	0.00%	0.00%	0.00%	0.00%
Meat and fish processor and similar production	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	6.90%	0.00%	0.00%	0.00%	0.00%	0.00%
Manufacturer of milk products	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.94%	0.00%	0.00%	0.00%	0.00%	0.00%
Processor of fruits, vegetables and other plant products (mostly manual)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Food and beverage taster and quality inspector	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Cleaning lady	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	5.88%	0.00%	0.00%	0.00%	0.00%	0.00%
Driver	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.86%	0.00%	0.00%	0.00%	0.00%	0.00%

Source: Own processing.

Annex 24 - Structure of employees as respondents in the questionnaire intended for employees in companies from the trade sector in Slovakia

Together	880	100.00%
President, CEO, Executive	30	3.41%
Manager in the field of finance	30	3.41%
Manager in the field of human resources	30	3.41%
Manager in the field of strategy and planning	30	3.41%
Manager of administrative and support activities not specified elsewhere	30	3.41%
Manager in the field of trade	30	3.41%
Manager in the field of marketing	30	3.41%
Manager in the field of advertising and public relations	30	3.41%
Manager in wholesale and retail	30	3.41%
Specialist in accounting and financial control	30	3.41%
Specialist in strategy and development	30	3.41%
Specialist in HR	30	3.41%
Specialists in the field of education and development of human resources	30	3.41%
Specialist in advertising and marketing	30	3.41%
System administrator, information and communication technology operation technician, web technician	30	3.41%
Lawyer	10	1.14%
Specialist in the field of accounting (payroll accountant, calculation, price and cost worker)	30	3.41%
Sales representative	30	3.41%
Buyer	30	3.41%
Administrative worker in accounting	30	3.41%
Administrative worker in the field of human resources	30	3.41%
Secretary	30	3.41%
Warehouse worker	30	3.41%
Facility manager, maintenance worker	30	3.41%
Head of business operations	30	3.41%
Sale assistant	30	3.41%
Cashier	30	3.41%
A worker in the field of private security - a guard	30	3.41%
Cleaning lady	30	3.41%
Driver	30	3.41%

Source: Own processing.

Annex 25 - Structure of the importance of digital skills and competences necessary for the performance of employees' work as respondents in the questionnaire addressed to employees in companies from the trade sector in Slovakia (1 indicates low importance and 5 the greatest importance)

Digital skill/ Average	3.07
Collection and use and storage of information (surfing on the Internet)	4.23
Digital communication on the Internet (e-mail, video conference, etc.).	4.25
Creating digital content (word processing, spreadsheets, creating and using databases, etc.).	3.71
Interpretation and presentation of digital content (self-education, presentation creation, etc.).	4.05
Planning, control, logging (geolocation, inventory, etc.).	1.73
Operation of computer-controlled tools, machines and equipment (CNC, CAM, etc.).	3.45
Creating and using computer programs (CAD).	1.95
Use of equipment to protect objects and property (access systems, etc.)	1.64
IT and data security (responsible use of devices and applications, adequate protection against leakage of sensitive data etc.).	2.46

Source: Own processing.

Annex 26 - Detailed structure of answers by occupation to the question of whether they expect their job position to disappear in the next 5 years

Position	Definitely it won't happen.	It may or may not happen.	I do not know.	There is high probability that it will happen.	Definitely it will happen.
President, CEO, Executive	96.67%	3.33%			
Manager in the field of finance	96.67%	0.00%	3.33%		
Manager in the field of human resources	93.33%		6.67%		
Manager in the field of strategy and planning	90.00%		10.00%		
Manager of administrative and support activities not specified elsewhere	93.33%	3.33%	3.33%		
Manager in the field of trade	83.33%	6.67%	10.00%		
Manager in the field of marketing	86.67%	10.00%	3.33%		
Manager in the field of advertising and public relations	83.33%	6.67%	10.00%		
Manager in wholesale and retail	76.67%	6.67%	16.67%		
Specialist in accounting and financial control	80.00%	10.00%	10.00%		
Specialist in strategy and development	83.33%	13.33%	3.33%		
Specialist in HR	70.00%	20.00%	10.00%		
Specialists in the field of education and development of human resources	76.67%	23.33%			
Specialist in advertising and marketing	76.67%		20.00%	3.33%	
Systems administrator, information operation technician and of communication technologies, web technician	96.67%		3.33%		
Lawyer	90.00%		10.00%		
Professional worker in area accounting (salary accountant, worker calculations, prices and costs)	73.33%		26.67%		
Sales representative	80.00%	6.67%	13.33%		
Buyer	70.00%	16.67%	10.00%	3.33%	
Administrative worker in accounting	73.33%	10.00%	16.67%		
Administrative worker in the field of human resources	56.67%	13.33%	23.33%	6.67%	
Secretary	63.33%		26.67%	10.00%	
Warehouse worker	70.00%	20.00%	10.00%		
Facility manager, maintenance worker	60.00%	16.67%	13.33%	10.00%	
Head of business operations	43.33%	30.00%	26.67%		
Shop assistant	46.67%	26.67%	26.67%		
Cashier	40.00%	30.00%	23.33%	6.67%	
A worker in the field of private security - a guard	50.00%	33.33%	13.33%	3.33%	
Cleaner	43.33%	23.33%	20.00%	13.33%	
Driver	70.00%	16.67%	13.33%		

Source: Own processing.

Annex 27 - Importance of skills/qualities within individual job positions in the trade sector (1 indicates little important and 5 very important)

	Skills	Physical resistance and perseverance	Literacy	Mathematical skills	Evaluation of information	Manually skills	Negotiation and communication skills	Persuasiveness	Managerial skills	Complex solution	Critical thinking	Social receptivity	Analytical thinking	Active listening, active learning	Flexibility	Creativity	Empathy	Team management	The sense of responsibility	Independent work	Foresight and the ability to plan
	Average	3.55	3.40	3.24	3.38	3.12	3.42	3.33	3.46	3.59	3.47	3.38	3.55	3.64	3.31	3.36	3.29	3.60	3.77	3.71	3.62
President, CEO, Executive	3.93	4.45	3.72	3.81	4.12	2.91	3.65	3.54	4.50	4.61	4.67	3.89	4.05	4.12	3.87	3.32	3.78	4.26	3.92	3.12	4.21
Manager in the field of finance	3.63	3.93	3.97	3.93	3.15	2.58	3.69	3.38	4.12	4.23	3.65	2.54	3.95	4.01	3.40	4.02	2.50	3.72	4.33	3.54	4.04
Manager in the field of human resources	3.60	3.70	3.54	2.31	4.17	3.12	3.95	3.71	4.08	4.20	4.44	4.05	2.89	3.71	2.63	3.54	3.33	3.71	4.02	2.78	4.15
Manager in the field of strategy and planning	3.56	3.12	3.87	3.93	3.45	3.05	3.81	3.29	3.95	3.76	3.86	3.15	4.31	3.15	2.67	2.33	3.07	3.27	4.21	4.57	4.37
Manager of administrative and support activities not specified elsewhere	3.49	3.26	3.90	3.15	3.41	2.61	3.66	4.75	4.21	3.06	4.18	4.22	3.43	3.69	2.95	3.28	2.91	2.73	2.98	4.38	3.01
Manager in the field of trade	3.63	3.51	3.71	3.71	3.97	2.91	4.12	3.15	3.97	3.87	3.70	3.45	3.78	3.75	3.50	3.15	3.51	3.69	3.59	3.69	3.90
Manager in the field of marketing	3.50	3.21	3.29	3.15	3.51	2.35	3.41	3.97	3.92	3.61	3.29	3.22	3.65	3.25	4.05	4.36	3.15	3.46	3.51	3.67	3.87
Manager in the field of advertising and public relations	3.52	3.21	3.34	2.91	3.21	2.41	4.19	4.05	3.87	3.58	3.71	3.97	3.25	3.45	3.69	4.05	3.78	3.28	3.41	3.51	3.56
Manager in wholesale and retail	3.70	3.29	3.72	3.73	4.05	3.15	3.98	3.46	4.21	3.79	3.65	3.15	3.89	3.75	3.81	3.76	3.69	3.97	3.38	3.89	3.76
Specialist in accounting and financial control	3.58	3.21	3.25	3.81	3.91	3.05	3.51	3.41	3.81	3.69	3.97	3.27	4.15	3.25	3.25	3.32	3.15	3.68	3.97	4.05	3.85
Specialist in strategy and development	3.56	3.28	3.67	3.71	3.87	2.71	3.05	3.69	3.69	3.87	3.86	3.15	4.23	3.49	3.27	3.28	3.28	3.75	3.64	3.97	3.69
Specialist in HR	3.45	3.40	3.51	3.16	3.27	2.15	3.74	3.29	3.23	3.64	3.51	3.15	3.76	3.56	3.56	3.75	3.76	3.61	3.58	3.69	3.76
Specialists in the field of education and development of human resources	3.37	3.41	3.27	3.21	3.13	2.10	3.57	3.37	3.76	3.22	3.15	3.75	3.15	3.78	3.69	3.56	3.61	3.58	3.21	3.21	3.69
Specialist in advertising and marketing	3.31	3.05	3.24	2.91	3.25	3.15	2.89	3.81	3.15	3.23	2.78	3.15	3.25	3.12	3.78	3.97	3.59	3.43	3.69	3.56	3.25
Administrator systems, technician ofoperations in informational a communication technology, web technician	3.64	3.98	3.97	3.61	3.89	3.65	3.15	2.78	3.25	4.15	3.74	3.05	4.23	3.89	3.28	3.25	3.12	3.69	4.15	4.15	3.87
Lawyer	3.70	2.78	3.21	2.51	4.25	2.71	4.87	4.31	2.89	3.97	4.15	3.54	4.56	4.05	3.15	3.25	3.31	4.05	4.56	4.28	3.69
Professional employee in the field of accounting (payroll accountant, employee of calculations, prices and costs)	3.40	3.15	3.61	3.62	3.24	3.24	2.89	2.67	2.81	3.67	3.12	3.46	3.87	3.61	3.11	3.15	3.05	3.97	3.79	3.91	4.05
Sales representative	3.66	3.76	3.21	3.59	3.13	3.15	4.13	4.05	3.45	3.59	3.41	3.61	3.67	3.87	3.97	3.78	3.39	3.89	3.94	3.86	3.66
Buyer	3.60	3.12	3.65	3.67	3.15	3.18	4.25	4.09	3.15	3.55	3.57	3.25	3.81	3.89	3.68	3.29	3.31	3.95	3.98	3.92	3.48
Administrative worker in accounting	3.19	2.78	3.61	3.51	3.41	3.12	2.92	2.46	2.42	3.51	3.10	3.15	3.27	3.12	2.91	3.15	3.04	3.46	3.66	3.69	3.43
Administrative worker in the field of human resources	3.17	2.92	3.12	2.89	3.05	2.91	3.86	2.98	2.31	3.37	3.08	3.15	3.15	3.21	3.39	3.25	3.29	3.25	3.75	3.23	3.25
Secretary	3.34	3.15	3.15	3.05	3.25	3.45	3.05	2.79	3.69	3.42	3.12	3.37	3.10	3.89	2.46	3.51	3.15	3.87	3.91	3.56	3.89
Warehouse worker	2.96	4.68	2.74	2.67	2.78	3.95	2.34	2.05	2.15	3.05	2.75	2.61	2.53	3.54	2.58	2.46	2.49	3.15	3.85	3.81	3.05
Facility manager, maintenance worker	3.23	4.21	3.12	2.76	2.81	4.05	2.74	2.15	2.89	3.41	3.35	3.25	3.15	3.86	3.45	2.65	2.69	3.58	3.79	3.91	2.79
Head of business operations	3.76	4.12	3.61	3.25	3.49	3.75	3.87	3.97	4.05	3.64	3.45	3.78	3.89	3.97	3.79	3.52	3.94	3.79	3.89	3.56	3.94
Shop assistant	3.42	4.12	3.10	3.15	2.81	3.65	3.92	4.15	2.81	3.21	3.05	3.71	3.61	3.64	3.05	3.49	3.69	3.36	3.56	3.21	3.05
Cashier	3.45	3.98	3.15	3.62	2.68	3.59	3.87	4.19	2.73	3.15	3.17	3.87	3.53	3.89	3.15	3.25	3.45	3.45	3.79	3.15	3.25
A worker in the field of private security - a guard	3.15	4.12	2.87	2.71	3.25	3.41	1.65	2.75	3.21	3.49	2.76	3.25	2.79	3.69	2.67	3.15	3.05	3.64	3.57	3.71	3.16
Cleaner	2.99	3.97	2.56	2.05	2.15	3.98	1.81	1.90	3.78	2.94	2.74	3.15	2.35	3.57	2.86	2.87	3.15	3.15	3.69	3.85	3.34
Driver	3.29	3.59	3.41	3.05	3.61	3.67	2.15	1.72	3.59	3.31	3.05	3.12	3.15	3.49	3.57	3.05	3.49	3.59	3.72	3.91	3.59

Source: Own processing.

Annex 28 - Expected growth in the importance of skills/ qualities within individual job positions in the future in the trade sector

Skill	Physical resistance and perseverance	Literacy	Mathematical skills	Evaluation of information	Manually skills	Negotiation and communication skills	Persuasiveness	Managerial skills	Comprehensive problem solving	Critical thinking	Social receptivity	Analytical thinking	Active listening, active learning	Flexibility	Creativity	Empathy	Team management	The sense of responsibility	Independent work	Foresight and the ability to plan
Average	72.00%	69.00%	65.33%	67.89%	72.89%	71.67%	70.22%	69.89%	71.00%	72.11%	70.22%	71.11%	75.00%	74.78%	71.78%	72.00%	73.22%	75.78%	69.00%	73.22%
President, CEO, Executive	66.67%	66.67%	93.33%	60.00%	93.33%	70.00%	73.33%	60.00%	53.33%	70.00%	90.00%	66.67%	93.33%	66.67%	93.33%	63.33%	56.67%	53.33%	60.00%	63.33%
Manager in the field of finance	66.67%	83.33%	96.67%	76.67%	70.00%	80.00%	83.33%	76.67%	90.00%	83.33%	56.67%	80.00%	86.67%	70.00%	83.33%	90.00%	63.33%	86.67%	50.00%	90.00%
Manager in the field of human resources	73.33%	66.67%	53.33%	63.33%	76.67%	90.00%	56.67%	76.67%	66.67%	50.00%	66.67%	60.00%	56.67%	73.33%	56.67%	96.67%	86.67%	66.67%	50.00%	76.67%
Manager in the field of strategy and planning	86.67%	63.33%	76.67%	86.67%	63.33%	93.33%	70.00%	86.67%	83.33%	93.33%	70.00%	83.33%	56.67%	93.33%	93.33%	90.00%	93.33%	66.67%	66.67%	93.33%
Manager of administrative and support activities not specified elsewhere	90.00%	73.33%	76.67%	70.00%	60.00%	63.33%	70.00%	53.33%	83.33%	73.33%	73.33%	80.00%	86.67%	60.00%	83.33%	66.67%	53.33%	76.67%	56.67%	63.33%
Manager in the field of trade	70.00%	66.67%	80.00%	70.00%	76.67%	56.67%	96.67%	76.67%	73.33%	93.33%	90.00%	70.00%	53.33%	63.33%	86.67%	53.33%	73.33%	86.67%	50.00%	93.33%
Manager in the field of marketing	66.67%	56.67%	50.00%	73.33%	73.33%	53.33%	70.00%	80.00%	73.33%	76.67%	80.00%	83.33%	86.67%	90.00%	93.33%	60.00%	63.33%	90.00%	50.00%	63.33%
Manager in the field of advertising and public relations	60.00%	86.67%	80.00%	73.33%	60.00%	86.67%	80.00%	83.33%	60.00%	50.00%	56.67%	70.00%	90.00%	66.67%	60.00%	73.33%	76.67%	63.33%	80.00%	60.00%
Manager in wholesale and retail	56.67%	60.00%	56.67%	63.33%	76.67%	90.00%	86.67%	70.00%	60.00%	90.00%	76.67%	83.33%	93.33%	86.67%	83.33%	70.00%	96.67%	86.67%	76.67%	53.33%
Specialist in accounting and financial control	76.67%	76.67%	83.33%	56.67%	83.33%	66.67%	73.33%	93.33%	56.67%	63.33%	73.33%	50.00%	86.67%	63.33%	93.33%	70.00%	93.33%	90.00%	76.67%	83.33%
Specialist in strategy and development	80.00%	83.33%	80.00%	60.00%	66.67%	53.33%	60.00%	60.00%	90.00%	93.33%	66.67%	60.00%	86.67%	73.33%	83.33%	86.67%	60.00%	53.33%	80.00%	83.33%
Specialist in HR	63.33%	63.33%	50.00%	56.67%	50.00%	50.00%	63.33%	80.00%	86.67%	70.00%	83.33%	56.67%	50.00%	53.33%	53.33%	56.67%	70.00%	66.67%	80.00%	70.00%
Specialists in the field of education and development of human resources	83.33%	80.00%	73.33%	53.33%	70.00%	76.67%	76.67%	73.33%	56.67%	66.67%	76.67%	80.00%	70.00%	70.00%	76.67%	76.67%	53.33%	76.67%	86.67%	70.00%
Specialist in advertising and marketing	83.33%	56.67%	63.33%	73.33%	63.33%	66.67%	56.67%	70.00%	80.00%	96.67%	60.00%	63.33%	53.33%	80.00%	90.00%	80.00%	96.67%	63.33%	80.00%	96.67%
System administrator, information and communication technology operation technician, web technician	66.67%	63.33%	56.67%	60.00%	80.00%	73.33%	83.33%	56.67%	86.67%	80.00%	53.33%	60.00%	60.00%	80.00%	63.33%	56.67%	96.67%	93.33%	76.67%	63.33%
Lawyer	60.00%	80.00%	40.00%	80.00%	90.00%	50.00%	70.00%	70.00%	60.00%	80.00%	50.00%	90.00%	70.00%	80.00%	60.00%	70.00%	80.00%	100.00%	90.00%	80.00%
Specialist in the field of accounting (payroll accountant, calculation, price and cost worker)	66.67%	63.33%	80.00%	56.67%	56.67%	73.33%	76.67%	66.67%	60.00%	76.67%	66.67%	80.00%	86.67%	70.00%	60.00%	56.67%	56.67%	83.33%	70.00%	76.67%
Sales representative	76.67%	56.67%	83.33%	66.67%	73.33%	86.67%	63.33%	56.67%	70.00%	70.00%	73.33%	50.00%	60.00%	76.67%	83.33%	60.00%	90.00%	76.67%	86.67%	83.33%
Buyer	66.67%	80.00%	76.67%	70.00%	60.00%	66.67%	90.00%	53.33%	80.00%	73.33%	60.00%	60.00%	53.33%	70.00%	53.33%	66.67%	76.67%	66.67%	60.00%	66.67%
Administrative worker in accounting	70.00%	80.00%	96.67%	66.67%	70.00%	70.00%	43.33%	53.33%	56.67%	53.33%	56.67%	83.33%	83.33%	90.00%	63.33%	83.33%	53.33%	73.33%	76.67%	56.67%
Administrative worker in the field of human resources	63.33%	73.33%	43.33%	73.33%	60.00%	66.67%	76.67%	50.00%	50.00%	53.33%	80.00%	66.67%	86.67%	60.00%	66.67%	63.33%	70.00%	50.00%	56.67%	60.00%
Secretary	56.67%	70.00%	50.00%	83.33%	66.67%	80.00%	66.67%	76.67%	66.67%	76.67%	70.00%	66.67%	73.33%	80.00%	56.67%	90.00%	76.67%	93.33%	50.00%	66.67%
Warehouse worker	70.00%	50.00%	40.00%	53.33%	96.67%	63.33%	80.00%	86.67%	60.00%	63.33%	66.67%	56.67%	73.33%	83.33%	56.67%	66.67%	50.00%	70.00%	76.67%	63.33%
Facility manager, maintenance worker	76.67%	43.33%	26.67%	63.33%	83.33%	70.00%	66.67%	56.67%	76.67%	50.00%	60.00%	63.33%	50.00%	56.67%	83.33%	73.33%	66.67%	93.33%	50.00%	66.67%
Head of business operations	53.33%	90.00%	96.67%	63.33%	86.67%	96.67%	70.00%	80.00%	86.67%	70.00%	83.33%	86.67%	96.67%	73.33%	63.33%	73.33%	83.33%	63.33%	56.67%	90.00%
Shop assistant	93.33%	76.67%	76.67%	83.33%	63.33%	96.67%	50.00%	80.00%	80.00%	70.00%	70.00%	76.67%	76.67%	90.00%	60.00%	86.67%	80.00%	60.00%	80.00%	50.00%
Cashier	90.00%	83.33%	56.67%	96.67%	53.33%	56.67%	70.00%	56.67%	93.33%	66.67%	70.00%	70.00%	63.33%	56.67%	80.00%	53.33%	73.33%	86.67%	80.00%	63.33%
A worker in the field of private security - a guard	66.67%	56.67%	40.00%	50.00%	83.33%	63.33%	56.67%	86.67%	53.33%	90.00%	73.33%	96.67%	90.00%	83.33%	60.00%	70.00%	80.00%	83.33%	73.33%	86.67%
Cleaner	93.33%	56.67%	40.00%	73.33%	86.67%	50.00%	60.00%	50.00%	73.33%	40.00%	86.67%	60.00%	83.33%	93.33%	63.33%	80.00%	73.33%	76.67%	70.00%	83.33%
Driver	66.67%	63.33%	43.33%	60.00%	93.33%	90.00%	66.67%	76.67%	63.33%	80.00%	66.67%	80.00%	93.33%	90.00%	50.00%	76.67%	53.33%	76.67%	73.33%	80.00%

Source: Own processing.

Annex 29 - Expected decline in the importance of skills/ attributes within individual job positions in the future in the trade sector

Skill	Physical resistance	Literacy	Mathematical skills	Evaluation of information	Manually skills	Negotiation and communication skills	Persuasiveness	Managerial skills	Comprehensive problem solving	Critical thinking	Social receptivity	Analytical thinking	Active listening, active learning	Flexibility	Creativity	Empathy	Team management	The sense of responsibility	Independent work	Foresight and the ability to plan
Average	6.67%	0.78%	2.56%	0.11%	0.67%	1.00%	1.11%	0.44%	0.11%	0.78%	0.78%	0.78%	0.00%	0.44%	0.78%	1.22%	1.11%	0.00%	1.00%	0.33%
President, CEO, Executive	6.67%	0.00%	0.00%	0.00%	3.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.33%	0.00%
Manager in the field of finance	3.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	6.67%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Manager in the field of human resources	3.33%	3.33%	10.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.33%	0.00%	0.00%	0.00%	0.00%	0.00%
Manager in the field of strategy and planning	0.00%	0.00%	10.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Manager of administrative and support activities not specified elsewhere	0.00%	0.00%	0.00%	0.00%	3.33%	3.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.33%	0.00%	0.00%	6.67%	0.00%	0.00%	0.00%
Manager in the field of trade	0.00%	0.00%	3.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Manager in the field of marketing	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.33%	0.00%	0.00%	0.00%	0.00%	0.00%
Manager in the field of advertising and public relations	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.33%	0.00%	0.00%	0.00%	0.00%	0.00%
Manager in wholesale and retail	3.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Specialist in accounting and financial control	3.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.33%	0.00%	0.00%	0.00%	0.00%	6.67%	0.00%	0.00%	0.00%	6.67%	0.00%
Specialist in strategy and development	3.33%	0.00%	0.00%	3.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	10.00%	0.00%	0.00%	3.33%	0.00%
Specialist in HR	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Specialists in the field of education and development of human resources	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.33%	0.00%	0.00%	0.00%	0.00%	0.00%	3.33%	0.00%	0.00%	0.00%
Specialist in advertising and marketing	0.00%	0.00%	3.33%	0.00%	0.00%	16.67%	0.00%	0.00%	0.00%	0.00%	3.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
System administrator, information and communication technology operation technician, web technician	0.00%	0.00%	0.00%	0.00%	3.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	6.67%	0.00%	0.00%	0.00%	0.00%	0.00%	3.33%
Lawyer	20.00%	0.00%	30.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	10.00%	0.00%
Specialist in the field of accounting (payroll accountant, calculation, price and cost worker)	10.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	10.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Sales representative	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.33%	0.00%	0.00%	0.00%	0.00%
Buyer	0.00%	3.33%	0.00%	0.00%	3.33%	0.00%	0.00%	0.00%	0.00%	6.67%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Administrative worker in accounting	0.00%	0.00%	3.33%	0.00%	0.00%	0.00%	3.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	6.67%	0.00%	16.67%	0.00%	3.33%	0.00%
Administrative worker in the field of human resources	0.00%	0.00%	3.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Secretary	0.00%	6.67%	0.00%	0.00%	0.00%	6.67%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.33%	0.00%	0.00%	0.00%
Warehouse worker	0.00%	10.00%	0.00%	0.00%	0.00%	0.00%	16.67%	0.00%	0.00%	0.00%	0.00%	13.33%	0.00%	0.00%	0.00%	10.00%	0.00%	0.00%	0.00%	0.00%
Facility manager, maintenance worker	0.00%	0.00%	3.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.33%	3.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.33%	0.00%
Head of business operations	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Shop assistant	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.33%
Cashier	0.00%	0.00%	0.00%	0.00%	0.00%	3.33%	0.00%	0.00%	0.00%	6.67%	0.00%	0.00%	0.00%	0.00%	0.00%	10.00%	0.00%	0.00%	0.00%	0.00%
A worker in the field of private security - a guard	3.33%	0.00%	0.00%	0.00%	6.67%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.33%	0.00%	0.00%	0.00%	0.00%	0.00%	3.33%
Cleaner	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.33%	0.00%	0.00%	0.00%
Driver	0.00%	0.00%	10.00%	0.00%	0.00%	0.00%	6.67%	0.00%	0.00%	6.67%	0.00%	0.00%	0.00%	0.00%	0.00%	3.33%	0.00%	0.00%	0.00%	0.00%

WorkTransition CEE

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