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Content

Specification of product value as a key part of Canvas business model in the context of industry 4.0

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Abstract

The purpose of this article is to specify the business model Canvas and its modifications in the manufacturing industry 4.0. The paper provides a review of the literature to expand our knowledge of how Industry 4.0 affects business models. This article aims to specify and analyze the Canvas business model and its application in the new revolutionary era of the digital world in manufacturing 4.0. Also, we defined the hypothesis that "exist a relationship between market type such specific market segment) and given value to the customer". The findings deepen the understanding of how 4.0 affects the manufacturing industry, B.M., and the behavior of the current economic environment. A lot of research in the field of industry 4.0 using Canvas B.M., but very often, the view of the Czech business environment is neglected. Focusing on this area may lead to future research. This literary review focuses on the latest literature indexed in the Web of Science and Scopus. The focus is on the period of 2013-2020. The research methodology is based on a comparison of research by other authors with a focus on industry 4.0 in the Czech Republic and worldwide, on the role of business models in this sector, and their interconnection. The main results of this research point to the importance of Industry 4.0 and its implementation, as well as the need to adapt business models to the needs of this revolution.

Keywords: business models, Canvas business model, Lean Canvas key performance indicators, manufacturing industry, industry 4.0, Czech Republic digitization, Industry 4.0.

Introduction

The term Industry 4.0 is already well known in the business environment. Its foundations were presented in a document at the trade fair in Hannover in 2013. However, the first ideas about the emergence of a new industrial era appear in 2011, and currently, the transition of companies to this new era is one of the most critical aspects of the Czech business environment (Confederation of Industry of the Czech Republic, 2019).

The fourth industrial revolution is a label for innovation and transformation of production processes. The internet and digitization enable complete interconnection and automation of all production processes as well as related services. Industry 4.0 brings technological and social changes. Production productivity increases by up to 30% and up to 40% of people will have to change their skills, but it does not just change the focus. The process of product innovation is also undergoing fundamental changes (Technodat, 2018; Koren and Shpitalni, 2010; Nayak, Dürr and Rothermel, 2015).

Industry 4.0 as such unifies the physical, information, and data components not only of the production environment itself. It connects machines, storage and logistics systems, and other technological components into one unit. An entirely digitized automated system brings significant improvements to all business processes. At the heart of this concept is the so-called "Smart Factory". This is a critical element of the transition to a digitized and automated whole. It can autonomously manage and at the same time streamline the complete production process. The Czech concept of I4.0 is broader than the world concept. It is not just a Smart Factory, but also a digital environment into which the company is gradually transforming (Ibarra, Ganzarain and Igartua, 2018; Fettig et al., 2018; Ematinger, 2017). The Czech concept focuses more on the customer and a smart product or service (Confederation of Industry of the Czech Republic, 2019).

In the summer of 2019, a survey was conducted, which included 105 Czech companies. In this survey, the manufacturing industry was represented in 59%, where 50 large enterprises (more than 250 employees), 31 medium-sized enterprises (50-250 employees), and 24 small enterprises (less than 50 employees) answered questions about the readiness and implementation of industry 4.0. This survey showed that most companies have 5% of their budget allocated to activities related to industry 4.0, and this survey also showed that large companies are more active in this regard. Companies in the Czech Republic are aware of the benefits that digitization, communication between systems and devices, and the flow of data to the company in real-time bring them. "Two-thirds of respondents said they had invested in elements of Industry 4.0 because it is important for their future. It is quite surprising that only 8.6% of companies feel external pressure to implement Industry 4.0 applications, whether from parent companies or customers.", comments Jiří Holoubek, a member of the board of the Confederation of Industry. It is generally stated that it is large companies, especially from the automotive industry, that should push their suppliers into the digital transformation. "However, only 36 percent of companies have developed a digital strategy, and in most of the implemented projects, it is probably more of a non-systematic implementation of isolated

partial solutions. It continues to be confirmed that small and medium-sized enterprises, in particular, need more support in understanding the benefits of digital technologies and their subsequent deployment. Most often, companies invest in elements of Industry 4.0 to increase productivity per employee (56.2%), reduce unit costs (43.8%) and optimize the use of production capacity (41%). For large companies, the motive for reducing costs prevails. Small and medium-sized companies are mainly trying to increase productivity by investing in digital transformation. The experience of companies so far shows that most of their expectations associated with these investments have been entirely, or at least partially met. Half of the companies want to increase investment in this area in the next five years (Confederation of Industry of the Czech Republic, 2019).

The Canvas model, therefore, appears to be one of the most suitable business models for modification to the needs of Industry 4.0. This statement will be confirmed when mapping the area of knowledge of this topic.

This article is focused on the level of knowledge of the fourth industrial revolution and the related knowledge about business models, their modifications and uses in I4.0, and on finding a gap in this area. The outputs of this article will be used as literature research for a junior project, which will focus on identifying key performance indicators (KPI) according to their specification and relevance in individual areas of the Canvas model for the needs of manufacturing in the Czech Republic, where industry 4.0 is already evident.

Measuring performance helps to sort day-to-day activities in the companies.to reach strategic objectives. But, there is important to divide used metrics correctly. Industrial companies have different needs what and how to measure performance and effectiveness and display the results in financial units. The metrics' group of non-financial displaying should be included in a group of Key performance indicators (KPI), which are used in the most crucial fields in present and future development of the company. Therefore, KPI represents a tool, by which is possible to measure performance, find relevant results, and interpret them correctly (Zaherawati et al., 2011; Kerzner, 2011; Janíčková and Žižlavský, 2020). All used KPI metrics are depended on industry, corporate strategy, and present situation. Production companies could create fields according to their interests (e.g. costs, motivation, quality, or logistics). Individual groups have to be flexible and changeable due to the needs (Samsonowa, Buxmann and Gerteis, 2009). There is a general recommendation to keep rule 10/80/10 in each organization. This rule means that the company should use ten metrics in KRI, eighty metrics in PI and RI, and ten metrics in KPI (Parmenter, 2010).

Osterwalder, Pigneur and Clark (2012, p. 14) define a business model as the basic principle by which a company creates, transmits, and receives a value. Canvas The Canvas business model helps create value for the company. The business model can be described with the help of nine building blocks, which bring closer the logic of how a company wants to make money and create value. These elements provide four main areas in the company, which are: (1) customers, (2) supply, (3) infrastructure, and (4) financial viability. The

business model can be understood as a strategic plan to be fulfilled through the organizational structure, processes, and systems. The building elements include:

1. **Customer segments:** Customer segments define the groups of people or entities that a company wants to focus on. Customers are at the heart of any business model, without which a business would not be able to function for long because they make a profit for the business. A company can improve customer service by dividing it into segments according to needs and behavior. The business model can then define one or more large or small segments. Furthermore, a clear decision must be made on which segments to focus their efforts on.

2. **Value offers:** Value offers describe the combination of products and services that create value for a specific customer segment. The value offer is the reason why customers prefer one company over another. The offer deals with the customer's problem or satisfies his needs. Each value offer contains a combination of products or services that respond to the requirements of the segment. The value offer is therefore a set of benefits that the company offers.

3. **Channels:** Channels determine how a company communicates with its customer segments and how it has access to pass on a value offer. Communication, distribution, and sales channels form the boundary between the company and customers. Distribution channels are important points that play a significant role in customer satisfaction.

4. **Customer relations:** Customer relationships describe the types of individual relationships that a company builds within individual segments. The company should have an idea of the relationship it wants to build with each segment. Relationships can vary, from personal to automated.

5. **Sources of income:** Sources of income represent all income that the company generates within customer segments. If customers are at the heart of the business model, revenue represents its artery. The company should ask itself the question: What value is each segment willing to pay for? A successful response allows you to generate one or more sources of revenue from each segment.

6. **Key resources:** Key resources describe the key assets needed to operate a business model. These resources allow you to shape and present value offerings, reach markets, maintain customer relationships and generate revenue. Depending on the business model, different resources are needed. Key resources take on physical, financial, mental, or human forms.

7. **Key activities:** Key activities characterize the most important assets performed by the company, which are necessary for the functioning of its business model. Like the key resources, the key activities are needed to create and present value offerings, gain a foothold in the markets, maintain good relationships with our customers, and, last but not least, generate revenue.

8. **Key partnerships:** Key partnerships refer to the network of suppliers and partners necessary for the business model to work. Companies establish these partnerships for several reasons and become the cornerstone of many business

models. Partnerships are born, for example, to optimize a model, reduce risk, or obtain resources.

9. **Cost structure:** The cost structure represents all costs related to the business model. Creating and submitting a value offer, maintaining relationships with customers, and generating revenue generate costs. The costs are relatively easy to quantify only after identifying key resources, activities, and partnerships.

The role of business models in Industry 4.0 is significant. Every company has a business model and uses it to manage its processes. Therefore, when introducing Industry 4.0, it is first necessary to modify the business model to meet the requirements of the Fourth Industrial Revolution. Many studies from around the world confirm this step and its importance. Man and Strandhagen (2017) explore how to use business models in Industry 4.0 successfully. The authors created a scheme that connects sustainability and industry 4.0 to the business model (Man and Strandhagen, 2017). This diagram shows figure 1.

Figure 1: Connecting sustainability and industry 4.0 to the business model.
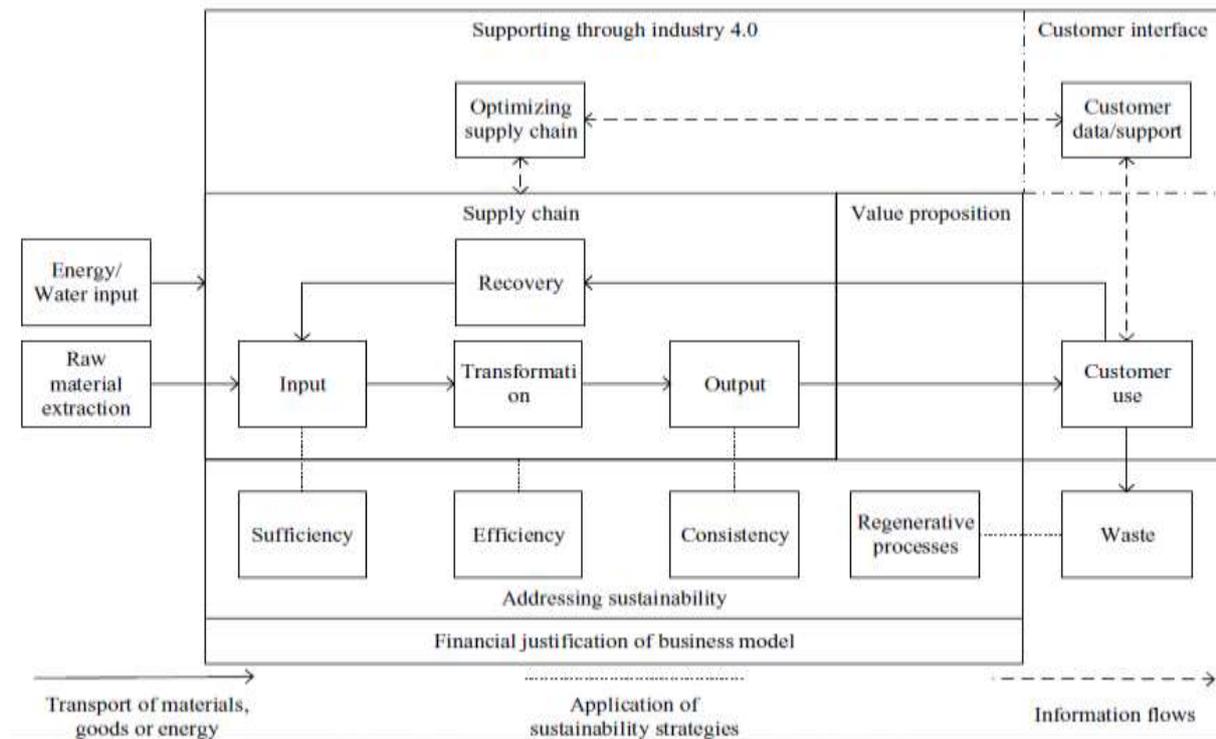
Source: Man and Strandhagen (2017).

The term Industry 4.0 is understood by the European Union (specifically by the European Parliament) as a term for a group of rapid transformations in the design, production, operation, and use of systems. Marking 4.0 means that this is the 4th industrial revolution for the world (European Union, 2015). In general, the Industry 4.0 concept can be characterized as a transformation of production as separate automated factories into fully automated and optimized manufacturing environments. Production processes are linked vertically and horizontally within enterprise systems. Sensors, machines, and IT systems

are interconnected within the value chain across enterprise boundaries. For this purpose, the Cyber-Physical System (CPS) is the cornerstone for smart factories (Kopp and Basl, 2017).

Against these latest research results, we can oppose, for example, the study by Basl (2017), where the author focused on the readiness of Czech companies for Industry 4.0. This research was conducted by a questionnaire survey in which participated 161 Czech companies. The results show that Czech companies have a relatively high awareness of the existence of a trend known as Industry 4.0. This readiness manifests itself the most at upper-level management rather than on the average employee level. Companies still lack their own Industry 4.0 strategy, and they do not have assigned responsible persons who would take care of further deepening of principles of Industry 4.0. Higher penetration of the principles of Industry 4.0 into companies is so far inhibited by unclear benefits and in many cases, the high costs associated with the application of Industry 4.0 solutions. Industry 4.0 also belongs among the topics that are being strategically initiated and supported by top management in his visions, motivated by the customer demands, and is expected to bring lower costs. Finally, the investigation has shown that there is a large space for improvement in terms of delivery of available information on Industry 4.0 to the employees. Most companies (56%) stated that their employees are not yet aware of what this new trend means. Only about 8% of companies reported that Industry 4.0 is already part of the motivation of their employees (Basl, 2017).

Methods and Data

The purpose of the research as a base for this paper is to find out the literary overview, then the comparison of the author's views on the use of the business model, innovation, and adaptation under the influence of digitization. According to the purpose, there is a defined hypothesis, that "exists a relationship between market type such specific market segment) and given value to the customer". There were realized two research parts, secondary research, and primary research. The secondary research was focused on the analysis of scientific databases such as EBSCO, Science Direct, or Web of Science. Also, there was processed primary research with a focus on business activities in connection to the Canvas business model. In primary research participated 422 companies, which operate in various industries in the Czech Republic. On the defined hypothesis, there was applied Pearson χ^2 test for independence, which provides a potential relationship between individual variables. These variables as input are defined by (1) types of market and (2) variables with relevant value for the target segments. We processed the data by application of statistical software IBM SPSS Statistics 25.

Results

According to the defined purpose and stated hypothesis, there were used two groups of variables. These groups are closely connected to the individual parts of Canvas. The

possibility to deliver required values is usually linked to the market, but under the condition of industry 4.0 elements, they should be modified. Therefore, we focused on observing the connection between all of these variables mentioned above:

- types of markets
  - specialized
  - segmented
  - mass
  - diversified
  - multilateral
- relevant value for the target segments
  - newness (different points of views)
  - output (improvement of creating products and services)
  - adaptation (product and service adaptation to specific needs)
  - task solution (creating solution)
  - design (part of the offered value)
  - brand (part of the offered value)
  - price (part of the offered value)
  - cost minimization (help to the customer within cost minimization)
  - risk minimization (help to the customer within risk minimization)
  - availability (assurance of availability of products and services)
  - convenience (convenience or easiness of usage)

Due application of chosen method (Pearson χ^2 test for independence) we defined 55 possible connections between individual variables (kinds of value and type of market). If the connection is put under verification and the value of significance must meet the 5% reliability level. If the value is lower than 0.05 as a response to the limit of 95% confidence level, then it is possible to declare, that in that relation exists statistical dependence. By contraries, if the value of significance is higher than 0.05, then the statistical dependence in the connection is not proved. From defined 55 relations, we found out only 14 relations with proved statistical dependence. Their results are shown in Table 1.

Because of the results in Table 1, we can say that there exist 14 statistical connections with statistical significance. The intensity of these connections could be explained by the due value of the contingency coefficient. The contingency coefficient refers to the power of the dependence, which belongs to interval ⟨0; 1⟩. If the value of the contingency coefficient is over 0.5 and close to 1, the dependence is strong. Vice versa, values under 0.5 are considered such medium or rather low. All gained values of contingency coefficient for gained relations are in interval ⟨0.259; 0.381⟩, which mean rather low intensity of dependencies between proved variables.

Tab. 1: Observed dependencies between individual variables and chosen type of market

		Specialized	Segmented	Mass	Multilateral
Output	P	46,076	No proven statistical significance	No proven statistical significance	No proven statistical significance
	S	0,009			
	C	0,319			
Adaptation	P	69,118	No proven statistical significance	59,959	33,397
	S	0,000		0,000	0,003
	C	0,381		0,359	0,276
Task solution	P	48,646	44,235	39,270	No proven statistical significance
	S	0,005	0,014	0,035	
	C	0,327	0,313	0,297	
Design	P	No proven statistical significance	42,465	No proven statistical significance	No proven statistical significance
	S		0,022		
	C		0,308		
Brand	P	40,417	No proven statistical significance	No proven statistical significance	No proven statistical significance
	S	0,035			
	C	0,301			
Risk minimization	P	44,400	No proven statistical significance	No proven statistical significance	29,129
	S	0,014			0,010
	C	0,314			0,259
Availability	P	56,618	43,658	No proven statistical significance	No proven statistical significance
	S	0,000	0,016		
	C	0,350	0,312		
Convenience	P	No proven statistical significance	40,665	No proven statistical significance	No proven statistical significance
	S		0,034		
	C		0,302		
P - Pearson chi-square; S – Significance; C - Contingency coefficient					

Source: own work of authors

Conclusion

Based on the literature research performed in this article, the level of knowledge in the monitored area was mapped in some detail. The results show that although the readiness of Czech companies for Industry 4.0 has significantly improved in recent years, there is still ample space for improvement. Businesses face significant obstacles to the introduction of new technologies and the overall unification of new knowledge with the traditional systems they have used so far.

This research will make it easier for many companies to implement Industry 4.0 and can deepen their scientific knowledge in this field. This connection will expand, simplify and improve the ability of companies operating in the manufacturing industry and at the same time in the Czech business environment to implement the concept of industry 4.0 This research will combine several methods that will provide many companies with this type of industry revolution.

Due to the breadth of the researched topic, there are many topics to discuss. Industry 4.0 concept has already penetrated some industries. As for the Czech Republic, the automotive and manufacturing industries are the best. Even there, however, companies are just beginning to work with the new concept, eliminating shortcomings and trying to meet the implementation of this system with as few obstacles as possible. Among other things, many other industries are not yet so far in implementing Industry 4.0 and need help with system modifications that will be tailored to their industry. All the knowledge that we know so far becomes with a certain degree of superficiality, and therefore it is important to focus research more in-depth on these topics and to expand knowledge in this area with greater detail.

The main limitation of this research is the overall diversity and significant differences in the levels of the manufacturing industry of the Czech Republic. Therefore, we first focused on the most advanced areas where Industry 4.0 is already implementing into companies. These businesses need our help immediately and indispensably to be able to connect their traditional methods, systems, and models with new technologies while still being able to measure their performance effectively.

Acknowledgment

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Is CarSharing a profitable business model for automotive OEMs?

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Abstract

CarSharing is seen as one of the four major trends in the automotive industry. The ever-increasing traffic volume in large cities, easier access to digital services through smartphones and the change in people's ecological thinking are seen as drivers for this business segment. Nevertheless, the German car manufacturers BMW and Daimler, normally competitors in the market, have joined forces in a joint venture (ShareNow) in the hope of being finally profitable. The venture does not release any information about their business figures and also in the literature there is so far no detailed analysis of the costs for operating a Free-Floating CarSharing company. This article will therefore use the Munich-based company ShareNow as an example to determine the cost structure and examine the non-monetary benefits for car manufacturers in addition to the monetary side. The analysis indicates that this business cannot be operated profitably and that even considering the non-monetary benefits, remaining in this business segment is questionable.

Keywords: car sharing, free floating, automotive, business model, cost structure

Introduction

We are in a time of change that affects the classic automotive industry in particular. Cities are struggling with strong growth and an ever-increasing traffic volume, which is accompanied by high emission levels. As a result, governments have to develop new mobility concepts to reduce the number of vehicles on the roads. At the same time, the smartphone has become the daily companion of most people and has never offered such easy access to digital services. In addition, it is increasingly important for people to act ecologically. Automotive OEMs have seen this change and are trying to expand their

business with CarSharing models. And the media also believes that car sharing is the solution to the mobility problem in cities, with headlines such as "Owning a Car Will Soon Be as Quaint as Owning a Horse" (Swisher, 2019).

Extensive literature research shows that mobility services and, above all, car sharing is considered by experts to be one of the four major trends of the future in the automotive industry.

If this sector is so promising, the question arises as to why companies are withdrawing from existing territories or stopping entirely. ShareNow has completely withdrawn from America and Canada in 2020. They have also discontinued their services in the European cities of London, Brussels and Florence. But it's not just German OEMs that seem to be struggling with profitability. American automaker General Motors has also completely discontinued its "Maven" service after original reductions in cities. Ford has also discontinued its "Chariot" service in 2019.

The purpose of this paper is to investigate whether CarSharing can be considered a profitable business segment for traditional automotive OEMs. For this purpose, the company ShareNow, a holding of the companies Daimler and BMW, will be used as an object of investigation. The reason for this is that, compared to the VW company WeShare, it is an established company with a nationwide offering and a diversified vehicle portfolio.

The operators do not reveal their business figures and therefore it is difficult to make financial analyses. Based on interviews, however, it is becoming clear that this is a negative business model for the companies and even as a joint holding company, supported by the large companies BMW and Daimler, the continuation of the business is questionable. So Daimler boss Ola Källenius said in an interview that Daimler and BMW have already invested a lot and the cash flows must become positive in perspective, otherwise it must be reacted. There are also rumors that the two companies are already in negotiation talks with UBER for a deal (Kaleta, 2020).

Methods and Data

The first step is to investigate the relevance of mobility services, or more precisely CarSharing, for the automotive industry in a literature review. Annual reports and newspaper interviews of the car sharing companies WeShare, DriveNow, Car2Go and ShareNow were then analyzed to provide information on the business model, vehicle fleet, user numbers and cost structure. Based on this information, a cost calculation for the operation of the vehicle fleet is calculated and it is deduced whether and how a CarSharing company can be profitable. The classic break-even analysis is used as an orientation aid. In addition, user surveys and statistics on the behavior of CarSharing customers are examined in order to be able to make statements and recommendations for action.

CarSharing

CarSharing is divided into three different business models. They can be well distinguished by the degree of flexibility. The three models are peer-to-peer car sharing, stationary car sharing and free-floating car sharing (Schiller, Pottenbaum and Scheidl, 2017).

In Peer-to-Peer CarSharing, private individuals can offer their car to other members via a platform. Users have to pay a daily fee and can use the car. This concept is very similar to the traditional concept of car rental companies. It represents a small percentage of providers (6%) and is only available in 19 countries (No Name, 2019b). Automotive OEMs are not represented in this business segment. A large provider for this type of car sharing is the U.S. company Turo.

Stationary CarSharing is the most widely distributed service in Germany in terms of area. The largest provider in terms of fleet size is Stadtmobil (No Name, 2021a). In this variant, there are fixed parking spaces where the vehicles are parked and have to be picked up. At the end of the rental, they must then also be returned there. It is primarily designed for longer rental periods and the car can be booked days in advance. German car manufacturers are not represented in this area either.

The model with the highest flexibility is called Free Floating CarSharing. The customer can pick up and park the car wherever he or she wants in a specific business area. It is often also possible to park the car outside the business area against a service fee. This service is mainly used for spontaneous and relatively short trips, as a longer rental period is not profitable given the comparatively high rates. This business area is covered by the German automotive OEMs.

Relevance of CarSharing for Automotive OEMs

The 21st century can be described as an era of constant disruption (Kumaraswami, Garud and Ansari, 2018). In this time, constant technological innovations often driven by digital revolutions such as Web 2.0 (Belk, 2014) are challenging existing business models and opening up entirely new business options. In addition, there is an increasing mindset change among customers away from owning goods to "access-based consumption." This means that transactions are mediated in which there is no transfer of ownership (Bardhi and Eckhardt, 2012). In contrast to the usual model of selling an object with an accompanying transfer of ownership, services or objects are rented or shared for a limited period of time.

Mobility as a Service and CarSharing have been discussed in the literature for years as an important trend for the future of the automotive industry. In the Gear 2030 Report of the European Commission, it is made clear that due to a changed concept of mobility, mobility services are crucial for the competitiveness of the automotive industry and the EU (Asselin-Miller et al., 2017). PwC makes the assumption in its paper that automotive compies need to offer mobility as a service to compete against their competitors in the field. Otherwise, they would become suppliers to the large mobility service providers. They predict a shift to sharing cars and OEMs that cannot compete with the big tech companies face the risk of being taken over by them (Weber et al., 2018).

McKinsey predicts that nearly one in ten vehicles sold in 2030 will be a shared vehicle (Kempf et al., 2018).

Car sharing in combination with autonomous vehicles are seen as an important step to relieve the infrastructure in the future (Rea et al., 2017; Scott and Pankratz, 2017).

In addition, it is repeatedly predicted that the sale of vehicles will decline in the future due to car sharing and that automotive companies should therefore not lose focus on this business segment. Responsible for this is also the changed mindset of customers that access to a vehicle has become more important than ownership. New mobility providers like Uber and tech giants like Apple and Google are forcing established OEMs to expand their business (Kaas et al., 2016).

Kuhnert, Stürmer and Koster (2018) predicts that the future car in 2030 will be electrified, connected, shared, autonomous and yearly updated.

As early as 2012, CarSharing was seen as a potential growth driver for automotive OEMs and even considered to be a must for OEMs in the future. Great market growth opportunities were foreseen and a winner takes it all scenario was drawn up. Which means that the strongest supplier in a city will displace all other suppliers (Cornet et al., 2012).

Helbig, Sandau and Heinrich (2017) have predicted that in 2025 vehicle sales may decrease by 10% due to car sharing and therefore OEMs should make their own offer in the area.

Through the extensive literature review, it is clear that car sharing is considered as an important trend for the automotive industry. Following the previous statements, it would be almost irresponsible for an OEM not to enter this business field.

Overview of the Car Sharing companies owned by Automotive OEMs

In Germany, all automotive OEMs have an offering in the car sharing business. While ShareNow is a holding of BMW and Daimler, ShareNow is a business unit of VW.

ShareNow

ShareNow is a joint venture between the then competing companies car2go (Daimler) and DriveNow (BMW), founded in 2019, and the global market leader in flexible car sharing. The two companies invested a total of $1.13bn in the merger, according to media information (Hawkins, 2019).

Car2go was officially launched in 2010 and offered its service in 26 metropolitan areas in Europe, North America and China with over 14,000 Mercedes-Benz and Smart vehicles. It was a 100% subsidiary of Daimler AG, unlike DriveNow (No Name, 2019e). Already in 2017 it was the market leader in Europe and North America with 24 million vehicle rentals and 1.97 million users worldwide (No Name, 2018). In 2018 the numbers increased to 3.6 million users worldwide with 25 million rentals (No Name, 2019d).

DriveNow was founded in 2011 as a joint venture between BMW and Sixt and started operations in Munich in the same year. In March 2018, it became a 100% subsidiary of BMW. The service was offered at twelve locations in Europe with over 6,500 BMW and

Mini vehicles (No Name, 2019e).

ShareNow significantly reduced the number of cities after its formation and is currently present in 16 major European cities in 8 countries. All locations outside of Europe have been discontinued. At the end of 2020, according to the company, 3 million customers were registered (No Name, 2021d). The fleet was reduced from approximately 18,820 vehicles (of which 3,130 electric) 11/2019 to 11,340 (of which 2,890 electric) vehicles 01/2021. It includes BMW, Mercedes Benz, Fiat, Mini and Smart vehicles.

WeShare

WeShare is a subcompany of VW and has started its operation in July 2019 in Berlin. The big difference between it and ShareNow is that WeShare operates a fully electric fleet with e-Golf and ID.3 while ShareNow has reduced the number of electric vehicles in their fleet. So far, the company has focused on Berlin as its only location. An expansion was planned to seven other cities in Europe in 2020. The fleet planned to increase from the current 1,500 vehicles in Berlin to a total of 8,400 vehicles. In Prague and Budapest, the company was planning to cooperate with Skoda. However, due to Corona, these plans were temporarily postponed (Automobilwoche, 2020).

Results

The costs for a CarSharing company, including their determination, are presented below. The calculations are based on the Munich location. The fleet size and distribution are then determined and the average time of use and frequency are examined.

Cost Overview

The costs for operating a CarSharing fleet consist of fixed costs, variable costs and special costs. Table 1 provides an overview.

Tab. 1: Cost overview

Fixed Costs	Variable Costs	Special Costs
Car Leasing/Purchase	Fuel	Damages
Hardware/Software	Service costs for refuel	Service costs for reparking
Parking costs		Service costs for cleaning
Overhead Employees		
Vehicle Tax		
Insurance		

Source: Authors.

Vehicle Costs

The largest part of the fixed costs for the business model are the costs for the vehicles. It can be assumed that automotive OEMs have a cost advantage over their competitors here. However, in an interview, Sebastian Hofelich, CEO of DriveNow, reported that DriveNow

leases the cars already equipped with the necessary software and hardware from BMW for one to two years, "at standard market conditions" (Goldmann, 2018).

Based on this statement, it is assumed that this procedure has not changed after the merger into ShareNow. In addition to the leasing rates offered directly by the manufacturer, the rates offered by comparison portals on the Internet for commercial customers were also examined. For the further calculation the most favorable rates of leasing contracts over 2 years and 20,000 km are used. Electric vehicles currently receive a subsidy of €6,000, which is included in the calculation.

Hardware/Software Costs

Another fixed cost item is the cost of the hardware and software for the vehicles in order to make them available to customers (booking and opening via app, reading out the fuel content, etc.). It was not possible to obtain costs for this from the company ShareNow. For this reason, a comparable system from the company getaround is used. This company charges 29€ per month for the operation of the system, each additional car costs 19€ (No Name, 2021b).

Parking Costs

In Munich, parking costs are set at a fixed rate of 1,000 euros per vehicle per year (Goldmann, 2018). In Hamburg, on the other hand, a fee of 900 euros per vehicle per year has been agreed. Electric vehicles are excluded from the fees in this city. In contrast, there are parking fees of more than 100 euros per car and month in Berlin for all vehicles (Mortsiefer, 2020).

Overhead employees

To run a company more than just the vehicles and software/hardware are needed. ShareNow has a total of over 500 employees in various areas that are required for a company (e.g. marketing, business administration, software developer ...). A large block is accounted for by the fleet managers, who take care of the control of the vehicle fleet. Salaries are not public, but users can enter their salary on the platform "Kununu". While fleet managers earn an average of 32,700 euros, software developers earn 65,500 euros (No Name, 2021c). With a usual company structure, an average salary of 42,000 euros can be assumed. These employees are calculated down to the current 11,340 vehicles.

Insurance

The cost of insurance is a critical issue. Due to the large number of users, there is a high risk of damage. The service can only be used from the age of 21, and the customer must hold a driver's license for at least one year. Inquiries with the insurance companies were not answered, so the usual market costs for insurance with a similar range of coverage were assumed.

Vehicle Tax

The tax of the vehicles is based on the engine capacity, the exhaust emission standard and the CO_2 emission. Electric vehicles are exempt from the vehicle tax.

Fuel Consumption

First of all, the average fuel consumption for the individual models is determined. Real data reported by a large number of users of the platform "Autokostencheck.de" is used to determine the average fuel consumption for each model. The reason for this is that these values are more realistic than the values provided by the manufacturers under laboratory conditions. In addition, it can be assumed that consumption is generally higher than for a non-CarSharing car, since almost only short distances are driven and users tend not to look at fuel consumption during their journey. The reason for this is not only the fun of driving and the "all-inclusive idea", but also the minute-by-minute billing, which leads to an effort to quickly end the rental process.

The consumption per minute can now be calculated down to the minute using the average speed in Munich. According to a study by HERE from 2019, the average speed in Munich over the course of the day is approx. 41km/h. It should be noted that this is an overall view of Munich. At rush hour and on the busiest streets in Munich, the average speed decreases significantly. On weekdays between 4 and 5 p.m., for example, it is only 20.5km/h for a busy street in Munich (No Name, 2019c).

Since most CarSharing users also travel during rush hours and in the central area (typically the business area), it can be assumed that the average speed is lower. Based on this evaluation, an average speed of 35km/h is assumed. With this information, an average consumption per minute can be calculated for the respective fleet model. Using the average gasoline price in 2019 of 143.2 cents, the cost per minute can also be determined. The year 2019 is taken as a reference, since Corona has reduced the gasoline prices above average (Hohmann, 2021). For the costs per Kwh, the common ChargeNow costs of 0.28 euros are used.

Service costs for refuel
There are incentives in the form of credits for customers if they refuel the vehicle themselves. Since the incentives are comparably low (5 Euro credit corresponds to 17 minutes of driving time on average) and most users use the car to get from A to B quickly (Ruhrort, 2020), it is assumed in the calculation that every vehicle must be refueled by the service employee. The refueling process is carried out when there is still 50km remaining range in the tank (warning message appears in the cockpit).

Vehicle Allocation
According to a Forsa study, cars in the free floating concept must at best be within a walking distance of 5 minutes (Weimer, 2016) . This results in a converted distance of approx. 500m. ShareNow does not provide any information about the exact distribution of its vehicle fleet per city. The only indication is that 200 of 1,200 vehicles in Munich are i3s. In Munich, the available vehicles were therefore evaluated via app over several days and a percentage was calculated. Due to the currently prevailing exit restriction by Corona from 9 p.m. in Munich, it can be assumed that almost all vehicles are unused from 11 p.m. onwards. By looking at the data over several days, isolated deviations can be smoothed out.

Costs / revenues not considered

Set Up and finish time

One minute could be added to the revenue for getting in and setting up the vehicle and one minute for the locking process. During this time, the vehicle is at a standstill and therefore the minute tariff can be charged in full, without deducting variable costs. However, the share of the total turnover is so small that this is not considered for the sake of simplicity.

Damages

The damages are covered by the insurance. The drivers have to pay the deductible. It is not considered here that many users do not report the damage and therefore these cannot be accounted to them. Furthermore, it is not considered that the car manufacturers can repair the damages much cheaper than other CarSharing providers. This could result in a positive asset for the manufacturers. However, this item is not considered due to the uncertain data situation.

Service for relocation and cleaning

If the car is parked outside the business area, the customer must pay a fee of approximately 10 euros. It can be assumed that this fee on average covers the cost of re-parking. In addition, costs are incurred by re-parking to ensure even distribution in the business area. Further costs arise from the regular cleaning of the vehicles inside and out.

Unavailability due to repair or technical problems

Not all vehicles are available at all times. Reasons for this can be workshop stops or also technical problems.

Break Even Analysis

The costs are presented divided into fixed (Table 2) and variable costs (Table 3). This is followed by the calculation of the break-even point from when the vehicle generates a profit (Table 4).

Tab. 2: Fixed Costs

	Leasing costs (total) [€]	Vehicle costs/ day [€]	Hard-/ Software costs/day [€]	Parking costs/ day [€]	Overhead employees /car	Vehicle tax/ day [€]	Insurance /day [€]	Total [€]
Mini	8,352.00	11.44	0.05	II.74	5.00	0.37	2.53	22.13
Smart	4,100.00	5.62	0.05	II.74	5.00	0.07	1.78	15.26
1 series	9,425.76	12.91	0.05	II.74	5.00	0.27	3.01	23.98
X1	11,736.00	16.08	0.05	II.74	5.00	0.23	3.15	27.25
2 series conv.	16,944.00	23.21	0.05	II.74	5.00	0.53	3.25	34.79
2 series tourer	10,920.00	14.96	0.05	II.74	5.00	0.23	3.15	26.13
A-class	9,700.00	13.29	0.05	II.74	5.00	0.27	2.74	24.09
Fiat 500	3,650.00	5.00	0.05	II.74	5.00	0.07	1.77€	14.63
i3	7,176.00	10.88	0.05	II.74	5.00	0.00	2.49	21.17

Source: Authors.

Tab. 3: Variable Costs

	Fuel consump. /100km [l]	Fuel /minute [l]	Fuel /minute [€]	Service Refuel [€]	Fuel tank [l]	Fuel minus 50km remaining [l]	Fuel range [minutes]	Refuel costs /minute [€]	Total [€]
Mini	7.1	0.04	0.06	9.5	44	40.5	974	0.010	0.07
Smart	5.8	0.03	0.05	9.5	28	25.1	740	0.013	0.06
1 series	7.4	0.04	0.06	9.5	50	46.3	1070	0.009	0.07
X1	8.1	0.05	0.07	9.5	51	47.0	991	0.010	0.08
2 series conv.	7.9	0.05	0.07	9.5	52	48.1	1040	0.009	0.08
2 series tourer	7.5	0.04	0.06	9.5	51	47.3	1077	0.009	0.07
A-class	7.5	0.04	0.06	9.5	51	47.3	1077	0.009	0.07
Fiat 500	5.1	0.03	0.04	9.5	35	32.5	1088	0.009	0.05
i3	18.5	0.11	0.03	9.5	42.2	33.0	305	0.031	0.06

Source: Authors.

Tab. 4: Break Even

	Total fixed costs [€]	Total variable costs [€]	Rental charge /minute [€]	Var. Profit / minute [€]	BE / minutes
Mini	22.13 €	0.07 €	0.28 €	0.21 €	105
Smart	15.26 €	0.06 €	0.19 €	0.13 €	119
1 series	23.98 €	0.07 €	0.31 €	0.24 €	100
X1	27.25 €	0.08 €	0.34 €	0.26 €	104
2 series conv.	34.79 €	0.08 €	0.34 €	0.26 €	131
2 series tourer	26.13 €	0.07 €	0.31 €	0.24 €	110
A-class	24.09 €	0.07 €	0.31 €	0.24 €	101
Fiat 500	14.63 €	0.05 €	0.19 €	0.14 €	106
i3	21.17 €	0.06 €	0.31 €	0.25 €	85

Source: Authors.

Frequency of use and duration

To determine profitability, it is important to know the behavior of the customers. It is difficult to get usage data from companies regarding frequency and duration of trips. Often, long-term rentals are included in the figures. However, these should not be included here in the financial analysis, as the cost structure is different. The following studies were selected because they seem to make the most sense in terms of their data base. Hülsmann et al., (2018) created a relatively recent study whose results were obtained through control group surveys with the result that the average frequency per user is less than once a month. The study by Ruhrort (2020) is based on real booking data from WeShare in Berlin. The result is that 2/3 of the trips are under 30 minutes and 1/3 are over 30 minutes. Furthermore, it is relevant to look at the general average trip duration in Munich independently of CarSharing. The Mobility Study Munich results in an average of 31 minutes and 12.5 km (Follmer and Belz, 2018). An analysis conducted in cooperation with BMW and based on real booking data showed that each user makes 0.8 bookings per month and the average travel time is 29 minutes (Kopp, 2015). A press

release from ShareNow (Süddeutsche Zeitung, 2020) mentions an average of 35 minutes (including long-term rentals) and 25 million rentals with 4 million customers. This results in a monthly booking per customer of 0.5 bookings. Based on these evaluations, an average duration of 30 minutes and a usage of one rental per customer per month is assumed.

Discussion

Based on the calculated costs, it can be seen that the majority of the fixed costs fall on the vehicle. It is unclear why the automotive OEMs have opted for the leasing model at standard market conditions. It should be possible to provide the company's own vehicles much more cost-effectively, thus giving up a competitive advantage over other operators of Free Floating CarSharing. The next most significant cost driver is the apportioned employee costs for operating the business. In addition to insurance, parking costs are a high cost block. As already described, the costs here differ depending on the city.

The variable costs arise primarily from fuel consumption and service with regard to refueling and recharging the vehicles.

The break-even point is different for each vehicle (Table 5). Due to the incentives for electric vehicles, the i3 can be leased relatively inexpensively and is exempt from vehicle tax. Due to the attractiveness of electric vehicles, a comparatively high rental fee of 0.31 euros can be realized. Although the pure energy costs per minute are the lowest of all the vehicles offered, the use of a service employee is necessary for charging due to the shorter range. In total, however, the variable costs for the i3 are the lowest after the Fiat 500. Thus, the i3 already reaches the break-even point on the day with 85 minutes. With an average booking time of 30 minutes, slightly less than 3 bookings are required per day.

The smallest and cheapest vehicles stand out with comparatively high break-even values. While the Smart has to be booked for 119 minutes per day, the Fiat 500 has to be booked for 106 minutes. The reason for this quite high value, despite the low fixed and variable costs, is the very low price per minute of 0.19 euros.

Tab. 5: Break Even Bookings

	BE / minutes	BE Bookings /day	Cars in Munich	Total Bookings
Mini	105	3.5	229	802
Smart	119	4.0	328	1299
1 series	100	3.3	42	141
X1	104	3.5	42	145
2 series conv.	131	4.4	36	157
2 series tourer	110	3.7	78	285
A-class	101	3.4	34	115
Fiat 500	106	3.5	210	738
i3	85	2.8	200	568

Source: Authors

An important issue for profitability is vehicle utilization. For the requirements of the free floating concept it is necessary that there is always a vehicle within walking distance. As mentioned above, at best within a 5 minute radius. This results in the necessity of a large vehicle fleet with the risk of underutilization. Putting the vehicles in relation to the required break-even trips per day results in the required number of 129,295 monthly bookings for Munich.

It was not possible to obtain ShareNow users' data for Munich. In 2019, however, there were around 250,000 users registered with the various providers in Munich (Engels, 2019).

An approximation of the possible user group makes sense in order to get an indication of the profitability. First, it needs to be determined how many people are living in the so-called hot spot areas. These areas usually coincide with the provider's business area. Stolle et al., (2019) has calculated a figure of 422,000 people in the area in the case of Munich. Next, the relevant target group must be extracted. According to the city of Munich, approximately 70% are between the ages of 20 and 69 (No Name, 2019a). This results in a potential user number of 295,400 people.

If we now take the average booking of one per customer and month for calculation purposes, 44% of these people would have to be ShareNow customers.

Even though there is no data from ShareNow regarding the number of users per city, it is clear that it is unlikely that this model can be operated in a profitable way. Munich is also a city with good operating conditions. On the one hand, it has a high income structure and a relatively central cityscape. It can therefore be assumed that the break-even analysis is weaker in for example Berlin. Another risk is that new competitors in the cities will take users away. The relatively constant number of potential customers is confronted with an increasing number of vehicles and providers.

Non-monetary benefit for the OEMs

In addition to the purely financial aspects, there are also non-monetary factors that can make a case for operating a CarSharing fleet. They will be examined and evaluated in more detail below.

Awareness of technical innovations

Contact with the latest technology can create a desire or need among users of the vehicles. Often the current technical developments of the manufacturers are not known. Without the knowledge of, for example, a Stop&Go assistant that brakes and starts automatically, there is also no desire on the customer's part. A changed interior design or cockpit can also make their own car look outdated (Kaas et al., 2016).

Brand Image

Companies are always concerned with creating a positive image among their customers. Especially for automotive companies it is important to appear modern, innovative and agile. The brand image could be positively influenced by CarSharing, because this is

associated with sustainability and it also shows that the company is not trapped in its classic old thought patterns, but is open to new trends. On the other hand CarSharing is no longer a new concept, but has existed for years. In addition, more and more competitors are entering the market that offer the same service and are not automotive OEMs. For this reason, it can be assumed that car sharing has no special influence on the brand image.

Attracting new customers

Another advantage that can be considered is that by using the vehicles new customers can be attracted and companies can reduce the advertising budget. BMW had gross advertising expenditure of around 1 million euros in Germany in 2019 (Weidenbach, 2021). With a total of 329,262 vehicles sold, this amounts to just under 3 euros in advertising per vehicle sold (Immen, 2020). This amount does not seem to be a decisive factor in the decision to operate a CarSharing fleet.

By having their own carsharing fleet, young people in particular who do not yet own a vehicle can be branded early on so that the manufacturer is at least considered when purchasing a vehicle in the future. In addition, carsharing rides are an easy way to experience the cars. While customers used to have to go to the dealership and convince the salesperson that they want to buy the car, a test drive with the nearest car can be booked very flexibly and inexpensively. Electric cars in a carsharing fleet can help change people's mindset by getting them used to driving an electric vehicle and reducing any prejudices they may have. Looking at the current fleet, it is dominated by inexpensive vehicles such as Smart and Mini. The number of 1-series and A-class models is very low, and most recently the Fiat 500, a foreign brand, was added to the fleet. It seems that the advertising impact of car sharing is no longer the focus of the manufacturers

Data Collection

The collection of data is another advantage that should not be underestimated. Short journeys with permanently changing drivers put extreme stress on the car and thus represent a good test in terms of durability and possible faults. This data can be used in future product developments. Furthermore, customer behavior provides important information on how often which functions and services in the vehicle are used. Feedback from the predominantly younger Car-Sharing customers also provides important information for the development of new products. Since the younger customer group does not usually drive premium vehicles, it is difficult to obtain feedback from interaction with the vehicle in the conventional way. However, since the younger generation are the buyers of tomorrow, it is fundamentally important to know which things are valued and which features or functions are not of great importance.

Fleet bonus with electric vehicles

The use of compact and electric cars helps OEMs meet their CO_2 fleet targets and thus avoid penalties. Due to the continuous expansion of the range of electric vehicles and the increasing sales figures, this point will become less important in the future.

Compensation for declining demand

In the previous literature review, CarSharing was seen as a compensation for the decreasing number of possible car sales in the future. The reason for this is that more and more people no longer see the need to own a vehicle. This argument can be refuted, at least for Germany, with regard to new registrations in Munich, where DriveNow has been available since 2011. New registrations are growing continuously and more strongly than the growth of the population (No Name, 2020).

Conclusion

Based on the analyses and the consideration of the non-monetary benefits for a CarSharing business, the model does not appear to be profitable in the long term. The reasons for this are, on the one hand, the high vehicle costs due to the use of premium vehicles. On the other hand, there are the low-cost vehicles from Smart and Fiat. Although their fixed costs are lower, they can only achieve a significantly lower rental price. Due to the existing competitors, companies are also forced to offer low prices in order not to lose customers. With these vehicles, however, many non-monetary advantages are no longer available. In general, a certain fleet size is necessary to operate Free Floating CarSharing. If the vehicles are underutilized, it makes more sense to maintain a large share of vehicles with low fixed costs.

Another important aspect is the support of the government in the respective cities. Too much bureaucracy, for example, in registering vehicles in certain urban areas, or high costs in the form of parking fees or congestion charges can very quickly make the entire business model unprofitable.

Due to the very low margins, it is important to gain as many customers as possible that use the offer regularly. Due to increasing competition in this field and a relatively fixed maximum value of possible customers, it appears difficult to further increase the number of customers. In contrast, there is more of a risk that existing customers will switch to other providers or take the closest car regardless of the provider.

The calculations have shown that the currently most lucrative option for the CarSharing provider is in the area of electric vehicles. Due to the various subsidies, they are currently relatively inexpensive. They also attract customers who are willing to pay more for the experience. According to a study, 66% of customers who signed up with car2go in Stuttgart did so in part to try out an electric car (Hülsmann et al., 2018). However, this advantage may be overturned as soon as the subsidies are reduced. In addition, there is a risk that many customers only want to have the experience of driving an electric car once and will return to the less expensive alternatives for further trips. With regard to production capacities, the automotive OEMs must also consider whether electric vehicles should not be sold instead. If the number of electric vehicles in a city is too high, there may also be problems finding charging stations. Blocking charging stations with fully charged vehicles that are not driven away can have a negative impact on the company's image. The

range plays another important role. The i3 is a vehicle with a comparatively short range. This leads to higher service costs for recharging the vehicles. However, if vehicles with a range similar to conventional vehicles are used, the economic benefit is even greater. In addition, the operation of electric vehicles provides important data for the still relatively new technology of the automotive industry.

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Impact of the coronavirus pandemic on the tertiary sector

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Abstract

The tertiary sector, also referred to as the services sector, is the most affected sector during the coronavirus crisis. The aim of this paper is to analyze and describe the economic and existential impacts of COVID-19 on this sector worldwide, caused by government interventions and government regulations. To achieve this goal, a self-administered questionnaire survey dealing with companies in the Czech Republic is produced and an existing questionnaire survey by Alonso et al. (2020) dealing with companies in the world is analyzed. Both questionnaires deal with the impact of the COVID-19 pandemic on companies operating in the hospitality sector, the biggest concerns of these companies and their coping with this situation. Companies are most concerned about the financial impact on their business and the uncertainty of what will happen next and how long the pandemic will last. Companies both in the Czech Republic and around the world are dealing with the pandemic in a similar way - by laying off their employees, moving them to other positions or working from home, suspending their activities and waiting for further government action or terminating business activities altogether.

Keywords: COVID-19, tertiary sector, hospitality, pandemic impact, activity change

Introduction

The global coronavirus pandemic affects not only our personal lives but also our economy. The tertiary sector or services sector, which includes, for example, trade, education, hospitality, transport and communications, healthcare or information, administrative, financial and insurance services, has the greatest influence. The services sector represents a significant part of the national economy. The Czech Statistical Office (2020) states that service providers have a 61.9% share in the gross domestic product (GDP) in 2018 of our country.

Due to the coronavirus crisis, many people have been forced to move to a home office, change jobs or leave work altogether. The transition to home office has its advantages and disadvantages (Chanana and Sangeeta, 2020). For some, working from home can be beneficial, for example for parents of young children who cannot go to school at this time. Conversely, the disadvantage may be that when working from home, employees may perform only limited work tasks (Koohsari et al., 2021).

Due to the state of emergency and the measures introduced by the government, many entrepreneurs had to close their business. So who is most affected by the coronavirus crisis in the services sector and how? In this sector, it mainly concerns operators of restaurants, accommodation facilities, hotels or organizers of mass events.

Tourism occupies a very important position in the tertiary sector. It is particularly sensitive to measures against a pandemic, due to limited mobility and social distancing. Due to travel restrictions and lockdowns, global tourism has slowed significantly and the number of global flights has dropped by more than half. As the number of infection cases grew, travel bans grounded a growing number of carriers (Gössling, Scott and Hall, 2020).

Hospitality is a basic branch of tourism. It employs millions of people and contributes hundreds of billions of dollars to the global economy (Dube, Nhamo and Chikodzi, 2020). Restaurant operators and organizers of mass events have not had it easy since the beginning of the pandemic. Governments increasingly restricted their activities and issued various measures, which meant great losses for these entrepreneurs. In many parts of the world, for example, there is a ban on retail sales and the sale and provision of services in establishments, a ban on the public's presence in catering establishments, or a ban on concerts and other cultural events. However, there are also exceptions (pharmacies, food sales, fuel sales, etc.), where, for example, it is necessary to observe 2 meter intervals between people or it is mandatory to test employees in some companies. While some companies have been able to continue to operate and secure, for example, a delivery system, others have fallen into a liquidation crisis or even ceased to exist.

The aim of this seminar paper is to analyze and describe the economic and existential impacts of coronavirus caused by government interventions and government regulations on the services sector worldwide.

In order to meet this goal, two research questions are defined:

- Does the coronavirus pandemic have a negative impact on the whole tertiary sector, or are there any sectors in this sector that are benefiting from the pandemic?
- What are the economic and personnel impacts of the pandemic on the tertiary sector in the Czech Republic and in the world?

Literature research

Governments are still coming up with new measures and restrictions on how to stop or at least alleviate the COVID-19 pandemic. However, these restrictions hurt businesses in the services sector the most, which are trying to figure out, in times of crisis, how, despite all these regulations, they can continue to operate without having to lay off employees or close down. Based on semi-structured interviews with 13 hotel managers in Jakarta, Bandung and Bali, Japurta and Situmorang (2021) concluded that some of the challenges posed by COVID-19 could turn into opportunities, and that some of the strategies that managers pursue could be harmful in the future.

The COVID-19 pandemic has hit the world economy hard, including tourism and hospitality. The unprecedented nature of COVID-19 has had crippling effects with numerous restrictions on businesses, resulting in far-reaching effects on hotels, restaurants, bars and other hospitality businesses, with overall and seemingly insurmountable challenges for the hospitality industry. The main concerns about the pandemic essentially take the form of significant financial implications, as well as worsening uncertainty about the loss of consumers, the unknown duration of the crisis and the socio-economic impact on employees and livelihoods (Alonso et al., 2020). The pandemic led to job and income losses, resulting in millions of jobs and billions of dollars in potential income losses (Dube, Nhamo and Chikodzi, 2020). Jung, Jung and Yoon (2021) used data from questionnaires distributed to employees for hotels in Seoul and found that if employees perceive job insecurity, it causes lower work commitment and consequently a negative state of mind. Koohsari et al. (2021) concluded through an online survey in Japan that the pandemic has caused significant changes in the work style of workers around the world, and that the increase in work from home is affecting workers' sedentary behavior and physical activity.

During the pandemic, organizations engage in many engagement activities, such as online training, webinars, video conference team meetings, online counseling, etc. In the current context, the introduction of similar employee engagement measures using technology is essential for organizational growth (Chanana and Sangeeta, 2020). The use of digital technologies to perform work from home during a pandemic is rapidly being promoted as an alternative way to maintain a certain minimum level of service for clients and to stay in touch with stakeholders. Although the use of technology in general is not a new phenomenon, its sudden and mandatory nature as a result of COVID-19 has brought new challenges into the hospitality industry (Chadee et al., 2021).

Wieczorek-Kosmala (2021) says that companies with a higher level of holding financial reserves are considered to be companies with better risk preparedness. According to Foroudi et al. (2021), the pandemic affects not only employees of hospitality businesses, but also the beliefs of customers and their emotions (negative and positive), which could affect their future desire to visit restaurants, hotels or other hospitality businesses. Im, Kim, and Choeh (2021) developed two common models and model estimates using the

fixed effects method, and found that the number of confirmed cases and COVID-19 reports affected individuals' social distancing and online search for tourist attraction information.

Robots and artificial intelligence (AI) technologies are increasingly prominent in the tourism industry. Using 4 experiments in the current pandemic situation, Kim et al., (2021) demonstrated a more positive relationship between customers and service robots providing contactless services, which are beneficial in maintaining social distance and reducing fears of infection through human interaction. However, after the end of the pandemic, customer preferences may return to human service instead of robotic service, because human service includes emotions, guarantees and communicativeness.

Gössling, Scott and Hall (2020) say COVID-19 provides remarkable lessons for the tourism industry, policy makers and tourism professionals. COVID-19 has significant long-term and short-term negative effects on the level of employment in the tertiary sector (Khan et al., 2021). For example, the aviation industry has faced many threats and challenges throughout history, but none have been as rapid and difficult as those posed by the proliferation of COVID-19. According to Sobieralski (2020), the employment of major airlines is the most affected, while low-cost and regional employment is less affected.

Huang et al. (2020) concluded that reopening policies play a statistically significant role in the slow recovery of the labor market and that the daily increase in new COVID-19 cases is associated with a continuing deterioration in the labor market.

Methods and Data

The input data will be obtained using online structured questionnaires sent to 60 companies, namely 20 hotels, 20 restaurants and 20 cafes operating in the tertiary sector in the Czech Republic. The data selection will include data collected from the period from April 19 to April 25, 2021. The questionnaire will consist of 10 to 15 questions, which will be closed and open type. The questions in the first part of the questionnaire will be used to collect demographic data from respondents and their companies. The second part will focus on identifying the impacts of the COVID-19 pandemic on companies in the tertiary sector using several open questions. Questionnaires will be sent to companies operating mainly in the hospitality industry (hotels, cafes, restaurants) via e-mail communication. E-mail addresses will be used from the created database of companies in MS Excel.

Next comes the analysis of freely available data by Alonso et al. (2020). This article identifies the impacts of the COVID-19 pandemic on hospitality businesses, adaptive approaches and adjustments in businesses. Managers and owners of hospitality businesses in 8 different countries (Argentina, Australia, Bolivia, Greece, Italy, Malaysia, Spain and the United Kingdom) were contacted via e-mails sent online during April and May 2020. A total of 96 companies were contacted (12 from each country), of which 45 companies replied. The questionnaires contain data and basic characteristics such as: country, position of the respondent in the company, gender, type of company, number of employees, age of the company and 3 open questions.

All data will be processed in MS Excel, where the basic statistical characteristics (mean, variance, median) will be presented and tables and graphs from the obtained data will be created. The output data should show what are the main concerns of companies in the tertiary sector associated with the COVID-19 pandemic, how these companies are coping with this pandemic and what are the changes or adjustments in their daily activities. Freely available data from the existing questionnaire survey in various countries will be used to compare the situation in the Czech Republic with the situation in other developed countries in Europe and in the world.

Results

For the questionnaire survey, 60 companies were contacted, namely 20 hotels, 20 restaurants and 20 cafes from randomly selected regions throughout the Czech Republic. Only 9 companies responded, which is only a 15% return. Given that the return rate of the questionnaires in most studies is up to 10%, this fact is essentially positive. Most responses were obtained from cafes, which accounted for 6 responses, then 2 responses came from restaurants and one response from a hotel.

The age of the companies that filled in the questionnaire ranges between 2-65 years, i.e. on average 18.39 years. 66.7% of companies are small enterprises (10-49 employees) and 33.3% are micro-enterprises (1-9 employees). The scope of companies is 88.9% regional and 11.1% multinational. Three companies out of nine at this time used or still use the possibility of delivering products or meals. They are mainly cafes and restaurants. Two companies replied that they used their own distribution and one stated that it used the distribution in cooperation with another company for 1 month.

The questionnaire further addressed what were or still are the biggest concerns associated with COVID-19 in relation to the business of the addressed companies, how these companies cope with this situation and whether, or what opportunities the COVID-19 pandemic provided them. For the first two questions, respondents had a choice of several options, where they could tick one or more answers and write their own answer. The biggest concerns associated with the COVID-19 pandemic are / were addressed by the contacted companies from the financial impact on their business and from the uncertainty of what will happen next with their business. Other concerns most frequently identified by respondents were the uncertain duration of the pandemic and customer fear. Only one company identified health concerns, see Graph 1.

Graph 1: Biggest concerns associated with COVID-19
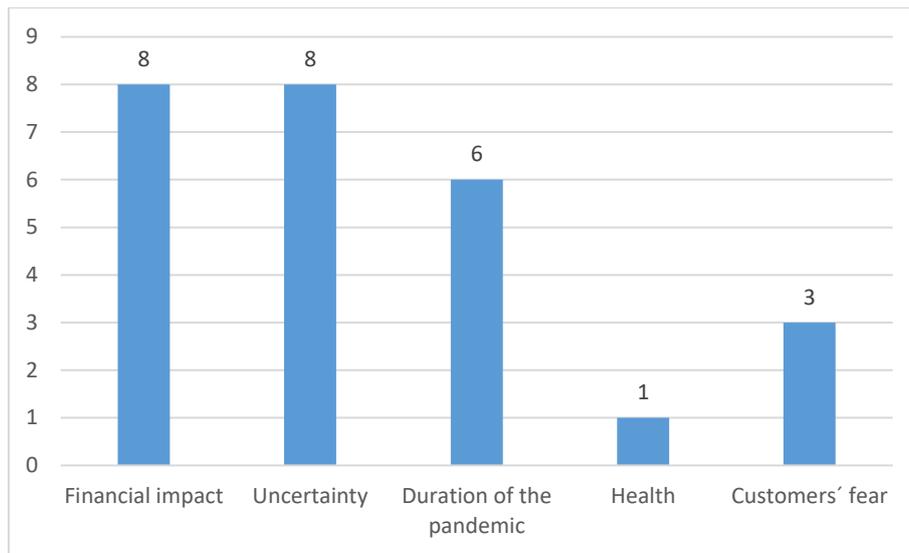
Source: Authors.

When asked how companies cope with this situation, the most answers were changes in activities or tasks and adjustment of working hours. Three companies replied that they were coping with the current situation by laying off their employees. One answer was about the possibility of working from home and moving employees to other positions, see Graph 2. Two companies then added their own answer: the first company stated that 95% of employees are at home and the second stated that they had to close and wait for what will happen.

Graph 2: Ways of dealing with the COVID-19 pandemic
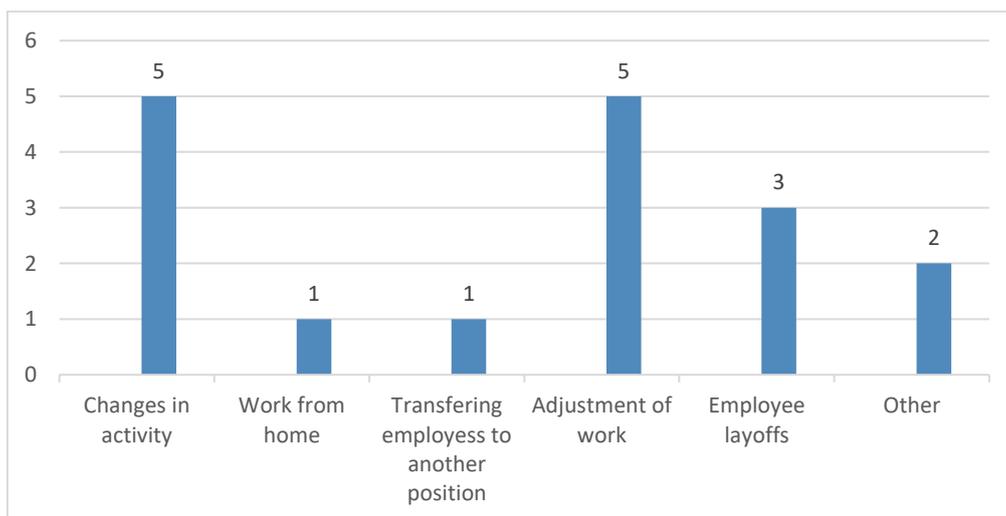
Source: Authors

To the last question whether or what opportunities the COVID-19 pandemic brought to companies, 7 companies answered that the pandemic did not bring them any opportunities. The other two companies replied that the pandemic provided them with

new opportunities. For one company it was an opportunity to buy more cheap operations and for another it was an opportunity to stop, think about the concept, restructure and set priorities during this pandemic.

Regarding the questionnaires of Alonso et al. (2020) 45 out of 95 respondents answered, which is 46.9%. The largest number of responses was obtained from hotels (33.3%), followed by restaurants (24.4%), wine bars (17.8%) and cafes (15.6%). The age of companies ranges between 1-80 years, with the majority (64.4%) being established for more than 10 years. According to the respondents, all participating companies belong to the category of small and medium-sized enterprises, i.e. they have less than 250 employees. The number of employees of the participating companies ranges between 2-70 employees.

The biggest concerns of companies associated with the COVID-19 pandemic in relation to their business were from 84.4% concerns about the financial impact, followed by the uncertainty created by this pandemic. Another significant concern among the participants was the fear of customers and tourists now or in the future. Respondents' concerns also included the effects of the pandemic on the future employability of employees and health, whether it was the health of people in the respondents' households or directly the employees in the company. Alonso et al. (2020) illustrated these responses in Figure 1.

Figure 1: Concerns associated with the COVID-19 pandemic in relation to business activity
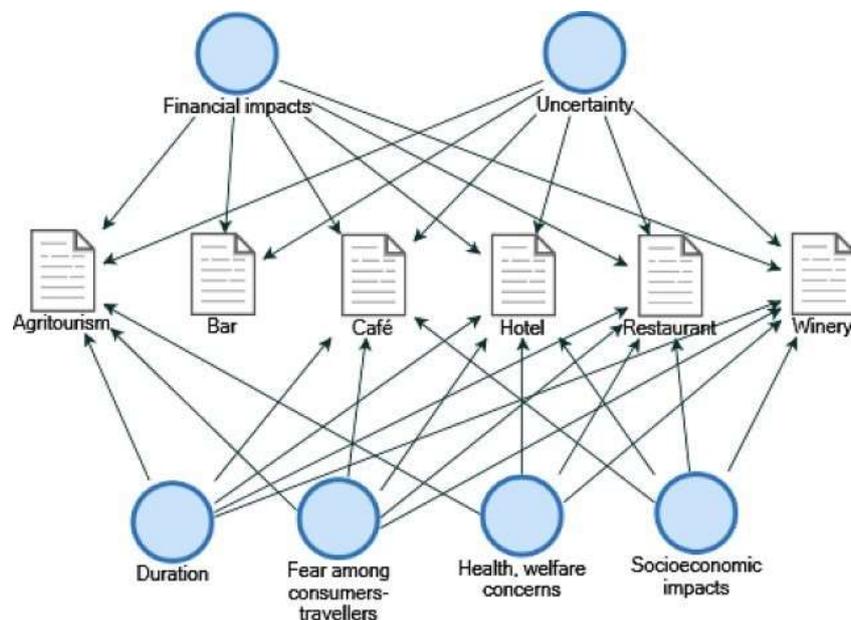
Source: Alonso et al. (2020), processed by authors.

When asked how companies are coping with the COVID-19 pandemic, 34 respondents found more than one solution. 37.8% of these solutions were focused on generating alternative revenue streams, for example by including or strengthening the possibility of delivering and take-out of food or products. Other ways in which participating companies are dealing with the COVID-19 pandemic are shown in Figure 2. Thanks to innovative and

creative approaches, some companies have managed to build a certain resilience and create new business opportunities. However, the pandemic did not bring any new opportunities to some companies. This is the case, for example, for those who are located far from consumers or places of demand or for those who have a different structure and business circumstances (food only for guests). Respondents had 3 different approaches to dealing with the COVID-19 pandemic. The first approach is active, which concerns the improvisation of the range of products and services that the company offers, or the use of innovative capabilities and the benefits of their location, for example in the city center. The second approach is inefficient, where companies have chosen to prepare for a post-pandemic regime. The third approach is inactive, where the only option for companies was to interrupt operations or set a standby mode, during which companies are waiting for new protocols allowing them to reopen.

Figure 2: Ways of dealing with the COVID-19 pandemic
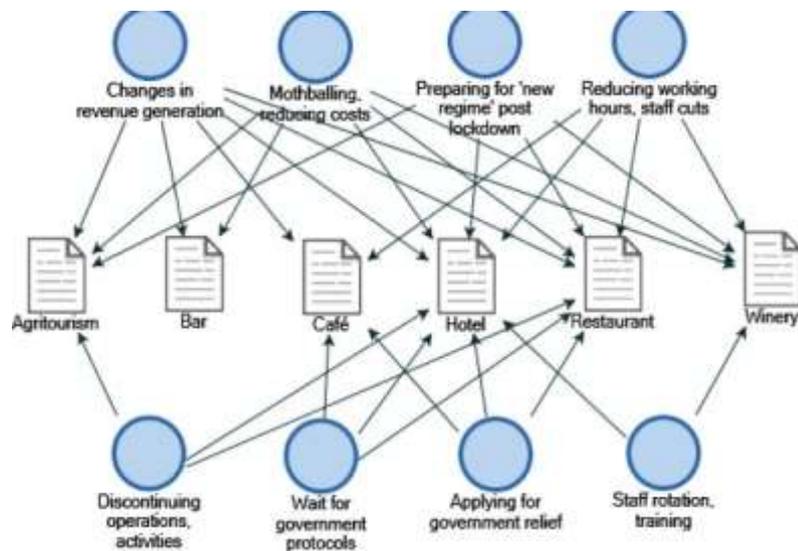
Source: Alonso et al. (2020), processed by authors.

When asked whether companies somehow changed or modified their daily activities, 60% of respondents said yes. The most frequent changes were mainly working from home. In the case of modifications in companies, emphasis was placed primarily on compliance with the requirements for the protection of the health and safety of guests and employees. Some participants also mentioned that they had time to think about new ideas, gather information and think about the future of their business. In some cases, they have changed their lifestyle. Changes and modifications of companies are shown in Figure 3.

Figure 3: Changes/adjustments in daily activities or tasks
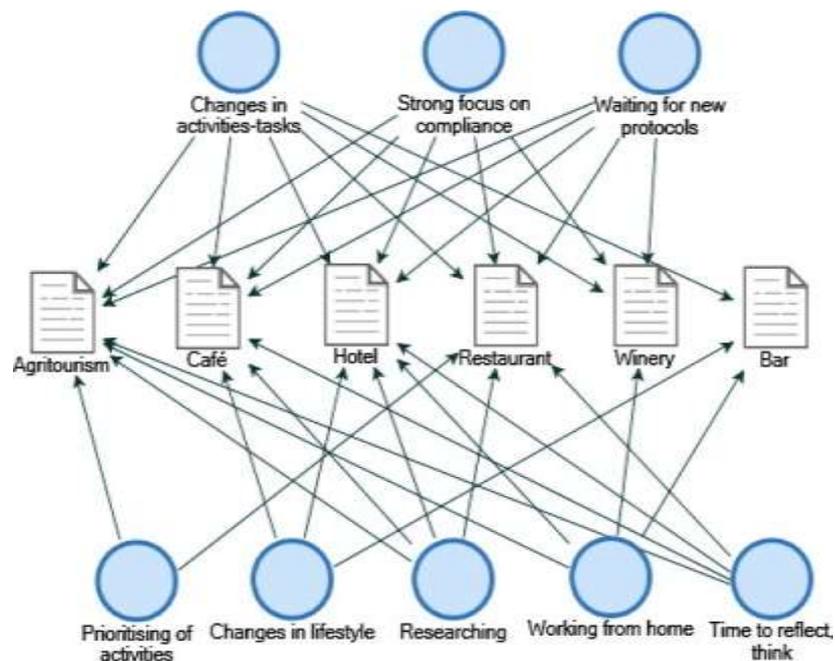
Source: Alonso et al. (2020), processed by authors.

Discussion

The results of the own questionnaire, answered by 9 out of 60 respondents, show that companies in the tertiary sector had or still have the greatest concerns about the financial impact on their business, uncertainty about what will happen to their business and the duration of the pandemic. Respondents also mentioned the fear of customers and tourists now and in the future. The same results were obtained by Alonso et al. (2020) from their questionnaires, which were answered by 45 out of 96 respondents. In Alonso et al. (2020) In addition, respondents raised concerns about the effects of the pandemic on the health of people in their households or the health of employees in their company.

During the research, 2 research questions were asked.

RQ1: Does the coronavirus pandemic have negative effects on the entire tertiary sector, or are there any sectors in this sector that are benefiting from the pandemic?

Although the COVID-19 pandemic appears to have harmed tertiary sector companies, it has provided new opportunities for some companies. In the hospitality industry, these are mainly delivery services for food and other products, without which restaurants and other hospitality facilities would not be possible to function at this time. Due to government regulations, restrictions on the movement of people and the closure of hospitality establishments, delivery has become the only way to get food or products to customers. When companies decided to deliver their products, they usually did so with the help of their own delivery. Some companies also used the services of distribution companies.

RQ2: What are the economic and personnel impacts of the pandemic on the tertiary sector in the Czech Republic and in the world?

The effects of the COVID-19 pandemic on the tertiary sector in the Czech Republic and in the world do not differ much. According to the questionnaire regarding the Czech Republic, the effects of the pandemic on hospitality companies meant mainly the dismissal or transfer of employees, changes in day-to-day activities and tasks, or even the termination/interruption of activities. However, this statement is inaccurate, given the small number of answers obtained.

According to the questionnaire survey by Alonso et al. (2020), the effects of the COVID-19 pandemic on hospitality businesses in other countries were similar. Companies around the world have also had to lay off their employees, move them to other positions or work from home, and close or suspend their activities.

Every company, whether in the Czech Republic or in the world, has reacted differently to the effects of the coronavirus pandemic. While some companies have focused on generating alternative revenue, building the company's resilience and creating new business opportunities during the pandemic, some companies have chosen to suspend their activities and prepare for the post-pandemic regime. Some companies have given up their fight against the pandemic and decided to end their activities or suspend them and wait for new government directions.

Conclusion

The aim of the paper was to analyze and describe the economic and existential impacts of coronavirus caused by government interventions and government regulations on the tertiary sector worldwide.

The aim of the paper was met. Data from the author's questionnaire survey and from the questionnaire survey of Alonso et al. (2020) was processed in MS Excel. These sets of data were then analyzed and presented in graphs and figures in the results chapter. In the chapter discussing the results, research questions were answered and the results from Alonso et al. (2020) were compared with author's own results from the questionnaire survey. Businesses in the tertiary sector are most concerned about the financial impact on their business and the uncertainty of what the pandemic will bring and how long it will last. Most often, companies dealt with the pandemic by laying off their employees, moving to work from home and adjusting their daily activities or tasks. Due to the COVID-19 pandemic, some companies had to close down. However, the results of the author's questionnaire survey were not very accurate, due to the small number of answers obtained. Nevertheless, it could be said that the Czech Republic and other countries in the world are dealing with the COVID-19 pandemic and its effects in a similar way.

In the future, it would be interesting to find out whether companies that have ceased their activities as a result of the COVID-19 pandemic have decided to resume their business in this sector or have decided to completely change their business plan.

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Customer manipulation during grocery shopping

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Abstract

Psychological influencing is a common practice in commerce, so it is not surprising that it also happens during grocery shopping. It is important for everyone to realize whether they are shopping correctly during their daily grocery store trip. Using data on general information about the individual, household standard of living, common items when shopping and comparing selected supermarket chains, collected by CAWI (Computer Assisted Web Interviewing), we were able to penetrate the ideas of everyday customers and analyze the data mainly by induction. However, the CAWI method does not prove to be the most suitable. The results show that only some demographic factors influence the view of the price level and that despite the fact that customers are aware of most of the influencing factors, they let themselves be manipulated by them anyway. These results will serve for a greater overview of the general population regarding the psychology of purchasing, managers of individual stores and chains, as well as professionals dealing with similar issues.

Keywords: left-digit effect, prices ending in nine, food chain, trademarks, produce country of origin, psychological influence

Introduction

Price is greatly influenced by the human view of the quality of the product, which plays a big role in deciding whether customers get a product of sufficient quality in exchange for their money. This idea is confirmed by Shiv, Carmon and Ariely (2005), who argue in their work that prices exert conscious influences on product quality expectations and product performance. Which logically implies that sellers use this abundantly to their advantage,

so we can notice prices that often end in the number nine (Tripathi and Pandey, 2018). Choi et al. (2014) argue that buying a certain product is often accompanied by a sense of guilt, which can be exacerbated if it is not a necessary thing for everyday life, but a thing to satisfy one's own desire or enjoyment. This guilt is, however, often alleviated by a sense of effort to obtain the desired product or a sense of selfless behavior (Choi et al., 2014). In addition, Lee-Wingate and Corfman (2010) found that guilt is even lower when a purchase includes a promotional item in the form of a gift that the customer can give to a loved one.

At this time, this issue, influenced by the spread of Covid-19, is very relevant for both consumers and directors and managers of individual stores, as customers have the opportunity to reveal when visual influencing of themselves occurs and managers and company presidents to find out how to increase sales with minimal price adjustment.

The aim is also to determine the psychological effect of price on the customer and the practices of selected chains used to get the customer to buy the product with a focus on price. Specifically, these are the three largest competitive retail chains in the Czech Republic, which according to the Chamber of Retail Chains SOCR ČR (2020) are those chains that achieve the highest annual sales in the Czech Republic; namely Kaufland, Tesco and Lidl. To meet the aim of the paper, it is important to answer the following questions:

V1: To what extent do demographic factors affect price perception?

V2: What feelings do prices visually evoke in customers?

V3: What factors influence customers to make a purchase that customers are most aware of?

V4: Do customers prefer products with a strong designation of origin more?

V5: To what extent are customers influenced by trademarks?

Literature research

The degree of influence on customers regarding how to pay the required price is a very broad topic, which can be considered from various angles. Tripathi and Pandey (2018), who deals with the issue of nine-ending prices for green and non-green products, says that, in customers, a round price evokes a feeling of quality and the purchase of something truly exceptional, while a product with prices ending with nine feels common to cheap. This is supported, for example, by Montero-Vincente et al. (2019), who state that the segment of people who prefer quality food decide on the basis of product quality rather than price attractiveness. Lin and Wang (2017) further develop this idea by the theory of the left-digit effect, which states that the price is more favorable for customers, the lower the left digit of the price at the expense of a price ending in nine. This effect is exacerbated when it comes to a discount; the original price is shown on the price tag and a significant difference between the left digit of the original price and the left digit of the new price is visible at first glance. Hrubá and Sadílek (2021) offer us another direction of focus on how to influence the customer, stating that music, which influences our feelings, plays an important role in purchasing decisions. It is music that often causes inattention when

choosing food for a large part of the population, the other part is already so accustomed to music in their surroundings that it takes it only as a backdrop (Hrubá and Sadílek 2021). A significant element in the increase in sales is the customers' popularity of innovation and trends; all new products or limited editions according to Nazzaro et al. (2019) show a high increase in sales.

Cole et al. (2008) brought about knowledge of brand loyalty and stereotypes, the main idea is that the younger generation is influenced by the older generation, whose decisions are related to age and experience, but despite these facts, the younger generation likes different sorts of products. Brand loyalty is mainly influenced by the factor of what sort of product it is. Kos Skubic, Erjavec and Klopčič (2018) state that people prefer country of origin and brand for meat products, while for dairy products they look mainly at prices. However, Balogh et al. (2016) claim that the designation of quality and origin plays an important role in all foods but depends on the attractiveness of the quality certificate and the authentic ingredients.

The attention of customers and their awareness is proportionally dependent on several variables. People who devote themselves to healthy nutrition and healthy lifestyles show a better orientation in the quality of products, which is supported by reading labels (Saba et al., 2019). Anić, Rajh and Rajh (2014), however, claim that it is also to some extent influenced by demographic variables, as confirmed by Sadílek (2019), who divided customers into three groups, unconscious customers who number half of the subjects, customers searching for quality products, who make up 24% and ultimately customers impulsive, based on their shopping behavior, which is based on the level of education, gender, income and the size and integrity of their family. We will use a questionnaire survey to collect information, as this style of information collection is considered to be the most ideal way to collect large amounts of information (Saunders, Lewis and Thornhill, 2019).

Methods and Data

To answer question V1, it will be necessary to obtain as much demographic information about the respondents as possible. Specifically, it will be necessary to know the age, gender, marital status, number of children in the household and whether they consider prices to be reasonable and affordable, too high or too low. When asking V2, it will be important to find out if they prefer round prices, prices ending in nine, and their perception about the left digit. In the case of V3, it will be necessary to find out which influencing factors the respondents notice when shopping. Among the factors interviewed will be the appearance of the price tags, namely their color, size, location in relation to the goods and the layout and size of the price tag text. Another factor is radio, both targeted music, which is supposed to put customers in a pleasant mood, and the ever-returning discounts and promotions, which are often part of the television advertising block and in advertisements placed on websites, and are also all written in a leaflet, which the vast majority of people receive in their mailbox and is also available in the store itself and

online. The distribution of goods is closely related to the stock of goods, because usually cost-effective goods are placed in prominent places, but we can see that the most expensive goods are at eye level and the cheapest goods are located at the bottom of the shelves. The last examined factor will be at first glance random texts around the store such as: bargain offer, price bomb,… which are of course purposefully placed. In the V4 question, it will be crucial to find out whether customers automatically choose goods that have a prominently stated designation of origin or whether they look past the first visual impression and look more specifically at all products and their origin, despite the fact that it will keep them in the store longer and if the country of origin is important to them. The last question, V5, focuses on whether customers also make decisions based on trademarks. It will therefore be important to find out whether customers prefer trademarks that guarantee them quality and whether they are willing to pay extra for such products. Therefore, whether they prefer quality over price or vice versa. As part of the summary of questions, it will be necessary to find out in which of the chains mentioned in the introduction it is most pleasant for customers to shop.

We will obtain all the necessary information by means of a questionnaire survey, which will be carried out using the CAWI method, the tool of which is a web questionnaire. Nazzaro et al. (2019) and Baregheh et al. (2012). The aim of the questionnaire survey will be to obtain all the information to answer the questions from the introduction. The filling out of the structured questionnaire will take place anonymously and online.

Due to the qualitative nature of the data, the main method for data evaluation will be the induction method, which will be used in all answers to research questions and will be supplemented by synthesis, comparative and relational methods.

Results

The questionnaire survey was filled out by 155 respondents, of which 116 were women, 38 were men and one respondent who chose to include themselves into the group "other". Graph 1 showing the age composition of the interviewed group. It is clear from this graph that the most numerous age group were respondents aged 18-25, namely 124 respondents, 6 respondents were from the groups <18 years old, 26-35 years and 36-45 years, 10 respondents were from the age group 46-55 and the least numerous group, 3 persons, were respondents >55 years of age. Of the total number of respondents, 81 are single, 54 in a relationship, 15 married and 5 divorced. 50 respondents live in one household with children, of which 32 with only one child, 15 with two children, 1 with three children and 2 with four or more children and 105 respondents live in one household without children. Regarding the level of food prices, 83 respondents responded that they were too high and 72 respondents that they were reasonable and none of the respondents thought that prices were too low.

Graph 1: Age of respondents
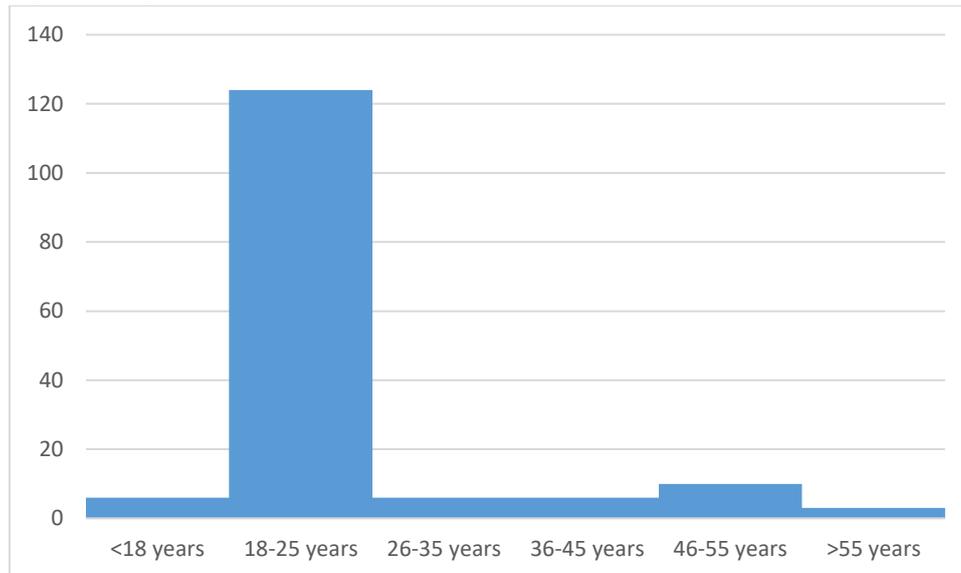
Source: Authors.

In the visual evaluation of prices 89 respondents chose the option 149.90 and 66 respondents chose the option 150. In the second visual evaluation of prices 94 respondents chose option 198 and 61 respondents chose option 200. When deciding on the placement of price tags on goods, 103 respondents preferred price tags under goods, 10 respondents above goods and 42 respondents do not care about the placement of price tags.

Graph 2 shows a graph of respondents' relationship to music in the store, where we see that 70 do not perceive music at all, 43 do not mind, 26 like it, 9 do not like it and 7 cannot stand it. Another element examined was an announcement about discounted goods on the store radio when shopping, with 61 respondents regarding it as annoying, 28 respondents not bothered, 46 respondents do not perceive it, 17 respondents sometimes find it beneficial and 3 respondents regularly shop according to it. The questionnaire also shows that 39 respondents do not look for advertising for promotional items, 77 respondents use classic promotional leaflets in paper form, 72 respondents prefer discount leaflets in electronic form, 39 respondents have confidence in television advertising and follow it, 5 respondents follow advertising on the radio, 36 respondents follow advertising on the Internet, 8 respondents follow advertising on billboards, 4 respondents search for advertising on the store radio, 2 respondents search for advertising on public transport and the daily press. Due to the fact that the question on the sources of promotional goods was semi-structured, respondents could use the option of their own answer, this option was used by 3 respondents, one of these three answers was that the respondent follows the current price tags in the store exclusively, the second answer was only the internet in general and the last respondent answered that they look at what is discounted, but not really; it is only artificially increased in price before the discount, so the final price is standard. The survey also shows that 113 of the respondents leave shopping with goods they did not plan to buy, 20 respondents always leave only with what they had on the list

and 22 respondents do not prepare a purchase list in advance. 55 respondents will add to their purchase the first thing they can get their hands on and 111 respondents will choose advantageous prices for products of the same category. Announcement signs such as price bomb, bargain offer, etc. attract 127 respondents, of which 33 respondents will automatically add goods to their purchase if it is a common item that they buy and 94 respondents will first consider whether it really is a bargain price. 28 respondents do not pay attention to these signs. For 94 respondents, the country of origin does not play a role on choosing the food product, rather their experience with individual products and their price, 44 respondents cannot be influenced at first glance for products with a clearly visible country of origin, they give other products a chance and inspect them first, and 17 respondents automatically reach for the product depicting the country of origin of their preference, as it is faster and they know where the goods come from.

Graph 2: Music on the store radio
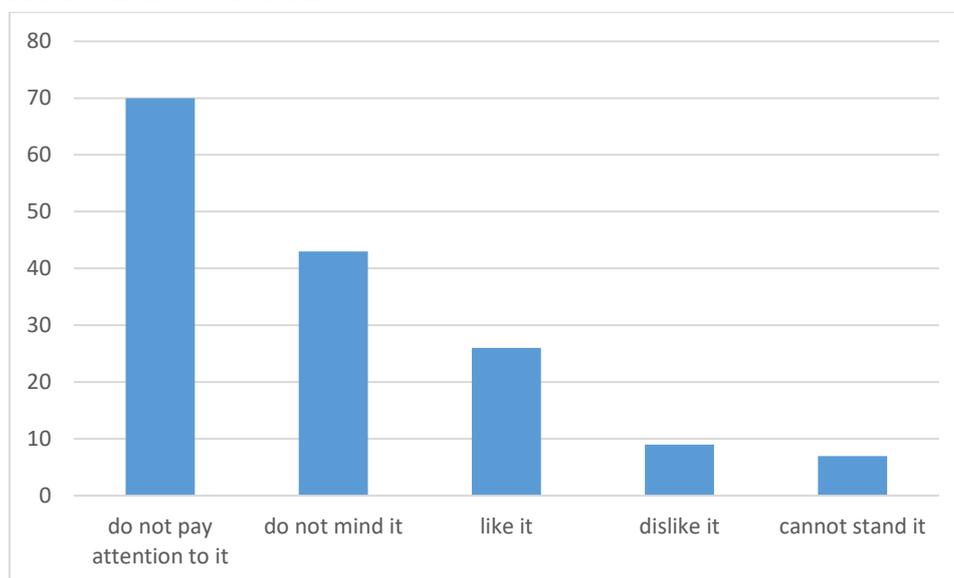
Source: Authors.

Graph 3 shows a graphical representation of respondents' decision-making factors when shopping; 67 respondents make decisions based solely on the price of food, 47 respondents make decisions based on the quality of product ingredients, 36 respondents prefer food with trademarks and 5 respondents buy only products with trademarks. In the visual choice between a product with a marked origin from the Czech Republic on the front and a product that did not have a marked country of origin on the front of the product, 106 respondents chose a product with a strongly visible country of origin and 49 respondents would choose a product without it. In the case of choosing between a traditional brand product without trademarks and a product of a lesser-known and less widespread brand, boasting several trademarks, 134 respondents chose a traditional brand product and 21 respondents chose a trademarked product.

Graph 3: Decision-making factors when shopping for food
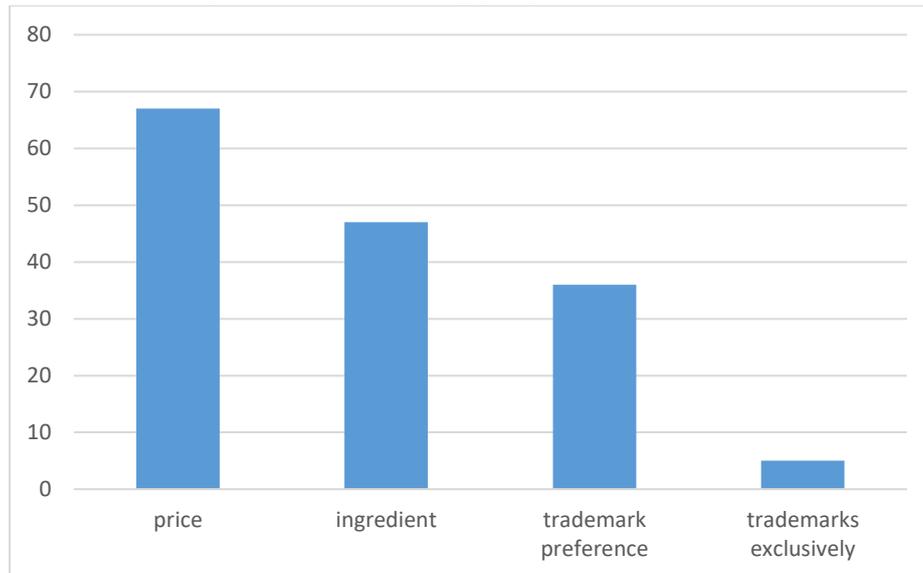
Source: Authors.

Respondents purchasing products were asked about their willingness to pay extra for trademarked products, see Graph 4. Thirty respondents do not hesitate to pay extra for trademarked products, 60 respondents are willing to pay extra, but at the same time try to look for promotions and discounts and 42 respondents buy trademarked products only if they are comparable in price to others.

Graph 4: Willingness to pay extra for trademarks
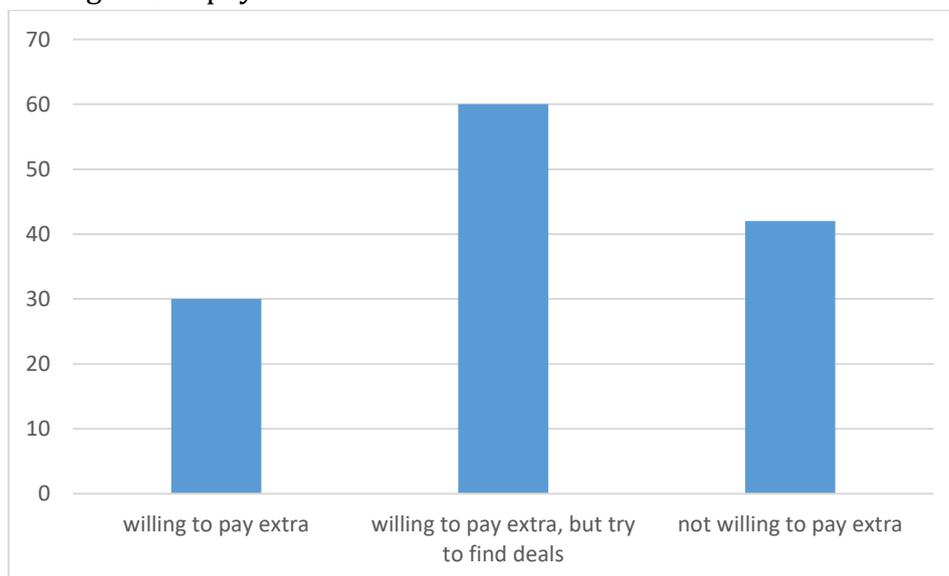
Source: Authors.

Graph 5 shows respondents' satisfaction with individual segments in selected food chains. The first listed here are the advantageous prices, with 63 respondents satisfied with them in Kaufland stores, 19 respondents in Tesco stores and 73 respondents in Lidl stores. Regarding logical placement of goods within the sales area, 42 respondents show

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satisfaction with the Kaufland chain, 42 respondents with the Tesco chain and 71 respondents with the Lidl chain. As for loyalty programs, 39 respondents expressed satisfaction with the Kaufland chain, 57 respondents with the Tesco chain and 59 with the Lidl chain. As for the diversity of payment options, 33 respondents opted for the Kaufland chain, 73 respondents for the Tesco chain and 49 respondents for the Lidl chain. The highest density of assistance staff in the sales area was recorded by 42 respondents at Kaufland stores, 51 respondents selected Tesco stores and 62 respondents chose Lidl stores. The diversity and availability of goods is best met by the Kaufland chain for 60 respondents, by Tesco for 54 respondents and by Lidl for 41 respondents. Regarding the most ideal size and clarity of the payment area, Kaufland was chosen by 41 respondents, 66 respondents selected the Tesco chain and 48 respondents selected the Lidl chain.

Graph 5: Customer satisfaction in monitored chains
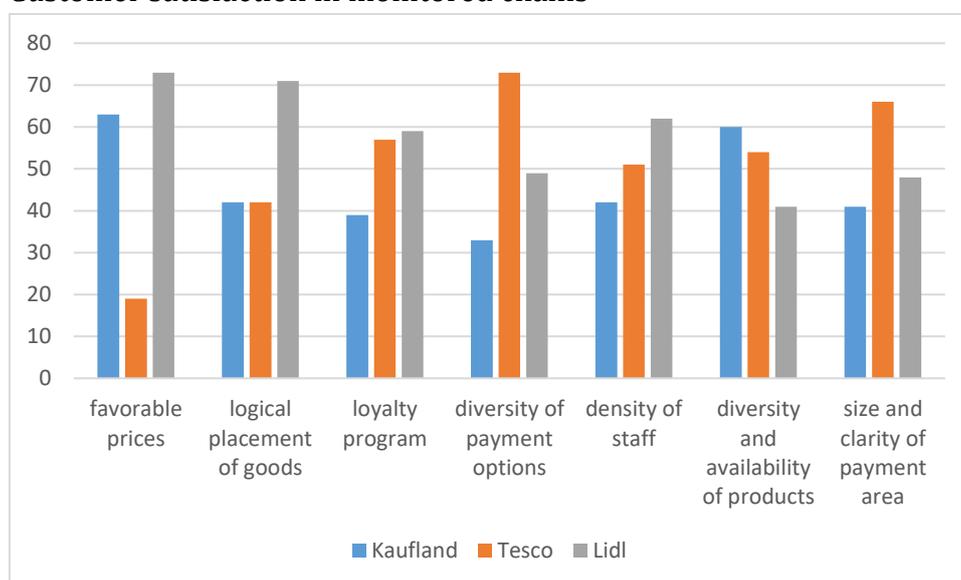
Source: Authors.

Discussion

We will use the information obtained by the questionnaire survey to answer the research questions that were created in the introduction:

To what extent do demographic factors affect price perception? The price is too high for a large number of customers. Its perception, in terms of demographic phenomena, is not affected by gender, but prices are too high for married customers, as well as for customers living with one or more children in the same household and those in the age group 36 and older.

What feelings do prices visually evoke in customers? For customers of food retail chains, the most positive feelings are evoked by prices that are visually much lower than their actual level. This is the effect of the left digit and the nine-ending price; regarding both crowns (CZK) and pennies. The research done Lin and Wang (2017), Patalano et al. (2021)

and Tripathi and Pandey (2018) is in line these findings. When placing price tags on shelves, they prefer them to be placed under the product.

What factors influence customers to make a purchase, that customers are most aware of? A significant element is radio in the store, the music of which respondents feel neutral to negative towards, which is closely related to the announcement of promotional items on the radio, which receives a similarly negative sentiment among customers. Customers search for discounted goods in classic paper leaflets, but also in their electronic form, and notice advertisements for promotional products on television and on the Internet. A significant and successful factor are the announcement texts and signs in stores for bargain purchases, which have a minimal negative response and a very positive effect supporting the purchase of products, customers are aware of their influence, but still buy products recklessly, which is why customers leave the store with products that they were not planning to purchase.

Do customers prefer products with a strong designation of origin? The decisive factor for most customers is the price and experience with a certain product of the given category, more than a strong designation of origin, they prefer traditional brands.

To what extent are customers influenced by trademarks? Tradition and price also prevail in the question of trademarks. But customers who prefer or search for trademarks have no problem paying extra for these products, with half of those looking for discounts and promotions.

When comparing the selection of retail supermarket chains with food products, it is best to shop at, according to customers, the Lidl chain with the highest frequency of votes across all rating points.

Conclusion

The aim of the article was to find out the opinion of customers on retail food chains in relation to prices and surrounding shopping phenomena. The goal was met and all answers to the questions were found. Nevertheless, it would be better to choose a different method of data collection than a questionnaire for the next similar research, so that psychological connections, from conducting for example a personal interview, could be evaluated more accurately.

The majority opinions regarding food prices depending on demographic factors, significant factors influencing customers when shopping, the relationship of Czech customers to trademarks and country of origin designations, which prices are more visually enticing and which chain is the best for shopping were found. This information can be used both by customers themselves to become aware of the entire shopping system, and by companies that want to target their development in the right direction.

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Comparison of Funding Corporate Education in the Czech Republic in 2016 and in 2021 during the Covid-19 Pandemic

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Abstract

The paper deals with an analysis of sources of finance for corporate education in the Czech Republic during the covid-19 pandemic in 2021, and compares such concept with conditions in 2016. The research is based on results of two questionnaire surveys. The first survey, where 607 companies were involved, took place in 2016, whilst the second one (with 506 companies participating) in the first half of 2021. Both surveys examined whether different types of funding employee education depend on company size, with two hypotheses being established. The first hypothesis (i.e. Using external sources of finance for employee education depends on company size) was confirmed, as large companies use more external sources than smaller companies. However, the second hypothesis, which was to prove a claim that the share of funding employee education solely from funds, projects, grants and subsidies will have an increasing tendency (when comparing the first and the second period under review), was not confirmed.

Keywords: corporate education, funding sources, human resources, covid-19

Introduction

Growing technical demands of production, opening of new markets as well as competition growth place high demands on companies. Human resources are currently one of the most important factors in competition. "If an organization is to develop in today's highly competitive environment, it cannot do so without ongoing training and development of its employees" (Urbancova et al., 2021).

According to Armstrong (2014), education and development are defined as a process ensuring that an organization has educated, qualified and committed people. It is

desirable that employee education should be seen as an investment that returns to the organization in the form of educated and capable employees. Given the fact that human resources have become the biggest competitive advantage of organizations, Czech organizations strive to create and continuously provide a variety of talent programs to their employees (Vnoučková, Urbancová, Smolová, 2018).

At present, the labour market is going through great development not only with regard to introducing digitization and other trends in Industry 4.0, but also in connection with the situation surrounding the global covid-19 pandemic. According to Beneš (2021), more than half of industrial companies in the Czech Republic are currently facing a shortage of skilled labour, as based on to the latest statistics. It may be assumed that the covid-19 pandemic will further exacerbate this problem. On the other hand, it should be noted that even in the pre-pandemic period, initial employee education did not provide the knowledge and skills expected by employers, and companies could not do without their employees´ further education and competence development.

Another reason for educating employees is that their initial education is no longer able to provide grounding for the entire period of their professional career. Denkowska, Fijorek, Wegrzyn (2020) followed the research of Earle (2010) who had shown that innovations are reflected in the knowledge and skills of employees with tertiary education. Denkowska et al. (2020) then proved that innovations and competitiveness depend on the will and skills of workforce to maintain habits of self-studying. The knowledge acquired as a result of formal education has a weaker, although still significant, impact on the level of innovations in EU countries.

"From the viewpoint of organizations, knowledge is the most important intangible resource that can be found in human beings. In line with rapidly changing trends, it is necessary for organizations to focus on implementing an innovative education system and be able to work in accordance with sector expectations leading to knowledge promotion." (Vnoučková, 2017). Also, Fajčíková, Urbancová (2017) looked into evaluating tools for education and development of human resources used in organizations operating in the Czech Republic.

In addition, employee education is also supported within the EU, and a number of tools have been developed to support lifelong learning. The Strategic Framework for European Cooperation in Education, adopted in May 2009, defined values for participating in education to be achieved in 2020. A corresponding proportion rate of adults aged 25-64 to participate in long-term education was set at the minimum of 15%. According to Eurostat, the rate was reported to be at 10.8% in 2019, which was 0.7% higher than in 2014. The best performers were Denmark, Finland and Sweden, where the figure ranged between 25.3% and 34.3%, whereas the worst countries in that respect included Romania, Bulgaria, Greece and Croatia (less than 4%). The Czech Republic recorded 11.1% of people in the above age group engaged in lifelong learning (Eurostat, 2020).

Considering an approach to employee education, it differs not only between individual states, but also between their individual regions. Filippetti, Iammarino, Guy (2017)

discussed regional differences related to the impact of employee education on employment. They focused on the effectiveness of educating and its impact on employment within the northern and the southern regions of Italy. They also addressed differences in the private sector and the public sector and described funding sources.

European Union funds are the main instrument for implementing the European cohesion policy. Interested parties have an opportunity to draw down the funds through individual operational programs. The European Social Fund (ESF) has been supporting employment and human resources development activities since 1957 with the focus on non-investment projects. In the Czech Republic, the funds are drawn through the Employment Operational Program. Its aim is to improve the population´s human capital and public administration in the country, also involving the area of further education. In the course of the 2014-2020 programming period, a number of calls directed at employee education were implemented through the program: Development of further vocational education (020), Corporate employee education (043), Education – a common path to development! (060), Corporate employee education II (097), Education – a common path to development II! (110), Age management – a smart change in management, an opportunity for growth (079). (Ministerstvo práce a sociálních věcí, 2020) Another opportunity for drawing down the funds involved POVEZ and POVEZ II programs. Education and development of competencies are also supported in other operational programs implemented in the Czech Republic, e.g. The Rural Development Program, The Fisheries Operational Program and others. A number of funds supporting education in the above programming period were also drawn through Local Action Groups under the LEADER program. Líšková, Klufová, Rost (2019) assessed the LEADER program in relation to the Visegrad Group (V4).

Tomé and Tracz-Krupa (2019) examined experience with drawing down funds from the ESF within the V4 in the 2007-2013 programming period. They state that the ESF is a form of public investment in human resources development using EU funds, and it is also a tool to help the V4 countries and their labour markets develop and lead them to increasing levels of skills. At the beginning of the period, the V4 countries had a good educational base comparable to the EU average. However, vocational training and further education are the areas where large deficiencies were found. Despite some quality problems, Tomé and Tracz-Krupa (2019) view the experience with drawing down the funds as very positive, with greater development and increased skill levels occurring in terms of human resources development.

A large number of companies in the Czech Republic are aware of the importance and need for educating of their employees. However, they do not always have enough of their own financing sources, and it is the drawing down from the EU structural funds (through various operational programs) that can provide them with sources to support educating. Dubel and Pawłowska (2020) deal with the issue of using ESF sources for education.

According to Morley et al. (2016), the amount that Central and Eastern European companies spend on educating of their employees is approximately 4% of the total annual

wage costs. They also remark that while assessing the effectiveness of individual training programs, feedback from line managers is most applied, which is followed by feedback from employees, fulfilment of goals and immediate response to trainings from their participants. The cost-effectiveness of skills development was addressed by Bhattacharya, Gibson, Doty (2005), who found that flexibility of abilities and skills contributes to cost-effectiveness. The findings suggest that investing in flexible skills and employee behaviour will positively affect financial performance of companies.

Urbancová et al. (2021) observed changes that occurred as a result of the covid-19 pandemic. They state that current trends and priorities of human resources for 2021, including an approach to funding, have changed significantly.

Methods and Data

The main objective is to determine whether and to what extent sources of funding related to corporate education differ depending on company size. Thus, the following hypothesis (Hypothesis I) was formed: Using external sources of finance for employee education depends on company size, large companies use more external sources to fund employee education than smaller companies. Furthermore, the research presented here followed results of the research conducted in the second half of 2016, as based on Caha (2017).

The other objective is to compare results of two questionnaire surveys from 2016 and 2021 respectively. The following hypothesis (Hypothesis II) was therefore formed: When comparing the first period (2016) and the second period (2021) under review, the share of financing employee education solely from funds, projects, grants and subsidies will have an increasing tendency. The second hypothesis is based on an assumption that the year 2021 is the end of the 2014-2020 programming period and individual companies had already had enough opportunities to gain experience in drawing down funds particularly from the EU structural funds.

A related research sample encompassed companies of diverse types and eventually amounted to a total of 506. Questionnaire survey results were processed by basic mathematical and statistical methods. To verify dependence of individual factors, calculations in the SPSS program were performed and a chi-square test as well as a sign test were applied. The companies were divided into four groups (categories) according to size, as indicated in Table 1.

Tab. 1: The structure of the research sample

Company Categories	Number of Companies
Micro-enterprises (1-9 employees)	130
Small enterprises (10 – 49 employees)	139
Medium-Sized enterprises (50-249 employees)	108
Large enterprises (250+ employees)	129
Total	506

Source: Authors.

Results

Regarding the individual groups, it was then examined how companies fund educating of their employees, which may be seen in Table 2:

Tab. 2: Structure of financial resources according to company size

	Micro-Enterprises		Small Enterprises		Medium Enterprises		Large Enterprises	
	Number	%	Number	%	Number	%	Number	%
solely from own funds	118	90,8	115	82,7	80	74,1	61	47,3
solely funds from projects. grants and subsidies	1	0,8	6	4,3	5	4,6	10	7,7
mainly from own funds, partly from projects, grants and subsidies	8	6,2	13	9,4	18	16,7	48	37,2
mainly funds from projects, grants and subsidies, partly from own funds)	3	2,3	5	3,6	5	4,6	10	7,8

Source: Authors.

The chi-square test confirmed significant dependence between company size and types of funding employee education (see Table 3). Therefore, Hypothesis I was confirmed.

Tab. 3: Chi-square tests

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	75.009[a]	9	.000
Likelihood Ratio	74.085	9	.000
Linear-by-Linear Association	43.812	1	.000
N of Valid Cases	506		

a. 2 cells (12.5%) have expected count less than 5. The minimum expected count is 4.70.

Source: Authors in the SPSS system

Moreover, Hypothesis I could also be verified using a sign test (see Table 4). Statistically, large enterprises significantly more often declare that they mainly use own funds, partly grants, etc. – with 99.9% reliability (+++), but also significantly more often use solely projects and grants and mostly projects and grants – with 95% reliability (+).

Tab. 4: A sign test

sources * size Crosstabulation					
Adjusted Residual					
		Size			
		Micro-Enterprises	Small Enterprises	Medium-Sized Enterprises	Large Enterprises
Sources	solely funds from projects, grants and subsidies	-	o	o	+
	mainly funds from projects, grants and subsidies, partly from own funds	o	o	o	+
	mainly from own funds, partly from projects, grants and subsidies	---	--	o	+++
	solely from own funds	+++	++	o	---

Source: Authors in the SPSS system

Graph 1 shows the structure of resources for funding corporate education in 2021.

Graph 1: Types of funding corporate education
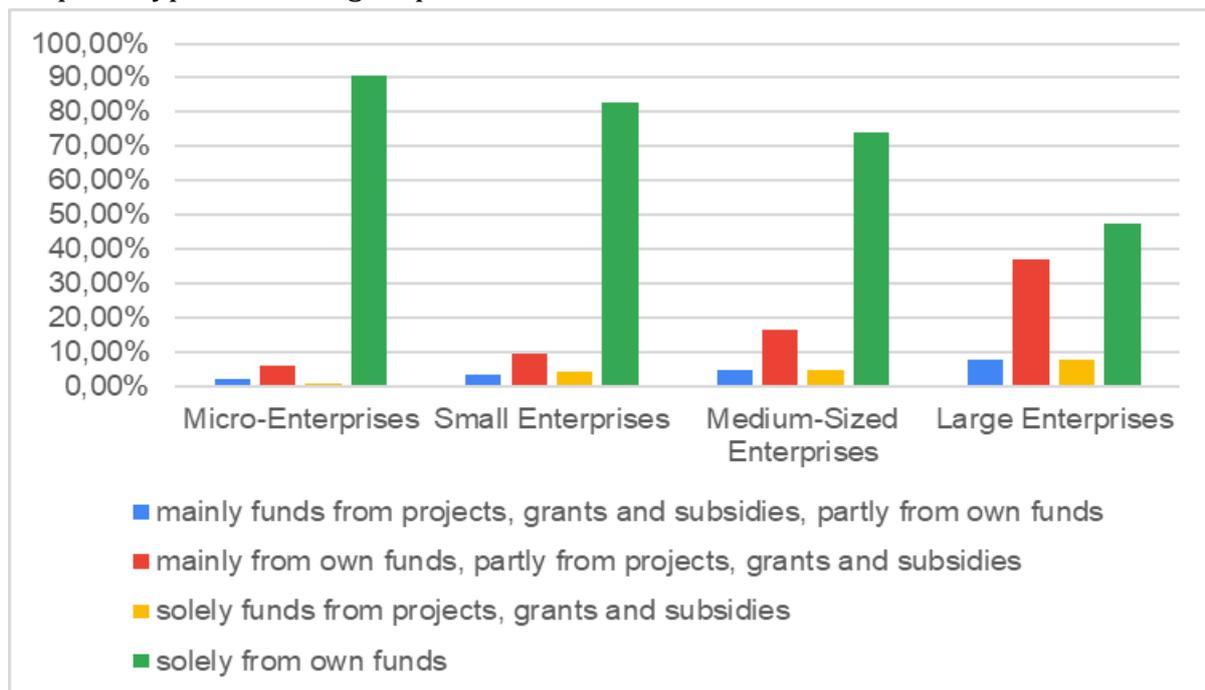
Source: Authors.

Table 5 shows a comparison of shares of individual funding types in 2016 and 2021. In 2021, large companies decreased the share of financing solely from own funds and mainly from own funds. On the other hand, there was an increase in the share of funding through projects, grants and subsidies.

Tab. 5: Sources of funding employee education based on company size - years 2016 and 2021

	Micro-Enterprises		Small Enterprises		Medium Enterprises		Large Enterprises	
	2016	2021	2016	2021	2016	2021	2016	2021
solely from own funds	85,5 %	90,8 %	76,1 %	82,7 %	60,1 %	74,1 %	53,7 %	47,3 %
solely funds from projects, grants and subsidies	4,6 %	0,8 %	3,4 %	4,3 %	3,7 %	4,6 %	2,4 %	7,8 %
mainly from own funds, partly from projects, grants and subsidies	7,6 %	6,2 %	13,6 %	9,4 %	29,4 %	16,7 %	41,5 %	37,2 %
mainly funds from projects, grants and subsidies, partly from own funds)	2,3 %	2,3 %	6,8 %	3,6 %	6,7 %	4,6 %	2,4 %	7,8 %

Source: Author.

As for micro-enterprises, small enterprises and medium-sized enterprises, the share of financing solely from own funds increased in 2021 (when compared to 2016), and yet the share mainly from own funds decreased (even by more than 12% in the case of medium-sized enterprises). Regarding funding mainly from projects, grants and subsidies, the share stagnated (micro-enterprises) and slightly decreased (small and medium-sized enterprises).

Graph 2: Sources of funding employee education based on company size - years 2016 and 2021
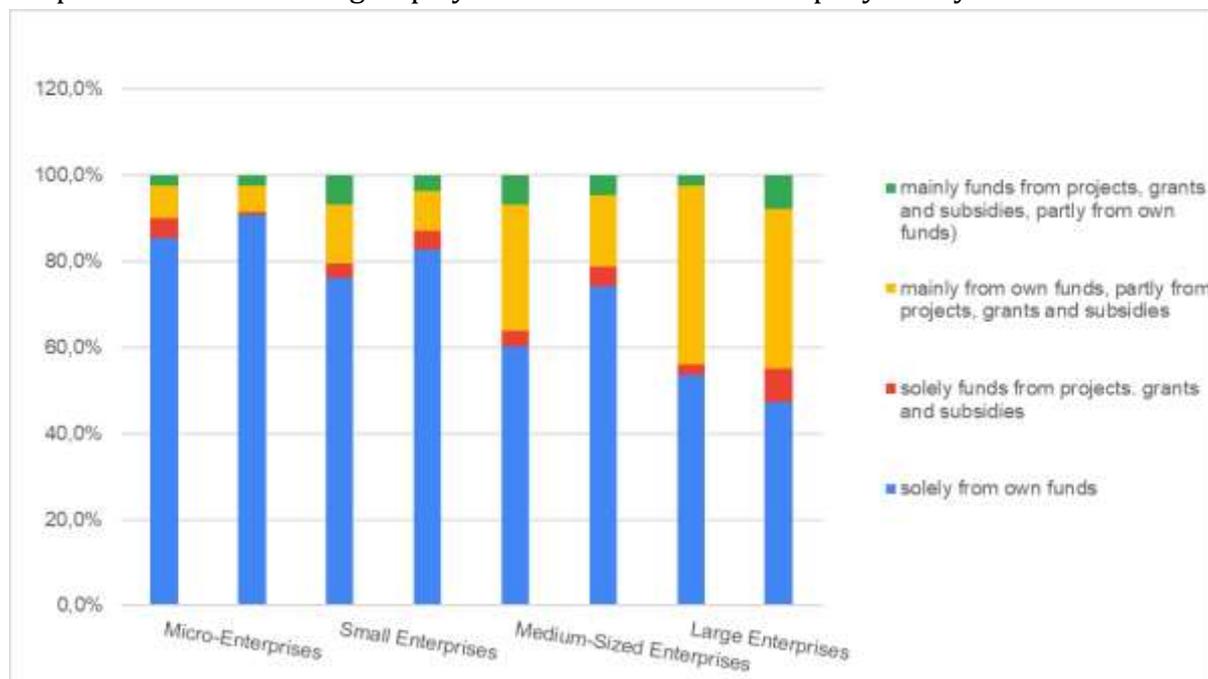
Source: Author.

Following from the results illustrated in Table 5 and Graph 2, it can be stated that Hypothesis II was not confirmed. The increase in the share of funds from projects, grants and subsidies occurred only in large companies, whilst the share stagnated or even decreased in other companies.

Discussion and Conclusion

Statistical methods proved that using external sources of finance for employee education depends on company size, where large companies use more of such sources than smaller companies and are able to better cope with the administrative complexity of drawing down individual subsidy titles. There can be several reasons for that. In general, it may be assumed that large companies have better conditions for managing the administrative process associated with drawing down subsidies, both in the form of sufficient personnel and financial coverage. There are companies able to manage the entire course of administration and actual implementation from their own funds, whereas other companies are forced to use external services. In most cases, when drawing down subsidies, eligible expenses are reimbursed only after the project´s implementation and completion. Thus, applicants are often concerned that if they make a mistake, the project will not be reimbursed and they will have to bear the costs from their own funds. Also, the situation is certainly complicated by the fact that for most projects, education suppliers must be selected in accordance with the Public Procurement Act. The Czech Chamber of Commerce (CCC), for instance, is aware of that and organizes courses for its members. The CCC therefore enters the role of an applicant and handles the administrative burden, organizing and responsibility for drawing down on behalf of its members.

The objective was also to confirm Hypothesis II: The share of funding employee education solely from funds, projects, grants and subsidies will have an increasing character in view of comparing the first and the second period under review. However, the hypothesis was not confirmed. There are several reasons why the share stagnated or even decreased, with the covid-19 pandemic being one of them. Several forms of aid, e.g. Antivirus A, were drawn down from the ESF, and a combination of the ESF education aid and the Antivirus A aid would mean double funding, which is inadmissible under the Structural Funds programs. This generated a situation where companies had time for educating their employees, but had to carefully consider funds they would use. Another problem related to the pandemic was the inability to organize full-time education. Considering the fact that the Czech Employment Operational Program (EOP) was originally aimed only at full-time education, the official notification of programs where the form was changed to online education had to be made again. Additionally, it even occurred that educating through the EOP could not be implemented at all for a certain period of time. As a result, if companies wanted to educate their employees during that period, they could only use their own funds. Another obstacle to drawing down was de minimis aid indicating that a given entity must not exceed the sum of EUR 200 000 in any three-year period. Apart from educating, the sum (limit) also included aids for job retention, which could potentially lead to meeting the limit. However, that would be assumed particularly for large and medium-sized enterprises.

In conclusion, it can be stated that companies rely mainly on their own sources of finance when funding education of their employees, and there are still large reserves in using funds from programs, grants and subsidies.

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Motivated employees as key to success of any organization

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Abstract

Employee motivation is currently the main key to the success of the entire organization. A purpose of a questionnaire survey implemented in a selected organization was to find out whether its employees are properly motivated and to find out which motivating factors are the most effective ones in relation to their performance. The results have shown that it is necessary to implement some changes; for this reason, several recommendations have been made in order to achieve improvement. The benefit of this work for the organization is the detailed overview of the actual situation in terms of the incentive system and the recommendations based on the employee preferences and current trends. The organization will also obtain new impulses that may lead to better employee motivation and thus improve the performance of the relevant organization.

Keywords: motivation, employees, organization, human resources management

Introduction

Motivation is currently a very topical issue, and one of the most important elements in the area of human resources management. Motivation is basically a process of inspiring people to achieve their goals (Chaudhary and Sharma, 2012). Employee motivation is a minor but important part of successful personnel management. Managers must be able to identify employee goals and lead employees so that they are able to achieve those objectives. Recognition and feedback are considered the primary motivators; more money does not necessarily mean better motivation and productivity (Fuhrmann, 2006).

All employees have their specific objectives and a clear picture of what they want to achieve at work in order to be satisfied. To achieve these objectives, employees are willing to work well and reliably (Stýblo, 1992). Work motivation represents a complex approach of an

employee to work in general, to specific circumstances and conditions of his or her engagement and employability, and specific assigned tasks (Provazník, Komárková, 1996).

Are all employees fully engaged in their work? A recent study has shown that it is not true. Actually, it is less than 1/3 of them (Markos, Sridevi, 2010). The question is whether employees feel well after whole-day work and if they feel satisfaction from the work done, whether they feel that they have achieved something, helped somebody, learned something, and contributed to something. Increasingly more often, employees ask what is the purpose of their work. The response should be that it is more than just money. Of course, they need money for satisfying their basic needs; however, motivation and engagement are not something money can buy (Guinn, 2013).

The main objective of this study is to assess the system of employee motivation in the company Hauser s. r. o. and subsequent evaluation of whether the employees of this company are properly motivated, or to find out which motivation tools are the most effective in relation to improving their performance.

Literary research

Theory of motivation has been addressed in professional literature in the sense that managers use motivational factors to successfully tackle/handle their assigned tasks. The question is whether managers in the Czech Republic are able and willing to use the individual motivational factors for their managerial work. Another question is which motivational factors can be used to motivate employees to the best performance possible. Appropriate motivation is of great importance for better performance, productivity, efficiency, and profitability. This idea is presented by Hospodářová (2008), who claims that the basic objective of motivation is to find and retain a qualified employee with high productivity and efficiency of performance.

Employee motivation is one of the tasks of a manager. In this context, the most frequently cited authors are Mintzberg (2006) and Šuleř (2008); however, each of them has a different approach. Mintzberg (2006) defines the role of a manager on the basis of manager activities, while the definition by Šuleř (2008) is based on their functions. According to La Bross, culture in the workplace is supported by managers who use all opportunities to encourage and motivate their subordinates. Authors, such as Daigeler (2008), Niermeyer and Seyffert (2007) state that the motivation of subordinates is one of the most important managerial tasks. Crainer and Des (2004) believe the more subordinates lose their motivation and their performance decreases, the more physical problems arise.

Making people work their best is one of the biggest challenges for managers. Employee satisfaction and motivation are becoming increasingly more important in companies. According to Nohria, Groysberg and Lee (2008), factors that enhance motivation include establishing bonds with the employees, understanding, and comprehension.

Salanova and Kirmanen (2010) explain that the process of motivation starts with the recognition of unsatisfied needs. Next, it is necessary to set the objective that would satisfy the need. For better achievement of the given objective, rewards for employees can be help set. Motivation is also influenced by social context, which comprises organizational and cultural values, as well as leading and management, influence of a group or a team.

According to the study by Oldham and Hackman (2010), which focuses on employees in education, institutions, and scientists, specifies six main factors: remuneration and benefits, career growth and development, meaningful work, leadership style, workplace relationships, and job security.

Norberg (2017) examined motivational factors and effectiveness of motivational factors related to work motivation. First, the author focused on various motivation theories and categories of incentives. The results of the study showed that incentives have very strong motivational potential and are able to make employees work more. The three most effective motivational factors appreciated by employees include human relationships, working environment, and interesting work. Other effective long-term factors motivating to work include meaningful work, flexible working hours, or social responsiveness; on the contrary, financial rewards, certificates, and gifts are effective only in the short run.

This is confirmed by Stachowska and Czaplicka-Kozłowska (2017), who conducted a questionnaire survey among non-academic workers of the university Warmai and Mezury in Olsztyn (Polandu). The authors concluded that employee motivation is influenced especially by the following factors: reward for work performed, career growth, personal development, human relationships, and effective communication.

The study by Insan and Yasin (2021) aimed to analyse and explain factors influencing employee motivation and employee performance. Six out of seven hypotheses formulated were accepted; one was rejected. The author concluded that managers need to pay more attention to the relationship with their subordinates, ensure fair wages and remunerations, and improve their comprehension and approach to employees. The research was conducted within 42 cooperating units in Makassar City. The data were collected by means of questionnaires and interviews (Insan and Yasin, 2021).

Many researchers see money as a motivational factor. It is often considered to be a symbol of success, often associated with comfort and safety (Engelberg and Sjöberg, 2006). This is advantageous for managers, since they can use money as a strategy, and money can have a large impact on employee performance.

Employee motivation is of great importance for any successful organization. Each company should focus on motivating human resources if it aims to be competitive in the market and avoid situations such as problems with retaining employees, which may have a negative impact on their business (Pârjoleanu, 2020).

COVID-19 has had a huge impact on the lives of people all over the world, and affected the level of employee motivation. The objective of the study by Sudershana, Satpathy and Patnaik (2021) was to map the impact of this pandemic on employee engagement in

companies that specialize in information technologies. In this research, both secondary and primary data were used. The study aimed at introducing new methods of how to retain and motivate employees in times of crises such as the COVID-19 pandemic COVID-19 (Sudershana, Satpathy and Patnaik, 2021).

The COVID-19 pandemic has negatively affected all areas of human life all over the world, including people´s motivation. An important task of all managers is to keep their employees positive and motivated. The objective of the research was to define the impact of the COVID-19 pandemic on the motivation of employees in micro-enterprises and small enterprises operating in Slovakia. The development of employee motivation was analysed in three areas: finance, work, and relationship. In the years 2017 – 2020, 848 respondents were addressed through stratified sampling. A significant decrease in the respondents´ preferences was recorded in the case of all motivational factors under review. Testing confirmed the existence of statistically significant differences during the year 2020 compared to previous years when examining the following motivational factors: basic salary, job security, a good work team, communication at work, and the approach of the superior. The main research benefit is the finding that the COVID-19 pandemic has affected also the area of employee motivation (Hitka et al., 2021).

The study submitted aims to answer the following questions: Are employees of the company Hauser s. r. o. properly motivated? What factors are the most effective ones?

Methods and Data

The main objective of this study is to assess the way of motivating employees in the company Hauser s. r. o. and evaluate whether the employees of this company are properly motivated, or to identify the most effective factors of their motivation related to their performance. The objective will be achieved through analysing the incentive system in the company by means of a questionnaire survey. In the conclusion part of the paper, changes related to possible shortcomings identified in the area of motivation are suggested which may contribute to overall higher employee satisfaction.

The most suitable method of data collection is an online questionnaire in the platform www.survio.com. The link to the online questionnaire is distributed to the employees via e-mail. The questionnaire survey is conducted between 5 April 2021 and 12 April 2021 with the participation of 110 respondents. The questionnaire consists of 12 questions examining the corporate system of incentives. The questionnaire survey will be anonymous so that the respondents can answer the questions without any limitations. In the introductory part, the questionnaire focuses on the basic demographic data on the respondents, such as gender, age, and the education attained. The following part contains questions concerning employee motivation.

The questionnaire contains close-ended questions where the respondents choose one or more possible options, and semi-open questions with predefined answers, and an option for free answer. The questionnaire also contains open-ended questions, which enable the

respondents to express their opinion but also make it difficult to interpret the results obtained. There are also questions where respondents assign points to options based on their preferences. The questionnaire will be evaluated using the statistical functions in MS Excel.

Results

Time necessary for completing the questionnaire varies from less than one minute to more than one hour. In most cases, the completion of the questionnaire took 5–10 minutes.

The first question focused on the gender of the respondents. 81 men (73.6%) and 29 women (26.4%) participated in the questionnaire survey. The resulting ratio confirms the structure of the company. Men mostly work at an assembly line, while women work rather as administrative workers. The second question asked about the age of the respondents. The results show that most employees of the company are at the age of 26-45 (58.5%). The employees at the age of 46-55 accounts for 25.2%, while the employees not older than 25 account for 11.4%. The least represented age category are the employees at the age of 56 and older (4.9%). The employees of Hauser mostly completed secondary education with a diploma (38.4% of the respondents) or vocational education with an apprenticeship certificate (34.8%). The highest level of education attained is university education (19.2%) and higher vocational education (4.4%). Only 3.2 % of the respondents completed basic education only. Nearly a half of the respondents (49.8%) have been working in the company for 1-5 years, while 20.2 % of the respondents have been working in the company for 6-10 years. 18.4% of the respondents have been working in the company for more than 10 years. These employees are very important for the company, since they have a lot of experience and can thus help their less experienced colleagues. The employees working in the company for less than a year account for 11.6%. The question concerning employee satisfaction was answered positively by most respondents. A total of 85% of the respondents are satisfied with their employment, 15% are not satisfied. As for the question of whether the employees consider their work to be interesting, the answer was "Yes" in 80% and "No" in 20%. The responses to these questions indicate that most of the respondents are satisfied with their work and consider it to be interesting.

Another question concerns the motivation provided by the superior. The purpose of this question was to find out whether the employees feel adequately motivated by their boss. 57% of the respondents answered positively to this question, while 43% answered "No". As for career growth, 40% of the respondents feel they have this possibility, while a total of 55% of the respondents answered they rather do not have this possibility, and 5% of the respondents provided negative answer to this question.

In the following question, the respondents chose from several options concerning their motivation to better performance. The results have shown that the biggest motivation is the wage (52.4%) and good relationships at the workplace (42%). A strong incentive is also additional financial rewards (31.6%), as well as job security (30.8%). Many employees consider job content to be a good motivation for better performance (38.4%). Employee benefits are motivating for 20.4% of the respondents. The least motivating

factor appears to be the name and the prestige of the company (12%). 4.8% of the respondents chose the answer "Other", e.g. good feeling from the job well done, interesting job, or fair evaluation from the superiors.

Figure. 1: What motivates employees to better work performance
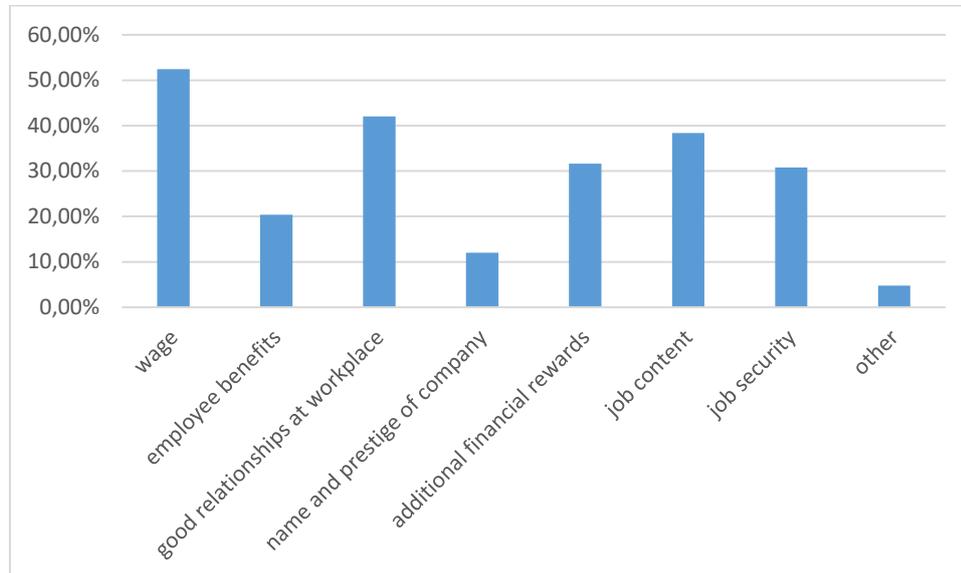
Source: Author

For the next question, the employees were asked to rank given work values from 1 to 7, where 1 indicated the most preferred factor, while 7 the least preferred one. By means of the weighted mean, the overall ranking of these values was created. The most preferred value selected by employees was the wage, i.e. financial remuneration is in the 1st place. This was followed by pleasant working environment, job security, and career growth, recognition from the superior, satisfaction, and reward for completing the assigned task. The least preferred factor was flexible working hours.

As in the previous question, the employees were asked to rank given values from 1 to 5 according to which values they appreciate most at work. The most important value appears to be a good working team, as well as an adequate wage. The employees also appreciate a pleasant environment, while job security ranks second to last among all values. Working hours were again ranked last.

The next-to-last question aimed to find out what the employees think about their wages in relation to the demands of the job. A total of 70 respondents consider their salary adequate to the demands of the job, while 21 respondents do not agree. 19 respondents were unable to assess whether their wages correspond to the demands of the job or not.

The purpose of the last question was to identify the wishes and possible suggestions related to the motivation from the side of employees. The respondents were free to express their opinion; each respondent was asked to provide his/her own answer. Seventy seven respondents did not make any suggestions or recommendations. The suggestions provided included mostly financial rewards, such as a bonus for work without

absence or for work well done. The employees would also appreciate any support related to free-time activities or sports activities, and the overall support at the workplace provided by their superiors.

Discussion

The results of the questionnaire survey showed that more than half of the respondents do not have the possibility of career growth. To expand the opportunities for career growth, the company could introduce an internal rotation system within the individual divisions. This way the employees could understand the processes occurring within individual divisions. Each employee should feel the company values its employees and encourages their personal and professional development (Nohria, Groysberg and Lee, 2008). By offering training and creating conditions for the education of their employees, employers can positively influence their motivation (Salanova and Kirmanen, 2010). As seen from the results of the questionnaire survey, insufficient motivation from the side of superiors is a big problem. The most common reason is the mistaken assumption that employees are familiar with specific procedures, and their mastering for granted. This could be due to the fact that they do not lead their employees to contact them in case of any problems (Stachowska and Czaplicka-Kozłowska, 2017). Employees try to conceal their problems or pretend they are familiar with the correct procedure; they believe they are supposed to know how to proceed, and lack of knowledge could lead to worse evaluation. Our recommendation is to extend the offer for training of managers in the area of leadership and to create a system of training focused on motivational skills, effective communication, and self-knowledge. Superiors should be able to listen and perceive the requirements and needs of employees and help them if help needed. It is important to praise properly the employees for the job well and timely done. This is important not only in order to enhance the motivation but also to point to the employee´s correct behaviour or work (Insan and Yasin, 2021). It is also appropriate to praise in the situation when the employee has not finished the task assigned but the procedure is correct and the employee needs some encouragement. This might motivate employees to perform better; employers can thus create a quality and motivating environment (Stachowska and Czaplicka-Kozłowska, 2017). Therefore, we recommend taking steps which might lead to better employee motivation and thus to better prosperity of the company and satisfaction of the management and all employees.

Conclusion

Motivation is one of the most important areas of human resources management in any company. The main incentive for employees is usually an adequate salary or wage. A properly functioning incentive system is important for the success of the company as well as its employees. Companies need to create working conditions that would enhance employees to improve their performance. Motivated employees work better and are a role model for their colleagues.

The objective of the paper was to ascertain the method of motivating employees in the company Hauser s.r.o. and assess whether the employees are motivated appropriately, or to find out which factors are the most motivating ones for them in relation to their performance. This paper provides recommendations, which may increase the overall satisfaction of the employees, increase their motivation, and improve their performance as well as the performance of the whole company.

This work is divided into two parts. The first part includes the literary research, while the second one is focused on the questionnaire survey in a selected company, whose objective was to find out whether the employees of Hauser s. r. o. are appropriately motivated and which factors are the most motivational ones in relation to their work performance. Moreover, recommendations are made, which may improve the motivation of the employees as well as the better prosperity of the company and satisfaction of both management and all employees. The questionnaire was answered by 110 employees. The results of the questionnaire showed that the employees in this company are satisfied with their work and consider it to be interesting. Their work motivation would be enhanced by a more frequent recognition from the superior for the job well done. The superiors should be able to value a well-performed task. The solution proposed is based on direct communication and interest in the employees. By direct communication, praise, or recognition, the superiors show their interest in the employees; managers should care more for their employees and motivate them to perform better. Such efforts will pay off.

For the company, it is important to strive for constant development and improvement in this area. Similarly, employee motivation should not be underestimated, since the overall prosperity of the company depends on the performance of all employees. For this reason, the aforementioned recommendations were made, which may help this company improve this area of human resources management. Motivation is a very topical issue today; therefore, we have decided to focus on it. we believe that this paper and its results contribute to increased employee motivation.

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A historical excursion through the development of cryptocurrencies in the world

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Abstract

In this paper, the topic of cryptocurrencies is investigated. The aim is to explain the basic characteristics of four selected cryptocurrencies, to show what the investment in these cryptocurrencies would have looked like in the last two years. Each of the cryptocurrencies examined varies greatly in both purpose and effectiveness. We use the methods of performance comparison and technical analysis. The aim of the article is to compare Ethereum and Bitcoin and to show the effect of the coronavirus pandemic on the development of cryptocurrency prices. The results show that investments in Ethereum or Bitcoin have been the most profitable in the last two years. Regarding the period of the coronavirus crisis, the most favorable investment was Ethereum.

Keywords: cryptocurrency, covid, investment, price development, bitcoin, ethereum, blockchain

Introduction

The emergence of cryptocurrencies can be dated to the beginning of the 21st century, more precisely around 2009, when the world was dealing with a financial crisis. The most discussed cryptocurrency in expert circles is Bitcoin (Nadarajah and Chu, 2017). It is a topic that some of us encounter on a daily basis as its price has risen exponentially in recent years (Pickard, 2021). Despite the great popularity of this cryptocurrency, there is only a fraction of experts who understand this cryptocurrency, understand the issue of virtual currencies and the development of their prices.

Despite the volume of the topic of cryptocurrencies, there are still many new, current trends that deserve the readers' attention. In terms of historical development, cryptocurrencies have proved to be very interesting worldwide in a relatively short time, whether for economic or financial reasons (Akhmatov and Roienko, 2020). The concept of globalization also comes with new modern technologies that allow us to conduct transactions worldwide in seconds, to communicate in a way that people could not even have imagined 20 years ago or invest from the comfort of our home. What can and probably has affected the price of cryptocurrencies is the coronavirus crisis. Akhtaruzzaman, Boubaker and Sensoy (2021) deal with this topic not only from a financial point of view.

Cryptocurrencies already have a global impact and great things can be expected of them in the future. Some even consider cryptocurrencies to be the invention of the century. Suyambu, Thiraviya and Janakirani (2020) share this view, but also mention other options. Everyone must have heard of Bitcoin, but what about Ethereum, Ripple or Litecoin?

So, what did the history and price development of the most famous 4 cryptocurrencies look from 2009 to 2021? What are the main differences in the characteristics of the 4 cryptocurrencies and what makes each one interesting? What is the impact of the coronavirus crisis on the development of cryptocurrency prices? How does the purpose and properties of the second best-known cryptocurrency, Ethereum, differ from the giant known as Bitcoin? Bringing answers and offering a historical excursion are the aims of this paper.

The aim of this paper is to make a historical excursion of cryptocurrencies from 2009 to the present and to find out how much an invested USD100 in cryptocurrencies one and two years ago would have earned. Subsequently, we present the basic differences in the characteristics of the cryptocurrencies Bitcoin, Ethereum, Ripple and Litecoin. Last but not least, we will state the impact of the coronavirus crisis on the development of cryptocurrency prices. Finally, we will mention how the purpose and features of Ethereum differ from Bitcoin and compare them and also show how similar they are.

Within this seminar paper, the following research questions were determined:

V1: What would a USD100 investment in BTC, ETH, XRP, LTC cryptocurrencies look like?

V2: What are the main characteristics of the 4 investigated cryptocurrencies?

V3: How do the purpose and properties of Ethereum differ from Bitcoin and how are they similar?

V4: What impact did the coronavirus crisis have on the development of cryptocurrency prices and what investment was the most profitable?

Literature research

The topic of cryptocurrencies is relatively new, however, the history of money itself dates back thousands of years, when the so-called barter trade was the equivalent of money. Through metal currency to paper money, we have reached a time when society operates on the basis of payment cards and now also cryptocurrencies. Allen and Bryant (2019) give a brief history, overview and characteristics of money. As for the current monetary system, it operates on two major currencies - the euro and the dollar (Rzayeva, 2019). Fauzi et al. (2020) argue that now is the time for the rise of virtual currencies and digital coins traded through the blockchain market. Rzayeva (2019) shares this view and also argues that the market needs to be transformed, adding that this process of adaptation will be long and unpredictable.

The main goal of each country is to ensure sustainable economic growth (Rzayeva, 2019). This growth brings countries together into one global system through monetary policy (Rzayeva, 2019). Lapina et al. (2020) argue that despite the global approach to cryptocurrencies, each country views them differently. In Switzerland, for example, in 2018, the Minister of Economy announced that the country planned to become the first crypto-nation in the world. According to statistics, the country with the largest number of cryptocurrency users is in Nigeria, where they are used mainly due to expensive cross-border transport. In contrast, there are countries where cryptocurrencies are illegal - Algeria, Saudi Arabia, Bolivia (Nasir et al., 2020).

Cryptocurrencies serve mainly as a digital asset, speculative investment, exchange medium (online), form of payment or for non-monetary use (Gil-Cordero, Cabrera-Sánchez and Arrás-Cortés, 2020). Transactions work via a so-called blockchain. Weiss et al. (2019) characterize blockchain as a database technology that is decentralized and in which the data owner has constant control. Their decentralization makes them exceptional. Forte, Romano and Schmid (2015) are of the opinion that blockchain technology is one of the first identifiable implementations of decentralization models that have the potential to reorganize all possible types of human activities.

Gidea et al. (2020) analyze four major cryptocurrencies (Bitcoin, Ethereum, Litecoin, and Ripple) and use time series analysis as well as topological data analysis. Casino, Dasaklis and Patsakis (2019) aimed to describe and explore the current state of blockchain technologies on the basis of a structured, systematic overview and thematic content analysis and their possible applications. Dibrova (2016) works with an overall analysis and estimation of risks related to possible development as well as insufficient regulation, where it indicates the extent of potential development of cryptocurrencies. Gil-Cordero, Cabrera-Sánchez and Arrás-Cortés, (2020) examines the factors that influence the intention to use cryptocurrencies by creating a new research model and using the "Partial Least Squares" (PLS) method by collecting data and measuring variables. Casino, Dasaklis and Patsakis (2019) use descriptive analyzes of 260 articles between 2014 and 2018 to provide interesting insights into current research trends in blockchain technologies and its application.

Bitcoin is often compared to the gold standard due to inflation and is called digital gold. Dyhrberg (2016) largely deals with this topic, where they describe the advantages, disadvantages of bitcoin against the US dollar. The safety of cryptocurrencies is also an issue. It is difficult to really find out who made the payment, so it can be used to buy weapons or support terrorist attacks (Lapina et al., 2020). Dibrova (2016) shares this view, where they also cite money laundering or illegal activities in general as examples. In the example, it is similar to dynamite, which was not initially expected to be misused.

The cryptocurrency Ethereum holds the second place in terms of market capitalization. The common characteristics of Ethereum and Bitcoin is that they are both decentralized and run on a blockchain database. Ferretti and D'Angelo (2020) call Ethereum programmable money. Ethereum and Bitcoin each have a completely different purpose and properties. Mariana, Ekaputra and Husodo (2021) obtain data from coindesk.com to analyze the development of Bitcoin and Ethereum as a possible hedge for money in the coronavirus crisis. They also find that Ethereum may be a better hedge than Bitcoin during a short-term stock market downturn, but Ethereum has higher yield volatility than Bitcoin. However, their results are in conflict with Bouri, Shahzad and Roubaud (2020), Conlon and McGee (2020) and Corbet et al. (2021), mainly due to the short-term focus.

The development of the coronavirus crisis has had and will have a significant impact on the cryptocurrency market. The topic is handled by Umar and Gubareva (2020) using wavelet analysis and descriptive statistics for time series. Al-Thaqeb, Algharabali and Alabdulghafour (2020) work with the EPU (Economic Policy Uncertainty) index and also focus on the future development not only of cryptocurrencies, but of the entire market.

To fulfill the goal and answer the research questions, we choose the method of document analysis for data collection and we choose comparative analysis for data processing and evaluation.

Methods and Data

For collecting data with the development of Bitcoin (BTC), Ethereum (ETH), Ripple (XRP) and Litecoin (LTC) cryptocurrencies, we will use document analysis and website analysis. Document analysis is based on Scopus and Web of Science databases. Here we will use the information from previous authors, mainly to determine the volatility of cryptocurrencies. We will focus mainly on the short-term development of all 4 cryptocurrencies since 2019. Gidea et al. (2020) used coindesk.com to collect data, using document analysis. However, we will use bitinfocharts.com, which, as one of the few, offers an overview of the development of Bitcoin since 2010, and finance.yahoo.com for the remaining cryptocurrencies. The website provides an overview of current prices and the history of each cryptocurrency. We also compare the development and volatility of each of the cryptocurrencies. The impact of the coronavirus crisis will be assessed from January 2020 to April 2021. The assessment will once again be based on data from finance.yahoo.com.

We will use the following methods for data processing: comparison method, technical analysis. We will compare the 4 aforementioned cryptocurrencies, according to the time point of view, with the help of Excel charts, which will serve as the main tool for calculating the highest profitability. Of the two investment models, the most important will be the profit, which we calculate using data from the chart. For both models, we will calculate the value of cryptocurrencies that can be purchased for USD100. We then calculate the percentual profit for each model (2019-2020 and 2019-2021). Finally, we calculate the net profit from the percentual profit (i.e., subtract the original investment of USD100). We will also use the comparison method to compare cryptocurrencies, but here we will focus more on how they differ and how they are similar. We will use this method mainly to compare Bitcoin and Ethereum. The data is based mainly on internet sources - databases, websites.

Results

Before you decide to invest in cryptocurrencies, you need to know at least the basic characteristics. Although the development of BTC and ETH does not have such a historical range as, for example, shares or bonds, both cryptocurrencies showed an average annual growth of up to 500% in a short timeframe (only the last 2 years were examined). We would also state here that the two cryptocurrencies do not have an inverse relationship to each other, i.e., when one decreases, the other may increase, as the two cryptocurrencies are very different and each have a different target.

The research is that USD100 is invested in each of the 4 cryptocurrencies mentioned. We will compare 2 periods - from May 2, 2019, to May 2, 2020 (annual) and from May 2, 2019, to May 2, 2021. We present all developments in charts. In order for everyone to be able to imagine the percentage growth, we will also present the net profit in Czech crowns (CZK). As for the exchange rate of the US dollar against the Czech crown, it will be based on the arithmetic average for the given year(s). We will then compare and evaluate which investment would have paid off the most. Graph 1 shows the development of price of USD against CZK.

USD/CZK

The exchange rate of the US dollar fluctuates just like any other currency. During the period under review, the lowest exchange rate was 21.14 USD/CZK (i.e., the Czech koruna was the strongest at this point). In contrast, the highest exchange rate was 26.03 USD/CZK (the least suitable for exchanging CZK to USD). In order to carry out the research without complications, we calculated an average of 22.51 USD/CZK in a one-year period and 22.85 USD/CZK in a two-year period. We have already mentioned that the investment was 100 USD/CZK, i.e., in the one-year period it is 2,251.09 CZK and 2,285.49 CZK in the two-year period.

Graph 1: USD/CZK development chart
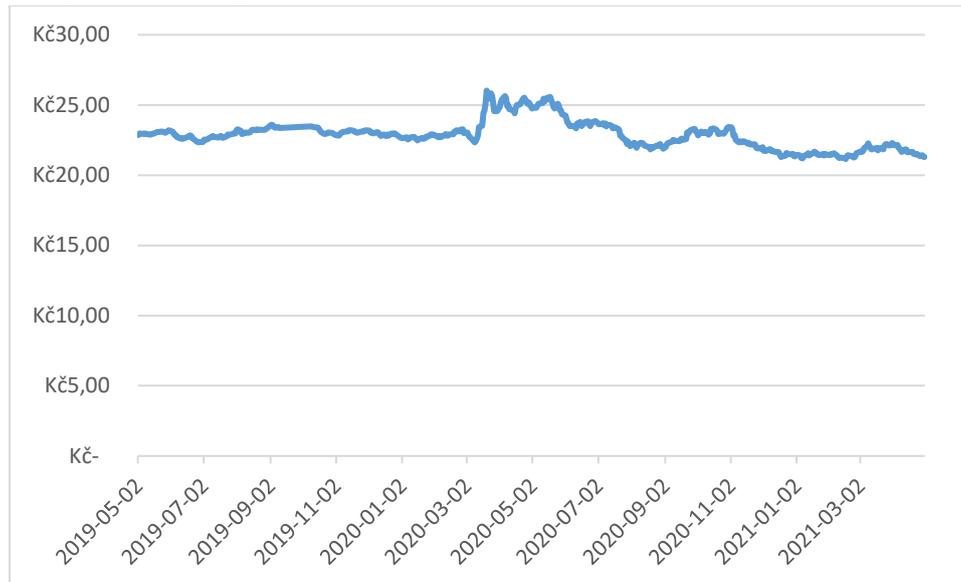
Source: Authors.

Bitcoin is based on a blockchain and works as a secure decentralized payment system. This is the first established cryptocurrency, launched in 2009, with the greatest liquidity. Almost every country allows this method of payment. The network itself verifies that payments are legitimate and not misused. BTC has the largest market capitalization (1TR/USD) of all cryptocurrencies, whether it will keep its position is pure speculation though. BTC is obtained either by purchasing or mining on your computer, where your computer solves complex equations. The main purpose of BTC was to serve as an alternative to other fiat currencies (£, €, CZK) operating in the given countries. It serves as a store of value and also as a medium of exchange. Graph 2 shows the development of the BTC price in USD.

Graph 4: BTC-USD development chart
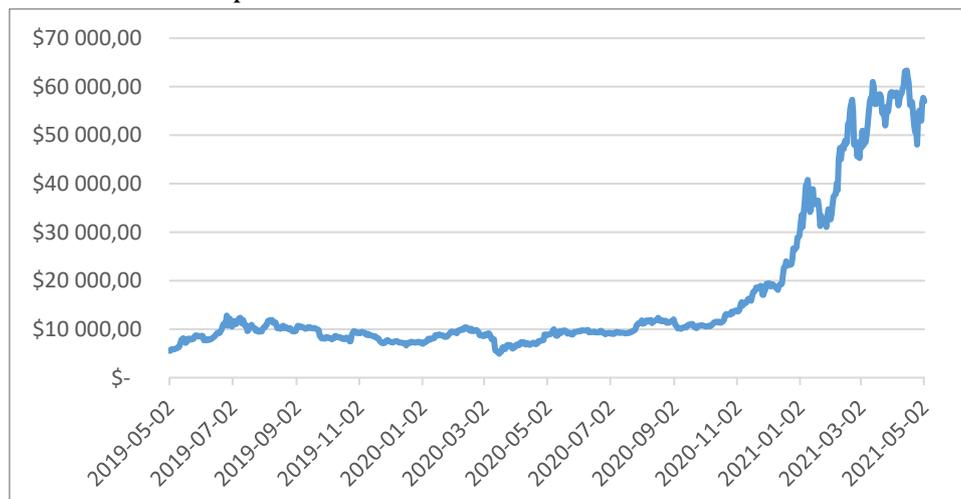
Source: Authors.

BTC/USD/CZK

Bitcoin, as the best-known cryptocurrency and with the largest market capitalization, now does not appear to be a bad investment. Unfortunately, cryptocurrency is highly volatile, so it is important when to buy. First, we will present a one-year investment model. 100 USD (2,251.09 CZK) was purchased on May 2, 2019, at a price of 1 BTC for 5,520 USD. For this amount, we obtained 0.0181159 BTC, which doesn't look like a big number. Therefore, if we take into account the average exchange rate of 22.51 USD/CZK and not investing more money in this cryptocurrency, we will have 0.0293596 BTC on the same day a year later, i.e., the price of 1 BTC rose from USD 5,520 to USD 8,946 during the year, which is a growth of 62%. The portfolio is now worth USD162.07 and the net profit is USD62.07. This model ended with the money being withdrawn on that day and no longer being invested. We will now compare this model with a two-year model. In this model, the money was not withdrawn from the bitcoin exchange, but was left in the account so that it could continue to grow. If we take it from the beginning of the investment, we have 0.0181159 BTC in 2019 at a price of 5,520 USD. The change is now in the USD/CZK exchange rate, which now stands at 22.85 instead of the original 22.51. We do not invest any more money in the account within the two years and wait for the market to develop. After two years, we find that out of the original amount of 0.0181159 BTC, we now have 0.1871193 BTC, or 1,032.90 USD (23,601 CZK). Thus, net profit is 932.90 USD and percentage growth over those two years is 1,033%. The price for 1 BTC is now (May 2, 2021) 57,016 USD (1,186,924 CZK).

Tab. 1: Results of Bitcoin

BTC				
Date	**Price for 1 BTC**	**100USD/BTC**	**% Growth**	**Net profit**
May 2, 2021	57,016	0.1690034	933%	$ 932.90
May 2, 2020	8,946	0.0293596	162%	$ 162.07
May 2, 2019	5,520	0.0181159	100%	x

Source: Authors.

Ethereum was founded in 2015 and serves as a software platform (also based on blockchain), which enables decentralized transactions. From the beginning, ETH has been more than just a payment system, giving developers more opportunities to create new applications. ETH recorded growth of up to 13,000% between 2014–2017 (Bhosale and Mavale, 2018). Ethereum is mined in a similar way to BTC, but with ETH, miners charge a fee for confirming the transaction, in so-called tokens, which power the ETH network. It is currently the most developed blockchain project in the world with a market capitalization of around 450B/USD. Most decentralized applications are based on Ethereum. ETH uses the Ether currency, which is used only in the Ethereum network. Graph 3 shows the development of the Ethereum price in USD.

Graph 5: ETH-USD development chart
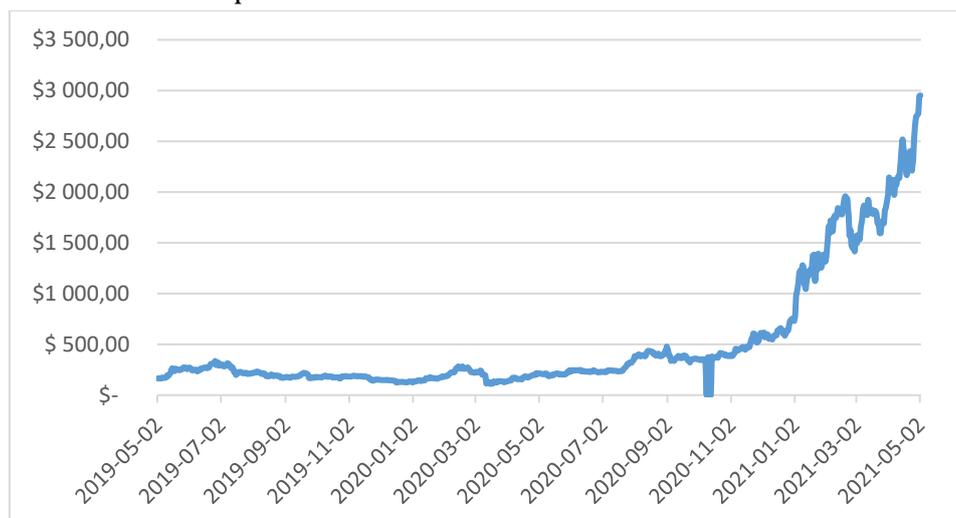
Source: Authors.

ETH/USD/CZK

Ethereum is popular mainly due to its potential use in the future. So let's start, as with BTC, by introducing two models. The first is a one-year investment, starting on 2 May 2019, and ending on 2 May, 2020. The USD/CZK exchange rate is the same as for investments in BTC (2,251.09 CZK in the first period and 2,285.49 in the second). We invest 100 USD at the price of 162.12 USD for 1 ETH. From this, we will have 0.616816438 ETH. As with BTC, we do not invest any more money in the account and wait 1 year. After this time, we will have 0.819232356 ETH in our account, which represents a 33% increase, and from the initial amount we will have 132.82 USD (2,989 CZK). Net profit is 32.82 USD. In the second model (22.85 CZK / USD), Ethereum price developed from the original 0.616816438 ETH to the incredible 11.23146718 ETH, which is 1,820.88 USD (4,1607 CZK). Net profit is 1,720.88 USD and percentage growth is as high as 1,721%. That is, from the original price in 162.12 (2019) to 2,952.06 (2021) for 1 ETH.

Tab. 2: Results of Ethereum

ETH				
Date	**Price for 1 ETH**	**100USD/ETH**	**% growth**	**Net profit**
May 2, 2021	2952.06	11.23146718	1,821%	$ 1,720.88
May 2, 2020	215.33	0.819232356	133%	$ 32.82
May 2, 2019	162.12	0.616816438	100%	x

Source: Authors.

Litecoin was created in 2011 and was supposed to be something like silver to Bitcoin gold (Hameed and Farooq, 2017). It currently holds 11th place in terms of market capitalization. Like BTC, Litecoin is based on a global payment network (open source) and is not controlled by any official body or bank. It also works on similar source code as BTC.

There is another similarity between Bitcoin, in that it is limited to a certain number - 84,000,000 pieces (compared to 21,000,000 pieces of BTC). Le Tran and Leirvik (2020) state that from their research, LTC is the most effective cryptocurrency and Ripple the least effective cryptocurrency. This year's data suggests that LTC would not be a bad investment, but there are better alternatives in terms of growth. LTC is designed to be used for cheaper transactions and to be more efficient for everyday use. Graph 4 shows the development of the LTC price in USD.

Graph 6: LTC-USD development chart
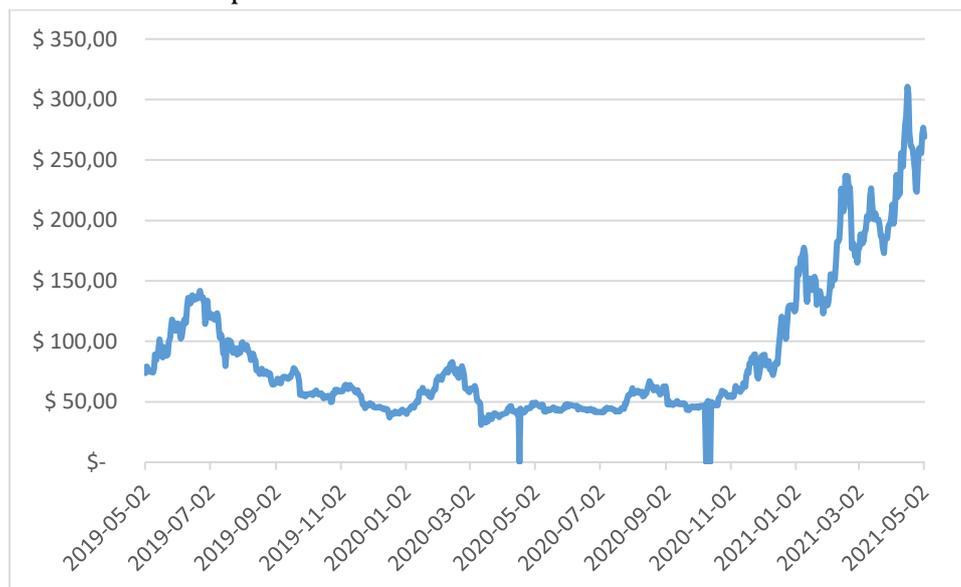
Source: Authors.

LTC/USD/CZK

The last cryptocurrency examined is Bitcoin-based cryptocurrency. The first model starts at 73.77718 USD for 1 LTC. For 100 USD, therefore, it is 1.35543274 LTC (2019). After 1 year (exchange rate 22.51 CZK/USD), the value of the portfolio, as with XRP, is in the red by 33%. We now have only 0.90813994 LTC (price 1 LTC - 49.45805 USD) and we are at a loss of 33 USD (742.83 CZK). The second model, from 1.35543274 LTC, will generate 4.94397989 LTC, i.e., a net profit of 264.7529 USD and the portfolio price is now worth 364.7529 USD (CZK 8,334).

Tab. 3: Litecoin results

LTC				
Date	**Price for 1 LTC**	**100USD/LTC**	**% growth**	**Net profit**
May 2, 2021	269.10437	4.943979887	365%	$264.75
May 2, 2020	49.458046	0.908139937	67%	$-33.00
May 2, 2019	73.777176	1.355432743	100%	x

Source: Authors.

Ripple is a technology that serves as a cryptocurrency and at the same time as a digital payment network through which transactions can be made between two currencies or networks. It was created in 2012 (Hameed and Farooq, 2017). It currently has the 7th largest market capitalization (in 2020 it was in 3rd place). XRP was created by Ripple Labs, for the purpose of an electronic payment system called the "Ripple Consensus Protocol" (Hameed and Farooq, 2017). Ripple is just a company name, while XRP is the cryptocurrency token itself. XRP is unique in that it works like a currency exchange with a low commission (it pays off when you want to exchange money but don't want to pay large fees). Another interesting thing is the speed of payment itself, where the average time is only 4 seconds (the fastest of all 4 analyzed). In terms of energy, the consumption of XRP is much lower than that of BTC mining. As one of the few cryptocurrencies, XRP has support from a large number of banks (Union Credit, BoA, NBF, American Express). Graph 5 shows the development of the XRP price in USD.

Graph 7: XRP-USD development chart
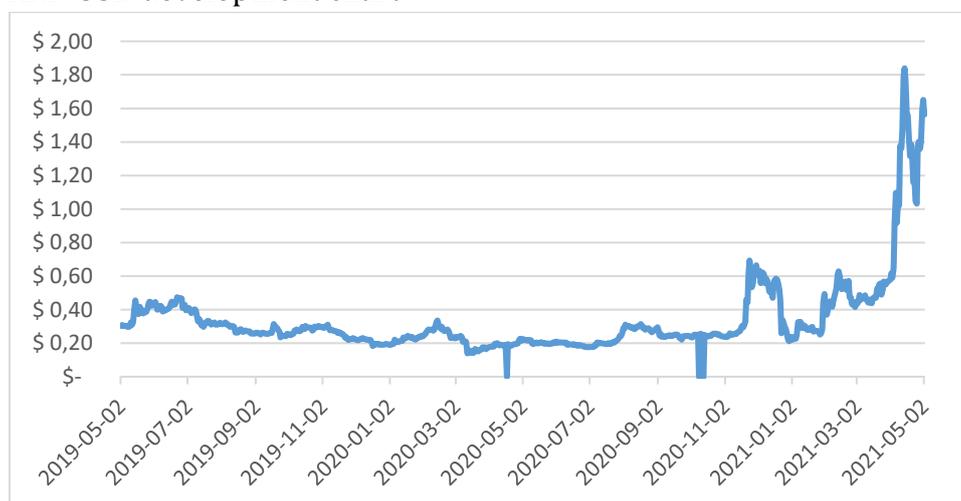
Source: Authors.

XRP/USD/CZK

We will use the same principles and resources again - 100 USD and 2 models. We start at 0.303239 XRP for 1 USD (30.3239 XRP). Under the same conditions, after 1 year we will be at a loss of 26.16%. That is, from the original 30.3239 XRP to just 22.439686. Therefore 74 USD (1,665.74 CZK). What happens if we leave the money in the account for another year (the only change is again at the USD/CZK exchange rate from 22.51 to 22.85)? The price of 1 XRP will change from 0.303239 to 1.562641 over a period of 2 years, i.e., 515% growth and a net profit of USD 415.31663 (CZK 9,489.985). The total value of the portfolio is now 515.31663 USD, and we own 156.2641 XRP, instead of the original 30.3239.

Tab. 4: Ripple results

XRP				
Date	Price for 1 XRP	100USD/XRP	% growth	Net profit
May 2, 2021	1.562641	156.2641	515%	$ 415.32
May 2, 2020	0.223914	22.439686	74%	$ -26.16
May 2, 2019	0.303239	30.3239	100%	x

Source: Authors.

How Bitcoin differs from Ethereum

It is important to realize that BTC and ETH are fundamentally different ideas. BTC mainly provides fast and secure transactions, while ETH can offer much more (digital currency, smart contracts, decentralized applications). The number of BTCs is limited to 21,000,000 from the beginning (which makes it rare). In contrast, ETH is not limited in quantity. The ETH and BTC payment processes are not related in any way. While the average time before payment takes about 10 minutes for BTC, it is only 15 seconds for ETH.

What Bitcoin and Ethereum have in common

Both cryptocurrencies are decentralized (they are not issued or regulated by a central bank or other body.). They are also both based on a blockchain, which protects them against most unauthorized manipulations. Each of them is a digital currency, traded through an online exchange (coinbase, robinhood, kraken). Both can be sent from this exchange to your own crypto wallet. Another common characteristic is high volatility (this could characterize all cryptocurrencies), where prices are able to rise or fall by 50% in one hour. Thus, it can be seen here that the prices of cryptocurrencies are driven by speculation (Fauzi et al., 2020).

Development of cryptocurrency prices during the COVID pandemic

The development of the coronavirus pandemic begins in Wuhan, where the first case was reported on December 8, 2019 (Mariana, Ekaputra and Husodo., 2021). However, for the purposes of this work, we will compare data from the site finance.yahoo.com from February 15, 2020, to May 2, 2021. The lowest values were reached on March 13, 2020 (about -50%), similarly to the stock market. The main factor in this fall was the declaration of a global pandemic by the World Health Organization. However, the fall proved to be short-lived, and the price began to rise again. Thus, it can be deducted from the chart that the values of BTC and ETH have had a similar development, however in the end, the growth of ETH for this timeframe was 929%, in contrast to BTC's "only" 457%. The price of LTC and XRP can be described as even more volatile than BTC and ETH, as the 3rd place changes very often. In the end, XRP won with 379% compared to LTC with 232% growth. Graph 6 shows the percentage growth of cryptocurrencies during the coronavirus crisis (from February 15, 2020, to May 2, 2021).

Graph 8: BTC, ETH, LTC, XRP percentage growth chart

Source: Yahoo!Finance

Discussion

As for the 1st model, i.e., from 2019 to 2020, the most profitable cryptocurrency was Bitcoin, with an annual growth of 62% (profit of 62.07 USD). The 2nd model, starting in 2019 and ending in 2021, shows that this timeframe was the most profitable when investing in Ethereum, with an annual growth of 1,721% (profit of 1,720.88 USD). The other cryptocurrencies mentioned (XRP and LTC) even recorded a loss in the case of the first model. In the case of LTC, it was a loss of 33% (the loss of LTC after the first year was 33.00 USD). In the case of the rainbow model, LTC's value increased by 365% (net profit would be 264.7529 USD). In the case of the last of the monitored cryptocurrencies, XRP, in the case of the first investment model, there would be a loss of 26.16% (i.e. a loss of 26.16 USD). In the case of the second model, the value of XRP increased by 515% (net profit was 415.32 USD).

The compared cryptocurrencies (BTC and ETH) have minimum in common (decentralization, blockchain, volatility), as they have both different properties and purpose. Anwar et al. (2020) compared BTC and ETH in terms of blockchain and according to their findings, the two cryptocurrencies are very similar, but upon closer examination, ETH has been found to provide greater payment efficiency and is supported by more applications than BTC. ETH also offers more advanced services such as smart contracts. Finally, Anwar et al. (2020) state that ETH provides faster payments than BTC and, last but not least, that payment with it is more secure. According to Rankhambe and Khanuj (2019), the two cryptocurrencies also differ by different programming of the blockchain. According to Sifat, Mohamad and Shariff (2019), cryptocurrencies are very similar to futures. However, cryptocurrency traders cannot profit from trading on the basis of hourly changes in their values according to movements in cryptocurrency prices, as is the case with other types of financial equivalents and derivatives.

The last of the research questions focused on the influence of COVID-19 on the development of cryptocurrency values in an effort to determine the best cryptocurrency for investment. In general, the COVID-19 pandemic affected the development of the value of all cryptocurrencies (Sahoo, 2021; Vidal-Tomás, 2021). The development of prices during pandemic was volatile, with the biggest drop occurring on March 13, 2020. The most profitable investment for this period appears to be Ethereum with 929% growth.

Abdelrhim et al. (2020) agree that Ethereum was the optimal cryptocurrency for investment during Covid pandemic. During the COVID-19 pandemic, cryptocurrencies also provided a refuge for the funds of many investors. This fact is evidenced by demonstrably higher flows of finance to cryptocurrencies (Corbet et al., 2021).

Conclusion

The aim of the paper was to find out which investment was the most profitable and also to explain the basic characteristics of the 4 cryptocurrencies examined, as well as to outline what price developments looked like during the coronavirus pandemic and explain how Bitcoin differs from Ethereum.

Bitcoin, which grew by 62%, had the most profitable investment model from 2 May 2019 to 2 May 2020. In contrast, for the second model, from 2019 to 2021, Ethereum secured the first place with a percentual two-year growth of 1,721%.

We examined the period of the coronavirus crisis from 15 February 2020 to 2 May 2021. Here, the cryptocurrency market experienced the largest fall on March 13, 2020, by approximately 50%. But the market soon recovered. The most profitable investment in this time period (approximately 15 months), was similar to the second Ethereum model with a growth of 929%.

Bitcoin and Ethereum have in common that they operate through a blockchain, are decentralized and are very volatile. Otherwise, they are practically two different things, which differ in purpose, performance, speed of transactions, mining and number of coins in circulation.

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Language courses as tool to motivate employees in South Bohemian enterprises

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Abstract

Employee motivation is a key to the success of any company. There are many ways to enhance employee motivation. This article deals with corporate training and education in the South Bohemian region with a special focus on language courses as a tool to motivate employees. The authors analyse how and to which extent companies in the South Bohemian region use language courses as an employee benefit in the form of language courses, what foreign languages are mostly taught and required within these courses, and also employee perception of this benefit, and whether there have been any changes related to the Covid-19 pandemic. For the purposes of the research, a questionnaire survey was used and distributed among employees of 20 companies in the South Bohemian Region in order to answer the formulated research questions. Based on the results of the research, it can be concluded that language courses are one of the most commonly used employee benefits, although their form appears to be influenced by the number of employees in a company. The research results also showed that the Covid-19 pandemic has affected the form of the courses and that the respondents are fully aware of the advantages and disadvantages of online and offline language courses.

Keywords: motivation, language courses, intrinsic and extrinsic motivation, employee benefits, corporate training, South Bohemian Region

Introduction

Most companies currently strive for succeeding or even survival in this unstable market environment. Employee motivation plays a major role in gaining a competitive advantage in the strong competition between companies, as motivated employees are usually

efficient ones. Companies, regardless of their size or sector they operate in focus on establishing a strong and positive relationship with their employees.

Nowadays, employers have a wide range of benefits to motivate their employees. In the situation when there is a lack of qualified employees in the labour market, employers, especially when actively looking for new employees, try to attract them by various bonuses and benefits, e.g. extra days off, working from home, flexible working hours, company car or phone, or financial or other support of leisure time activities, one of them being the possibility to attend language courses. Globalisation and internationalisation are two growing trends in the current world, and knowledge of foreign languages is being increasingly emphasized. The knowledge of at least one foreign language increases chances for graduate employability on the job market; the importance of this for companies is obvious. When striving for entering a foreign or international market, having employees who speak the language of the target market provides companies with a competitive advantage, especially those operating in the sector of sales and services, as it enables employees to understand better the culture of the country, helps them avoid misunderstandings in communication, and accept assigned tasks.

The objective of this paper was to analyse the offer of benefits as motivational factors most frequently used in the companies in the South Bohemian region, with a special focus on language courses. The paper aimed at identifying the situation in corporate language education and the motivation of employees to actively participate in such courses. Based on the literary research on this topic, the following hypotheses were formulated:

Hypothesis 1. *Language courses are the most commonly offered benefit in South Bohemian companies.*

Hypothesis 2. *Because of the vicinity of Germany and Austria, German is the most taught language within the corporate language courses.*

Hypothesis 3. *Language courses are motivating for employees*

Hypothesis 4: *The coronavirus pandemic and the measures adopted to prevent the spread of the coronavirus has affected the form of corporate language courses.*

Literary research

The productivity of employees and the whole company is directly related to employee motivation. A way to gain a competitive advantage in the market is to motivate and retain human resources (Salah, 2016). Motivation thus plays an important role.

Mullins (2002) defines motivation as a driving force to achieve personal objectives and to meet their needs or values. Motivation is based on needs, values, and personal goals. According to the author, needs, values, and objectives are individual; logically, motivation is also specific for each individual, as it is based on his or her needs and values, which form individual goals. According to Váchal and Pártlová (2008, p. 41), motivation is "a complex set of various factors that represent a driving force for human activities that regulate

behaviour of an individual; in a way, it is a psychological regulation of an employee´s acting." Dessler (2009) claims that motivation is a force that makes an employee behave in the way that leads to achieving the goal set.

There are more types of motivation. Legault (2016) mentions intrinsic and extrinsic motivation, where intrinsic motivation refers to the behaviour motivated by internal reward. Deci (1973) believes that as for intrinsic motivation, there is no apparent reward for the behaviour except for the activity itself (e.g. volunteering just because I want to help). Extrinsic motivation is of instrumental nature; its objective is to achieve a different result separable from the activity itself, e.g. volunteering because it looks good in CV.

According to Dobre (2013), motivation and employee performance are closely interconnected; they are basic factors of the long-term success of any company. Measuring company performance is important for its management, as it provides information on the development and success of the company. On the other hand, there is a relationship between employee motivation and efficiency of the company. Employee dissatisfaction could negatively affect the performance and efficiency of the entire company. Individual employees are different; therefore, they should be motivated in different ways (advantages, benefits, job satisfaction, better working environment, etc.). It is thus necessary for companies and their managers to understand what motivates their employees in order to be able to maximize the performance of the company.

Traditional motivational theories focus on specific elements that motivate employees to improve the efficiency of the company. For example, according to Maslow´s theory of needs and motivation (Maslow, 1943), there are five basic categories of needs (physiological, safety, social, ego, and self-actualization), while the theory of equity formulated by Adams in 1963 states that employees strive for equity between themselves and other employees. Current research on motivation, however, is an interdisciplinary issue, which includes neuroscience, biology, and psychology, with the aim to bring traditional theories of motivation together into a more complex theory, which includes traditional management, human resources, behaviour of the company with new perspectives in neuroscience, biology, and psychology. According to Lawrence and Nohria (2002), human nature is the basis of employee motivation. There are four basic drivers – acquiring, bonding, learning, and defending., where the reward system is related to acquiring, company culture is connected with bonding, learning is connected with the possibility to adjust working conditions or work as such, and the processes of managing the performance and acquiring resources are connected with defending (Lawrence and Nohria, 2002, Nohria, Groysberg and Lee., 2008).

Employee motivation is one of the basic tasks of a manager. According to Kmecová and Teřlová (2017), a manager is a person who "stimulates and manages activities of other people in the organization, tries to make employees work so that the objectives of the organization are achieved." It is important for managers to be aware of employee interests, priorities, and goals. Managers need to know the primary intrinsic motivation of employees prior to creating the motivational system of the organization in order to be able to stimulate the efforts of the employees to achieve maximum results with minimal costs. In some cases, profit or material

rewards are less important than recognition, flexible working hours, more days off, career growth, etc. When adequately used, these methods enable retaining the loyalty of employees and ensure a high level of their motivation.

Companies motivate their employees by means of both financial and non-financial factors that improve employee satisfaction and motivate employees to better performance. Both financial and non-financial factors are directly related to work performance. According to Burton (2012), an efficient system of recognition and rewards might motivate employees, thus increasing the productivity of the whole organization.

Many researchers believe that financial motivation plays a more important role when motivating employees since money enable employees to satisfy their basic needs as well their need to own things and "have power". Gupta et al. (1998) concluded in their research that financial motivation is indeed effective. However, there are also non-financial (internal) factors which play an important role in motivating employees. According to Mansaray-Pearce et al. (2019), non-financial motivational factors include recognition provided by the superiors, job rotation, degree of independence in performing assigned tasks, success, development of competencies, the possibility to plan and work independently, being informed, possibility to participate in determining the goals. Non-financial motivation is very important because "if employees are not satisfied with these aspects, even well-paid employees may leave the company". Companies with a sophisticated system of non-financial benefits may attract motivated and talented employees (Armstrong and Brown, 2010).

Preference of financial or non-financial motivation is related to a number of factors such as the age of employees (Ashkanani, 2014, Hitka et al., 2019), job position (Asad and Dainty, 2005), gender (Lorincová et al., 2019), etc. According to Mansaray-Pearce et al. (2019), non-financial rewards affect motivation more when salary achieves a certain level.

Armstrong et al. (2010) admit that management of rewards can never be a hundred percent right. The task of a manager is to find the best system for each organization.

Language competencies are becoming increasingly important mainly due to strengthening cooperation with foreign countries. According to Tlapa et al. (2019) published by the Ministry of Foreign Affairs of the Czech Republic, Czech export in 2018 amounted to CZK 4.2 trillion, which accounted for 67% of the GDP.

An extensive survey conducted by the Czech statistical office concerning further education and training of adults, the interest in further education increases with the degree of education attained. Further training is predominantly focused on language courses; 78% of the courses were attended for the purpose of work. 88% of such courses were fully or partially financed by employers; 79% of the courses were attended within the official working hours. According to the CSO, one-fifth of the respondents study foreign languages for the purpose of work; on the other hand, almost 42% of adult Czechs believe they do not need any further education. This argument was mentioned mostly by men; women do not attend such courses for family reasons.

Data and methods

For the purpose of the research, employees of 20 companies operating in various sectors in the South Bohemian region were addressed. The data for the research was collected by means of a questionnaire survey containing 20 multiple-choice and open-ended questions. The questionnaire was compiled and distributed among the employees by means of both paper and web-based questionnaire (Survio). The responses obtained by means of paper questionnaire were evaluated together with the responses obtained via a web-based questionnaire. The compiled questionnaire is presented in Appendix 1.

A total of 50 employees of different participated in the survey, where the research sample consisted of 29 women and 20 men; one person did not want to specify the gender. Most responses (29%) were obtained from the respondents aged 41–55 years, which accounted for 58%. As for the job position of the respondents, 20 respondents work in administration, 12 respondents in production, 4 respondents in management, and 14 respondents selected the category "Other". The structure of the research sample is shown in Tab. 1 below.

Tab. 1 Structure of research sample

GENDER		
Respondents by gender	**Number**	**Percentage**
Male	20	40%
Female	29	58%
Doesn´t say	1	2%
In total	50	100%
AGE GROUP		
Respondents by age	**Number**	**Percentage**
Male (18-25)	4	8%
Male (26-40)	6	12%
Male (41-55)	10	20%
Male (over 55)	-	
Female (18-25)	-	
Female (26-40)	7	14%
Female (41-55)	21	42%
Female (over 55)	1	2%
JOB POSITION		
Job position	**Number**	**Percentage**
Management	4	8%
Production	12	24%
Administration	20	40%
Other	14	28%

Source: Authors

Results

In the previous chapters, four hypotheses were formulated to meet the objective set. This chapter presents the results of the individual hypotheses.

In order to verify the hypotheses formulated, the respondents answered a questionnaire (online or paper form) containing 20 open-ended, multiple-choice, and closed questions. The results were processed using the online tools of Survio. The responses to open-ended questions were processed and analysed by the authors. Due to the extent of the questionnaire, only the most important findings will be presented in this contribution. Tables and graphs referring to individual questions are presented in Appendix 2.

The first part of the questionnaire concerned the basic information about the respondents (their age, gender, position in the company – questions 1–3 in the questionnaire). In the following part, we will focus on individual hypotheses.

Hypothesis 1: *Language courses are the most commonly offered benefit in South Bohemian companies.*

Hypothesis 1 was formulated to which extent language courses are used as a tool to increase employee motivation. The validity of the hypothesis was verified using question 5 from the Questionnaire in Appendix 1: What benefits does your company offer to its employees? where the respondents choose from car and/or phone, meal allowance, support of sport activities, courses to acquire/improve technical skills, and language courses. The responses indicate that language courses, together with meal allowance, are among the most frequently offered benefits. The analysis of the responses obtained showed that companies usually use a combination of various types of benefits. Only 24% of respondents stated that they can use 1 benefit only, while 4% mentioned a combination of 3 and more types of benefits. Other questions focus in more detail on the support provided by employers. Graph 1 below shows the structure of the responses to Question 5, indicating that the most frequent benefit is meal allowance, while language courses are the second most common benefit.

The remaining part of the questionnaire focuses on a specific employee benefit in the form of language courses. Here, 42% of the respondents stated that language courses are offered to all employees. 34% of the respondents argue that this benefit is offered only to employees in specific positions; 2% of the respondents claimed that the possibility to attend language courses is offered to top management only, while 20% admitted they are not able to answer this question. Question 9 dealt with the support provided to language courses from the side of employers. As a response to this question, 42% of the respondents stated that language courses are paid for by the employer and the employees are allowed to attend them within their working hours. 30% of the respondents claimed that language courses are fully paid for by the employer; however, employees can attend them in their free time only. According to 13% of the respondents, the employer provides only partial financial support (to certain amount) to language courses but allows the employees to attend them within their working hours, compared to 5% of the respondents, whose courses are also

partially paid for by the employer but they can attend them in their free time only. Only one respondent stated that he/she is allowed to attend the courses within his/her working hours but without any financial support from the side of the employer. The possibility that the employer does not provide any support to language courses, be it in the form of enabling their attendance within the working hours or any financial support, was not mentioned; 3 persons mentioned a different form of support.

Graph 1: Employee benefits offered by companies
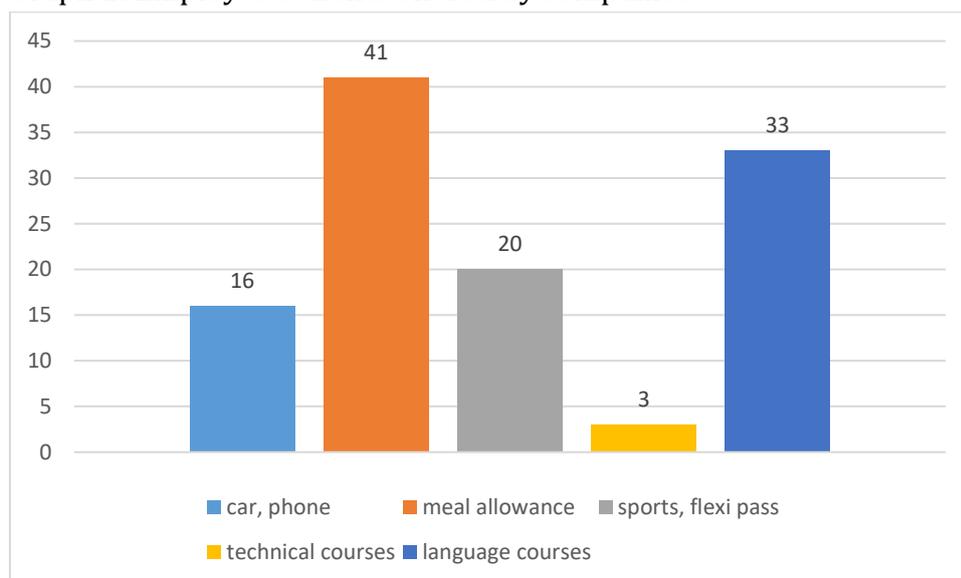
Source: Authors

Tab. 2: Support provided by employer

Form of support	
Language courses are fully paid for by the employer and I can attend them within my working hours	17
Language courses are fully paid for by the employer but I cannot attend them withi my working hours	12
Language courses are partially paid for by the employer and I can attend them within my workig hours.	5
Language courses are partially paid for by the employer but I cannot attend them within my working hours	2
My employer does not finance the language courses but I am allowed to attend them within my working hours	1
There is no support from the side of the employer	0
Other forms of support	3

Source: Authors

Hypothesis 2. *Because of the vicinity of Germany and Austria, German is the most taught language within the corporate language courses.*

A part of the questionnaire focused on finding out which language is the most taught or required one within the language courses offered by companies in the South Bohemian region. There were several questions concerning the importance of foreign languages for specific companies or specific employees (Question 4 and 14 concerning foreign cooperation of individual companies and the respondents´ personal experience with working abroad, and Question 5 concerning specific languages taught and required by employers). Due to the location of the Czech Republic, it was assumed that foreign partners and customers of the companies operating in the South Bohemian region are predominantly from German-speaking countries (Germany, Austria) and thus the language taught and required most by the employers is German. The analysis of the results showed that most commonly taught languages are English 26 responses) and German (29 responses). English was mentioned in 26 responses, while German in 29. 7 respondents admitted they do not know the answer to this question. The discrepancy concerning the number of responses/respondents is due to the fact that most companies offer English and German. Based on the results, we can see that the hypothesis was confirmed; however, there is only a slight difference between German and English in terms of the languages most frequently taught in corporate language courses.

Hypothesis 3: *Language courses are motivating for employees*

Hypothesis 3 focused on employee perception of language courses as a motivational tool. The validity of the hypothesis was verified using questions 7, 11, 12, 13, 15. The questions focused on the form of the courses; from the perspective of Hypothesis 3, specifically question 11 is important on how the respondents perceive the language courses they attend. The results show that the majority of respondents perceive language courses as motivating, as 34 out of 39 respondents stated they attend language courses voluntarily in order to improve their language skills, and 4 respondents claimed that attendance is compulsory, yet they perceive language courses as a benefit. Only one respondent indicated that compulsory attendance in the language courses is perceived negatively.

The motivation of employees to attend language courses is also confirmed by responses to questions 12-14 concerning the practical use of a foreign language. The responses indicate that 74% of the respondents need a foreign language in their position, where 22% communicate in writing only, 2% only for spoken communication, and 44% of the respondents use a foreign language both in written and spoken communication. This information is in a certain contradiction with the responses to Question 14, where only 28% of the respondents claim they have personal experience with working abroad. However, we can say that the hypothesis was confirmed.

Hypothesis 4: *The coronavirus pandemic and the measures adopted to prevent the spread of the coronavirus has affected the form of corporate language courses*

In the period when the whole world faces the coronavirus crisis, it could be expected that various measures taken to prevent its spread will affect a lot of activities within companies. This lead to the formulation of Hypothesis 4 above. Question 17 aimed specifically at changes in the form of language courses. The responses indicated that in 55%, language courses were suspended due to the restrictions adopted to slow down the spread of the coronavirus. In 30%, the form of the courses was changed, where respondents mentioned specifically transition from offline to online form. Only 15% of the respondents stated that the form of the courses did not change (see Tab. 2 below). Hypothesis 4 was thus confirmed.

Tab. 3 Influence of the pandemic on language courses

Changes caused by the pandemic		
No change	6	15%
Courses were suspended	23	55%
Change in the form of the courses	13	30%

Source: Authors

Discussion of results

Besides confirming or rejecting the hypotheses formulated, the analysis of the responses provided several other interesting findings.

The first hypothesis concerned the question of whether language courses are the most commonly offered benefit. Although the hypothesis was not confirmed, the results showed that language courses, along with meal allowance, are the most common benefits offered by employers. The support to language courses from the side of employers was analysed using other questions in the questionnaire, which aimed at the nature of the language courses. Less than 50% of the respondents stated that the possibility to attend language courses is offered to all employees in the company; in other cases, there were certain limitations. 38% of the respondents from the companies that support language courses stated they have the possibility to choose the form of the course (individual or group). 22% of the respondents can attend group courses only; 8% stated that the choice depends on the position of the employee. Here, we can assume that company size may play a role. As the questionnaire was anonymous, it was not possible to divide the employees into groups depending on the size of the company they work in; however, it is probably much easier for a small company to ensure the possibility to attend language courses for all companies. Similarly, company size might also influence the offered form of the course. 46% can choose between individual and group courses; 28% are allowed to attend group courses only, while 20% of the respondents admitted that the possibility to choose depends on the position in a given

company. The support provided by employers might be evidenced by the fact that all respondents confirmed support from the side of the employer, either in the form of financing the courses or by enabling the employees to attend the courses within their working hours.

As for Hypothesis 3, we may conclude that language courses are motivating for employees. This is evidenced by the fact that most employees attend language courses even though they are not required to by their employer. The responses to other questions also showed that employees are motivated by the fact that their company has some form of cooperation with foreign companies or customers (Question 4), command of a specific foreign language is necessary in their position, because they actively use a foreign language at work (Question 12 and 13) for written and/or spoken communication. The respondents had also a possibility to describe a preferred focus of the language course, where a vast majority of respondents prefer the combination of a general language and language for a specific purpose depending on the company´s specialization.

Interestingly, the progress of employees seems to be not checked anyhow by employers, as the majority of the respondents (70%) state there is no control from the side of the employer. This means most employees do attend the language courses on a voluntary basis; it can thus be concluded that language courses do represent a benefit appreciated and required by employees.

Due to the current situation, we considered it necessary to find out whether and how the pandemic and the related restrictions have affected the offered language courses. The measures adopted by the Czech government aimed at reducing the movement of persons and required most employees to work from home, which was naturally reflected in the organization of the language courses. The changes resulting from the measures taken included suspension of the courses or change of their form from offline to online courses. Only a small percentage of respondents claimed the form of the courses remained unchanged, which may, of course, be due to the fact that some courses had been offered in the online form even before the pandemic. We were also interested in the reactions of the respondents to the changes (Question 18). Most of them were dissatisfied with the suspension or the online form of the courses; as for the transition to online courses, the respondents were asked to specify the advantages and disadvantages of this form of teaching (Question 19). The advantages mentioned by the respondents include saving of time due to the fact that it was not necessary to travel to courses; thanks to this, the lectors were more flexible and willing to comply with specific requirements concerning the time of the courses. The transition to the online form also required using specific platforms; the necessity to learn to work with them in a way may represent another advantage. The most frequently mentioned disadvantages were technical problems and the resulting worse quality of picture and sound; in group courses, it sometimes happened that more participants spoke at the same time. The respondents also mentioned they miss personal contact with the lector; others spoke about various health problems related to spending too much time working with a computer.

In the last question, respondents were asked to provide their opinion to the given issue.

Several interesting findings were obtained, which could lead to adopting certain changes, thus improving the form of the courses for employees. The respondents mentioned e.g. insufficient support of such courses from the side of the state, the fact that language courses represent a way to maintain the knowledge acquired even at the times when the possibility to use a foreign language is significantly limited due to the restrictions adopted, in some cases, the termination of the language course lead the employees to find some others outside andd pay for them themselves. A few respondents negatively spoke about the fact that the company does not enable employees at lower positions to attend a language course but expects them to be have a command of a given language. These opinions could make the governmente think about how to make language courses accessible to a wider range of employees, e.g. by providing financial support from the state.

Conclusion

Currently, companies have many possibilities to motivate their employees. Besides financial motivation, there are also non-financial motivational tools that are often preferred by many employees. For this purpose, a questionnaire was compiled, which examined benefits in general, with a special focus on language courses and employee motivation to active participation in such courses. Language courses might be an employee benefit that would be beneficial both for employees and employers, as having employees who have a command of one or more foreign languages, especially the languages of the target foreign market would provide the company with a clear competitive advantage. For the purposes of this research, several hypotheses were formulated, which were confirmed or rejected on the basis of the responses obtained.

The responses showed that language courses, together with meal allowance, represent one of the most frequently offered benefits. Companies offer various types of support. This can be due to the fact that it is possible to address a relatively high number of employees at the same time at relatively low costs compared e.g. to providing company car or telephone. The possibility to choose a specific form of a language course is probably related to the size of the company; the attendance in language courses is mostly on a voluntary basis. This indicates that language courses are motivating for employees, which is probably also evidenced by the fact that in terms of the content of the language courses, most respondents prefer a combination of a general language and language for specific purposes according to the specialization of the company. The vicinity of Germany and Austria leads us to the assumption that the most frequently taught and required foreign language is German. This was confirmed by the responds of the respondents; however, the difference between English and German is not so big.

The research also confirmed that the coronavirus pandemic has had an impact on corporate language education since language courses were suspended in most companies, or transferred to the online environment. Within the research, the most common advantages and disadvantages from the perspective of employees – participants of the courses were specified.

Given the current situation, other possible restrictions can be expected. However, in a way, this might represent a challenge for both employees and employers consisting in finding a prompt and efficient way to react to such situations. Moreover, online courses bring another advantage, as having to learn to use various platforms may help improve employee IT skills.

The research limitation is a small number of respondents. The added value of the research is the finding what languages and what specific form the respondents need and are interested in, which could improve the cooperation between the educational system and business practice in terms of language education.

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Appendix 1. Language courses as employee benefit - questionnaire

1. Gender *(Choose one answer only)*
   a) Female
   b) Male
   c) I don´t want to answer

2. What´s your age? *(Choose one answer only)*

   a) 18 – 25
   b) 26 – 40
   c) 41 – 55
   d) Over 55

3. What is your position in the company? *(Choose one answer only)*

   a) Production
   b) Administration
   c) Management
   d) Other (please specify): _____

4. Is there any form of foreign cooperation in your company? *(Choose one or more answers)*

   a) Yes, we have a foreign partner/partners
   b) Yes, we are a foreign company with a subsidiary in the CR
   c) Yes, we are a Czech company with a subsidiary abroad
   d) Yes, we have foreign customers
   e) No

5. What benefits does your company offer to its employees? *(Choose one or more answers)*

   a) Car, phone
   b) Meal allowance (canteen, meal coupons, etc.)
   c) Support of sport activities, flexi pass, etc.
   d) Courses to acquire/improve technical skills (driving licence, welding course, …)
   e) Language courses – please specify the languages (German, English, French, …):
   _____

If your company does not offer language courses, please continue with Question 20

6. Language courses can be attended by: *(Choose one answer only)*

   a) All employees
   b) Employees in specific positions (those who work with foreign customers, management, ….)
   c) Top management
   d) Other specification (e.g. only full-time employees, employees with specific qualifications, principle of seniority, etc.) Please specify:
   _____

7. **Participation in language courses is:** *(Choose one answer only)*

    a) On voluntary basis (offered as an employee benefit)

    b) Compulsory (required by employer in order to improve the language skills necessary for a specific position/quality performance)

8. **Can you choose a specific form of the language course?** *(Choose one answer only)*

    a) Yes, I can choose between individual or group language courses

    b) I can attend an individual course

    c) I can attend a group course only

    d) Only employees in certain positions can choose a form of the course

    e) Other – please specify: _____

9. **What is the support from the side of the employer?** *(Choose one or more answers)*

    a) Language courses are fully paid for by the employer and I can attend them within my working hours

    b) Language courses are fully paid for by the employer but I cannot attend them within my working hours

    c) Language courses are partially paid for by the employer and I can attend them within my working hours

    d) Language courses are partially paid for by the employer but I cannot attend them within my working hours

    e) My employer does not finance the language courses but I am allowed to attend them within my working hours

    f) There is no support from the side of the employer

    g) Other forms of support – please specify: _____

10. **Does the employer check your progress?** *(Choose one answer only)*

    a) No

    b) Yes (please specify): _____

11. **How do you personally perceive the possibility to attend language courses?** *(Choose one answer only)*

    a) My attendance is voluntary, I want to improve my language skills

    b) My employer requires my attendance in the language courses but the courses are interesting for me

    c) I participate in the language courses only because I have to

12. **Is knowledge of a foreign language important in your position?** *(Choose one answer only)*

    a) Yes

    b) No

13. **Do you communicate in a foreign language at work?** *(Choose one answer only)*

    a) No

    b) Yes, but only for writing

    c) Yes, for both writing and speaking

    d) Yes, but only for speaking

14. Do you have experience with working abroad? *(Choose one answer only)*

     a)   Yes

     b)   No

15. What kind of language courses do you prefer? *(Choose one answer only)*

     a)   General language

     b)   Language for specific purposes

     c)   Combination of both

16. Does the current form of language courses suit you? *(Choose one answer only)*

     a)   No

     b)   Yes

     c)   Yes, but I would change some things (Please specify):

         _____

17. Has the pandemic and the related restrictions affected the language courses in your company?
(Choose one or more answers)

     a)   No, there have been no changes

     b)   Yes, the courses have been suspended

     c)   Yes, partially – their form has changed (from offline to online, from group courses to individual courses and vice versa, etc.) Please specify:

         _____

18. If the courses were suspended, what reaction has it caused?

_____

19. If the form of the courses has changed from offline to online, name please advantages and/or disadvantages you perceive:

_____

20. Would you like to add some more comments?

_____

_____

_____

_____

Appendix 2 Graphs and tables to questions

Questions 1 – 3 *Structure of respondents*

Gender		
Respondents by gender	Number	Percentage
Male	20	40%
Female	29	58%
Doesn´t say	1	2%
In total	50	100%
Age group		
Respondents by age	Number	Percentage
Male (18-25)	4	8%
Male (26-40)	6	12%
Male (41-55)	10	20%
Male (over 55)	-	
Female (18-25)	-	
Female (26-40)	7	14%
Female (41-55)	21	42%
Female (over 55)	1	2%
Job position		
Job position	Number	Percentage
Management	4	8%
Production	12	24%
Administration	20	40%
Other	14	28%

Question 4: *Is there any form of foreign cooperation in your company?*

Foreign cooperation	
Foreign partner/partners	14
Foreign company with a subsidiary in the CR	28
Czech company with a subsidiary abroad	3
Foreign customers	10
No form of foreign cooperation	3

Question 5 *What benefits does your company offer to its employees?*

Language courses as employee benefit		
English only	4	8%
German only	7	14%
English, German	22	40%
No language courses	10	20%
I don´t know	7	14%

Question 5: *What benefits does your company offer to its employees?*
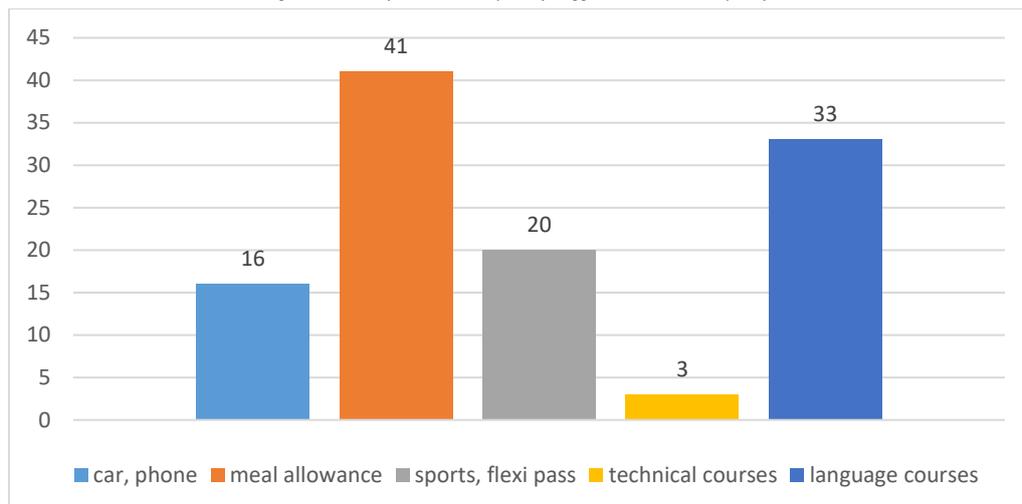
Source: Authors

Question 6: *Language courses can be attended by:*

Possibility to attend language courses		
All employees	21	42%
Only employees at specific positions	17	34%
Top management	1	2%
Other criteria	1	2%
I don´t know	10	20%

Question 8: *Can you choose a specific form of the language course?*

Possibility to choose a form of the courses	
Individual or group courses	18
Individual courses only	1
Group courses only	11
Only employees at specific position can choose	8
Other	1

Question 9: *What is the support from the side of the employer?*

Form of support	
Language courses are fully paid for by the employer and I can attend them within my working hours	17
Language courses are fully paid for by the employer but I cannot attend them withi my working hours	12
Language courses are partially paid for by the employer and I can attend them within my workig hours.	5
Language courses are partially paid for by the employer but I cannot attend them within my working hours	2
My employer does not finance the language courses but I am allowed to attend them within my working hours	1
There is no support from the side of the employer	0
Other forms of support	3

Question 10: *Does the employer check your progress?*

Checking progress by employer	
No	27
Yes	12

Question 10 *Does the employer check your progress?*

Forms of checking employee progress	
Tests	10
Random participation of employer in language courses	1
Interview with employer	1

Question 11 *How do you personally perceive the possibility to attend language courses?*

Attendance in language courses	
Voluntary attendance in order to improve language skills	34
Compulsory attendance but perceived positively	4
Compulsory attendance, negatively perceived	1

Question 11 *How do you personally perceive the possibility to attend language courses?*

Source: Authors

Motivation to attend language courses - WOMEN
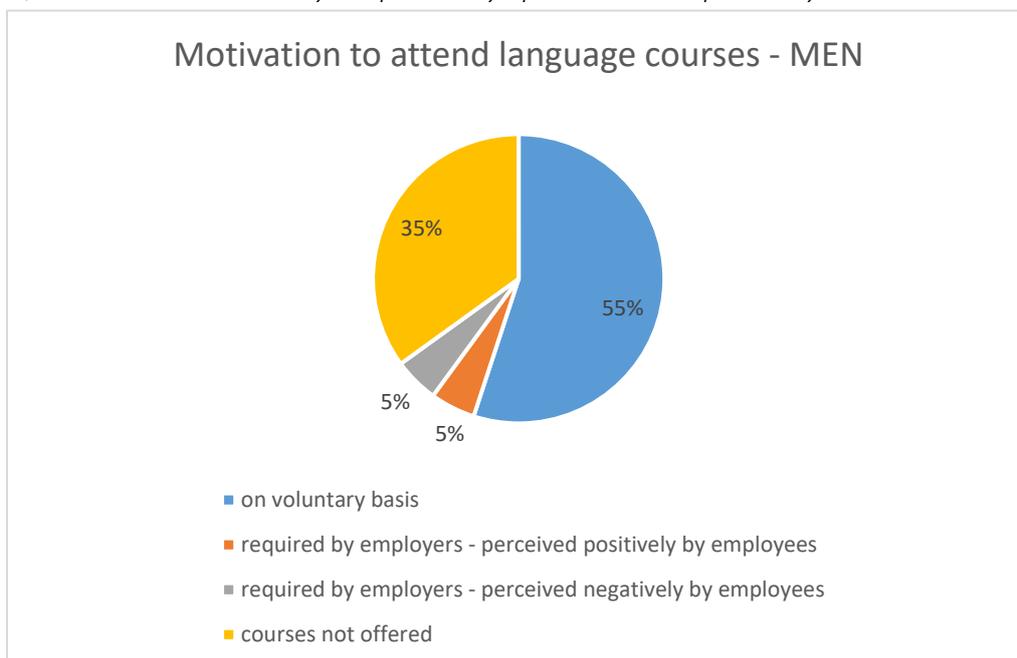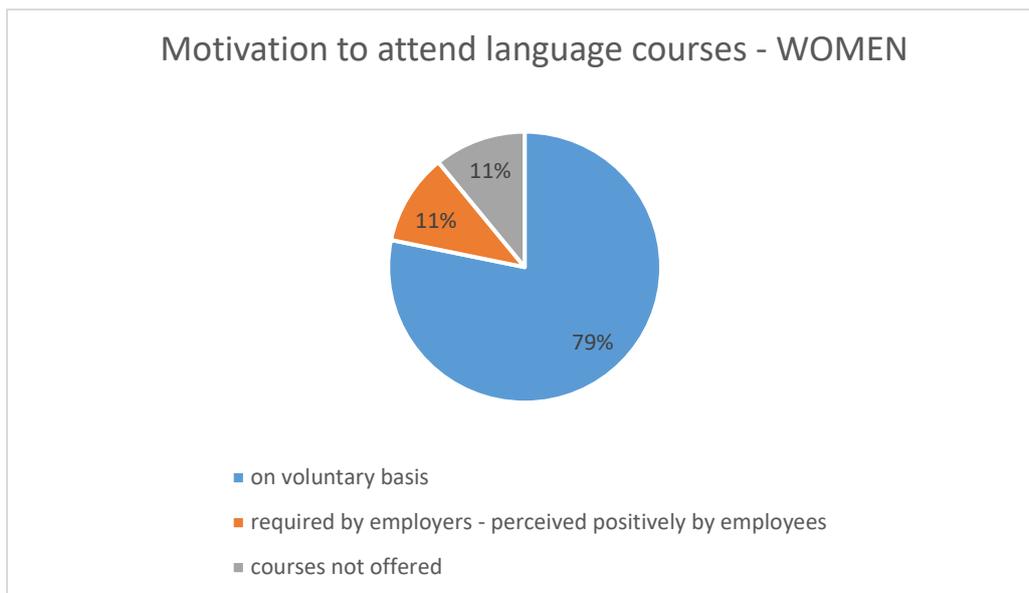
Source: Authors

Question 12 *Is knowledge of a foreign language important in your position?*

Language skills required for my position		
Yes	37	74%
No	13	26%

Question 13 *Do you communicate in a foreign language at work?*

Foreign language used for communication at work		
Only for written communication	11	22%
Written communication and speaking	24	44%
Speaking only	1	2%
I don´t use foreign language at work	14	28%

Question 14 *Do you have experience with working abroad?*

Personal experience with working abroad		
Yes	14	28%
No	35	70%

Question 15 *What kind of language courses do you prefer?*

Course specialization	
General foreign language	11
Foreign language for specific purposes	5
Combination of both	27

Question 17 *Has the pandemic and the related restrictions affected the language courses in your company?*

Impact of pandemic on language courses		
No changes	6	15%
Courses were suspended	23	55%
Changed form	13	30%

Transfers of healthcare workers due to the COVID-19 crisis and its impacts

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Abstract

During the coronavirus crisis, healthcare workers are exposed to a large amount of work in high-risk workplaces in very unfavorable conditions. The aim of this seminar paper is to find out what psychological effects the coronavirus crisis has on these healthcare workers and also what are the reasons and procedures for moving workers to other positions. Whether it's transfers between departments within an organization, or transfers between organizations to other cities or regions. To achieve the aim of the research and answer the research questions, data from the existing questionnaires of Suryavanshi et al. (2020) and Lasalvia et al. (2020) are processed and analyzed and our own questionnaire survey is created, which describes the reasons and procedures for relocating workers in times of crisis. The received questionnaires are compared and analyzed. They show that the symptoms of moderate to severe depression and severe anxiety are most common in healthcare professionals who are in direct contact with infected COVID-19 patients and are also more common in women. The questionnaire itself describes that the most common reasons for relocating workers are necessary assistance with vaccinations or with testing, assistance in special wards for patients with COVID-19, but also due to the lack of staff due to COVID-19 infection. Hospitals use various procedures to deal with this crisis; these most often include transfers of workers to work from home, recruitment of new part-time workers and contractors, bans on taking holidays for healthcare staff and mandatory overtime, assistance from students, part-time workers and volunteers, as well as repurposing hospital beds and reorganization of operations.

Keywords: COVID-19, pandemic impact, employees, healthcare workers, mental health, employee transfers

Introduction

At the turn of 2020, COVID-19, caused by the coronavirus SARS-CoV-2, first appeared in Wuhan, China. The virus, which has gradually spread around the world and caused an ongoing pandemic, has also caused huge economic problems.

Employees are a major chapter in the COVID-19 crisis. At a time when the world had to stop, the governments of some of the most affected countries were forced to introduce a so-called lockdown, which suspended the entire economy in the country. The industry and all services stopped, except those that provide essential goods and services. Hospitals were forced to postpone planned procedures and start accepting patients with a serious course of the disease. Governments around the world have responded to the coronavirus crisis by introducing fiscal policies to support increased healthcare spending, income transfers, increased social benefits, and wage subsidies to firms to retain employees and thus minimize short-term unemployment (Makin and Layton, 2021). In both developed and developing economies, the virus has damaged the efficient functioning of companies and their employees in the private sector, while activity and employment in the public sector have been affected much less (Makin and Layton, 2021).

Some companies went bankrupt because they were unable to operate under these conditions. Thus, a large number of employees lost their jobs due to the pandemic, were forced to change their occupation or were transferred to other positions (Chanana and Sangeeta, 2020). This applies in particular to healthcare workers, the military and workers in the integrated rescue system. These workers are exposed to COVID-19 every day, but they are also an indispensable part of combating the disease (Gombar et al., 2020). What are the effects of the crisis on these employees? What does it mean to transfer workers to other positions or retrain them?

Relocation of employees to other workplaces is most often seen in workers in medical facilities. The isolation centers of medical facilities lack a large number of medical staff, and so medical staff from non-intensive care are deployed in these centers. The deployment of these health professionals requires some form of adaptation to the entirely new environment that this work entails (Okediran et al., 2020). In the Czech Republic, governors of regions began to call on, for example, outpatient specialists, employees of day care facilities and inpatient care where they do not yet care for covid patients (Ministry of Health of the Czech Republic, 2021).

The aim of this article is to find out how and to what extent workers in the most risky job positions (health professionals, police officers, etc.) were, and still are, physically and mentally affected during the coronavirus pandemic. In order to meet this goal, the following research questions are defined:

1) What are the reasons and procedures for transferring employees to other positions?
2) What are the mental or physical impacts on these workers?

Literature research

Healthcare workers deserve nationwide attention during the coronavirus crisis. Not only are they constantly working under stress, but their healthcare organizations are under a lot of pressure and many are trying to deal with providing care to many critically ill patients at the same time (Burdorf, Porru and Rugulies, 2020). These are workers who are in constant contact with infected patients and are therefore at the greatest risk of infection. All of this has significant implications for the mental health of these workers (Bell and Wade, 2021). Xue-Hui et al. (2021) analyzed information on the level of depression, loneliness of health professionals and their knowledge related to COVID-19. They found that workers in the isolation ward suffered from mild to moderate depression. The degree of loneliness was higher for doctors than for workers in the isolation ward. The study also shows that the level of awareness of healthcare professionals about the knowledge of COVID-19 is relatively high.

According to Okediran et al. (2020), the experience of front-line healthcare professionals in isolation centers during the coronavirus pandemic varies from the joy of healing patients to suffering from their deaths. They concluded that there was a need to increase psychosocial support and to provide greater material and financial support to these workers and to ensure a safe working environment. The results of Sahebi et al. (2021) show that the overall prevalence of anxiety and depression among health professionals during the COVID-19 pandemic is 24.94% and 24.83%, respectively. Olagunju et al. (2021) demonstrate the influence of mental well-being on the quality of patient care and the effective functioning of healthcare services. They interviewed 303 healthcare professionals to evaluate mental distress and the Pittsburgh Sleep Quality Index (PSQI), to assess multidimensional aspects of sleep, including quality, latency, duration, use of sleep medications, and daily dysfunction. The value of mental distress was 23.4% and 6 out of 10 participants reported sleep problems. The largest proportion of participants reported problems with sleep latency (81.5%), duration (71.3%) and daily dysfunction (69.6%), while approximately one third (32%) reported sleep medications and had problems with sleep quality.

According to Maltezou et al. (2020), out of 3,398 monitored nurses, 1,599 were exposed to low-risk, 765 to medium-risk, and 1,031 to high-risk coronavirus infection. The study also shows that hospitalization was most common in workers who were at high risk of infection. Johnson et al. (2021) found that another important source of virus transmission between patients and workers is the spread of asymptomatic COVID-19 among healthcare professionals. Coronavirus tests were performed on workers from four metropolitan hospitals, with 439 participants taking a nasopharyngeal swab and 374 participants taking a blood sample. Using nucleic acid-based PCR (NAAT) assays, the incidence of SARS-CoV-2 infection was 0.23% and the antibody level from blood samples was 2.41%.

In order for healthcare professionals to be able to return to work after a positive PCR test, they must spend some time in isolation. An analysis of 150 patients and healthcare professionals who switched from positive to negative PCR test results within 2 months was performed at an academic medical center in the USA. They concluded that until there

is evidence of how long a positively tested person is infectious, the length of quarantine should be more than one month (Gombar et al., 2020).

Petzold, Plag and Ströhle (2020) summarized the recommendations of the World Health Organization, the United Nations and the International Society of the Red Cross to reduce stress and psychological burden on healthcare workers during the COVID-19 pandemic and to identify important factors that senior staff should consider to reduce the psychological burden on their subordinates. According to them, the emphasis is on the normalization of strong emotions and stress, the fulfillment of basic needs, social support, clear communication and division of tasks, flexible working hours and the use of psychosocial and psychological help.

According to Carnevale and Hatak (2020), human resource managers should be able to adapt to unforeseen events that cause increased insecurity among their employees and pose an immediate threat to the performance and viability of organizations. They should react quickly and try to help their employees adapt to and cope with the radical changes in the work environment due to the COVID-19 crisis. For example, employees who previously only worked in their organization must now quickly adapt to remote work environments.

Human resource managers in companies are constantly developing innovative, creative and effective ways to engage their employees in various activities in order to maintain their mental well-being and thus increase their motivation and efficiency at work (Chanana and Sangeeta, 2020).

Jankelová and Mišún (2021) tried to identify the effects of the competencies of crisis managers in the field of agriculture on the performance of employees in the coronavirus crisis, when their performance was influenced by subjective perception and evaluation of their working conditions, satisfaction and safety. They found that the performance of employees in a crisis can be influenced by competent crisis management and increase its impact by sharing information and supporting teamwork.

Ren, Cao and Tachia (2020) show that job creation by employees strengthens their job satisfaction and innovative work behavior in turn strengthens their work commitment. The research provides evidence of how employees involved in job creation have reoriented their careers to cope with high unemployment.

Since the outbreak of the COVID-19 pandemic, the possibility of working from home (home office) has become a common part of many employees' lives. It was recommended to workers as a measure to reduce the risk of infection and thus reduce the spread of the virus. The possibility of working from home can have positive as well as negative effects on working conditions as well as on the physical and mental health of employees (Hallman et al., 2021). Hallman et al. (2021) set to find out what are the differences in the use of time during one day (24 hours) between office workers and home office workers. It was found that workers who worked from home during the COVID-19 pandemic in Sweden slept longer than when they worked in offices. Physical activity did not change significantly during work and leisure. These changes while working from home can be healthy. However, some workers in this study reported that their work performance and

well-being changed for the worse during the pandemic. This suggests that action will be needed to prevent possible health risks.

Methods and Data

Based on a study by Suryavanshi et al. (2020), which provides information on the mental health and quality of life of health professionals during the COVID-19 pandemic in India, we will analyze data from an online structured questionnaire. This questionnaire was opened to respondents from May 5th 2020 to May 16th 2020. Respondents include health professionals (doctors, nurses and trainees) from 30 cities in 12 states of India. The state of Maharashtra has the highest representation. Approximately 1,000 healthcare professionals were interviewed, of which 204 responses were received. The survey contains data on demographic characteristics, the level of depression and anxiety, and the quality of life of health professionals.

Data from Lasalvia et al. (2020) will be processed and analyzed for comparison. The data is obtained from a web-based questionnaire available from April 21st to May 6th 2020. Respondents to this questionnaire include administrative staff and medical staff working at the University Hospital of Verona in the Veneto region of Italy. A total of 2,195 healthcare professionals participated in the survey, and the questionnaire contains personal socio-demographic information and characteristics, including gender, age, living conditions, existing psychological problems, and length of practice.

Data from these two articles will be processed and analyzed in MS Excel software, where basic statistical characteristics (mean, median, variance) will be performed and graphs will be created for comparison.

In order to obtain relevant results, which will also be valid for the Czech Republic, a research sample will be created, which will be obtained through a questionnaire survey. From April 19th to April 26th 2021, an online structured questionnaire will be distributed, which will be sent out via e-mail among staff in hospital organizations and the Police of the Czech Republic. The aim of this questionnaire will be to find out the reasons and procedures for relocating employees to other positions. The questionnaire will be in Czech language and will be created using Google Forms. It will contain 6-12 questions of open and closed types. First, the demographic data of the respondents will be analyzed and then information on employee transfers and the reasons for these transfers will be collected. The output data will be presented in MS Excel software through tables and charts.

Results

The questionnaire of Suryavanshi et al. (2020), mediated among health professionals in India, received a total of 197 responses. Graph 1 shows the level of depression and anxiety in all health professionals who participated in the survey. It shows that moderate to severe depression occurred in 44 healthcare professionals (22%), moderate to severe

anxiety in 56 healthcare professionals (28%), and a combination of moderate to severe depression and anxiety in 33 healthcare professionals (17%). The remaining 64 health professionals (32%) had no levels of depression or anxiety.

Graph 1: Levels of depression and anxiety in all healthcare workers
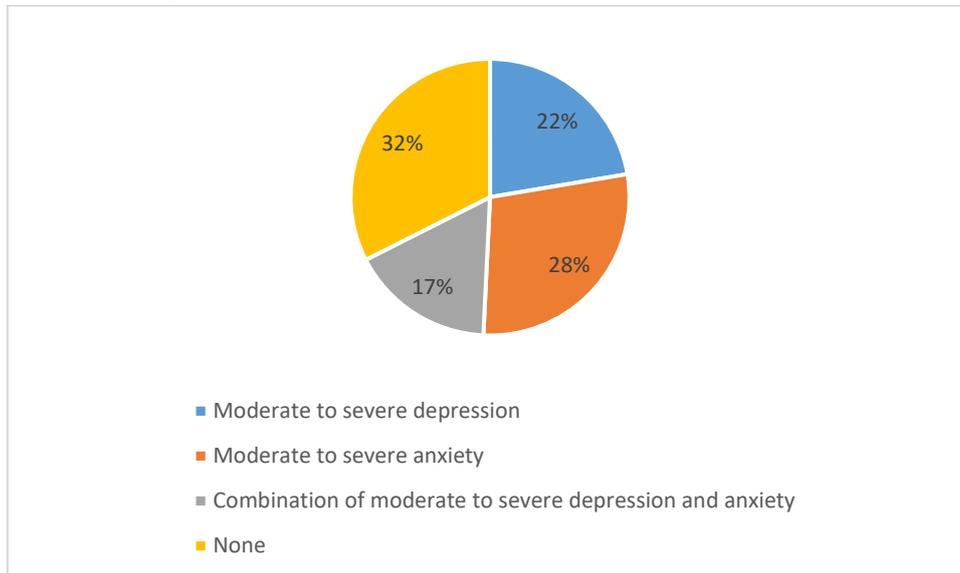
Source: Suryavanshi et al. (2020), processed by authors.

The gender distribution of workers showed that out of a total of 101 women, 23 (23%) suffer from moderate to severe depression, 32 (32%) from moderate to severe anxiety, and 17 (17%) reported a combination of moderate to severe depression and anxiety and 29 women (29%) had no levels of depression or anxiety. The overall distribution is shown in Graph 2.

Graph 2: Levels of depression and anxiety in women
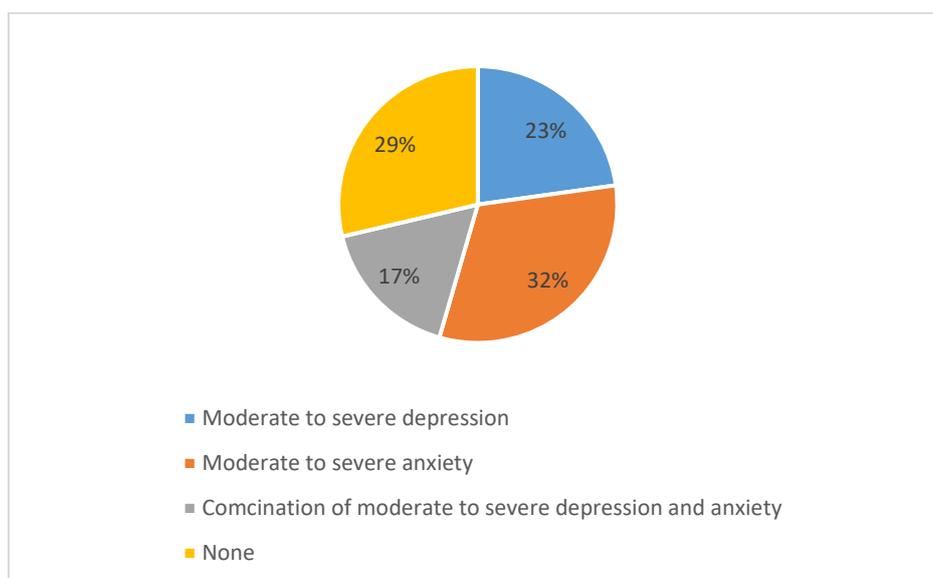
Source: Suryavanshi et al. (2020), processed by authors.

A total of 96 men participated in the questionnaire survey. 21 male health professionals (22%) suffer from moderate to severe depression, 24 (25%) from moderate to severe anxiety, and 16 (17%) a combination of moderate to severe depression and anxiety. 35 employees (36%) do not suffer from either, see Graph No. 3.

Graph 3: Levels of depression and anxiety in men
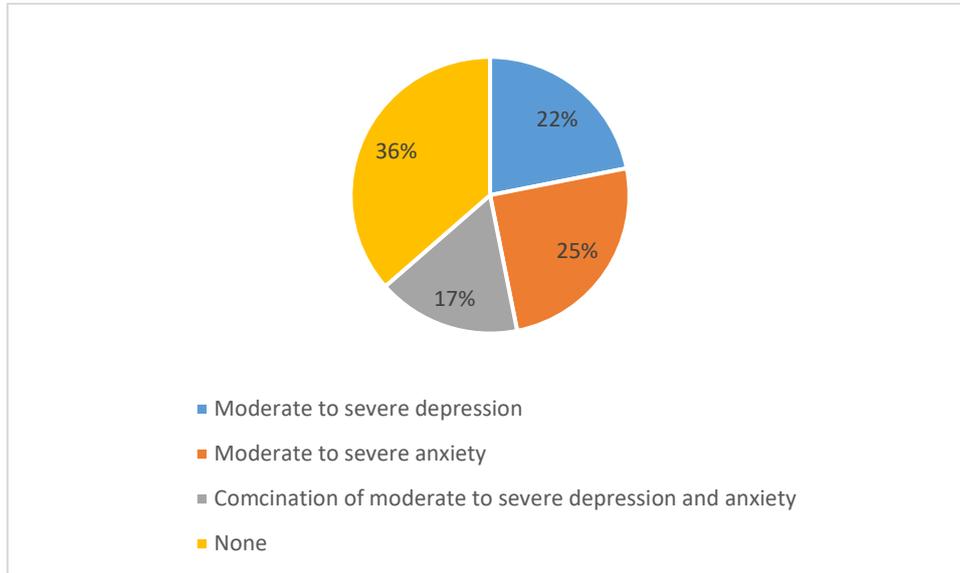
Source: Suryavanshi et al. (2020), processed by authors.

Graph 4, 5 and 6 show the distribution of the level of depression and anxiety according to the age of the respondents. There were a total of 81 workers under the age of 30. Four healthcare workers suffer from moderate to severe depression (30%), 26 from moderate to severe anxiety (32%), 18 (22%) and 13 (16%) did not report any depression or anxiety.

Graph 4: Levels of depression and anxiety in healthcare professionals under 30 years of age
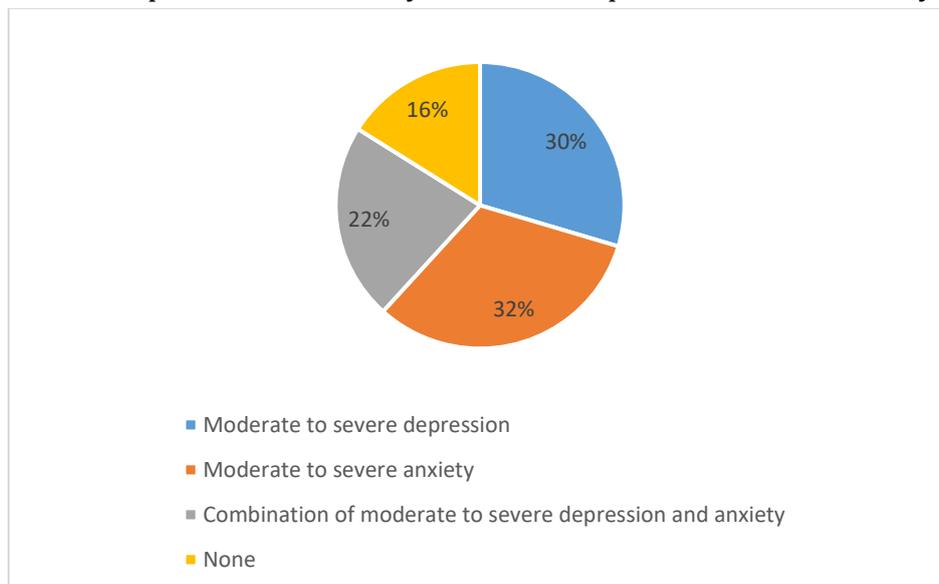
Source: Suryavanshi et al. (2020), processed by authors.

There were 73 workers aged 31-39 years. 14 of them (19%) stated that they suffer from moderate to severe depression, 20 workers (27%) reported that they suffer from moderate to severe anxiety, 10 respondents (14%) reported a combination of moderate to severe depression and anxiety 29 respondents (40%) did not report any depression or anxiety.

Graph 5: Levels of depression and anxiety in healthcare workers between 31-39 years of age
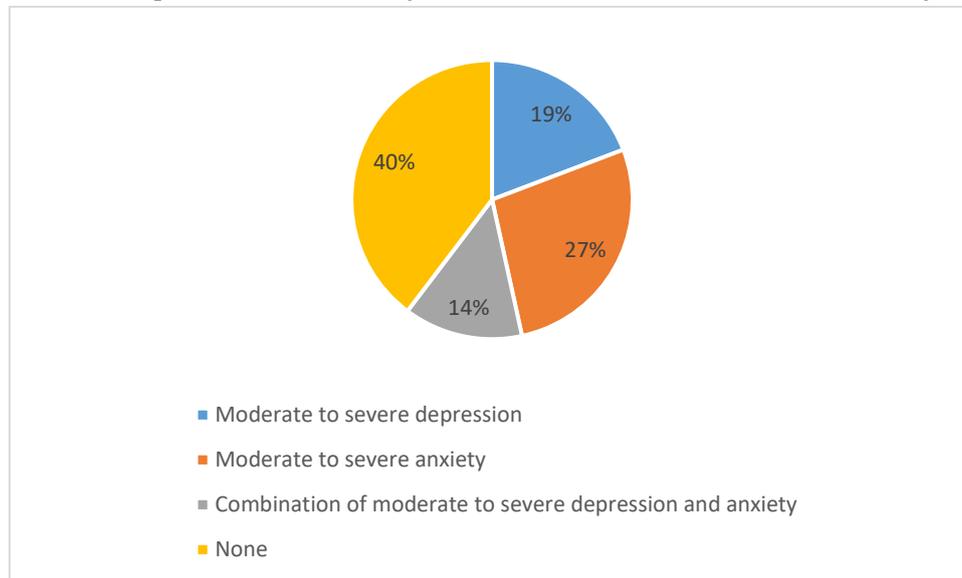
Source: Suryavanshi et al. (2020), processed by authors.

Among healthcare professional over the age of 40, a total of 43.6 (14%) reported having moderate to severe depression, 10 health professional (23%) reported moderate to severe anxiety, a combination of moderate to severe depression and anxiety was reported by 5 healthcare professional (12%) and 22 healthcare professional (51%) reported no depression or anxiety.

Graph 6: Levels of depression and anxiety in healthcare professionals over 40 years of age
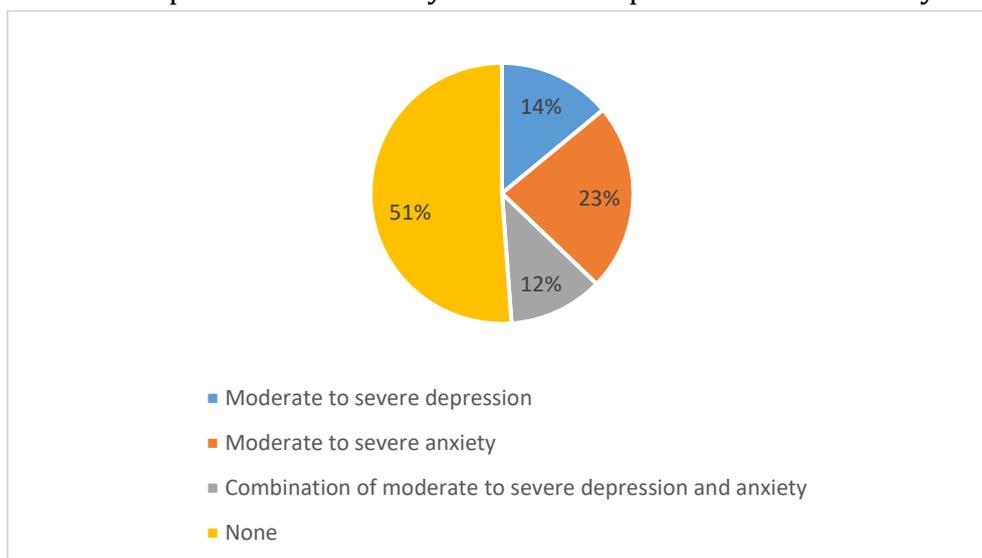
Source: Suryavanshi et al. (2020), processed by authors.

Suryavanshi et al. also processed staff responses, depending on whether or not they were in direct contact with infected COVID-19 patients. Of the 197 workers, 171 were in direct contact with infected patients. Mild to severe depression affects 41 of them (24%), moderate to severe anxiety affects 50 (29%), a combination of moderate to severe depression and anxiety affects 30 workers (18%) and 50 (29%) did not report either, see Graph 7.

Graph 7: Levels of depression and anxiety in healthcare professionals working in direct contact with infected COVID-19 patients
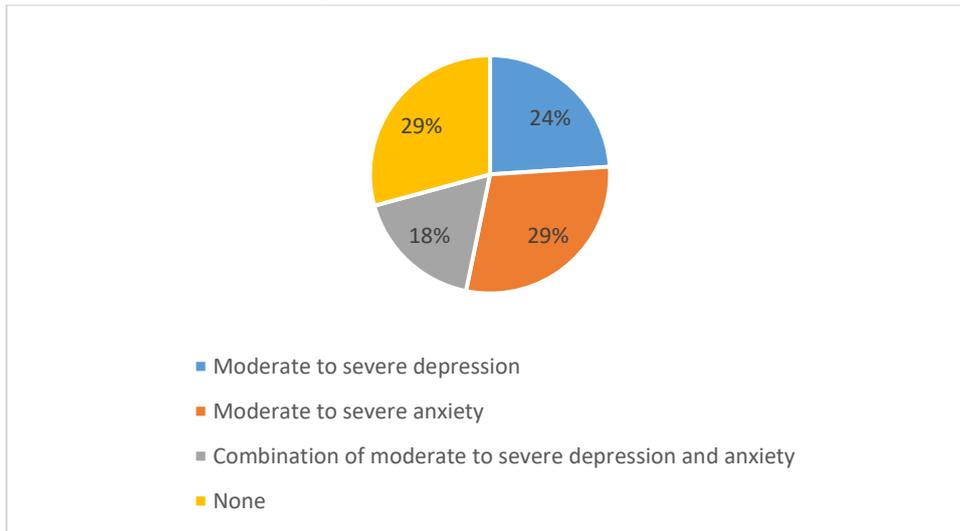
Source: Suryavanshi et al. (2020), processed by authors.

The remaining 26 staff members were not in direct contact with infected patients. Graph 8 shows that 3 workers (12%) reported having moderate to severe depression, 6 workers (23%) with moderate to severe anxiety, 3 workers (12%) with a combination of moderate to severe depression and anxiety and 14 employees (54%) did not report either.

Graph 8: Depression and anxiety levels in healthcare professionals not working in direct contact with infected patients COVID-19
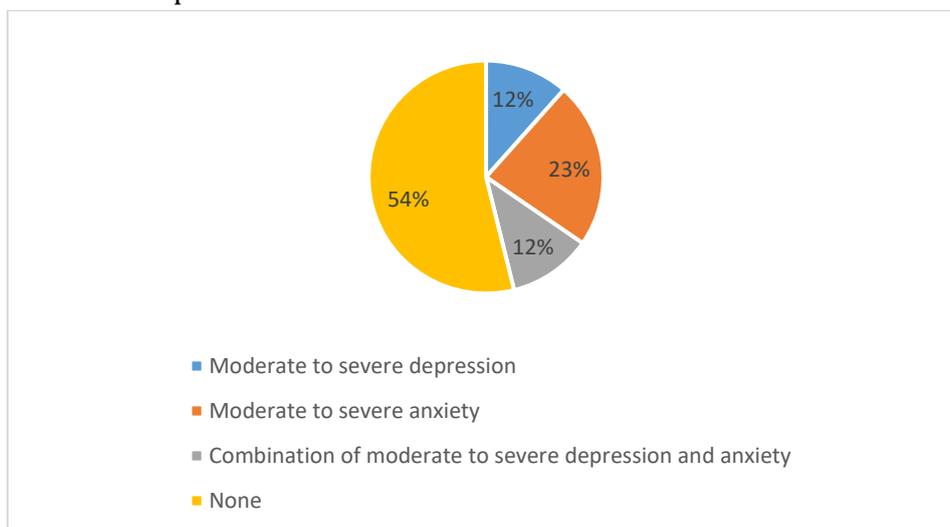
Source: Suryavanshi et al. (2020), processed by authors.

A total of 2,195 respondents participated in the questionnaire survey by Lasalvia et al. (2020). 35.70% participated were nurses, 24.30% were other healthcare professionals, 16.40% were interns, 13.90% were doctors and 9.70% were administrative staff. Graph 9 shows a clear representation of this division of staff in a hospital in north-eastern Italy.

Graph 9: Distribution of staff in a hospital in north-eastern Italy
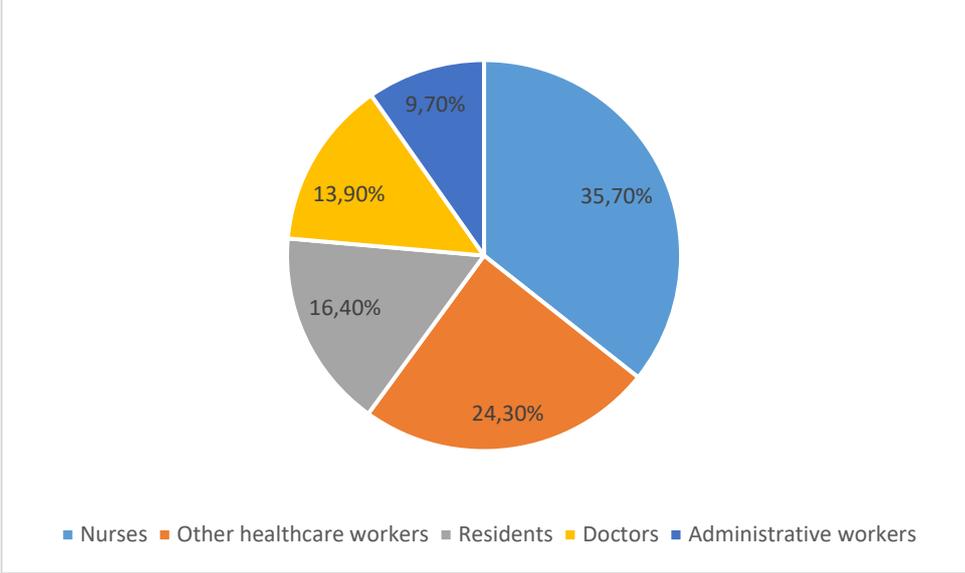
Source: Lasalvia et al. (2020), processed by authors.

Of the total number of participating employees, as shown in Graph 10, 9% worked in the ICU, 8% worked in COVID-19 sub-intensive units, 7.60% in other front-line services and the remaining 75.4% worked in different hospital ward without contact with COVID-19 patients.

Graph 10: Distribution of work positions of respondents
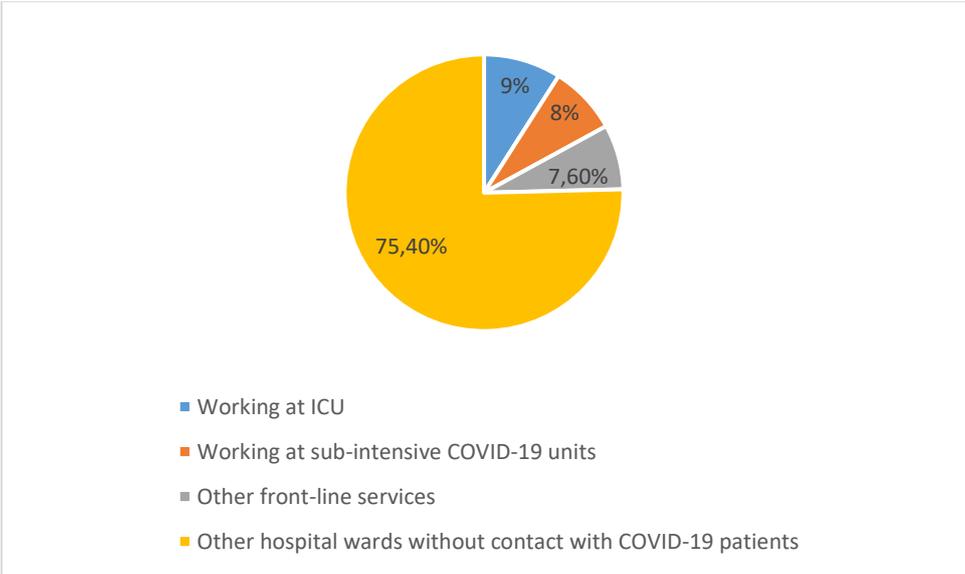
Source: Lasalvia et al. (2020), processed by authors.

The questionnaire survey also shows that out of 2195 respondents, 63.20% stated that they suffer from traumatic experiences associated with COVID-19 at work. 53.80% showed signs of post-traumatic anxiety and in addition 50.1% showed signs of clinically relevant anxiety and 26.60% showed signs of at least mild depression. This research also showed that women, i.e. nurses and other assistants directly associated with patients with COVID-19 and persons with pre-existing psychological problems were at increased risk of psychopathological consequences of the COVID-19 pandemic.

To answer the research questions, a questionnaire was created to find out the reasons and procedures for moving employees to other positions. Of the 30 hospitals randomly contacted in the Czech Republic, 8 responded. Graph 11 shows the distribution of respondents according to their scope within regions of the Czech Republic.

Graph 11: Regional scope of hospitals.
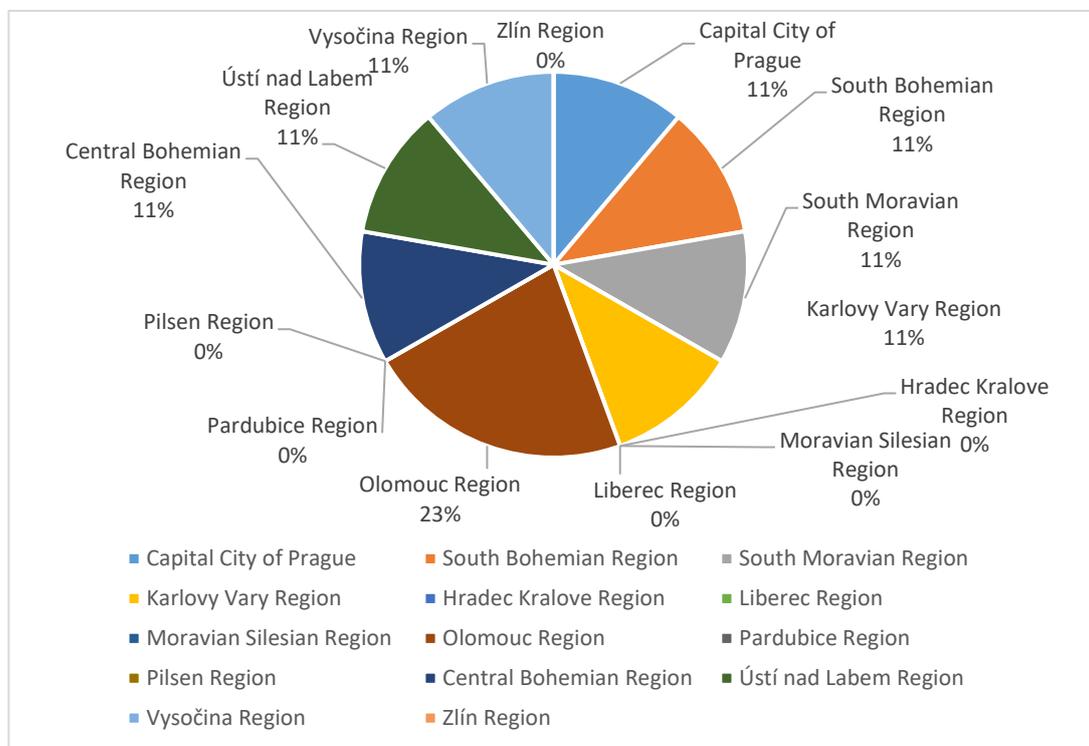
Source: Authors.

The number of employees at these hospitals ranged from 414 to 5,689. Detailed numbers of employees are shown in Graph 12.

Graph 12: Number of hospital employees
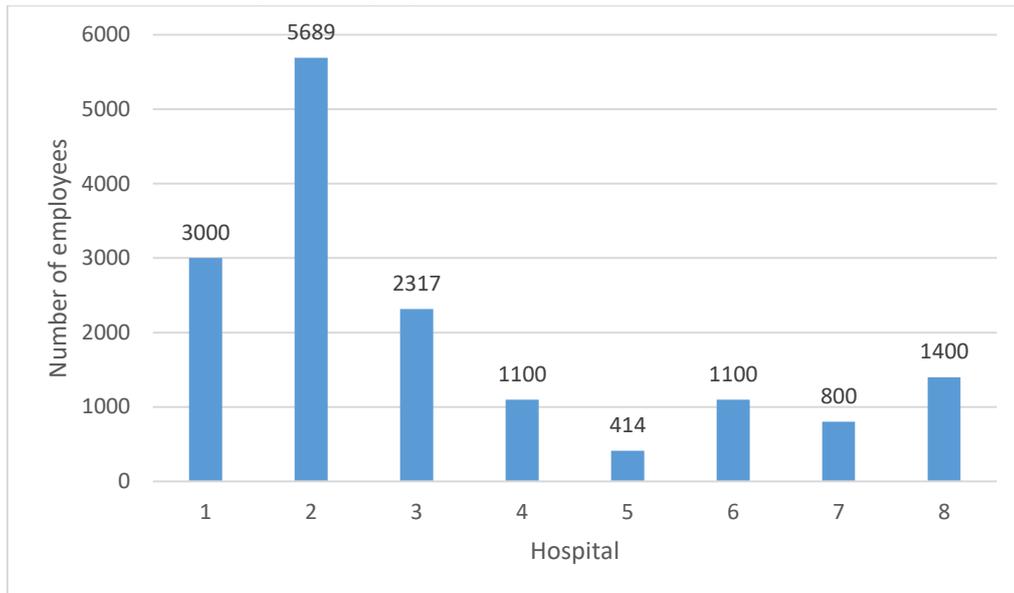
Source: Authors.

When asked whether hospitals had to deal with staff transfers due to the COVID-19 pandemic, 100% of respondents said yes. Graph 13 shows which transfers were involved.

Graph 13: Employee transfers
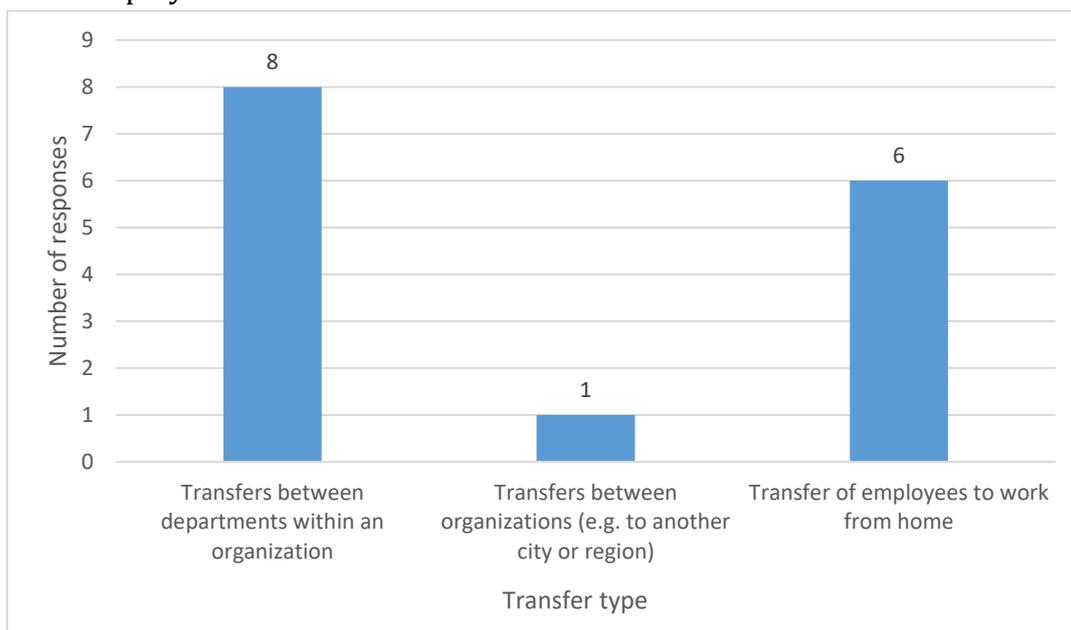
Source: Authors.

If the hospital had to deal with transfers of staff between organizations (e.g. to another city or region), respondents were asked to indicate the procedures and reasons for the transfer. These relocations concerned only one hospital, which stated that its staff had to provide vaccinations in another city and were also forced to use another building for one ward for a short period of time.

Another question was whether the hospitals were facing a shortage of staff. Of the total number of responses, 7 hospitals (87.5%) answered yes and 1 hospital (12.5%) answered no.

Several answers were received to the open-ended question concerning the main reasons for the redeployment of staff. The most common reasons for relocating employees were:

- assistance in hospital wards with COVID-19 patients,
- assistance with vaccinations or testing,
- rotation of workers in groups due to restrictions or infection,
- reduction or reorganization of operations,
- quarantined staff, closure of some departments,
- establishment of COVID-19 workplaces and staff shortages in these departments.

The last question of this questionnaire survey was how hospitals dealt with staff shortages during the COVID-19 pandemic. Hospitals have addressed this problem by mandatory overtime, by banning taking holidays for medical staff, assistance from students, part-time workers and volunteers, or transfers between departments. Detailed processing of answers is presented in Graph 14.

Graph 14: Ways of solving staff shortage problems
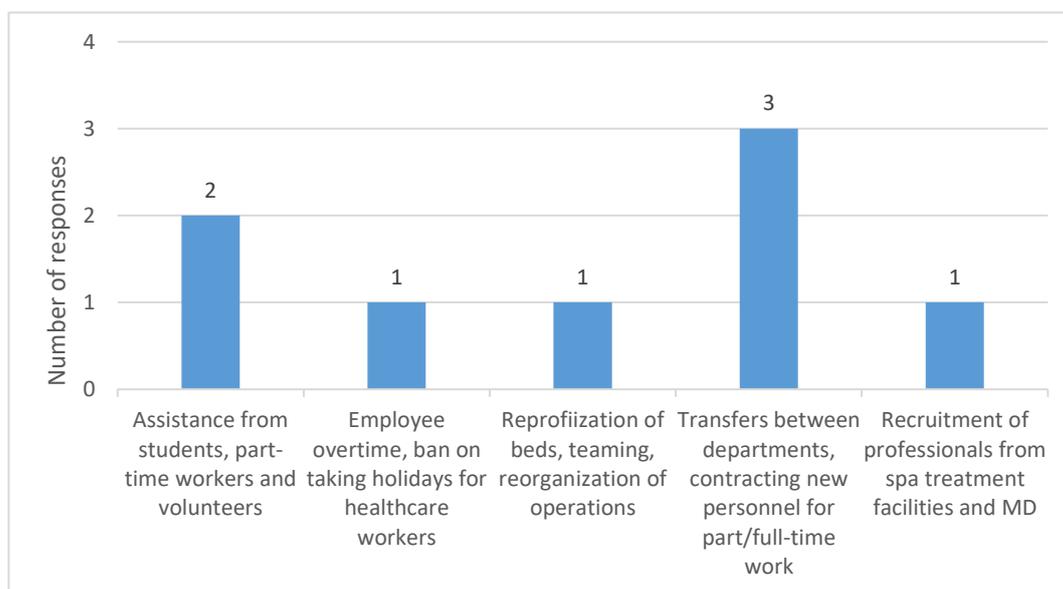
Source: Authors.

Discussion

To answer the research question as to what are the mental or physical impacts on workers in the most risky workplaces, two questionnaires were compared, which related to this issue. The questionnaire of Suryavanshi et al. (2020) examined the impacts on health professionals in India and the questionnaire of Lasalvia et al. (2020) examined how the COVID-19 pandemic affected healthcare and administrative workers in north-eastern Italy.

Suryavanshi et al. (2020) concluded that most of the symptoms of moderate to severe depression or moderate to severe anxiety were reported by workers under the age of 30, but also workers who worked in direct contact with infected patients with COVID-19. A total of 197 respondents took part in this questionnaire survey. Among these respondents, nurses were the most represented - 35.70% followed by other healthcare professionals - 24.30%. Physicians participated in this survey by only 13.90%. It also follows that women suffered the most severe anxiety - 32%, in men it was only 25%. Furthermore, with a slightly smaller difference than in the case of anxiety, women suffered more from moderate to severe depression, namely 23%, in men it was 22%.

In contrast, the results of the questionnaire survey by Lasalvia et al. (2020), which was answered by 2,195 respondents, show that fewer healthcare professionals showed symptoms of at least mild depression. Most workers, exactly 63.20%, answered that they suffered from traumatic experiences associated with COVID-19 at work. At the same time, 53.80% stated that they suffered from post-traumatic anxiety. Also, over 70% of workers reported showing symptoms of clinically relevant anxiety and symptoms of at least mild depression. Lasalvia et al. (2020), as well as Suryavanshi et al. (2020) concluded that women are at increased risk of psychopathological consequences of the COVID-19 pandemic.

To answer the research question, as to what are the reasons and procedures for moving employees to other positions, a questionnaire survey was conducted. 30 randomly selected hospitals from all over the Czech Republic were interviewed and a total of 8 answers were obtained. The number of hospital staff who responded to this questionnaire survey ranged from 414 to 5,689.

All respondents stated that they had to deal with staff transfers. For all hospitals, these were transfers between departments within the organization. Six hospitals stated that they were moving workers to work from home and only one hospital stated that they had to move workers between organizations, to other cities or regions. The main reasons for these transfers for most respondents were help in wards with COVID-19 patients and help with vaccinations or testing. Another reason was the rotation of workers in groups to reduce possible infection, reduction or reorganization of operations, due to quarantined staff and closed departments or due to the establishment of COVID-19 wards and the lack of staff in these departments.

Conclusion

The aim of this article was to analyze the effects of the coronavirus crisis on healthcare professionals and to identify procedures and reasons for relocating employees to other positions.

The aim of the paper was met. The results section analyzes data that show that health professionals who work in direct contact with patients with COVID-19 in most cases show symptoms of moderate to severe depression or severe anxiety to a relatively large extent. Furthermore, the main reasons for moving employees to other positions were identified using a questionnaire survey. Whether it was a transfer within one organization, i.e.

between departments or other organizations in other cities or counties, in all cases these reasons were associated with COVID-19.

Complications during the research arose in the own questionnaire survey, when the questionnaire was sent to a small number of respondents. Of the 30 hospitals sent, only 8 responses were obtained. This is a small sample of responses, but it was sufficient enough to analyze the main reasons for the employee transfers.

The issue of COVID-19 has great potential for further research. It would be very interesting to conduct research analyzing whether individual hospitals returned to their usual regimen before the coronavirus crisis or how healthcare professionals dealt with this crisis and its effects on their mental and physical health.

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The development of the financial health within the fishing industry in the South Bohemian region

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Abstract

Ponds and the entire fishpond system are considered important cultural assets and heritage which people have benefitted from until now. They are being used for the commercial breeding of waterfowl and fish, however they are also important from the perspective of water management, recreation, aesthetics, or ecology. This paper aims to evaluate the development of the financial health of the fishing industry in the South Bohemian Region in the period 2003-2019. For the analysis, data from the Bisnode Magnusweb were used. According to the classification of economic activities CZ-NACE, it is sector "A – agriculture, forestry, and fishing, more specifically, subgroup 030000 (Fishing and aquaculture). The analysis includes only companies in the South Bohemian Region due to their highest concentration in this area. Based on the financial statements of the companies operating in the sector of fishing and protection of waters, an average sample company was determined. Subsequently, financial analysis of the whole industry is carried out using the average data. The results indicate that although this industry showed clear reactions to external and internal economic influences during the monitored period, from the economic perspective, the industry has been stabilized very well since the last economic crisis.

Keywords: financial analysis, South Bohemian Region, comprehensive evaluation, ratios, fishery, ponds, landscape

Introduction

Ponds are a common type of freshwater habitat in Europe, and they are not only being inseparable features of the landscape, but they also have several of productive functions including fish farming or waterfowl breeding, and non-productive functions that affect not only the landscape, micro-climatic conditions, retention function, but play also an

important role on flood protection, biodiversity, culture, society, education, and aesthetics (De Bie et al., 2007; Turkowski and Lirski, 2011). Ponds can be situated in lowlands, highlands, or at high altitudes; they can be located in fields, meadows, forests, or built-up areas such as in villages and towns (Chytrý et al., 2010; Kumar et al., 2012).

Most of the fish ponds have been a part of the landscape of the Czech Republic for several hundred years, and therefore play an important role in the hydrological system for ages (Pechar, 2000). Mesolitic fishermen were the first fisherman in Czech lands who concentrated their activities mainly near rivers. The first written record about pond and fishing date back to 1034 (Andreska, 1997). The first ponds in Czech lands were not dedicated to the fish farming. Their aim was to help the medieval miners to mine and float various non-ferrous ores, or to serve as water reservoir and provide drinking water for humans and cattle. The first ponds used for fish farming were established near these reservoirs mostly by monks from monasteries, and fish became a part of traditional dish of peasants but also feudals (Hule, 2009). Many fish were consumed by monasteries and other church institutions as fasting meal, but also by Jewish inhabitants for the Friday night Shabbat dinner (Andreska, 1997). Fish pond farming and aquaculture is a significant part of the primary sector of the South Bohemian Region with a long tradition, creating a typical landscape pattern of the region, moreover is responsible for more than half of the total fish production of the Czech Republic (Polanecký et al., 2018; Bednářová, 2005). The South Bohemian Region has long been perceived as an agricultural area with developed pond farming and forestry. The region is a part of the river basin of the upper and central Vltava with its tributaries – the Malše, the Lužnice, the Otava, and many others. In the past, more than 7,000 ponds were created, with the overall area achieving 30,000 ha today. The biggest ponds both in the region and in the Czech Republic, are Rožmberk, Horusický rybník, and Bezdrev. In addition to the fish production itself, the share of waterfowl breeding, mainly ducks and geese, is also significant (Český statistický úřad, 2020).

In addition to fish production, ponds in South Bohemia are of considerable importance as landscaping elements retaining water in the landscape and significantly contributing to the biodiversity of the territory. Riparian vegetation has significant benefits in terms of landscape-scale conservation of avifauna, as it provides possibilities for nesting for many species of birds even in highly modified environments, but no management in a form of rational mowing and pasture may become a threat (Hanzelka, 2010; Bennett, Nimmo and Radford, 2014). Specific vegetation can be found for instance in sandy areas with dunes that occur along the Lužnice river in southern Bohemia, or deep river valleys such as in the Vltava valley, or even in fishponds, but also in lowland taiga which occurs in Třeboňská basin (Chytrý, 2012). In this respect, many ponds located in the South Bohemian region are of great conservation importance even on an international and global level, which is confirmed also by the general delimitation of so-called bird areas specified in NATURA 2000 or by the localities included in the Ramsar Convention on Wetlands (Kušová, Těšitel and Bartoš, 2005; Chytil and Hakrová, 2001). Ponds and pond systems are also considered an important cultural heritage and part of local history contributing to regional identity and its typical landscape. The region benefits from ponds

and pond systems to this day not only in terms of the possibility of commercial fish or waterfowl farming but also concerning water management, ecological functions, tourism, recreation, as well as for its aesthetic or artistic values. In connection with the production function, there exists a wide range of events for the public such as ceremonial fish harvests with the possibility to taste fish specialties or to buy a live fish. Třeboň fishpond heritage was nominated for inclusion in UNESCO´s World Heritage List (Heřmanová, 2012).

The importance of this industry is indisputable. Another very important aspect is the financial situation of the fishing industry. Like other types of companies, enterprises active in the fishing industry are living entities, which need to deal with finance. It is very important to be aware of the situation of the given industry, or the situation of its competitors. This paper aims to present a way to properly express the financial health of the given industry, or apply this method in the case of specific companies. The objective of the paper is thus to evaluate the development of the financial health of the fishing industry in the South Bohemian region between 2003 and 2019.

Methods and Data

The data used for the analysis will be obtained from Bisnode´s Magnusweb database. According to the classification of economic activities CZ-NACE, it is the sector "A – agriculture, forestry, and fishing". More specifically, it is the subgroup 030000 (Fishing and aquaculture). The analysis includes only the companies from the South Bohemian region, as there is the highest concentration of companies active in this field.

The monitored period is defined by the time series of seventeen consecutive years. It is a period between the years 2003 and 2019. Older data were not available by means of the database used. For each year, a specific sample of companies was selected as shown in Table 1 and 2.

Tab. 1: Number of companies for given period (2003-2011)

	2003	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Companies no.	7	7	8	7	7	9	10	13	14

Source: Authors.

Tab. 2: Number of companies for given period (2012-2019)

	2012	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Companies no.	13	12	11	10	13	15	13	8

Source: Authors.

In terms of the sample companies for individual years, there shall be mentioned a fact concerning the selection. For all years, the samples consist of limited liability companies and two joint-stock companies only. However, the database does not contain data on the volume of the shares issued, dividends paid, or price of shares. In 2011 and 2017, the

maximum number of companies from the database was 14 and 15, which is twice the number of companies from the years 2003-2007.

Moreover, to provide information about the financial situation of the entire industry, it is necessary to determine an average sample company, which will be created on the basis of averaging all data of eligible companies for each year. Based on the resulting data, a balance sheet and profit and loss account will be created for each year, which will be used for financial analysis. Within the methods of comprehensive evaluation, creditworthy and bankruptcy models are being used.

Profitability ratios: ROA (Return On Assets) – Earnings before interest and taxes/Assets, ROS 1 (Return On Sales) – Earnings before interest and taxes/Sales, ROCE (Return On Capital Employed) – (Earnings before interest and taxes)/Equity + Capital employed), ROE (Return On Assets) – Net earnings/Equity.

Activity ratios: Receivables turnover – Sales/Receivables, Stock turnover – Sales/Stock, Receivables turnover period – Receivables/(Sales/360), Stock turnover period – Stock/(Sales / 360), Average collection period – Receivables/(Sales/360), Creditors payment period – Payables/(Sales/360),

Debt ratios: Equity Ratio – Equity/Assets, Debt Ratio I. – Debt/Assets, Debt Ratio II. – (Debt + Other liabilities)/Assets, Debt Equity Ratio – Debt/Equity, Interest coverage I. – Earnings before interest and taxes/Interests, Interest coverage II. – (Earnings before interest and taxes + Depreciation)/Interests.

Liquidity ratios: Net Working Capital – (Current assets – Payables), Total liquidity – Current assets/Payables, Current ratio – (Payables + Financial assets)/Payables, Cash ratio – Financial assets/Payables, Creditors payment period – Payables/(Sales/360).

Bankruptcy and creditworthy models: Altman Z-Score for companies non-traded on financial markets and modifications for Czech companies, Indexes of Mr and Mrs Neumaier (IN 95, IN 99, IN 01, IN 05), Taffler model, Kralicek Quick Test (original and modified), Solvency index.

An average sample company is determined by the arithmetical average of companies active in fishery and water protection. First, the balance sheet and profit and loss account will be used to analyse absolute ratios. Subsequently, ratio analysis of selected ratios will be performed. The values are presented in thousand CZK.

Results

The analysis of the data clearly shows that the value of the total assets of an average sample company in the monitored period fluctuated significantly. The largest volume of assets was in 2019 (CZK 116,453). The smallest volume was in 2008 (CZK 57,029). The fluctuation was largely caused by the ratio of fixed tangible assets to stock. The development of the total assets is presented also in Graph 1.

Graph 1: Development of the volume of the total assets (in thousand CZK)
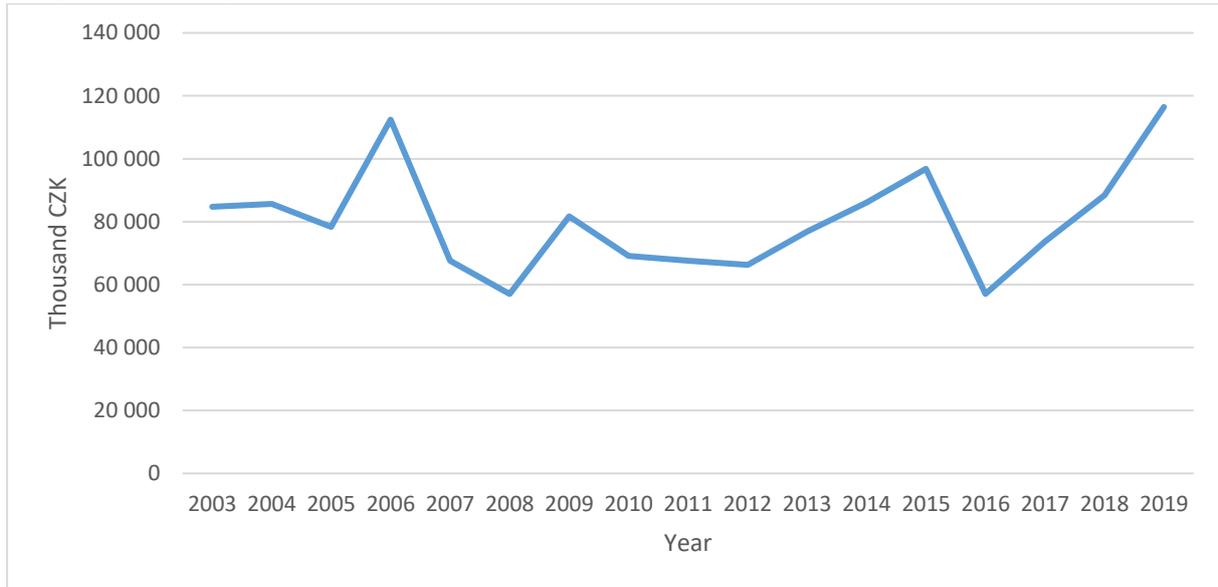
Source: Authors.

The total assets volume of the average sample company active in fishery and water protection showed an unusual increase in 2006 compared to other years. Another significant fluctuation in the form of a decrease in the volume of the total assets was between 2015 and 2016; afterward, it started to increase sharply up to the highest value recorded during the monitored period. The average sample company active in fishery and water protection is interesting also in terms of the structure of the total assets. The structure is shown in Graph 2.

Graph 2: Structure of total assets (in thousand CZK)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Other Assets	195	219	158	153	315	338	206	198	320	354	458	235	216	209	197	240	482
Current Assets	41 858	40 202	36 774	63 392	35 568	30 819	41 941	88 698	38 396	34 398	40 270	44 621	50 830	32 722	41 402	47 838	59 738
Fixed Assets	42 650	45 232	41 377	48 871	31 762	25 873	39 536	29 646	28 905	31 486	36 111	41 227	45 753	24 101	32 094	40 336	56 233

Source: Authors.

Graph 2 clearly shows that the total assets in every year consist only of a negligible part of other assets. In most of the monitored years, it is evident that half of the total assets

consist of current assets and fixed assets of the company. The only exception is the year 2010 when the current assets account for 74.95 % (CZK 8,869) of the total assets.

Subsequently, the structure of the liabilities of the average sample company active in fishery and water protection can be analysed. Graph 3 shows a simplified version of the liabilities of the average sample company. The values are presented in thousand CZK. The analysis of the data shows that the volume of equity during the monitored years increased slowly. The highest value was recorded in the year 2015 (CZK 73,868), but also in the year 2019 (CZK 91,566) which is not represented in the graphical presentation. On the contrary, the volume of the borrowed capital have decreased over the years. The highest volume of the borrowed capital was in the year 2003 (CZK 40,870), while the lowest volume was in the year 2016 (CZK 12,536). In terms of the structure of the liabilities of the average sample company active in fishery and water protection, it is evident that from 2008, the share of the borrowed capital on the total volume of liabilities decreased significantly. The borrowed capital formed the largest share of the liabilities in 2006 (CZK 5,240). In terms of the borrowed capital to equity ratio, it was in 2003 (48.3 %). However, the overall development trend of the total liabilities increased continuously. A more detailed view of the liabilities structure of the average sample company active in fishery and water protection in the period 2003-2017 is presented in Graph 3.

Graph 3: Structure of total liabilities (in thousand CZK)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Other Liabilities	143	172	127	290	143	80	92	139	192	913	240	288	267	282	267
Borrowed Capital	40 870	39 262	31 728	52 406	32 307	22 631	25 050	24 247	21 914	15 788	18 706	20 559	22 665	12 536	16 074
Equity	43 690	46 217	46 453	59 720	35 195	34 318	56 552	44 771	45 514	49 536	57 892	65 236	73 868	44 215	57 352
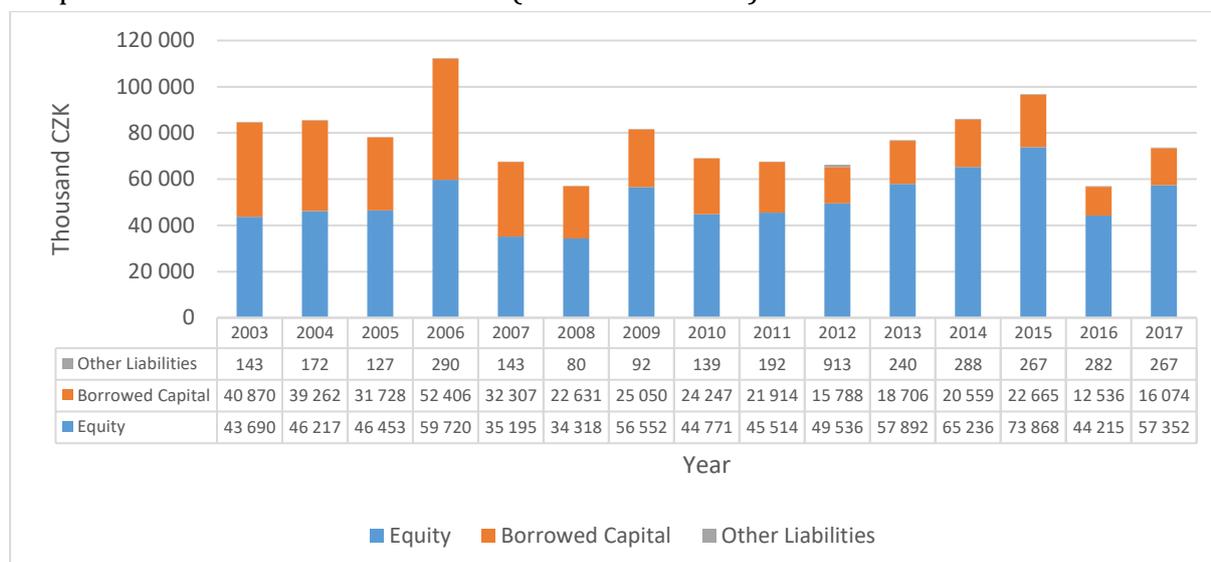
Source: Authors.

An interesting fact is the development of the profit and loss account of the average sample company active in fishery and water protection. The most important items in the profit and loss account for each kind of company are operating results, financial results, and extraordinary profit/loss. The items are presented in detail in Graph 4.

Graph 4: Operating result, financial result, and extraordinary profit/loss

|	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
■ Extraordinary Profit/Loss	3 191	0	380	8	464	73	91	18	46	-10	143	107	-16				
■ Financial Result	-4 098	-315	-371	-1 094	-234	-85	-689	-313	-159	-218	86	47	-47	3	172	38	360
■ Operating Result	-211	3 883	5 149	25 509	8 151	6 029	6 061	4 014	5 302	4 114	6 023	6 816	6 880	3 758	4 969	5 465	5 854
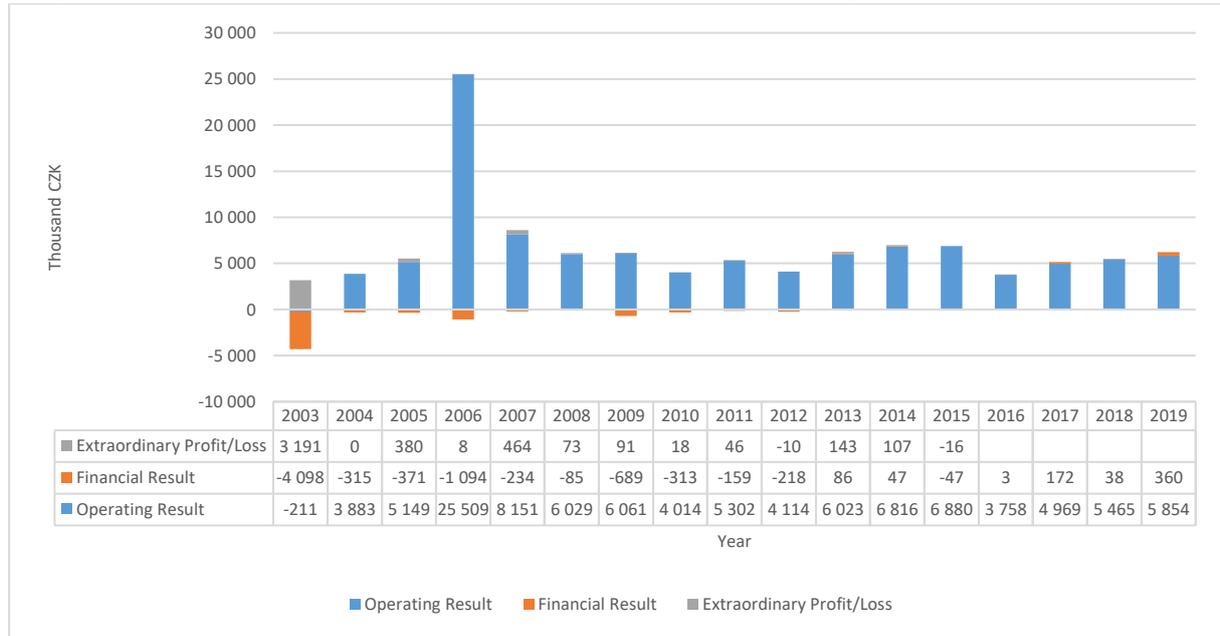
Source: Authors.

Graph 4 indicates that in 2006, the average sample company active in fishery and water protection showed extremely high operating results. Compared to this, the operating result in other monitored years was approximately the same, with a noticeable regular cyclicality. In 2003, the company showed very negative financial results, and this trend continued until 2012. The financial result was positive from the year 2013. Extraordinary profit/loss was recorded in terms of the volume only in the year 2003; from the following year, the value of this item in the profit and loss account was negligible.

In terms of the profitability of the average sample company active in fishery and water protection, the most important profitability ratios are ROA, ROE, ROS 1, and ROCE. Graph 5 shows the development of all these ratios.

Graph 5: Development of profitability ratios (ROA, ROE, ROS 1, and ROCE)
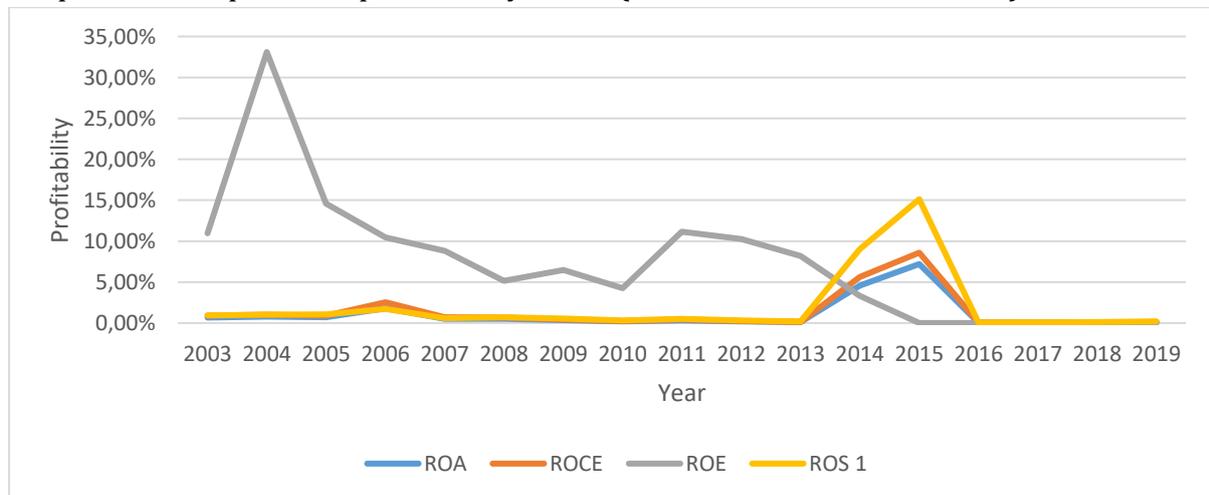
Source: Authors

It follows from Graph 5 that the ROE of the average sample company active in fishery and water protection showed major changes in the monitored period. In 2004, an extreme value of this ratio was recorded (33.1 %), which subsequently decreased gradually. However, from 2015, it was not possible to determine this ratio due to the absence of the data. ROA, ROS 1, and ROCE showed a similar development trend for the whole monitored period. The values were very low for most of the monitored period (ROA ~ 0.5 %; ROS 1 ~ 0.6 %; ROCE ~ 0.6 %). In 2015, the values of these ratios increased to 7.21 % (ROA), 15.12 % (ROS 1), and 8.59 % (ROCE).

In terms of activity ratios of the average sample company active in fishery and water protection, the receivables turnover periods were very long. For all monitored years, the period was longer than one year. In the years 2003-2019, the receivables turnover period was extended every year, the longest one being in 2015 (755 days). In this year, assets turnover was only 0.48. After 2015, there was only a slight decrease (by several days). The shortest receivables turnover period was in 2006 (344 days). Assets turnover in this year achieved the maximum value (1.04). The stock turnover period of the average sample company active in fishery and water protection in the monitored period was between 76 and 188 days, where the periods changed for every year. Stock turnover achieved the values of 4.71-1.90. The average collection period of the average sample company active in fishery and water protection in the monitored period was 75-117 days. At the end of the monitored period, this period was rather shorter, i.e. closed to the lower limit of the aforementioned interval. The shortest creditors payment period of the average sample company active in fishery and water protection was in 2004 (59 days). From this year until the end of the monitored period, the period extended continuously to 97 days in the year 2019. The most interesting debt ratios include the Equity ratio, Debt ratio I., and Debt ratio II. The graphical representation of their development is shown in Graph 6.

Graph 6: Development of debt ratios (Equity ratio, Debt ratio I, and Debt ratio II)
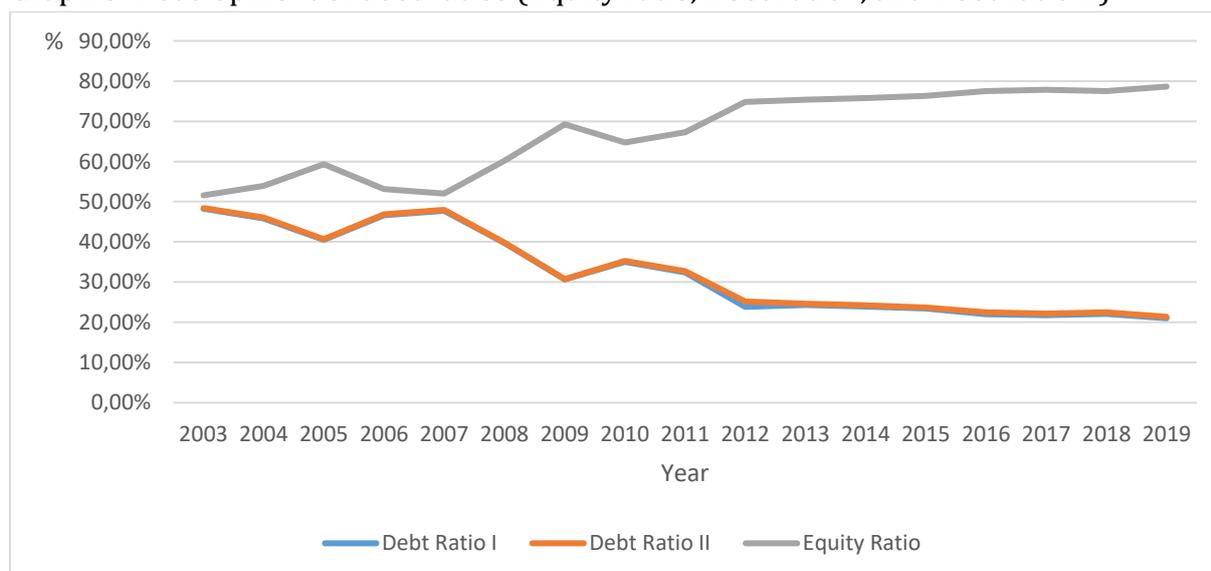
Source: Authors.

Graph 6 shows that the values of both analysed debt indicators are very similar, with the same decreasing trend during the whole monitored period. Equity ratio shows an opposite trend in comparison with Debt ratio I. and Debt ratio II. Interest coverage I., however, cannot be determined for most year of the monitored period due to the absence of necessary data. It can be determined only for the years 2012-2015, where the highest rate of interest coverage I. was recorded in 2015 (76.42). Interest coverage II. was very low at the beginning of the monitored period, about 6.0. From the year 2007, however, the value increased gradually, reaching its maximum in the year 2015 (106.52). Another ratio characterizing the financial health of a company is liquidity ratio. In a company, liquidity can be divided into total, current, and cash. The development trend of all types of liquidity is presented in Graph 7.

Graph 7: Development of liquidity ratios (total liquidity, current liquidity, and cash ratio)
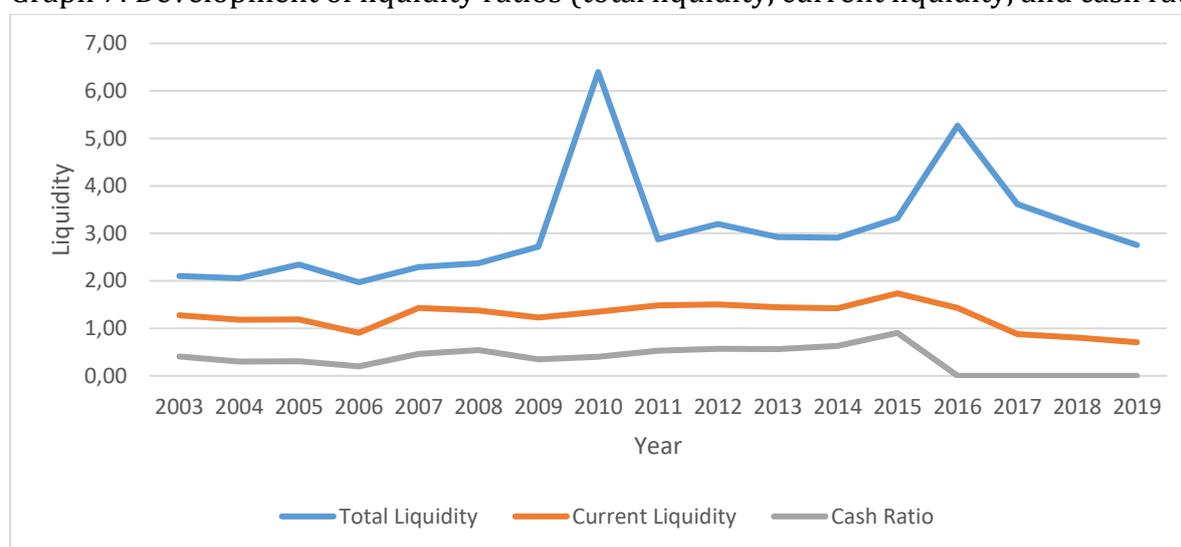
Source: Authors

According to Graph 7, cash and current liquidity showed a similar development trend for the whole monitored period, with the same decrease after 2016. Due to the absence of the input data, however, it was not possible to determine the cash ratio after 2016. On the contrary, total liquidity showed an upward trend with two fluctuations in 2010 and 2016, reaching 6.4 % (in 2010) and 5.26 % (in 2016). Another interesting parameter is net working capital. Based on the analysis of this item, it can be stated that the volume of net working capital of the average sample company active in fishery and water protection showed an upward trend, with the volume achieving CZK 37,613 at the end of the monitored period. In 2010, the volume of net working capital was CZK 73,916. On the contrary, the lowest volume of net working capital was in the year 2008 (CZK 16,201). The creditors payment period did not exceed 100 days, with the longest creditors payment period being 98 days in the year 2010, while the shortest creditors payment period was recorded 2016 (56 days).

From the methods of comprehensive business evaluation, the following methods were selected for the financial analysis of the average sample company active in fishery and water protection in the years 2003-2019: Altman Z-Score, IN (IN 95, IN 99, IN 01, IN 05), Taffler

model, Kralicek Quick Test, and Solvency index. Altman Z-Score showed that the average sample company active in fishery and water protection in terms of the results for companies non-traded on financial markets decline for most of the monitored period. In the years 2006-2007 and 2015-2016, the company was in the grey zone. According to Altman Z-Score modified for companies operating in the Czech Republic, the development in the monitored period is identical. Other indicators of financial health are IN indexes. According to the results of IN 95, the company was in the grey zone for most of the monitored period. In the years 2014-2015, the company appeared to be able to survive possible financial distress. According to the index IN 99, the company was going to go bankrupt in the years 2003-2005 and 2007-2019. However, in 2006, the company was in the grey zone. The index IN 01 indicates that in 2003, the company was going to go bankrupt; nevertheless, from 2004 to 2013, the company was in the grey zone. In the years 2014-2015, the company appeared to be able to survive possible financial distress. From the year 2016 until the end of the monitored period, the company was again in the grey zone. IN 05 evaluates the company as a bankrupting company in the period of 2003-2009. However, from the year 2010, the company was in the grey zone, except for the year 2011, when it was considered rather a bankrupting company. Taffler model is very specific for the calculation structure. According to Taffler model, the average sample company active in fishery and water protection was not going to go bankrupt for the entire monitored period. According to the original version of Kralicek Quick Test, the average sample company active in fishery and water protection was considered an unhealthy company in the year 2003. However, in the years 2004-2014, the company was considered average. In 2015, its reputation declined and could be considered a financially unhealthy company again. In the following years, however, it was again evaluated as an average company. On the other hand, according to the modified version of Kralicek Quick Test from the year 1999, the average sample company active in fishery and water protection in the years 2003-2019 was considered a bankrupting company. In the years 2006 and 2013, however, it showed the parameters of a creditworthy company. The last financial and analytical indicator is the solvency index. According to its results, the average sample company active in fishery and water protection is a company with certain financial problems at the beginning of the monitored period. From the year 2005 to the end of the monitored period, however, its solvency is considered to be good, in the year 2006 even very good.

Discussion

All industries usually go through cyclical repeated fluctuations in terms of their financial ratios. An average sample company is thus a suitable tool for presenting the financial health of a specific industry. During the monitored period, there were individual repeated phases caused by both external and internal economic factors. One of the most important external economic factors is the global economic crisis, which hit the Czech Republic in 2008. A positive fact is that companies active in fishery and water protection were able to maintain the downward trend in terms of their indebtedness despite the unfavorable conditions. This was possible also thanks to the gradual increasing of the total liquidity even after the crisis. In terms of the financial result, it is obvious that the results were

negative for most of the monitored period; this can, however, be considered normal in this industry, since these companies do not improve their financial result by means of the operations with shares and other financial derivatives. What is more essential for these companies is the operating result achieved mainly by selling the products (fish, fishing tackle, etc.). Compared to other years, the operating result was stable even during the crisis, which means that this industry was able to cope with the financial crisis very well. It is also apparent that since this crisis, companies active in this industry have become interested in reducing the ratio of borrowed capital to equity. This step was supposed to lead to the optimization of the financial leverage function. Within the monitored period, the year 2006 can be considered very interesting, as companies in this industry showed larger volumes of the total assets, liabilities, and economic results. On the other hand, this had another effect in the form of higher indebtedness, which had shown a downward trend until then. Nevertheless, the companies were able to reduce their debt constantly. This was possible also thanks to the slight growth rate of liquidity after the year 2006. Another interesting year is 2010 when ROE showed more significant growth.

Conclusion

The objective of this paper was to evaluate the development of the financial health of the fishing industry in the South Bohemian region for the years 2003-2019. The objective of the paper project was achieved. Onthe basis of the financial statements of companies active in fishery and water protection, an average sample company was determined. Based on the average data, a financial analysis of the entire industry was performed. Although this industry showed clear responses to external and internal economic factors during the monitored period, it can be stated that from the economic point of view, this industry has stabilized very well since the last economic crisis.

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Leadership Vacuum: Why are there Less Leaders with Disabilities in India?

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Abstract

Around the globe, people with disabilities regularly face discrimination and range of disabling barriers to education, health care, employment and other public facilities. Stigmatized attitudes, societal prejudices and negatives stereotypes about individuals with disabilities has profound influence on the integration of such marginalized group into the society. People with disabilities are often underrepresented in leadership positions. Generally, it inspires and empowers people to see faces that look like them in leadership positions. It provides a feeling of being accepted and hope that they too could one day accomplish success like their role model.

In India, people with disabilities have received little attention in leadership positions in different platforms of our society. Since there is very little research conducted concerning the topics of leadership and people with disabilities in Indian context, this provides ample opportunity to investigate, hence may be the best starting point for conducting research in this social realm.

After reviewing the literature, many multi-dimensional observations were reported. This article focuses on the core themes of disability and leadership qualities. Additionally, explores challenges faced by individuals with disabilities from taking space in society as leaders which has been lacking in generations for a long time. This research leads to a better understanding of the complexities of cultural, socioeconomic, and professional barriers that people with disabilities encounter when navigating life and practicing leadership.

This article will offer qualitative information, cases, and suggestions for public organizations, Non-Governmental Organizations (NGOs), social workers, policy makers, academicians, researchers and above all, people in context. It is the belief that this notion of mindset change will become even more advantageous in the years ahead.

Keywords: People with disabilities, leader, inclusion, religion, stereotypes.

Introduction

One billion people, or 15% of the world's population, experience some form of disability, and disability prevalence is higher for developing countries (The World Bank, 2020). As per Census 2011, in India, out of the 1.2 billion population, about 26.8 million individuals are reported to have some kind of disability which is 2.21% of the entire population (MOSPI, 2017). Still, the fact is that people with disabilities are unable to make adequate representation in various positions in the community. By 2050 there will be 9 billion people to feed, clothe, transport, employ and educate in this world economy that helps everyone succeed and prosper while working together (Abelow, 2018). As the age profile of bodily limitations does not change over time, more people with disabilities are likely make their presence felt in coming decades.

India signed, and subsequently ratified, the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) on October 1, 2007. According to the UNCRPD, disability arises from the interaction of impairments with attitudinal and environmental barriers that inhibit complete and active participation on an equal basis in society (Math et al., 2019). Article 5 – Equality and non-discrimination of Convention on the Rights of Persons with Disabilities (UNCRPD) of 2006 lays down broad mandates to ensure equality for people with disabilities and to remove all types of discrimination on the grounds of disability (Cera, 2017).

In today's scenario, there is an important question being asked: why some people with disabilities do not emerge as leaders, especially in developing countries? There are various factors that play a role when it comes to absence of people with disabilities in leadership position in the society. There can be many underlying reasons that have more to do with social categorization of World's largest minority than with the people with disabilities themselves. Persons with disabilities are more likely to experience adverse socioeconomic outcomes such as less education, poorer health aftermath, lower levels of employment, and higher poverty rates (The World Bank, 2020). Barling and Weatherhead (2016) hypothesized in their study that exposure to poverty would limit later leadership role occupancy through the indirect effects of the quality of schooling and personal mastery.

Leadership is a motivational instrument for people from marginalized group when the society is diverse and reflected of what the world looks like. People with disabilities in governance or any other corporate position inspire the people to push themselves on self-imposed mission to elevate the professional and personal thrive to succeed in life. This study of literature on diverse phenomena helps to explain that leadership needed not only by certain individuals to succeed, but also by people from underprivileged backgrounds to continue to advance and flourish.

For all research disciplines and all research projects, consideration of prior, applicable literature is important. The author starts by explaining previous studies to map and

analyze the research area while reading an essay, independent of discipline, to inspire the study's purpose and explain the research question and hypotheses (Snyder, 2019). This article is based on Kadi's (2018) Doctor of Education thesis, which was designed to show the benefits the community and individuals are going to get when people with disabilities take their rights and place in the society. In order to address the value of giving people equal opportunities to become their own leaders without judgment or attitude, Kadi's study focuses on the leadership perspective. Authors feel that this study is appropriate for Indian subcontinent as people with disabilities are unable to make their mark on the world as leaders, and society has unofficially labeled them with negative terms such as the retarded, the deaf, and the disabled. How do these challenges create barriers for people with disabilities to advocate their democratic rights, and demonstrate their leadership traits? Building a culture that is sensitive to the needs and rights of people with disabilities and advocates collectively at the political level to strengthen their capacity to support legislation and reform structures (Dowse, 2001). This starts with educating such individuals about their rights from childhood and encouraging the expansion of their representation in the society. However, the issue is that, as children and teenagers, many people with disabilities do not acquire the requisite leadership and advocacy skills because they are not offered the chance and right to pursue these skills (Grenwelge, Zhang and Landmark, 2010), Moreover, experiences from the past also affect the future of individuals with disabilities as they start believing themselves as an outcast in their own surroundings.

Methods

This study is restricted to qualitative methodology, authors have spent significant amount of time in reviewing national and international literature to examine the political, social, economic and psychological challenges faced by face people with disabilities in India. From December 2020 to April 2021, the online database Google Scholar was searched using keywords. Google search engine was additionally utilized because it provided latest and relevant information that may not be available in google scholar databases, for example information pertaining to national and international laws on disability.

While looking for relevant information, same keywords were used for both google scholar database and google search engine: disability, people with disabilities, children with disabilities, individuals with disabilities, religion, gender discrimination, employment, stigma, stereotype, attitudes, Hindu, Muslim, etc. To select articles and data for this review, keywords were combined with Boolean operator "OR" and "AND" to arrive on exclusion and inclusion benchmark.

Given the scarcity of papers on the subject, the search terms were kept deliberately broad in order to find any papers relating to people with disabilities and leadership models. The

included content had to be written in English and addressed the effect of social, cultural, political, and economic factors on the inclusion of people with disabilities.

Results: Social, Cultural, Political and Economic spheres

There is abundant evidence that both societies - western and non-western - show various attitudes to persons with disabilities (Ingstad, 1990). In developing countries, people with disabilities have been constantly evaluated and judged by other people, and such instances from the past are still very evident. Historically, people with disabilities were perceived as unable to make their own choices and take care of their lives; they were viewed as people who either need support or as subjects of sympathy and charity (Coleridge, 1993).

India is a diverse nation in terms of ethnicity, history, faith, and ideology. Though India is home to more than 90% of the world's Hindus, it also has large communities of Muslims, Christians, Sikhs, Buddhists, Jains, and followers of folk faiths. Attitudes towards individuals with disabilities from the views of various religious and cultural backgrounds is especially vital within the context of Indian society. An ethnographic study conducted by Gabel (2004) on North Indian Hindu immigrants reported three dominant beliefs about people with intellectual disability (ID). A common belief being that a person acquires or born with a disability as a result of bad deeds (karma) in a previous life. The third belief known was that of a "mundh buddhi", that is commonly utilized in Hindi language to describe individuals with ID. Few examples from Ramayana and Mahabharata scriptures, where manipulative servant, Manthara (with a hunchback) and King Dhritarashtra (blind) were portrayed as evils and scheming (Wilson, 2019). Unlike Hinduism, the Muslim religion emphasizes the various aspects of Islam practice, especially in terms of health care, disability, and rehabilitation. Bazna and Hatab, 2005, as cited in Hasnain, Shaikh, and Shanawani, 2008 analysed the Quran and hadith's views on disability and came to the conclusion that disability is morally neutral; it is neither a punishment nor a blessing from God, and it does not represent any spiritual deformity. Unity and respect are at the forefront of religious life. No religion, culture and beliefs play a role in sustaining discriminatory practices against persons with disabilities. The time has come to hold a more in-depth conversation about the important changes that religion, history, and values have made to disability and people with disabilities.

The 2019 "State of the Education Report for India: Children with Disabilities" was based on the 2011 census, which revealed that India has 7.8 million children with disabilities, accounting for 1.7 percent of the total child population (India Today, 2019). According to a UNESCO study, 75% of children with disabilities in India do not attend school (Agarwal, 2020). With each subsequent stage of education, the number of children enrolled in school decreases dramatically, and there are less girls with disabilities in schools than boys with disabilities in schools (India Today, 2019). It is difficult to measure and explain dropout rates, but there are few evident reasons proposed by many education experts. For

example, accessibility issues, lack of access to schools, peer discrimination, disability pattern and teacher's involvement in class (Navya, 2018a). Interestingly, education is very important for students regardless of type of disability, and they would face significant obstacles in ensuring a secure future if unable to complete formal education. Peer discrimination and children with disabilities have long been a topic of discussion in India. They also face opposition from their extended family as well as the wider population. Discriminatory actions directed at differently abled children in the society have been classified as deprivation of disability, physical restrictions, social boycotts, denial of property rights, reduced marital life chances due to impaired family member, effects on sexuality of persons with disabilities, women with disabilities, disparities in state care systems, and problems with measurement of disabilities (Janardhana, et al., 2015). Many times, specific and untraceable emotional scars from the past, no matter how long ago it was, can be extremely destructive for a person. Such stressful experiences in early childhood leave mental scars which have a significant effect on adult life and individuals with disabilities choose self-imposed exile from different spheres of society.

Physical appearance has many advantages in Indian society and both gender, male or female, are obsessed on how one looks. Historically, our multi-cultural fraternity constantly reminds us that bodily attractiveness is important in every part of our lives. According to facts, society continues to attribute sociability, friendliness, and integrity to those who are aesthetically pleasing (Mahajan, 2007). Jenna Goudreau (2013) in her article, "Why Attractive People Are More Likely to be Leaders" illustrated on leadership skills and aesthetic appearance. She cited findings of many authors supporting the perception that good looking leaders have added advantage in many ways, for example citing work of Stanford law professor Deborah Rhode who discovered that attractive students are thought to be smarter, nice-looking professors receive better reviews, appealing employers earn more money, and good-looking politicians receive more votes. Inadvertently, people contributed to the creation of a false binary between intellect and bodily aesthetics, and thus to a contrived representation of disability. The representation of individuals with disabilities on screen and print media is also questionable. The media's representation of people with disabilities may have a positive or negative impact on the public's view of disability. Like normal people, individuals with disabilities have the same access to mass media and negative portrayal about disability may perpetuate existing public misunderstandings, especially for those millennials who have grown up in a social media-dominated environment (Reinhardt, Pennycott and Fellinghauer, 2013). Disfigured and objectionable portrayal of screen character authored by abled people, portrayed by non-disabled actor, and told from the eyes of abled people. For one, may make people with disabilities feel defeated in relation to exceptional achievements, lowering their self-worth and triggering poor expectations from others. The society conceptualizes image of people through their bodily limitations portrayed on different social platforms and subconsciously view disability as negative and unimportant without even connecting with incredible diversity of disabled people.

Due to cultural, economic and political reasons, women in India are always at the receiving end which had a detrimental effect on their quality of life. Social decisions are influenced by the interaction between gender and disability perceptions. Many international authors have discussed the double dimensions of disability from a perspective of a women; "two handicaps plus" (Hanna and Rogovsky, 1991), "double discrimination" (Habib, 2010), "double disadvantage" (Kavanagh et al., 2015), "a double dose of discrimination" (Shah and Bradbury-Jones, 2018) in their research to bring societal disequilibrium to the public's attention. While both men and women with disabilities face discrimination as a result of their disabilities, women with disabilities are at a disadvantage due to the mixture of gender bigotry and disability discrimination (Traustadottir, 1997). Similarly, the same paper demonstrates the three main phases in life of women with disabilities, namely the conventional feminine domain of fertility and nurturing; education; and employment and how they fare in these areas as compared to women without disabilities and men with disabilities. In particular, there continues to be a void in the literature discussing the reality of women with disabilities and their leadership perspectives, styles, and growth in an Indian context. The disability and feminine rights movements have often neglected topics that are important to women with disabilities in this male-dominated guild.

In India, only 3.4 million of the approximately 13.4 million people with disabilities are active in labour market (Verma and Venugopalan, 2019). The majority of studies reflect on employers reservations around recruiting people with disabilities at work , for example, being incompetent (Nario-Redmond, 2010) inflexible in terms of multi-tasking profiles (Kaye, Jans and Jones, 2011), dependent personalities (Louvet, 2007), team dynamics issues and relationship between employees with disabilities and other employees (Nario-Redmond, 2010; Louvet, 2007); absenteeism (Kaye, Jans and Jones, 2011; Daruwalla and Darcy (2005), inability to handle job related stress (Bengisu and Balta (2011), and finally, customers related insecurities. (Kaye, Jans and Jones, 2011; Bengisu and Balta, 2011). Contrary, surveys have been conducted that show the advantages of skilled representation of people with disabilities in the labour force: honesty (Nario-Redmond, 2010), low absenteeism (Hernandez et al., 2008), Warm personality (Louvet, 2007), Loyalty (Hernandez et al., 2008), and Employees with disabilities performed as well as or higher than their counterparts without disabilities at work (Unger, 2002). Globally, there has been change of mindset and employers are accepting disability as an instrument to have a diverse and inclusive professional environment.

At many work places across the globe, corporate leaders with disabilities aren't necessarily open about their disabilities, depriving workers with role models that could mentor, encourage and empower them (Henneborn and Jerdee, 2020). In fact, according to this study by Accenture, the majority of workers (76%) and leaders (80%) with disabilities are not entirely honest about it. Empowering individuals will continue to eliminate workplace bias and prejudices because those who have been empowered can become self-reliant as a result of the skills they have learned and will be able to find employment. As a result, these

empowered individuals have unintentionally stepped in to the shoes of becoming a leader and have successfully embarked on a journey to inspire multiple lives.

The government, as social welfare state, should not just provide standard legislations to safeguard the rights of minorities, but should introduce tailor made interventions to comprehend the safety of fellow citizens. Many developing countries such as India have introduced many legislative instruments to improve the lives of people with disabilities, through progressive legislations and/or policies (Kochhar et al., 2018). Despite major reforms in disability laws that foster equality, individuals with disabilities continue to face significant discrimination (Ball, Monaco and Schmelig, 2005). Additionally, in most poor economies, where everybody is struggling for survival, disability is not usually seen as a priority in development, except by disabled people and their families (Coleridge, 2000).

In India, Right of Persons with Disabilities Act 2016 replaces the Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act, 1995. One of the salient feature of this new Act is that the types of disabilities has been increased from existing 7 to 21 (No name, 2020). The preamble of this act clearly states that it aims to uphold the dignity of every Person with Disability (PwD) in the society and prevent any form of discrimination (Math et. al., 2019, p. 2). Another highlight of this law is the extension of its applicability to private firms. The revised Act received critiques from the disability advocates as they observed that the legislature could have chosen a path more persuasive than punitive (Kochhar et al, 2018).

In an article by Navya (2018b) highlighted that there have been very few individuals with disabilities who have made their representation at regional and national political level in India. A few individuals with disabilities have contested as independents or as smaller party candidates during the past decade, but not many have won. She also reported that the disabilities sector has been largely left out, although political parties cater to other disadvantaged communities, and routine rights abuses are being faced by this marginalized group.

There are so many inspiring individuals with disabilities who have changed the world with their examples and have accomplished "space" in society through their actions, attitude, determination and commitment (Table 1). When you lead by example, you create a picture of what's possible. People can look at you and say, "Well, if he can do it, I can do it." When you lead by example, you make it easy for others to follow you. (Marinuzzi, 2018). Such revelation help people regardless of gender, age, race, disability to create new personal goals, improving skills, and strengthening their professional development.

Such strong individuals with disabilities use their networks, forums, and NGOs to support other individuals with disabilities. For one, only a few of the ways they benefit are by delivering food, educational opportunities, and contributing to charity. While there were a few influential politicians with disabilities, such as Congressman Jaipal Reddy, he did not take up the cause of the community (Pareek, 2014).

Tab 1: List of Achievers with Disabilities.

Sr. No.	Name of the Achiever	Profession	Type of disability	Remarks
1.	Mr. S. Jaipal Reddy	Politician	Polio	What we will remember about the guy is that his condition (at a very young age, Reddy was stricken with polio) never prevented him from attending any meetings, even though they were held in buildings on the second or third floor that did not have lifts (Pallam Raju, 2019).
2.	Ms. Usha Kiran Naik	Sarpanch, Disability and Sexuality Rights Activist	Polio	General Secretary of the NGO Karnataka Vivkalachethana Sanghatane and President of the Swaraj India Party of Chikballapur District. In Chikballapur in Karnataka, Naik spent many years working with women with disabilities and people with HIV (Walia et al., 2020).
3.	Mr. Javed Abidi	Disability Activist	Spina bifidia	When he turned 15, he was diagnosed with spina bifidia and further complications made him a wheelchair-user. In his life, even this jolt did not deter him from going abroad to complete his schooling and fulfill his aspirations of being a journalist. He has been actively interested with disability issues for years and is the head of the National Center for Job Promotion for People with Disabilities (NCPEDP) (Pareek, 2014), and Director of the National Centre for the Development of Jobs for Disabled Persons (NCPEDP) and also Director of the Global Chair of International Disabled Persons (DPI), the first international body for persons with disabilities with an ECOSOC Advisory Status to the United Nations (United Nations, n. d.). He advocated public services and travel mobility for people with disabilities and his powerful support was instrumental in the passage of the Persons with Disability Act in India in 2016 (United Nations, n. d.).
4.	Ms. Nishtha N. Thaker	Motivational Speaker, Social Activist and Managing Director	Muscular Dystrophy	Nishtha N. Thaker, Motivational Speaker, Social Activist, and MD & Founder Trustee of Spreading Smiles Charitable Trust (Possiabilities, 2020). Nishtha is a resolute citizen who motivates and encourages other people who are affected by muscular dystrophy through her untiring efforts (Joshi, 2014).
5.	Ms. Minati Barik	Sarpanch.	Wheelchair-Bound Person	In Odisha (Kantabania Gram Panchayat), the first female wheelchair candidate ever to win an election and who has improved significantly the hygiene and sanitation of her village, Bajapur (Walia et al., 2020).
6.	Ms. H. Boniface Prabhu	Wheelchair tennis player	A Quadriplegic Person	Boniface Prabhu is a player with international renown in wheelchair tennis. In order to promote, train and discover new talent among the physically and mentally disabled population, he created the 'Boniface Prabhu Wheelchair Tennis Academy' (No name, 2014).

Source: Authors own interpretation based on literature review

Most of people are having difficult experiences and are exposed to the horrifying aspects in their formative years. Therefore, they have a hard time understanding that not

everyone is mean or world is not a bad place to live. Past experiences should not have an impact on the future. Everyone understands what leadership is, but only a few people can actually recognize their true potential as a teacher. Creating a cohesive environment within the society is a crucial step to help people to polish their unique talent and maintain a strong leadership focus. People with disabilities can overcome what was and take charge of their own life. It's important to keep things in perspective.

In future, developmental efforts should eliminate barriers resulting from political, societal, religious, cultural, gender bias, or economic loopholes. In the end, this will help oppressed people gain self-confidence, and if that process begins, an individual will be ready to tap and channel their creativity, intellect, and ability positively. People with disabilities, like most people, are required to exhibit leadership skills and be respected as leaders (whether in official roles or not) and how the public perceives their particular style of becoming a figurehead.

Conclusion

The aim of this research paper was to look at how social and economic factors affect people with disabilities, as well as to look into why people with disabilities are underrepresented in leadership roles in Indian society. People's attitudes, specifically society's attitudes, which include social and cultural values, stigma, bigotry, and stereotyping, not only shape the definition of disability, but also serve as a focal point for negative emotions.

In conclusion, this study discovered several common trends regarding the lack of representation of people with disabilities in leadership roles. Gender inequality, cultural and religious values, inclusive education concerns, labour market participation, and the stigma that persons with disabilities face in the Indian society are among the most common and consistent topic emerged in this qualitative research.

Women in leadership roles have gained less recognition in India. Across the different states, women with disabilities have witnessed discrimination and stigma which over the course of a person's life, manifests in separate or several generational junctures (childhood, youth, adulthood and older age) (Shah and Bradbury-Jones, 2018). Disability sensitivity programs for children in preschool, kindergarten, and high school are necessary to teach them to be empathetic, tolerate physical distinctions, and be compassionate of their peers.

Given this context, the media's power to affect perceptions and opinions towards disabilities should not be ignored. Increased awareness through different forms of digital platform could help people with disabilities to appreciate their uniqueness, and encourage them to promote their extraordinary accomplishments to the world.

This study could also be extended to the permanent and temporary category of employees at the lower grades, where they could judge the leadership qualities of top and middle management. It could also be extended to other states of India and even globally, since all

people with disabilities have a significant global presence. Furthermore, these unconscious prejudices and stereotypes attached to disability have an effect not only on social and professional relationships, but also on one's quest to seek a place in leadership forepart. People with disabilities at leadership positions can create a more inclusive society and increase awareness not about disability but also about the different type of impairments.

World is full of individuals with disabilities who, by their endeavors, have overcome all the hurdles life has thrown at them and turned the spotlight on themselves. They were made better by these challenges, particularly by not following the conventional survival approaches and succeeded to inspire other people with disabilities to foray into different avenues.

In India, the small number of studies published on the subject limits this study and one of the limitations faced by authors. Our search was restricted to google scholar database and google search engine, it's likely that certain studies were overlooked.

Most importantly, the government will have to find gaps in existing legal framework, provide academic opportunities and access to all kinds of resources needed by individuals with disabilities to appreciate their talent to make a mark in society for not only themselves, but also for others. This is vital point to bear in mind when collaborating on multi-disciplinary studies and inclusive growth initiatives in India.

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Impact of macroeconomic factors on the MTPL insurance in Latvia

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Abstract

The objective of the article is to do a research on current and the most important issues regarding the impact of macroeconomic factors on one of the most widespread insurance products - Motor Third Party Liability insurance (MTPLI). A research has been made to evaluate the actual presence of the MTPLI insurance in the Latvian market of motor vehicle insurance and the presence in the general insurance portfolio at European level. The authors studied the performance of Motor Third Party Liability insurance in the Latvian insurance market from 2005 till 2019. This research examines the actual problems of Latvian insurance market in the context of the impact of macroeconomic indicators on MTPLI product performance. Further considerations regarding the macroeconomic impact on MTPLI have been made, taking into account the role of the macroeconomic factors on the demand for the specific insurance product. The paper focuses on the analysis of factors determining development of the insurance market as well. An overall evaluation of the impact of macroeconomic factors on the MTPLI in Latvia has been carried out.

Keywords: Motor Third Party Liability insurance, macroeconomic factors, insurance consumption, insurance premiums.

Introduction

A developed and stable insurance market is an important part of any economic system. In the current economic conditions, there is a lot of competition in the Latvian insurance market, therefore, in order to successfully attract customers and develop a competitive business, it is especially important for each insurance company to understand the macroeconomics impact to insurance business. Insurance plays an important role in supporting economic activity, and

the insurance mechanism makes a significant contribution to the country's sustainability by compensating for financial losses. The insurance industry provides coverage for various types of risks, reducing uncertainty and unpredictability for both individuals and companies. The fact that insurance plays an important role of any economy has been proven in several studies and has been recognized as an essential factor for successful economic development. Insurance as a financial concept is designed to manage risks, seeks to provide security for economic growth or to hedge against uncertain loss. Although the market has been incredibly profitable, the insurance industry is highly fragmented, and the sector is fraught with challenges (Kaffash et al., 2020). Adapting to the changing conditions of the world, new types of insurance are emerging (Shaw and Bauman, 2021). Apergis and Poufinas (2020) concluded in their study on the role of insurance growth in economic growth that insurance is one of the main activities in the globalized financial and economic environment, and the study confirmed that the activities of insurers are significantly and positively associated with economic growth. Accordingly, we can say that insurance affects the economy, and conversely, the economy affects the insurance industry. In this study, the authors examine the impact of the economy on the insurance industry. Given the cross-country heterogeneity in insurance consumption, the literature has widely accepted that the adjustment dynamics of insurance premium are complex and varied from one country to another (Chang, Lee and Chang, 2014). Several theoretical and empirical studies have more precisely indicated that the insurance premium grows nonlinearly with macroeconomic factors (Enz, 2000; Zheng, Liu and Dickinson., 2008; Lee and Chiu, 2012). Studies mainly utilize a conventional linear model specification to investigate the relevant issues of insurance market development and economic growth, e.g., Ward and Zurbruegg (2000) and Kugler and Ofoghi (2005), to mention a couple. However, the literature has extensively supported that a number of important macroeconomic variables should exhibit non-linear behavior. As to financial markets, they may also exhibit non-linear behavior resulting from the presence of market frictions and transaction costs, as well as the interaction between heterogeneous traders (McMillan, 2003). Since insurance premiums are usually based on projected investment income and expected losses, which are related to business cycles, it may be reasonable to expect a significant interrelationship exists between insurance markets' activities and macroeconomics (Lee and Chiu, 2012). Consequently, the non-linear model specification is more appropriate than the simple linear setting to examine the insurance-growth nexus (Lee, Lee and Chiou, 2017).

Christophersen and Jakubik (2014) suggest that the nominal GDP is the key driver for non-life insurance, while unemployment is a driving factor for premium growth on the life side. Use of such models could provide a projection of insurance market growth under different macroeconomic scenario and help to assess key risks for the insurance sector (Christophersen and Jakubik, 2014).

Non-life insurance activities may be linked to the general economic performance of the national economy and may be related to changes in real GDP. The reason to include income variables is not only because of the wealth and income effect on attitudes toward risk, but also the economic growth effect, which creates more insurable risk as a result of

the increase in goods, such as houses and automobiles, and affects the demand for insurance. Kristīne Sūniņa-Markēviča (Sūniņa, 2003) suggests that the following factors are the most important in determining the total amount of premiums in the insurance market:

- general situation in the insurance market. If insurers have accumulated reserves and there have been no significant insurance events for several years in a row, they might lower the prices of insurance services. Even if such reserves are accumulated by only few market participants, everyone is forced to lower prices in a competitive environment. Thus, the total amount of the insurance premiums in the market depends on the methodology calculated by each participant. Insurers use their own methodology by determining factors, which are the most important in determining the amount of premiums;

- a wide range of regulatory, risk and economic factors determine insurers' calculations of premiums. Premiums are set in proportion to the expected risks and need to cover expected claims as well as operational, administrative costs and other obligations. All these factors differ widely from one country to another, which explains the varying levels of average insurance premiums across Europe (Sūniņa, 2003).

Tian et al. say that price of the insurance products is usually determined by demand and supply; thus, factors affecting the demand side or supply side can have impacts on price determination. When the revenue from investment is considerable, insurance firms may lower the expectation on underwriting profit, which means that insurance firms can underwrite some relatively bad risk that they would not accept otherwise or underwrite standard risk with a lower price. According to definition of insurance price, insurance price reflects the margin that insurance firms can obtain from selling the policies. Thus, insurance price has a negative relation with investment profitability, a proxy for rate of market return. Premiums are usually thought to be the discounted present value of future costs; thus, it is not surprising to see that the interest rate, a proxy for discount rate, is negatively related with insurance price (Tian et al., 2018).

GDP serves as an indicator for potential losses and mainly influences the demand side of the model. The results indicate that, compared with the U.S. and Switzerland, the Japanese insurance market reveals quite different features for both GDP and interest rate implications. Lamm-Tennant and Weiss (1997) use a generalised least square regression model to analyse the changes in premiums with respect to the changes in lagged losses, interest rates, average stock prices and real gross domestic products of nine developed countries. The changes in GDP usually have neutral or even negative impacts on insurance premiums, as in the cases of Italy, Japan and Switzerland (Tian et al., 2018). Chen, Wong and Lee (1999) focus on Asian countries for the first time and report that the changes in GDP have no impact on insurance premiums in Japan and Taiwan. Because a significant relationship between the premium and real gross domestic product is identified after accounting for the claim paid in Lamm-Tennant and Weiss (1997) and Chen, Wong and

Lee (1999), it is reasonable to assume that GDP is related to insurance price (Tian et al., 2018).

Methods and data

The objective of the study is to find out the macroeconomic indicators that determine the demand for Motor Third Party Liability insurance (MTPLI) with a sufficiently high level of confidence and to assess the degree of impact of the relevant factors.

Based on the literature analysis and the study of macroeconomic indicators available in the databases (Eurostat, OECD and local Statistical Bureau), a list of variables was created for a more in-depth study of MTPLI gross premium (MTPLIGP) volumes and growth rates using correlation analysis.

The simulation method was used to find out the relationships between the dependent variables (the amount and increase of MTPLI) and the selected independent variables based on Latvian insurance market data for the period 2005-2019. Various combinations of factors as well as linear and nonlinear forms of relationships were tested. The statistical stability of the generated models was tested using the F test, but the regression parameter stability was tested using t tests. Durbin–Watson test was used to detect the presence of autocorrelation in the residuals. The best fit models were determined using the coefficient of determination (R^2) and p-values.

Results and Discussion

The scope of insurance product covered in this paper: non – life insurance products group, motor insurance division. It should be mentioned that definition of "motor insurance" are distinguished, namely liability for motor vehicles to third parties (MTPLI) and own damage to the engine (MOD). In our study, we analyze the extent to which economy characteristics can explain premiums of MTPLI.

The Motor insurance can also be made taking into account the degree of autonomy of the parties to the insurance contract (Sliviski, Poliychronidou and Karasavvoglou, 2019). In this case, it stand out:

- Compulsary insurance – concluded as a result of an order resulting from directly applicable laws; the main representative of this group is compulsory MTPLI
- Voluntary insurance – there is no obligation to conclude a contract, expl. Motor Own damage.

In the futher part of the paper, authors will limit to considerations to compulsory third-party liability insurance calling them interchangeably both motor insurance and MTPLI. MTPLI due to its mandatory nature is the most frequently concluded insurance in various European Union (EU) countries (Andreeva, 2019). MTPLI is homogeneous across the EU in terms of insurance cover provided, as well scope included: any damages to property

and health of victims caused by the drivers fault. Under the 2009 motor insurance directive (European Commission, 2009) anyone who holds a compulsory motor insurance policy in an EU country is covered to drive throughout the EU. The directive regulates such aspects, as:

- obliges all motor vehicles in the EU to be covered by compulsory third party insurance
- abolishes border checks on insurance, so that vehicles can be driven as easily between EU countries as within one country
- specifies minimum third-party liability insurance cover in EU countries
- specifies exempt persons and authorities responsible for compensation
- introduces a mechanism to compensate local victims of accidents caused by vehicles from another EU country
- requires claims about accidents in an EU country other than the victim's country of residence to be settled quickly (so-called visiting victims)
- entitles policy holders to request a statement of any claims involving their vehicle, which were covered by their insurance contract, over the last 5 years

According to the Organization for Economic Co-operation and Development (OECD) classification, at the macroeconomic level, the effectiveness of insurance companies is assessed according to the following criteria (Kwon and Wolfrom, 2016): insurance premiums (volume and growth), premiums per employee, insurance density and distribution; the share of life and non-life insurance in the total insurance market; national market share OECD; market share of foreign insurers in the domestic market; balance sheet and income; portfolio distribution; accepted reinsurance ratio; retention ratio (net written premiums / gross written premiums); loss ratio, expenditure ratio and combined ratio (non-life). P&C insurance is typically characterised by cycles of upward and then downward movements in premiums and combined ratios. A cycle comprises a hard market of intense competition and a soft market in which reserves can be accumulated.

Over the past decade, motor premiums in Europe grew 8.1%, largely due to an 18.1% increase in optional motor damage insurance. Premiums for mandatory MTPLI cover decreased 0.8% over the same period. After four consecutive years of decline (2011–2014), total motor claims expenditure rose slightly (0.6%) in 2015, followed by a further 4.5% increase in 2016, to total EUR 103.5bn (Insurance Europe, 2019). MTPLI premiums increased up 1.0% in 2015 and 4.0% in 2016 to reach EUR 61.1bn. Strong growth in 2016 was recorded in Turkey (+76.3%), Poland (+42.9%) and Hungary (+34.2%), whereas several other markets experienced a decline, notably Latvia (-15.8%), Greece (-9.6%), Italy (-4.9%), Finland (-2.2%) and Norway (-1.6%). Large and mature markets such as Germany, Spain, France and the Netherlands registered 2.9%, 2.7%, 1.2% and 0.5% growth respectively. Average MTPLI premiums rose by a modest 1.1% in 2016 to €205 as a result of a 4.0% increase in premiums and a 2.9% increase in the number of policies (Insurance Europe, 2019).

The average motor premium in 2016 ranged from EUR 66 in Latvia to EUR 622 in the UK. The number of claims rose 2.3% in 2015 and 1.9% in 2016.

Motor insurance is cyclical in nature too. The financial crisis of 2007–2008 left its mark on the European motor sector: the highest combined ratio (108.1%) and the worst underwriting results (-EUR 5.5bn) were recorded in 2009. Most European countries registered their highest combined ratio in the 2008–2010 period, notably Germany (107%), France (109%), Italy (119.5%) and the UK (115.6%). After the 2008–2010 peak, combined ratios and underwriting results started to improve but then began to rise again in 2016.

The MTPLI is the largest non-life insurance product in Latvia and forms one fifth of the total non-life insurance portfolio (See Table 1).

Tab. 1: Gross Written Premiums and proportion of types of insurance in the Latvia in 2019.

Gross premiums written by Non-life Insurance Companies. (Thousands of EUR)	4 quarters 2019
Total	442,121.00
Motor vehicle liability insurance	126,295.00
Land vehicle insurance	95,889.00
Property insurance	67,192.00
Motor vehicle liability compulsory insurance	47,665.00
Health insurance	47,541.00
General liability insurance	13,722.00
Suretyship insurance	13,643.00
Assistance insurance	13,063.00
Accident insurance	10,139.00
Ship insurance	3,076.00
Goods in transit insurance	1,968.00
Insurance against miscellaneous financial losses	886.00
Railway rolling stock insurance	341.00
Credit insurance	328.00
Aircraft ownership liability insurance	146.00
Aircraft insurance	110.00
Ship ownership liability insurance	104.00
Legal expenses insurance	17.00

Source: Latvian Insurers Association (2020).

The same situation can be observed in EU on the whole, where Motor insurance has the largest share in non-life insurance products portfolio (See Table 2).

Tab. 2: Total premiums by business line in the EU — 2017–2018 (bn EUR).

| Product Line	2017	2018	Growth
Life	718	764	6,7%
Health	134	140	4,8%
P&C	389	407	5,7%
Motor	140	144	3,8%
Property	101	105	4,8%
General Liability	40	43	6,9%
Accident	37	37	2,5%
Total	1241	1311	6,2%

Source: Insurance Europe (2021)

MTPLI product for a long time - in the period from 2011 to 2018 has had a higher loss ratio than the total insurance portfolio in Latvia. Here is a Graph 1.

According The Financial and Capital Market Commission (FCMC) the MTPLI market in Latvia has been loss-making for the insurance industry for a long time - in the period from 2010 to 2017 (The Financial and Capital Market Commission, 2021), which has not motivated insurance companies to develop this service and create more precise pricing criteria for this insurance service.

The research will promote the development of scientific discussions on the problems and current issues of the insurance industry in Latvia.

Graph 1: MTPL insurance and total insurance portfolio loss ratio in Latvia 2010-2020,%.
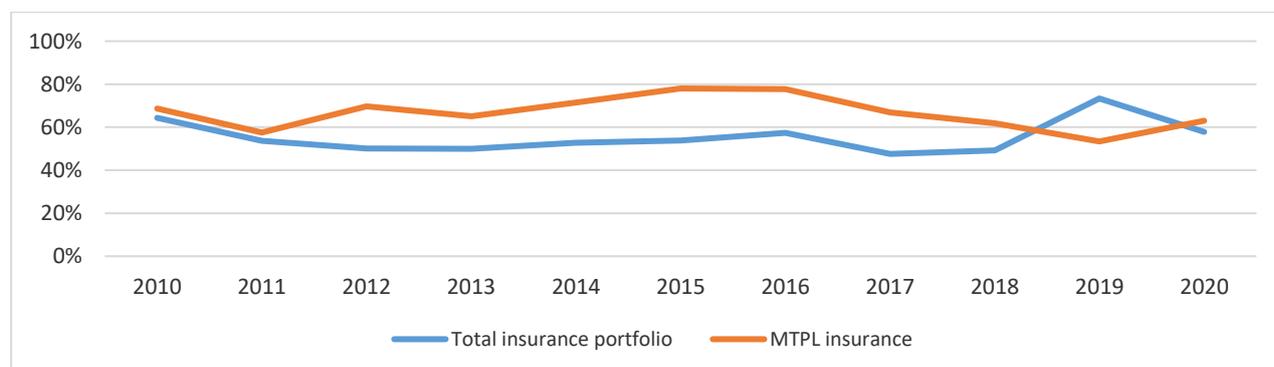

Source: FCMC (2021)

These considerations raise the need to find out and study the related processes in depth, finding answers to what factors influence the written premium of MTPLI.

The diversity of the national motor insurance markets in Europe reflects differences in EU member states' regulatory, risk and economic environment. Over the past decade, the motor insurance share of property and casualty (P&C) business in Europe has been steadily decreasing (See Graph 2).

Graph 2: Motor premiums as proportion of P&C premiums in Europe, 2007 – 2016.
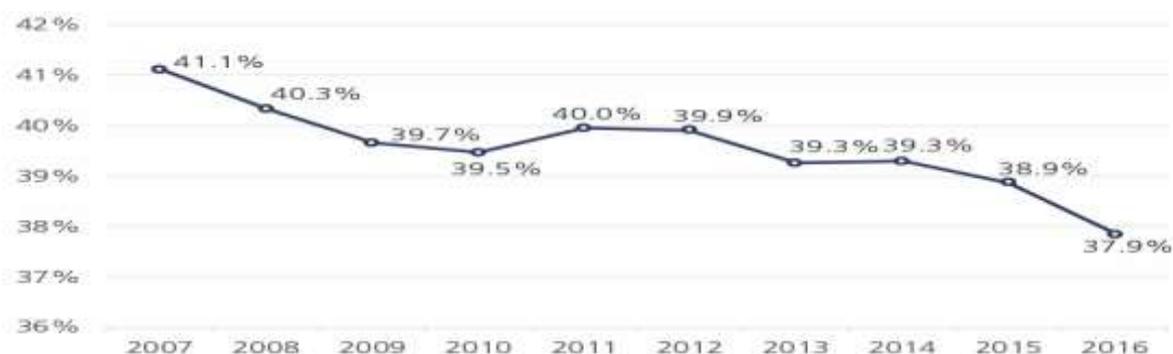
Source: (Insurance Europe, 2019)

Nonetheless, motor remained the largest P&C business line at 38% in 2016, followed by property insurance (27%) and general liability insurance (11%). Europe's national motor insurance markets are generally very competitive, but tend to be subject to cycles of expansion and contraction. (Insurance Europe, 2019). The number of vehicles on the road depends largely on the economic environment and the demographics in each state. Boosted by European economic recovery, the number of insured vehicles increased 3.4% between 2014 and 2016. The total number of MTPLI and damage policies increased 4.8% between 2014 and 2016 and 3.0% between 2015 and 2016. Most countries experienced growth in the total number of MTPLI and damage policies (Insurance Europe, 2019).

Based on the literature analysis and the study of macroeconomic indicators available in the databases (Eurostat, OECD and local Statistical Bureau), a list of variables was determined for a more in-depth study of MTPLI gross premium (MTPLIGP) volumes and growth rates for the period 2005-2019 using regression analysis methods, see the following table.

Tab. 3: Macro indicators correlation with MTPLIGP amounts and MTPLIGP growth.

Factors	Unit of measure	Denotation	MTPLIGP amounts	MTPLIGP growth
Passenger cars registered	thousands	*PCR*	0.8491	0.4583
Total cars registered	thousands	*TCR*	0.8303	0.4746
HICP	y-o-y, %	*HICP*	0.7945	0.5598
HH debt to GDP	%	*HDG*	0.6245	-0.1203
Investments to GDP	%	*INVG*	0.5711	0.6633
Private sector debt to GDP	%	*PSD*	0.5406	-0.2579
Long-term interest rate	%	*LTR*	0.5305	-0.3080
Net wages growth rate	y-o-y, %	*NWG*	0.4609	0.7994
GDP growth	%	*GDP*	-0.3285	0.4742
Unemployment rate	annual, %	*UNPL*	-0.1331	-0.7238
HH disposable income	y-o-y, %	*HDIG*	-0.0815	0.6755

Source: Calculated by authors based on The Financial and Capital Market Commission and Eurostat data.

As can be seen from Table 3, MTPLIGP volumes are most significantly affected by indicators such as passenger cars registered (PCR), total cars registered (TCR) and Harmonised Index of Consumer Prices (HICP), as shown by the correlation coefficients of 0.8491, 0.8303 and 0.7945, respectively. The growth of the MTPLIGP, on the other hand, is most strongly influenced by indicators such as net wage growth (NWG), unemployment rate (UNPL) and household disposable income growth (HDIG), as shown by the correlation coefficients of 0.7994, -0.7238 and 0.6755, respectively.

Graph 3 shows the associations of the major macro indicators with the MTPLIGP volumes. Consequently, we see that as PCR, TCR, HICP and HH debt to GDP increases, so do MTPLIGP premiums.

Graph 3: Macro indicators and MTPLI gross premiums trends
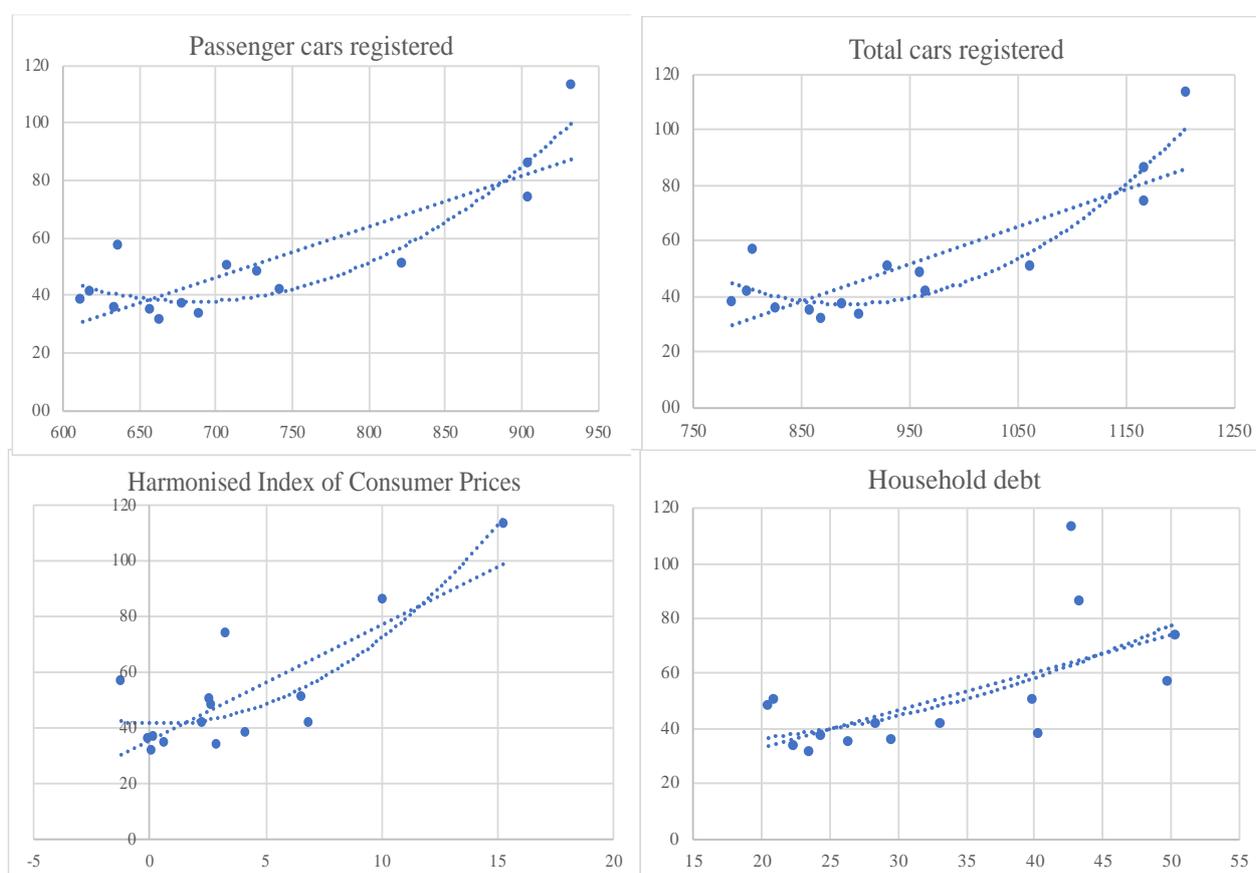
Source: Created by authors, based on FCMC and Eurostat data

Following Graph 4 shows the associations of the major macro indicators with the MTPLIGP growth.

Graph 4: Indicators and MTPLI gross premiums growth trends
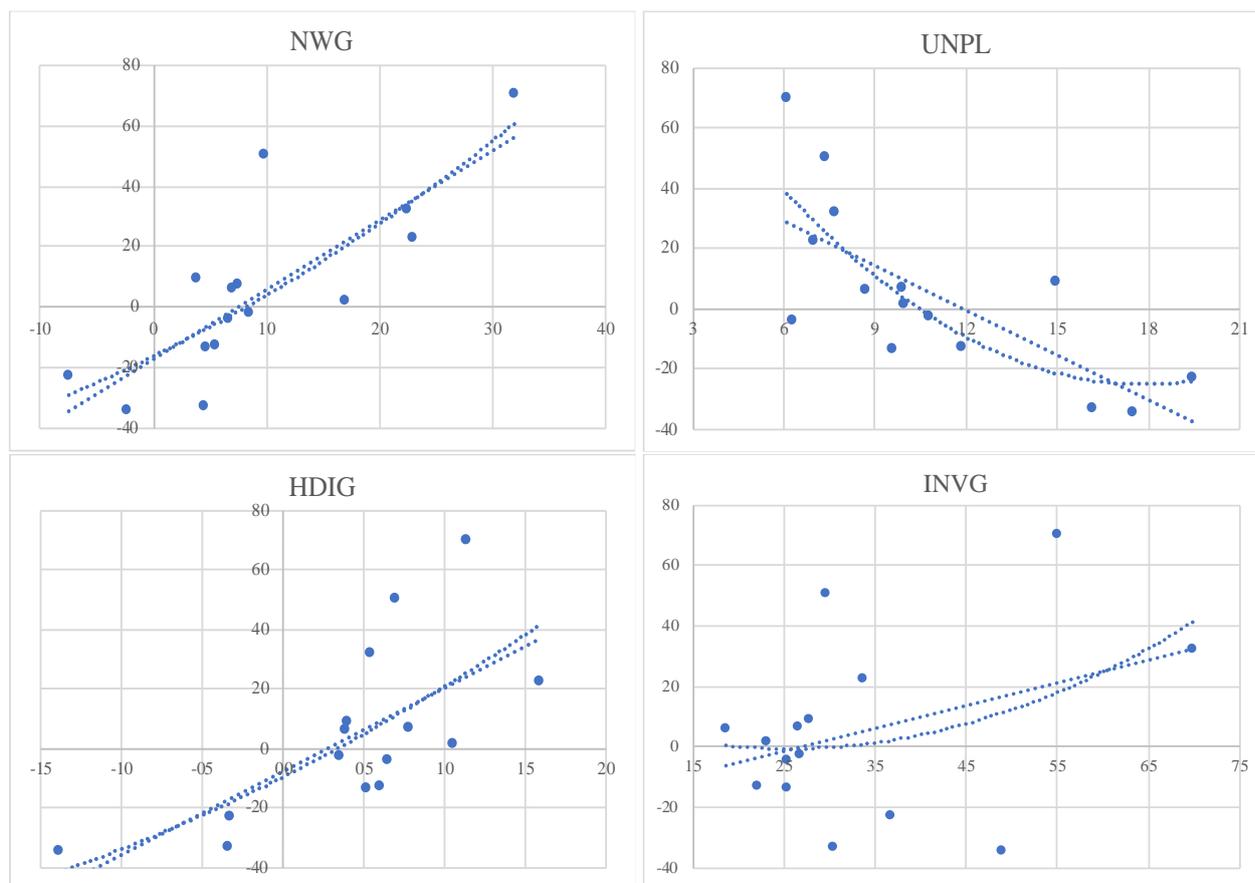
Source: Created by authors, based on FCMC and Eurostat data

Consequently, we see that as net wages (NWG), household disposable income (HDIG) and investments (INVG) increases, so do MVLCIGP growth. And opposite, as unemployment increases, MTPLIGP growth decreases.

The regression model

Let $MTPLI_t$ be dependent variable in year t. Further, let $x_{1t},...,x_{kt}$ denote independent variables (macroeconomic indicators) and $b_{it},...,b_{kt}$ denote regression coefficients of independent variables, than the model can be expressed as in equation:

$$MTPLI_t = f(x_{1t}, ..., x_{kt}) + \varepsilon_t \qquad (1)$$

where ε_t – the error term.

During the research, combining the selected factors, linear and polynomial regression models were calibrated which passed the F-test at the confidence level of 0,95 and the Durbin Watson test with $\alpha = 0,05$.

The following table summarizes the coefficients of determination, F-statistics and p-values for top 8 statistically significant models for MTPLIGP volumes.

Tab 4: Top 8 regression models statistics

Model type	Variables	R^2	F	p - value
Polynomial	*TCR*	0.8816	44.67	<0.01%
Polynomial	*PCR*	0.8670	39.11	<0.01%
Polynomial	*HICP, LTR*	0.8616	37.36	<0.01%
Polynomial	*HICP, HDG*	0.8434	32.32	0.01%
Linear	*NWG, GDP*	0.7887	22.39	0.05%
Linear	*NWG, GDP per capita*	0.7595	18.95	0.09%
Polynomial	*HICP*	0.7397	36.94	<0.01%
Linear	*PCR*	0.7209	33.58	<0.01%

Source: Calculated by authors based on FCMC and Eurostat data.

As one can see, the top 8 regression models explain more than 72%, while the top for regression models explain at least 84% of the total *MTPLI* gross premiums variability. The *F*-test results show that the statistical stability of all top 8 models is high (<0.1%), but the probability of statistical error of the first tree models is even lower than 0.01%.

The following table summarizes the regression coefficients and *t*-test *p*-values for top 8 statistically significant models for MTPLIGP volumes.

Tab 5: Top 8 regression models for MTPLIGP volumes variables statistics

Model variable	Regression coefficient	p - value	Model variable	Regression coefficient	p - value
TCR²	0.0006	0.042%	*PCR²*	0.0010	0.172%
TCR	-1.1474	0.098%	*PCR*	-1.3846	0.372%
Intercept	548.7276	0.115%	*Intercept*	511.9497	0.431%
Model variable	**Regression coefficient**	**p - value**	**Model variable**	**Regression coefficient**	**p - value**
HICP²	0.2881	0.001%	*HICP²*	0.2685	0.004%
LTR	2.3055	0.347%	*HDG*	0.7622	0.773%
Intercept	32.3635	0.000%	*Intercept*	17.3469	3.706%
Model variable	**Regression coefficient**	**p - value**	**Model variable**	**Regression coefficient**	**p - value**
NWG	2.3265	0.002%	*NWG*	2.2407	0.005%
GDP	-3.3433	0.005%	*GDP per capita*	-3.2476	0.011%
Intercept	38.0740	0.000%	*Intercept*	42.3229	0.000%
Model variable	**Regression coefficient**	**p - value**	**Model variable**	**Regression coefficient**	**p - value**
HICP²	0.3173	0.002%	*PCR*	0.1774	0.003%
Intercept	40.9970	0.000%	*Intercept*	-78.0742	0.211%

Source: Calculated by authors based on FCMC and Eurostat data.

As one can see from Table 5, the regression coefficients *t*-test *p*-values for all top 8 models do not exceed 0.8%, indicating strong relationship between *MTPLI* gross premiums and relevant macro indicators.

The following table summarizes the coefficients of determination, *F*-statistics and *p*-values for top 8 statistically significant models for MTPLIGP growth.

Tab 6: Top 8 regression models for MTPLIGP growth variables statistics

Model type	Variables	R^2	F	p - value
Polynomial	*INVG², ln(GDP per capita)*	0.7750	20.66	0.067%
Polynomial	*NWG², GDP per capita*	0.7701	20.09	0.075%
Linear	*INVG, ln(GDPper capita)*	0.7551	18.50	0.103%
Linear	*INVG, GDP per capita*	0.7475	17.76	0.120%
Linear	*INVG, GDP*	0.7465	17.66	0.122%
Linear	*NWG, GDP*	0.7405	17.12	0.138%
Linear	*NWG, GDP per capita*	0.7305	16.26	0.166%
Linear	*NWG, GDP*	0.7168	15.19	0.212%
Linear	*GDP per capita, INV*	0.7159	15.12	0.215%

Source: Calculated by authors based on FCMC and Eurostat data.

As one can see from Table 6, the top 8 regression models explain more than 71%, while the top for regression models explain almost 75% of the total *MTPLIGP* growth variability. The *F*-test results show that the statistical stability of all top 8 models is high (<0.22%), but the probability of statistical error of the first two models is even lower than 0.1%. The following table summarizes the regression coefficients and *t*-test *p*-values for top 8 statistically significant models for MTPLIGP growth.

Tab 7: Top 8 regression models for MTPLIGP growth variables statistics.

Model variable	Regression coeff.	p - value	Model variable	Regression coeff.	p - value
INVG²	0.0968	0.002%	*NWG²*	0.0959	0.002%
Ln(GDP per capita)	101.040	0.067%	*GDP per capita*	6.1922	0.077%
Intercept	-338.287	0.029%	*Intercept*	-158.360	0.013%
Model variable	Regression coeff.	p - value	Model variable	Regression coeffi.	p - value
INVG	5.2813	0.003%	*INVG*	4.3852	0.007%
ln(GDP per capita)	99.7223	0.100%	*GDP per capita*	13.0131	0.121%
Intercept	-403.448	0.021%	*Intercept*	-237.557	0.010%
Model variable	Regression coeff.	p - value	Model variable	Regression coeff.	p - value
INVG	4.6104	0.006%	*NWG*	2.3291	0.007%
GDP	0.0038	0.124%	*GDP*	0.0020	2.555%
Intercept	-196.01	0.007%	*Intercept*	-63.571	0.701%
Model variable	Regression coeff.	p - value	Model variable	Regression coeff.	p - value
NWG	2.2480	0.011%	*NWG*	2.6022	0.007%
GDP per capita	6.8129	3.323%	*INV*	0.0024	4.721%
Intercept	-86.154	1.426%	*Intercept*	-45.845	0.928%

Source: Calculated by authors based on FCMC and Eurostat data.

As one can see from Table 7, the regression coefficients *t*-test *p*-values for all top 8 models do not exceed 5,0%, indicating strong relationship between *MTPLIGP* growth and relevant macroeconomic indicators.

Conclusions

The results of the study allow concluding that macroeconomic developments have a significant impact on the demand for MTPLI - both the changes in amount of premiums and in premium growth can be explained by macroeconomic indicators with a high level of confidence. Consequently, business volume forecasts for the insurance industry and the companies operating in it can be reasonably compiled on the basis of macroeconomic development scenarios with a relatively high level of reliability.

However, it should be noted that no model is perfect by definition. In addition, both the level of macroeconomic development, as well as intercultural differences and the dynamics of the two, cause changes that cannot be ignored. Therefore, first, MTPLIGP models need to be calibrated based on local data and regularly updated, and second, it is desirable to maintain more than one regression model in order to be able to base forecasting on a set of macroeconomic indicators that cannot be included in the model at the same time due to their statistical incompatibility (non-compliance with regression analysis assumptions). In this way, using the predictions of several models and weighing them, e.g. based on R^2, it is possible to increase the reliability of the obtained results.

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