LITTERA SCRIPTA

Economics

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Finance and Valuation

1/2022

VŠTE

Littera Scripta

(Economics, Management, Corporate Finance, Finance and Valuation)

Ing. Veronika MACHOVÁ, MBA (Editor-in-chief)

Address Editor:

Institute of Technology and Business in České Budějovice

Okružní 517/10

370 01 České Budějovice, Czech Republic

Tel.: +420 387 842 183

e-mail: journal@littera-scripta.com

http://littera-scripta.com

ISSN 1805-9112 (Online)

Date of issue: March 2022

Periodicity: Twice a year

Since 2010

The Journal is indexed in:

- ERIH PLUS (European Reference Index for the Humanities and Social Sciences) – in 2015
- CEJSH (Central European Journal of Social Sciences and Humanities) – in 2015
- EZB (Elektronische Zeitschriftenbibliothek) – in 2017
- GOOGLE SCHOLAR – in 2017
- DOAJ (Directory of Open Access Journals) – in 2019

Content

Loyalty cards as a form of sales promotion for retail chains and their impact on customers

Eva Kalinová[1], Tereza Mílová[2]

[1]University of Žilina, Faculty of Operation and Economics of Transport and Communications, Department of Economics

[1]Institute of Technology and Business in České Budějovice, Okružní 517/10, 370 01 České Budějovice, Czech Republic

Abstract

This article deals with a comprehensive of the loyalty program as such, in terms of its functionality and impact on retail customers. The aim of the work is to evaluate the benefits of loyalty cards, customer motivation to purchase and the impact on sales. Furthermore, to assess whether the loyalty program pays off for retailers and which of them offer the most advantageous benefits. With the help of data analysis resulting from a questionnaire survey, the influence of loyalty cards on customers and their regularity in use is determined. Most customers own a loyalty card only because of a possible benefit or reward. However, their frequency of use is mostly exceptional or up to once a week. The comparison method used compares selected retailers to determine the best offer. Using this method, we achieved results show that the retail store Kaufland offers the largest number of benefits in its loyalty program. Together with the Lidl retail store, it offers a large number of benefits, but Lidl's offer seems to be the most advantageous for customers. The SWOT analysis provided results on strengths and weaknesses, including opportunities and threats to retail as such and its loyalty programs. The resulting proposal for retail is the defensive strategy of Terno supermarket and the escape strategy for their loyalty program. The benefit of the work are the results and evaluation of useful loyalty programs for customers, which are based on data. Also, the clarification of the overall benefits of shopping at certain retail stores and the convenience of shopping.

Keywords: loyalty program, loyalty cards, customer loyalty, sales support, offer, retail

Introduction

Loyalty cards, as a form of sales promotion for retail chains, are a much-discussed topic among consumers in connection with the current coronavirus situation. This issue needs to be addressed, as retail business activity has still not been fully restored. Tellis (2000) is of the opinion that retailers have been trying for some time to make the offer more attractive to their customers. However, co-participation from the other side is also important, in the form of a purchase. Promoting sales with loyalty cards is important in stores, due to the increase in profits.

Blažková (2005) states that building and gaining customer loyalty is related to market saturation if the company has limited opportunities to gain new customers. If companies are in highly competitive markets, it is difficult for them to maintain a long-term positive and friendly relationship with their customers. The biggest problem occurs with differences, when a strong incentive is the low price when shopping. We encounter this fact most often and nowadays mainly on the Internet. Laštovičková (2012) claims that in order for a company to retain its customer, loyalty programs are used as a way of doing so. For this method of retaining your customer, it is first necessary to know them well, to know their needs, desires. Know what the competition has and use in-depth analysis to create the best conditions on the market.

Valvodová (2016) states that loyalty cards are a great motivator for gaining and retaining your customer. This small change can affect the customer's thinking and actions. Thanks to new technologies, it is now relatively easy to influence customers, but loyalty cards are not always sought after. A retail store will create an imaginary club to which loyalty cards and their benefits apply. Loyalty cards are therefore used to utilize discounts at the first possible opportunity or at another time, at your own discretion (Mulačová et al., 2013).

The aim of this paper is to evaluate the benefits of loyalty cards of selected retail chains that are on the Czech market. Furthermore, their ability to motivate the customer to make a purchase. Based on the set goal, the following research questions can be set:

V1: What factor, that forces a customer to make a purchase in a given store, is decisive for them?

V2: To what extent does the loyalty program motivate customers to make a purchase in a retail store?

V3: Is the loyalty program worth it for the retailer as a tool to support sales?

V4: Which loyalty program is properly targeted at customers' desires?

Literature research

To increase sales of food retail chains, it is important in the first phase to identify factors that affect customer loyalty (Romanova and Noskova, 2015). Furthermore, it is necessary to get acquainted with the issue of loyalty programs in marketing (Kuš, 2011). Such as advertising, public relations, sponsorship and others. Building customer loyalty affects

business efficiency and profitability (Gang, Peng and Xiufei, 2011). However, an important factor must not be forgotten, and that is customer satisfaction, as this also guarantees customer loyalty (Dayou and Yongju, 2011). Next, it plays the role of effective communication between the customer and the company. This provides feedback and the loyalty program can become more efficient (Curatman, Suroso and Suliyanto, 2021). This should take into account that a company with a loyalty program should be interested in what its loyal customer wants and what kind of behave it deserves (Hendler, Latour and Cotte, 2021).

Therefore, the main task before sales promotion in the style of loyalty cards is for the company to find out what are the desires and needs of their customers. However, Zakaria, Rahman and Othman (2012), add that the mere offer of a retail loyalty program does not guarantee customer loyalty, primarily due to the great similarity of individual loyalty programs. The program that a company offers mainly works on the principle of providing rewards to the customer for their loyalty. This action is based on marketing strategies that influence the customer's thoughts in favor of the company. Although this method seems to be very advantageous, despite the large amount of supply from the competition, it is not suitable for everyone, especially not for small retailers (James et al., 2020). Hrstka (2013) concluded that the analysis of the current situation in a company is suitable for determining a competitive offer and improving customer relationships. This finding was made with the help of an analysis of customer needs and desires and a survey of loyalty programs by competitors. The analysis was performed in the form of a marketing survey. Rubeš (2014) adds that in an effort to influence the customer, it is necessary to identify strategies that will influence the customer's thinking and behavior in favor of the company. Rubeš (2014) further states that, however, not every strategy is usable in the Czech Republic and effective on the customers and their loyalty.

Fedotova et al. (2019) states that one of the ways to obtain the necessary data to ensure sales support is a matrix evaluation. Three-level classifications were used, namely "low level", "medium level" and "high level". To start the research, it was necessary to create a questionnaire or non-participatory observation. Subsequently, the hypothesis is proven or not refuted. Another option is qualitative and quantitative research. This method is used to identify motives, opinions and attitudes that lead to findings regarding customer behavior (Kozel, Mynářová and Svobodová, 2011). Quantitative research can be used to find out who buys what, when, how much and subsequently due to which causes and consequences (Karlíček, 2013). One of the variants for examining customer loyalty is an experimental method called 2x10. It is possible to determine the customer's wishes, preferences and customer loyalty the specific program. Furthermore, it has been found that the promotional effects of loyalty cards are very important for awareness and easy for the customer to remember (Su and Zhao, 2011). ANOVA, or analysis of variance, provides data for testing hypotheses. Through this procedure, it is possible to determine whether customers show possible differences in the use of loyalty cards. Whether it depends on the frequency of purchases in an emerging market or a developed market. The result is the ability to describe the benefits for businesses (Zielke and Komor, 2020). The prerequisites for this method are the independence of the measurement (across

segments), the same variance in a certain group and the normality of the data. Another possible method for collecting data about customers and their behavior is a method called data mining. It has the ability to gather data from large or complex data files (Hand and Adams, 2014). Therefore, it can analyze and collect customer information. Tomanková (2013) used the data mining method together with the marketing mix and came to results that suggest that marketing communication is more important and entices the customer more than the loyalty program itself offered by the company.

Takáč (2012) states that another of the sales promotion options is the use of a competitive environment analysis called SWOT analysis. It will be determined how the company itself and its specific loyalty program are performing. The result of the analysis will identify the strengths and weaknesses of the company, as well as the loyalty program. This is accompanied by findings on threats and opportunities. The pros and cons of loyalty programs can be obtained from this data. These results can be used to identify areas for the business to focus on and promote sales. It also opens up the possibility of greater competitiveness. To support this method, it is possible to use a questionnaire survey for data collection based on correctly formulated questions, where the answers to these questions will bring specific required data. By combining these two methods, results can be obtained that lead to the identification of customer needs, the determination of priorities that lead the customer to shop at a particular retail store, and the mapping of competing loyalty programs. It is important to focus on information on whether the customer shops at a particular store due to a positive relationship with the company, based on the provided loyalty program or if the decisive factor for the purchase is only the price.

Data and methods

Data

The method of questionnaire survey will be used for data collection and the method of comparison and the method of marketing research - SWOT analysis - will be chosen for data processing and evaluation. The data that will be presented can be characterized either as respondents' answers or publicly available information. Furthermore, the data in the methodology are described and characterized with the help of statistical operations. To answer research questions such as: "Which factor, that makes a customer shop at a given retailer, is decisive for them?" "To what extent does a loyalty program motivate customers to shop at a retail store?" The question "Which loyalty program is properly targeted at the interests of customers?" Will be answered using the method of comparison. The question of how the retail loyalty program pays off for the company will be answered with the help of a SWOT analysis.

Methods

The method of questionnaire survey will be used first. It is a qualitative method for data collection. It is a principle that is based on asking a question to the respondent, who then either states their answer or chooses a pre-prepared answer option. The questionnaire survey will be conducted in a CAWI manner. The advantage of this method is that with the help of the Internet and easy promotion, it is possible to address a wider range of potential respondents and thus obtain more information and opinions. Furthermore, it offers low financial and time requirements for processing, promotion and evaluation of the questionnaire. The disadvantage is that responses are not guaranteed.

The given method allows for the best data gathering for this research. Regarding this data collection, it will be constructed as a semi-structured type of questionnaire. In order for the respondents to be able to express their opinion in open-ended questions as well as to evaluate the process in choice questions. It will be in the form of a qualitative analysis, thanks to which the data will be evaluated on the basis of motivation, behavior and opinions of respondents. The results will then be evaluated and the main reason for participating in retail loyalty programs will be identified. Following obtaining answers from respondents, the reason for the purchase in the given retail store will be found and, on the basis of the most frequent answers, it will be determined what customers really find important. The answers will be graphically processed, and it will be verbally described what the finding was.

Another method that will be used for data processing and evaluation is the comparative method. It consists of comparing subjects that have common features or characteristics. This means finding out what the subjects agree on and vice versa. The method of comparison will be applied to the results of three observations in three retail loyalty programs, namely Kaufland, Terno supermarket and Lidl, for the processing and evaluation of data comparing the three loyalty programs and their listed benefits. The comparison will be made on the basis of the created table and the identified loyalty benefits of individual retail stores. The information that will be presented in the tables is freely available on their websites (www.lidl.cz/lidl-plus (Lidl Plus, 2021), www.kaufland.cz (Kaufland, 2021), www.jednotavimperk.cz (Jednota Vimperk, 2021)). The result will be the mapping of loyalty programs and determining their suitability for customers, as well as suitability for retail as such.

The SWOT analysis will be used to identify the strengths and weaknesses, opportunities and threats of the selected loyalty program, specifically the one that will be the weakest in terms of benefits. First, the individual parts of the SWOT analysis will be determined and described in a table. The information that will be provided will be obtained through long-term observation and subjective judgment. Each piece of information in a given criterium will be scored according to its importance, starting from 0-1. The importance in the sum must result in the number 1 or 100%. The rating is derived from the importance, with numbers 1-5. Where the highest number means the best or the most advantageous for the strengths, and conversely for weaknesses, the highest number means the worst

that could happen. In each section, the sum will be calculated, which will be determined by multiplying each line by the rating and adding it to the second line, where the same action will be performed as in the case of the first line. This will be performed until it happens with each row.

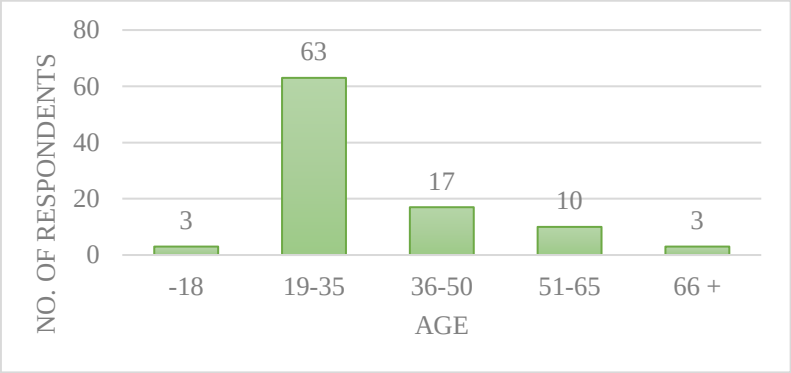
Then there is the part titled SWOT results. Here, the name of the strengths and weaknesses will be written according to observation and subjective opinion, and a known number from the sum will be added to them. Below these two pieces of information, there will be the internal total and in addition there will be a number which will be determined by subtracting the number for the strengths minus the one for weaknesses. Next, the opportunities and threats will be listed, and the number from the sum will be written again. Also, under these two pieces of information external total will be written, in addition to a number which will be determined by subtracting threats from opportunities.

The results of the SWOT analysis will be graphically represented by plotting them in the Cartesian coordinate system. The numbers for such a display will be obtained from the overall results of the SWOT analysis described above, where the internal and external values are data that will then be plotted in individual quadrants. This will achieve results that determine the most advantageous strategy for the company and its loyalty program.

Results

As shown in Figure 1, respondents who participated in the questionnaire survey fall into these age categories. The highest number of respondents, i.e. 63, answered that they belong to the age group of 19-35 years. The next age category was the age of 36-50 years, which included 17 respondents. 10 respondents answered that their age is in the range of 51-65. The smallest age group consisted of the age of younger than 18 and over 66 years, where the sum of respondents is 6.

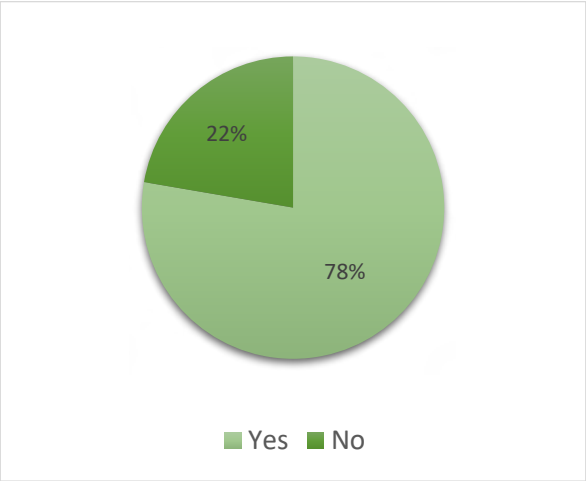
Figure 1: Age category of respondents



Source: Author.

The next fact is that 78%, or 73 respondents answered that they own a loyalty card. On the other hand, 22%, i.e. 21 respondents, stated that they do not own any loyalty card. These results are shown in Figure 2.

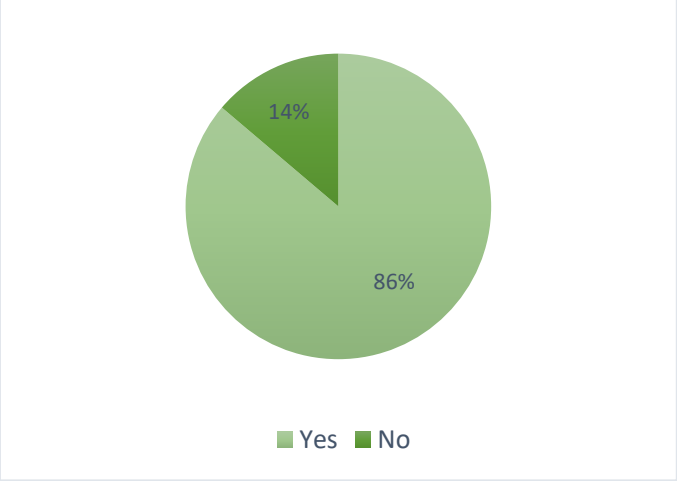
Figure 2: Loyalty card ownership



Source: Author.

Figure 3 shows that if a loyalty card were to bring any benefit to a potential retail loyalty program applicant, 86% of respondents said they would set up a loyalty card. This answer was chosen by 81 respondents. Only 14% of respondents would not set up a loyalty card despite the potential benefits. 13 respondents chose this answer.

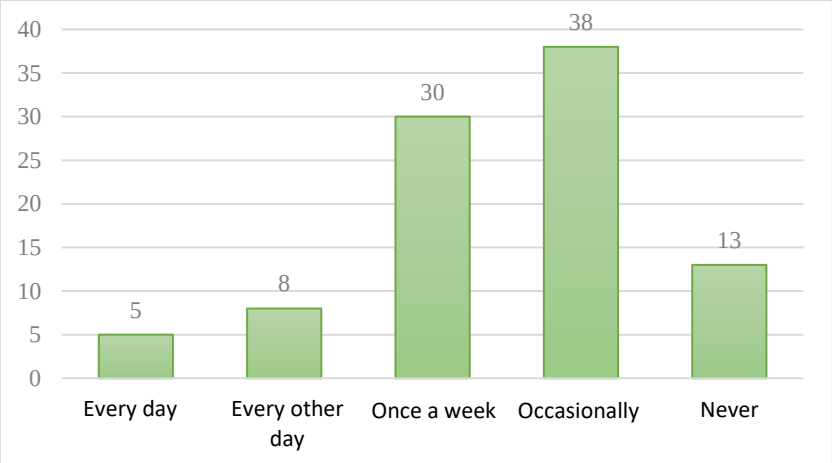
Figure 3: Establishing a loyalty card if it brings a benefit



Source: Author.

When asked how often the respondent uses the loyalty card, 38 respondents answered that they use their card only in exceptional cases. 30 respondents stated that they use the loyalty program once a week. Furthermore, 13 respondents stated that, despite having a loyalty card, they do not use it. 8 respondents choose to use the card every other day. Only 5 respondents answered that they use the loyalty program every day. The visual representation is in Figure 4.

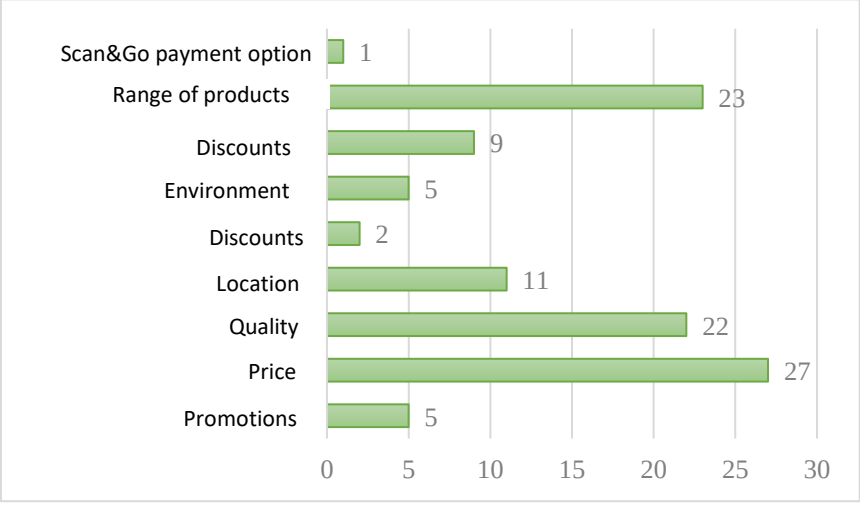
Figure 1: Frequency of loyalty card usage



Source: Author.

The results of the questionnaire survey in Figure 5 show the fact that the factor that forces a customer to buy is primarily the price. It became the most common answer, with 27 respondents mentioning this factor. Another common answer is the range of products in the store, as it was mentioned 23 times. 22 respondents stated that the quality of the assortment is also important. The fourth place of frequent answer is occupied by the location; how important the distance of store is for the respondents.

Figure 2: What influences the customer during shopping



Source: Author.

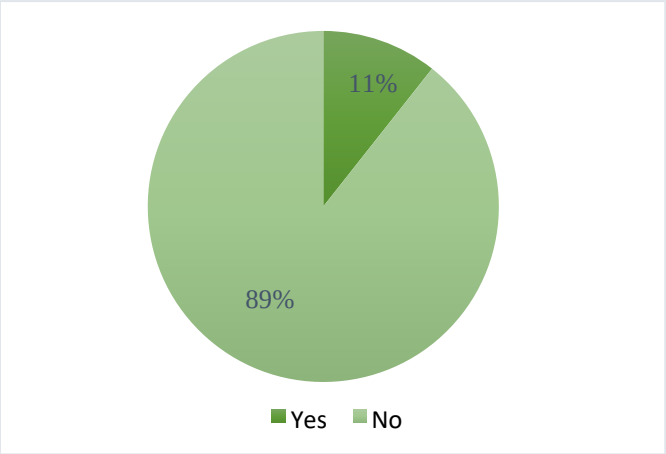
If the customer must decide between two retailers, the determining factor for them is the discounted price without a loyalty card; this answer was chosen by 69 (73%) respondents, as shown in Figure 6. The remaining 25 (27%) respondents prefer loyalty benefits.

Figure 3: Factor which influences the decision

Source: Author.

When asked about the importance of the loyalty program, as seen in Figure 7, 84 (89%) respondents answered that it is important for them whether the retailer has a loyalty program. Only 10 (11%) respondents said they did not care if the retailer has a loyalty program.

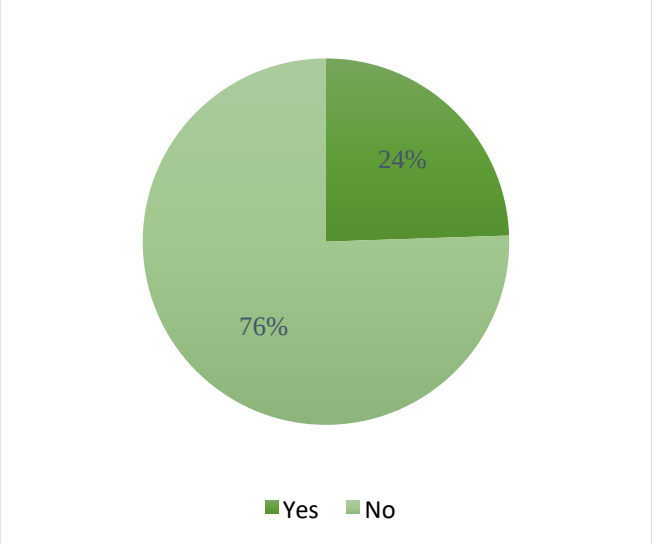
Figure 4: Importance of the loyalty program



Source: Author.

Only 23 (24%) respondents have a favorite loyalty program, as shown in Figure 8. The remaining 71 (76%) respondents stated that they do not have a favorite loyalty program.

Figure 5: Favorite loyalty program



Source: Author.

Table 1 shows the differences in the loyalty programs between the individual retailers, namely Kaufland, Lidl and Terno supermarket. Using the comparison method, it was found that from the customer's point of view, Kaufland offers a wider range of benefits than the Terno supermarket, but quite similar to Lidl.

Tab. 1: Loyalty benefits

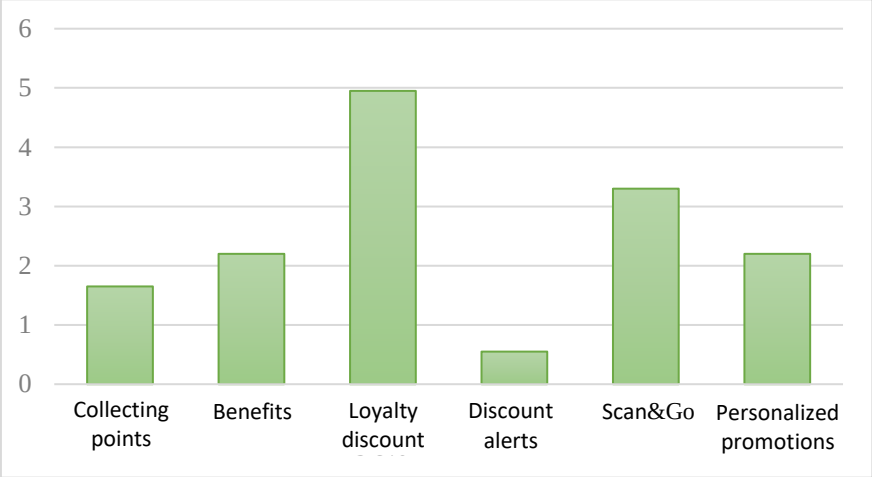
Loyalty benefits	**Kaufland**	**Lidl**	**Terno supermarket**
Loyalty discounts	x	x	x*
Smartphone app	x	x	
Online leaflet	x	x	
Personalized coupons	x	x	
Digital card	x	x	**x**
K-scan	x		
Notification function	x		
Collecting points	x		**x****
Online cookbook	x		
Shopping list	x		
Store finder tool	x		
Promotional competitions	x		
Scratch off cards		x	
Electronic receipts		x	

* The 0.8% discount that is offered can be used from 5,000 points and up. These purchases do not take into account cigarettes and other tobacco products, returnable packaging, and recharging mobile phone credit. Cash payment only.
** Collecting points (1 CZK = 1 point)

Source: Author.

The main benefits mentioned by customers include the loyalty discount. Furthermore, Scan&Go is a great advantage for loyalty program customers. The benefits as such are also a popular part of the loyalty program along with personalized promotions. Other benefits listed in Figure 9 were point collection and discount alerts.

Figure 6: Reasons for the popularity of the loyalty program



Source: Author.

The last method is a SWOT analysis shown in Table 2. The result is the determining of strategy for Terno supermarket. The strategy that emerged from the analysis is defensive, with the result expressed graphically in Figure 10. The data are obtained from observation, where the strengths of Terno supermarket have a sum of 4. And the most appropriate is its location. Weaknesses have a sum of 3.7, while the weakest side is considered the low level of communication with customers. Furthermore, the improvement of communication with customers appears to be an opportunity, where the sum is equal to 2.3. The threat of the given retail store is a lot of competition on the market, with a total of 3.4.

Tab. 2: SWOT analysis of Terno supermarket

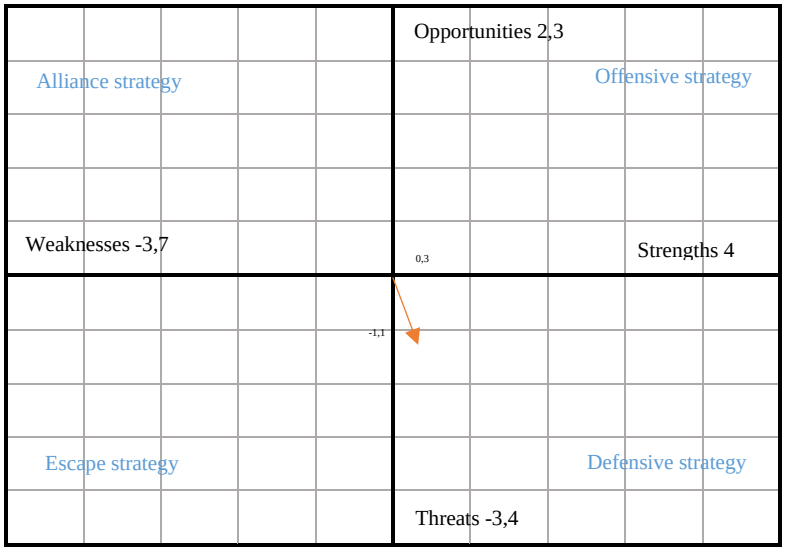
Positive | **Negative/harmful**

	STRENGTHS	importance	rating		**WEAKNESSES**	importance	rating
1	Tradition	0,2	3	1	Low level of communication with customers	0,4	3
2	Location	0,6	5	2	Not innovative	0,1	3
3	Affordability	0,2	2	3	Increasing competition	0,2	5
4				4	Declining customer satisfaction	0,3	4
	Sum		4				3,7
	OPPORTUNITIES	importance	rating		**THREATS**	importance	rating
1	Improving communication with customers	0,4	2	1	High competition	0,5	4
2	Increasing the volume of assortment	0,3	2	2	Reduced product quality	0,3	2
3	Increase in profit due to the temporary closure of a competitor	0,2	4	3	Change in customer priorities	0,2	4
4	Improving the environment (atmosphere)	0,1	1	4			
	Sum		2,3				3,4

SWOT – results		**TOTAL**	**-0,8**
Strenghts	4		
Weaknesses	3,7		
Total internal	**0,3**		
Opportunities	2,3		
Threats	3,4		
Total external	**-1,1**		

Source: Author based on (Lasák, 2004).

Figure 7: SWOT analysis of Terno supermarket



Source: Author.

Defensive strategy: possibility to use the strategy if the Terno supermarket is strong enough to pose a threat with the aim of achieving something new. The point is for the retail business to ensure that the operation and development is better or the same as the competition. The main focus is on the strengths and threats that may threaten the retail business.

The results of the second SWOT analysis are in Table 3 and are focused on the analysis of the Terno supermarket loyalty program. The result of the analysis is a determined escape strategy, for which the result is shown graphically in Figure 11. Data are obtained from observations. The strengths of the business have a sum of 3.8 and the strengths of the loyalty program are the location and comprehensibility of the program. The weak point is mainly the non-innovative loyalty program, the sum overall is 4.4. Opportunities include increasing the volume of the assortment and increasing the use of the loyalty program thanks to quality; the sum is 3.8. The biggest threat to the retail business is competition, where the sum is 4.4.

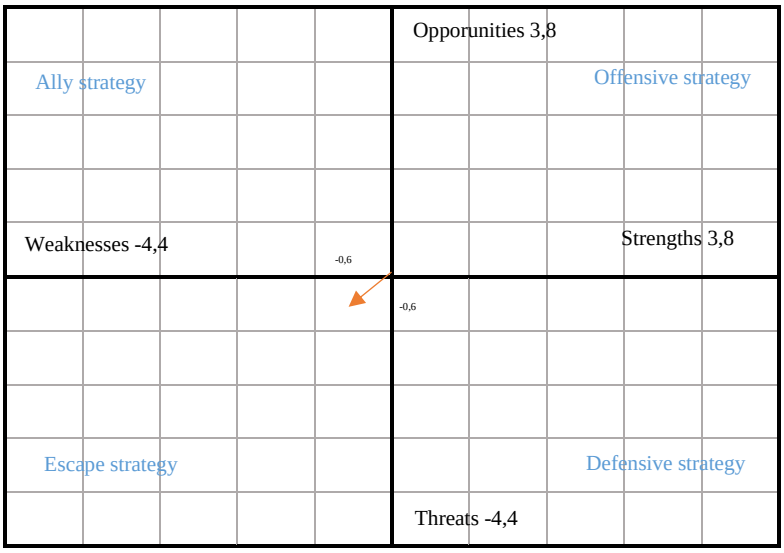
Tab. 3: SWOT analysis of the Terno supermarket loyalty program

	Positive			**Negative/harmful**		
	STRENGTHS			**WEAKNESSES**		
		importance	rating		importance	rating
1	Location	0,4	4	No support (line,...)	0,2	4
2	Program comprehensibility	0,4	4	No social network	0,1	3
3	Better utilization	0,2	3	Non-innovation of the loyalty program	0,5	5
4				No promotion	0,2	4
	Sum	3,8			4,4	
	OPPORTUNITIES			**THREATS**		
		importance	rating		importance	rating
1	Introduction of a discount voucher	0,2	3	Competition	0,6	5
2	Increasing the volume of assortment	0,4	4	Low innovation	0,2	4
3	Increased utilization due to program quality	0,4	4	Selection of benefits	0,2	3
4						
	Sum	3,8			4,4	

SWOT – results		**Total**	**-1,2**
Strengths	3,8		
Weaknesses	4,4		
Total internal	**-0,6**		
Opportunities	3,8		
Threats	4,4		
Total external	**-0,6**		

Source: Author based on (Lasák, 2004).

Figure 8: SWOT analysis of the Terno supermarket loyalty program



Source: Author.

Escape strategy: it is primarily a matter of eliminating weaknesses and threats to the loyalty program. In this case, it is a matter of maintaining the basic functions of the loyalty program. The main focus is on weaknesses and circumstances that threaten the business.

Discussion

The questionnaire survey took place in April 2021 using an Internet link. 100 respondents answered the questionnaire and 47 did not answer. Responses were recorded from more than half of women. The results show that the questionnaire survey was filled out mainly by people under 35 years of age. Furthermore, the respondents were in the range of 36-50 years and the other age categories were less occupied. The questionnaire survey found that ¾ of the respondents own a loyalty card or would sign up for it if it brought them a benefit. It follows that people like benefits and reduced prices. Alternatively, they also like whatever will speed up or make their purchase easier. However, they use their cards either once a week or only exceptionally. Due to not so frequent store visits. Most respondents do not even have a favorite loyalty program. To the question "To what extent does a loyalty program motivate the customer shop at the store?", the answer is that whether or not a company has a loyalty program is irrelevant to customers. Furthermore, the question "What factor is decisive and will influence the customer to shop at the store?" can be answered that the most decisive factor is the price. Furthermore, the range of products and their quality. Despite these facts, the loyalty program pays off.

Table No. 1 shows the individual loyalty programs offered by select retailers. Using the method of comparison, the following question was answered: "Which loyalty program is properly targeted at customers' desires?“ - thanks to the large range of benefits offered by Kaufland and Lidl, these two retailers are the most advantageous for potential shoppers. These retailers have more interesting loyalty programs.

On the contrary, Terno supermarket presents a very limited offer of benefits for customers with a loyalty card, where attractive-sounding discounts are only attained by collecting a certain amount of points. If it is a discount on an offered product, it's for everyone, both a customer with a loyalty card and a customer without a loyalty card. The only advantage and difference between this and other loyalty programs is the choice of reward. This means that if a customer has collected, for example, 50,000 points on their loyalty card, they can choose (from the previously published catalog) what they would like as a reward, and it will then be provided. These rewards range from a bottle of alcohol to bed linen and end with rewards the type of a lawn mower. Each item has a value of a different amount of points. On the other hand, Lidl is somewhere in between these companies. Their offer covers the most important benefits, and what the customer needs. A great advantage seems to be the electronic receipt stored in the application on the user's phone. Furthermore, "scratch off tickets" are more of a novelty but it distinguishes their loyalty program from others. The result of the comparison method is that the Kaufland and Lidl appear to have the most suitable and usable loyalty program. Despite the fact that some of the features offered are not necessarily used by everyone, such as the store locator. Their loyalty benefits cover everything a potential loyalty program applicant might need.

Last but not least, the results of the SWOT analysis, which answer the question of how a retail loyalty program pays off as a sales promotion. The choice of retail unit for this job was due to the fact that these retail chains are in the city where I live. The selection of the Terno supermarket for the SWOT analysis was due to the fact that it is the least popular in the city. I wanted to find out why this is happening and whether the company has a chance to change this feeling. The results suggest choosing a strategy that could work for the Terno retail supermarket. From this, the retailer can determine where they stand on the market and what threatens it, and vice versa, what it excels in on the market. Furthermore, the company as such shows results that are focused on strengths and threats. Where it comes mainly to using the company's strengths to avoid threats that could weaken them.

The second SWOT analysis shows another strategy, namely the escape strategy, which is applied to the Terno supermarket loyalty program. The business is based on this result, as it shows how their retail loyalty program pays off. The analysis shows that the loyalty program is not doing best and there is a risk of deterioration of its market position. It is focused on weaknesses and threats to the company. The starting point seems to be a change of focus, assortment or offer.

Kotler and Keller (2007) state the fact that price competition can be circumvented by means of a difference in offer or the introduction of a service beyond the original offer. It is also possible to improve the environment and atmosphere of the company. The results of the survey agree that market saturation is related to the acquisition of new customers. Furthermore, it is important to know your customers and to offer them benefits according to their needs and desires. It is also important to know the competition and their offers.

Zakaria, Rahman and Othman (2012) state that the offer of a loyalty program does not in itself guarantee customer loyalty, due to the similarity of individual loyalty programs. The most important factor is customer satisfaction. This ensures their loyalty to the given store (Dayou and Yongju, 2011). This factor also coincides with the results of the survey. The results of this work can be used by companies to find out the customers' views loyalty programs. Subsequently, what strategy they can use for their company or loyalty program. On the basis of the results, questions that arise are "Why do people use loyalty cards less often when they want and like their benefits?" And "What is behind the declining prosperity of the analyzed store and its loyalty program".

Conclusion

The thesis deals with loyalty cards and their impact on customers. How hard it is to get regular customers and how to keep them. When in the beginning it is necessary to introduce the reader to the issue and gradually deepen the information obtained. Subsequently, the data and methods for further work are determined. The obtained results are described and then evaluated.

The aim of the work was to find out how much of a motivator the loyalty program is for a customer to visit the store. Furthermore, what factor affects the customer during shopping. These questions were answered using a questionnaire survey for data collection. The method of comparison was used to find out and evaluate what benefits these retailers offer and how their offer appears to customers. The SWOT analysis provided information on the strategies that were established both for the given retail business and for their loyalty program. The fulfillment of the objectives is stated in the results section and the subsequent discussion. Where respondents' answers, subjective view and observation of activity are given. Subsequent processing of information, their description and creation of graphs or tables. The main obstacle was the collection of respondents' answers, when not everyone was willing to respond to the questionnaire. Furthermore, not all information obtained was publishable and was therefore not beneficiary for their processing.

Other possible topics that can be addressed after the completion of this research are, for example: the reasons for owning a loyalty card of a certain store with low utilization or possible promotion of the loyalty program. Furthermore, the willingness to fill out questionnaires. Whether it is mainly distrust, especially by the older generation and their work with Internet questionnaires and general work with the Internet. The general lesson from this work is to obtain as many respondents as possible, information and, last but not least, an overview of the topic. These things serve to facilitate the work and its research.

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Contact address of the authors:

Ing. Eva Kalinová, University of Žilina, Faculty of Operation and Economics of Transport and Communications, Department of Economics, Univerzitná 8215/1, 01026 Žilina, Slovakia, e-mail: kalinova@mail.vstecb.cz

Tereza Mílová, bachelor student, Institute of Technology and Business in České Budějovice, School of Expertness and Valuation, Okružní 517/10, 370 01 České Budějovice, Czech Republic, e-mail: 25430@mail.vstecb.cz

Price´s availability drugstores and the differences between online and offline shopping

Tomáš Krulický[1], Martina Kyprá[1]

[1]Institute of Technology and Business in České Budějovice Okružní 517/10, 370 01 České Budějovice, Czech Republic

Abstract

Which drugstore is the most convenient to shop at, according to the lowest prices, is nowadays a very common topic of discussion in society. Every family finds themself in a different life situation, so some households are considering whether it is more advantageous to visit a drugstore in their town or to buy the products from online websites. The basic method of data collection for solving this topic is the analysis of documents, the method of observation and the CAWI method, which addresses a hundred respondents regardless of their age, gender or education. Furthermore, the method of comparison was used, which was used for data evaluation. The results of the research show that the most advantageous brick and mortar drugstore in terms of the lowest prices is the Dm drugstore market s.r.o. If we chose a different range of products and different chain of drugstores, the results would be different. For this reason, it is necessary to direct research only to a selected assortment in the given drugstores. The second partial result is the finding that the most advantageous method of shopping is to shop from websites, i.e. through online drugstores. The benefit of the work is the recommendation for consumers regarding where to buy cosmetics or drugstore goods most advantageously, i.e. at the lowest prices.

Keywords: drugstores, consumer shopping behavior, prices of goods, consumer preferences

Introduction

The current generation is living in modern times and even this time brings with it a number of advantages and disadvantages. In the current covid pandemic, not every

potential customer has the same financial opportunities. Loxton et al. (2020) state that the covid-19 illness significantly affected and caused significant economic downturns and increased unemployment. Despite this fact, consumers are influenced by several factors that can influence their shopping behavior when choosing a store or service.

Baubonienė and Gulevičiūtė (2015) point out that comfort, simplicity and a more favorable price are among the main factors influencing consumers when shopping online. The analysis continued to show that men shop online more often due to lower prices, and respondents in the 25-35 age range prefer online shopping due to lack of time and a wide range of products (Baubonienė and Gulevičiūtė, 2015). Thus, it is clear that price, service quality, and physical environment significantly affect consumer satisfaction, and a change in price does not have a significant effect on customer satisfaction (Cristo, Saerang and Worang, 2017).

Agarwal and Singh (2018) found that the range of produxcts offered has a significant impact on customer satisfaction. Consumers are affected not only by retail purchasing factors through advertisements or promotional leaflets, but also by factors from online stores. Due to speed, convenience, online shopping is becoming a very popular method of shopping (Zhang, Li and Azamat, 2012).

The aim of the case study applied in the Czech Republic is to compare the prices of cosmetics, including their classification, together with drugstore goods in selected brick and mortar drugstores in comparison with online stores and evaluate which of the stores is most advantageous to visit in a specific selected product due to the consistently low price of the product. At the same time, it will be crucial to find out whether it is more advantageous to shop in brick-and-mortar drugstores or on online drugstores through their relevant websites. This raises research questions:

V1: Which retailer offers the selected goods at the lowest prices?

V2: What is the difference between the prices of drugstore goods in brick-and-mortar stores and prices in online stores?

V3: Which of the retail stores is the most visited among consumers?

V4: Do consumers prefer price to quality or vice versa?

Literature research

In society, there is a question regarding whether it is more advantageous to shop in brick-and-mortar stores, or in other words through offline shopping, or, conversely, if it is more advantageous to choose the form of online shopping. Whereas Rubin, et al. (2020) states that online shopping has recently become a popular activity. Gupta (2015) observed online and offline shoppers and evaluated the values that are key to shopping through

both aforementioned channels, and pointed out the fact that it is very important to realize what factors can influence the process of choosing a shopping method (Gupta, 2015). Applying the conceptual model, it was found that women shop online much more than men and people over the age of 35 are less likely to shop online because they do not realize they possess the ability to shop online. It also shows that affective trust plays a big role in deciding between online and offline shopping. It turns out that this factor can play an important factor when one decides to buy online (Nghia, Olsen and Trang, 2020).

Zhou, Lu and Wang (2011) compared factors that may influence the increase and decrease in consumer shopping behavior online. Based on the application of group analysis, they came to the conclusion that the perception of the quality of services by consumers significantly affects their shopping behavior for online shopping, while the decline in online shopping is significantly affected by the quality of websites of individual online stores. Ads, and especially their content, are closely related to websites. Turley and Kelley (1997) examined the differences in advertising content in more detail, examining differences in several directions in the context of two types of merchandise advertising. Specific elements included headings, product returns, price information or the inclusion of an Internet address (Turley and Kelly, 1997).

The issue of shopping behavior was also addressed by Montoya et al. (2018), who specialized in selected generations. They obtained the results by applying a comparative analysis, which clearly showed that the most common factors that influence consumer decisions to buy online are practicality, trust and sufficient motivation (Montoya et al., 2018).

In addition to consumer shopping behavior, the issue of consumer willingness to pay a price premium for organic goods resonates. Kucher et al. (2019), on the basis of a comparative analysis, found that the higher the price premium, the fewer consumers are interested in purchasing the aforementioned organic goods. Friedrich (2020) shares this view and, in addition, contributes to this issue with research showing that young consumers are more ready and willing to accept higher prices for biofuel-based goods. The obtained research results are recommended to be used to assess the prospects for the development of the market for organic goods or to make a marketing decision that will be targeted within the relevant market segment (Kucher et al., 2019). In addition, Dunphy (2016) states that the amount and value of price mark-ups have decreased since previous years.

Today's market is very diverse and there are two types of consumers: online-to-offline customers explore goods and services online, but buy the final product or goods offline, which means in brick-and-mortar stores, and the second type of consumer is those who not only explore goods and services online, but also shop online (Watabe, 2018). The research results in suggestions that motivate consumers to prioritize offline shopping over online shopping (Watabe, 2018). Bharathi and Dinesh (2020) fully agree with this

result, adding that in today's modern world, strong competition is flourishing among retailers and it is therefore very difficult to attract customers.

Using the comparative method is the best method to compare the prices of drugstore goods in the online and offline shopping environment. After all, Wesley, Lehew and Woodside (2006) also chose this method for their research, by personally recording data in shopping malls. Using the same method, the collected data were analyzed using the mean and percentage (Bhartathi and Dinesh, 2020). Delaney-Klinger, Boyer, and Frohlich (2003) also opted for a comparative method that resulted in results that show how important a match between operations and marketing strategies is to a retailer's success.

Data and methods

In connection with online and offline shopping, we should not forget to mention the shopping behavior of consumers and their preferences.

The basic method of data collection will be document analysis and observation. The observation method will be used for some of the "brick-and-mortar" drugstores that can be visited in person. So, we will choose a drugstore in the vicinity of our residence and visit them in person. Image recordings will be made from scientific observations, which will then be processed into a clear spreadsheet in Excel from Microsoft. The file will show the classification of cosmetics and drugstore goods. From each category, we select 3 to 4 products that will represent the group. For each product, the price, brand and replacement brand will be listed, which could be purchased if the first brand were not available. If a situation arises where it is not possible to find the same assortment in a given category, we select the 3 cheapest products and use the average to get the average price and write names in the brand column, from which we calculate the average price. The last column will list the prices of the selected products in three selected retail stores. In the end, we will perform the sum of products in individual drugstores and find out in which retail store we can buy the given cosmetics or drugstore goods at the cheapest price. The comparison method will be used to evaluate the data.

The second research question will be processed in the form of the cheapest purchase. We will obtain the data through the analysis of documents from which we will take notes and through the method of observation, during which image recordings will be made. In order to know what consumers buy most often during monthly purchases, it will be necessary to study the results of several surveys on the website. Then we always determine the cheapest product from the individual categories, both in selected retail stores as well as online drugstores. The prices found will also be processed in Excel and the monthly purchases for a family of three in brick-and-mortar drugstores and online drugstores will be compared with each other. The aim will therefore be to compare brick and mortar drugstores with each other and also to compare brick and mortar drugstores versus online drugstores as a whole.

For the third and fourth research questions, the CAWI data collection method will be used through an online questionnaire, which will be published on the internet. The target group will be all respondents, regardless of age, gender or place of residence. Therefore, it can be anyone. In the questionnaire, we will directly mention the third and fourth research questions. We will also take into account the possibility that the respondents would want to answer in a different way than it the ones it will be possible to choose from in the created questionnaire. Therefore, we will add the possibility of another answer to these questions. The results of the questionnaire survey will be processed into bar charts in Excel with the description written in pie charts.

Results

As shown in Table 1, the most favorable of hair cosmetics is in the Dm drugstore market s.r.o.

Table 4: Prices of hair cosmetics

						Teta drogerie a lékárny ČR s.r.o.	**Dm drogerie market s.r.o.**	**Top drogerie ČR s.r.o.**
COSMETICS	HAIR	shampoo	product	Head & Shoulders Citrus fresh shampoo against dandruff 400ml		154,90	139,00	154,90
			alternative product	Syoss Full hair 440 ml		139,90	99,00	139,90
		conditioner	product	Elseve Dream Long 400 ml		89,90	89,90	74,90
			alternative product	Botanic Therapy coconut milk & makademie 200 ml		59,90	59,90	79,90
		styling preparations	product	Taft - hair spray Volume Mega Strong, 250 ml		49,90	79,90	89,90
			alternative product	Syoss hair spray Max Hold 300 ml		129,90	109,00	129,90
		total				**624,40**	**576,70**	**669,40**

Source: Author.

Skin cosmetics are sold at the lowest prices in the Dm drugstore market s.r.o., as shown in Table 2.

Table 5: Prices of skin cosmetics

						Teta drogerie a lékárny ČR s.r.o.	Dm drogerie market s.r.o.	Top drogerie ČR s.r.o.
COSMETICS	SKIN	wrinkle creams	product	L'Oréal Paris Age Specialist 65+ nourishing care against wrinkles daily 50 ml		199,90	159,00	249,90
			alternative product	Garnier Skin Naturals Visible Rejuvenation 55 + nourishing care against wrinkles daily 50 ml		129,90	139,00	159,90
		masks	product	Garnier Fructis Hair Food banana 390 ml		139,90	149,00	179,90
			alternative product	Garnier Botanic Therapy Ginger 300 ml		99,90	99,00	119,90
		micelar water	product	Garnier micellar water for sensitive skin 400 ml		139,90	139,00	139,90
			alternative product	Garnier BIO micellar water 400 ml		179,90	169,00	199,90
		lip balms	product	Astrid regenerating lip balm 4,8 g		29,90	39,90	29,90
			alternative product	Deer Tallow original lip balm placenta 4,5 g		44,90	49,90	32,90
				total		**964,2**	**943,8**	**1112,2**

Source: Author.

In the case of Table 3, we can observe that the best prices are again recorded at the Dm drugstoremarket s.r.o.

Table 6: Prices of body cosmetics

						Teta drogerie a lékárny ČR s.r.o.	Dm drogerie market s.r.o.	Top drogerie ČR s.r.o.
COSMETICS	BODY	anti-perspirants	product	Rexona Sexy Bouquet antiperspirant spray 150ml		89,90	54,90	84,90
			alternative product	Adidas Climacool 150 ml		99,90	69,90	99,90
		creams	product	Astrid Almond Care almond nutritious day and night cream 50 ml		109,90	109,00	99,90
			alternative product	Nivea Soft fresh moisturizing cream 200 ml		119,90	109,00	119,90
		body lotions	product	Nivea Body Milk nourishing body lotion 400 ml		209,90	159,00	279,00
			alternative product	Dove bambucuké butter body lotion for dry skin 400 ml		184,90	129,00	179,90
		soaps	product	Dove Deeply Nourishing Moisturizing shower gel 250ml		89,90	89,90	89,90
			alternative product	Dermacol Aroma Ritual Delicious shower gel macadamia truffles 250 ml		59,90	39,90	59,90
				total		**964,20**	**760,60**	**1013,30**

Source: Author.

The selected assortment of decorative cosmetics achieves the lowest prices in the Dm drugstore market s.r.o. This result is shown in Table 4.

Table 7: Prices of decorative cosmetics

						Teta drogerie a lékárny ČR s.r.o.	**Dm drogerie market s.r.o.**	**Top drogerie ČR s.r.o.**
COSMETICS	DECORATIVE	nail polishes	product	Miss Sporty lak, Miss Sporty lasting color gel shine, Essence; Miss sporty, Essence, Trend IT UP; Regina, 7days, Revlon		43,23	34,90	64,30
		mascara	product	Dermacol Obsesión mascara for volume and length of lashes 12ml		149,90	119,00	149,90
			alternative product	Miss Sporty Studio Lash Dark Lashera 8ml		99,90	69,90	99,90
		Eye shadow	product	Dermacol, Miss Sporty, Rimmel London; s.he stylezone, alverde, Trend IT UP; Regina, Dekor, Davis eye		93,23	63,23	59,90
				total		**386,27**	**287,03**	**374,00**

Source: Author.

In the case of Table 5, which shows the prices of drugstore goods, it is clear that the drugstore Dm drugstore market s.r.o. is still the most favorable.

Table 8: Prices of drugstore goods

					Teta drogerie a lékárny ČR s.r.o.	**Dm drogerie market s.r.o.**	**Top drogerie ČR s.r.o.**
PHARMACY PRODUCT	soaps	product	Sanytol Liquid soap disinfectant moisturizing aloe vera & green tea		69,90	59,90	69,90
		alternative product	Dove Original Cream tablet for washing 100g		24,90	29,90	32,90
	detergent	product	Persil washing powder Color Deep Clean, 90 washing doses		679,90	399,00	699,90
		alternative product	Savo washing powder for colored and white laundry, 20 washing doses		179,90	99,00	179,90
	separating agent	product	Cocolino Blue Splash 1.8 liter - 72 washing doses		129,90	74,90	119,90
		alternative product	Silane fabric softener Supréme Romance 1200 ml - 48 washing doses		139,90	74,90	139,90
	cleaning agents	product	Bref WC gel, 360 ml		99,90	99,90	99,90
		alternative product	Bref EXCEL WC 700 ml		69,90	39,90	69,90
	bleaching agents	product	Savo disinfectant spray against mold 500 ml		99,90	104,00	89,90
		alternative product	Savo disinfection Original 1.2 l		49,90	59,90	49,90
			total		**1544,00**	**1041,3**	**1552,00**

Source: Author.

From the point of view of brick-and-mortar drugstores, the cheapest is the Dm drugstore market s.r.o., and from a comprehensive view of online drugstores versus brick-and-mortar drugstores, online drugstores are more favorable, as shown in Table 6.

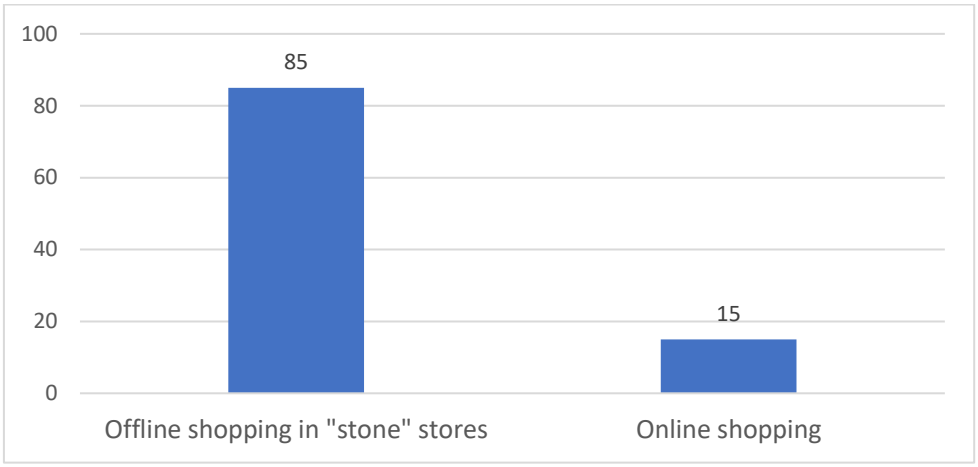
Table 9: Prices of goods in drugstores

		PRICES OF GOODS IN DRUGSTORE					
		brick-and-mortar store			**online**		
PRODUCT ASSORTMENT		Teta drogerie a lékárny ČR s.r.o.	Dm drogerie market s.r.o.	Top drogerie ČR s.r.o.	Eva s.r.o.	Ageo.cz	Mojedrogerie.cz
toothpaste		19,90	10,90	34,90	18,00	32,50	19,00
mouthwash		99,83	24,90	69,90	33,00	37,50	49,00
interdental brushes		69,90	59,90	99,90	39,00	104,90	49,00
toothbrush		19,90	24,90	29,90	19,00	9,50	25,00
washing powder		24,90	79,90	199,00	49,00	18,00	78,00
fabric softener		69,90	29,90	109,00	25,00	38,50	41,00
toilet paper		7,90	32,90	16,90	33,00	15,00	13,00
classic women's insoles		19,90	17,90	54,90	18,00	18,00	45,00
liquid toilet cleaners		39,87	24,90	44,90	33,00	19,50	35,00
liquid soap		39,90	19,90	34,90	24,00	38,50	36,00
window cleaner		25,90	24,90	49,00	18,00	21,50	32,00
detergent for dishes		19,90	22,90	69,00	22,00	24,50	24,00
dish sponges (10 pieces)		19,90	22,90	39,90	11,00	17,00	29,00
hair shampoo		29,90	19,90	69,90	19,00	43,90	27,00
conditioner		49,90	44,90	69,90	19,00	46,90	42,00
shower gel		29,90	17,90	49,90	32,00	36,50	25,00
kitchen towels		29,90	29,90	24,90	33,00	21,50	22,00
tissues		19,90	19,90	24,90	13,00	13,00	19,00
cotton buds		24,90	11,90	24,90	19,00	19,00	20,00
make-up removing tampons		24,90	12,90	19,90	19,00	19,00	25,00
razors		49,90	24,90	39,90	22,00	39,50	29,00
clothes pegs		19,90	39,90	24,90	16,00	22,50	18,00
washcloths		29,90	39,90	29,90	12,00	19,50	17,00
	total	**786,60**	**658,70**	**1176,30**	**546,00**	**676,20**	**719,00**
			2621,60			**1941,20**	

Source: Author.

From the questionnaire survey, it was found that mostly women residing in a municipality, and in the age category of 16-25 years old, shop at drugstores and visit them once a month. Furthermore, the results shown in Figure 1 found that consumers prefer to shop at a brick-and-mortar drugstore over online drugstores.

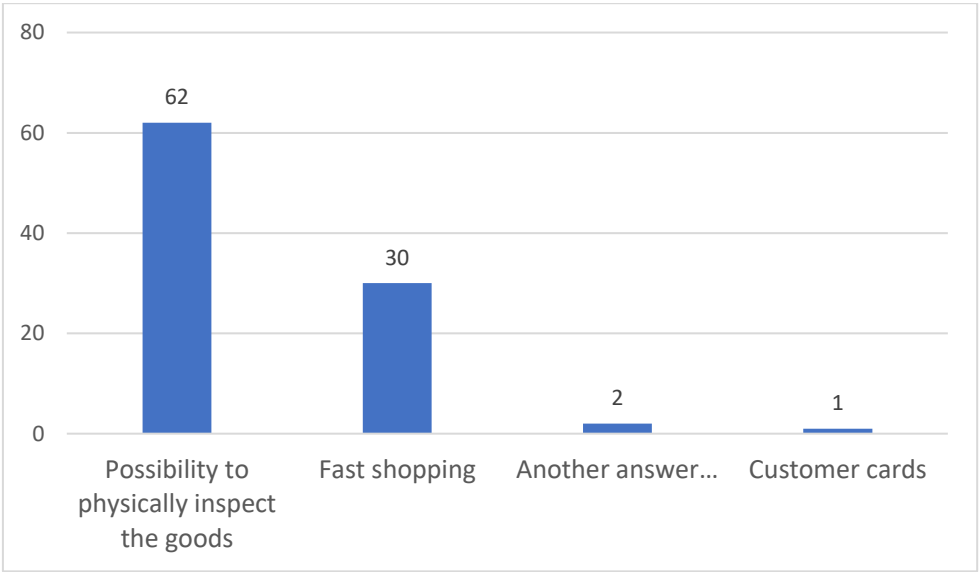
Figure 9: Which of the following options is more prevalent for you?



Source: Author.

Figure 2 shows that the respondents are most influenced by the possibility of physical choice when shopping in person.

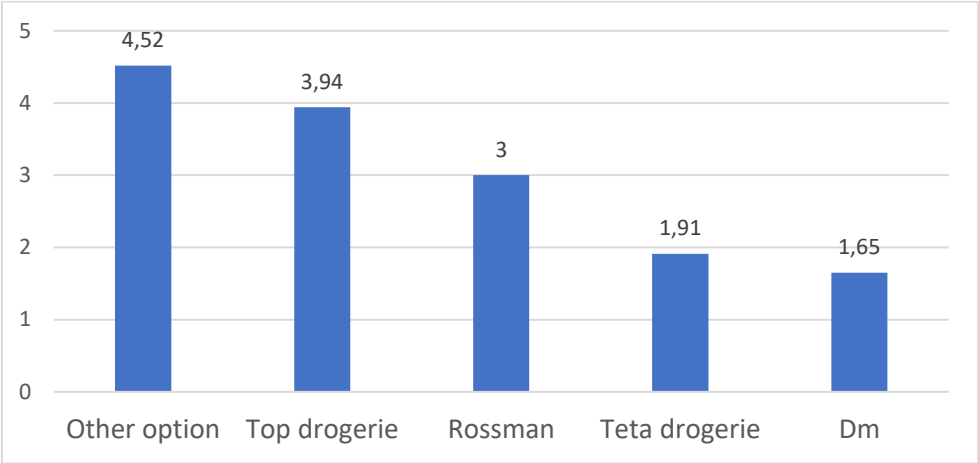
Figure 10: If you prefer to visti brick-and-mortar drugstores, which of the factors is decisive for you?



Source: Author.

Consumers physically visit drugstores other than those shown in Figure 3.

Figure 11: Which drugstore do you physically visit most often?



Source: Author.

Table 7 is closely related to Figure 3, as Table 7 shows other options that respondents indicated in the online questionnaire.

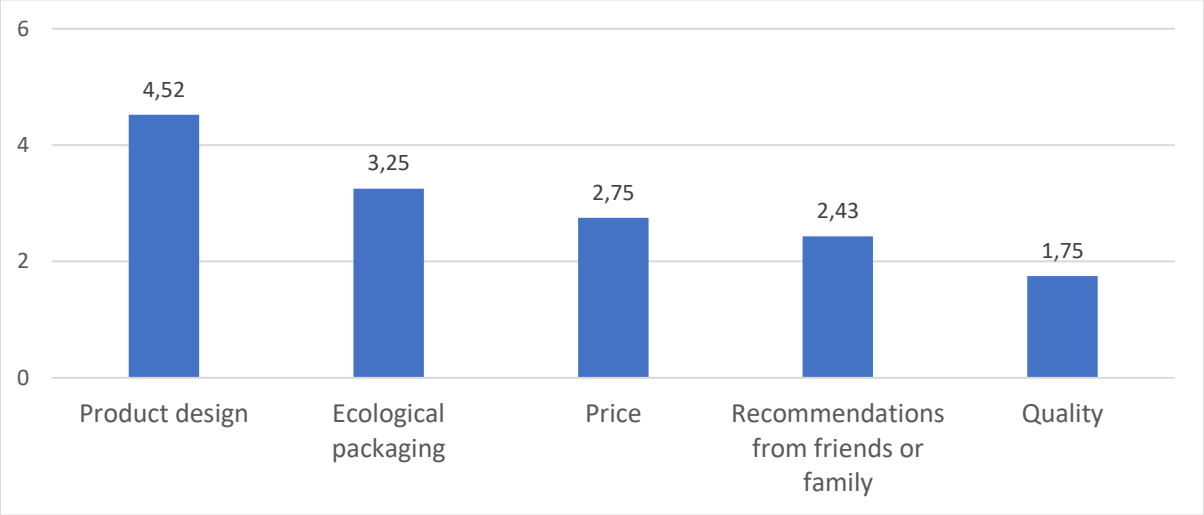
Table 10: Different options that consumers visit most often

I do not visit any	2
In a retail chain / supermarket / drugstore section in a hypermarket (Penny, Kaufland)	4
In the town I drive through	1
Vietnamese convenience in the town square	1
Dm drugstore market s.r.o.	3
Douglas, Notino	2

Source: Author.

In the case of Figure 4, the respondents were asked which factor influences their shopping behavior the most.

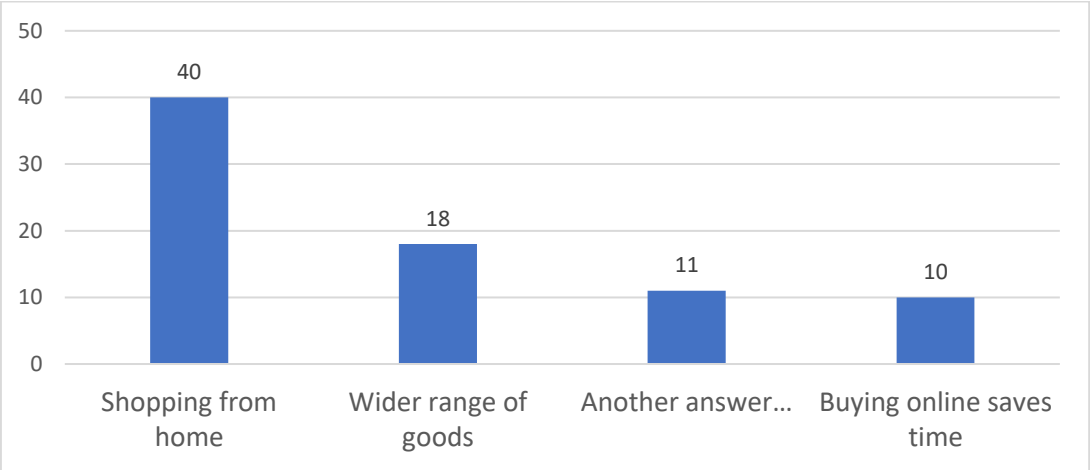
Figure 12: What factors influence your shopping behavior?



Source: Author.

If consumers buy cosmetics or drugstore goods over the internet, it can be seen in Figure 5 that this is due to shopping from the comfort of home.

Figure 13: Conversely, if you shop for cosmetics and drugstore goods online, then for what reasons?



Source: Author.

Discussion

Based on the obtained results, we are able to answer research questions that were determined:

Which retailer offers the selected goods at the lowest prices? This is a surprising discovery, because from our results we came to the conclusion that the cheapest retailer is clearly the Dm drugstoremarket s.r.o. In all categories of cosmetics, and also in the field of drugstore goods, the products we selected have always been the cheapest in the aforementioned Dm drugstore market s.r.o.

What is the difference between the prices of drugstore goods in brick-and-mortar stores and the prices on online shops? Regarding the differences between brick-and-mortar drugstores, we can say that in total there is a difference of approximately 518 CZK, if we subtract the highest and lowest total amount of purchases from online drugstores, then the difference is 173 CZK. Comprehensively then, it can be stated that shopping at a drugstore online through a website is more advantageous for consumers and will save them up to 681 CZK. At the same time, it is very important to mention that even regarding the cheapest monthly purchase, the Dm drugstore market s.r.o. again maintained the number one position, so even in this case, the Dm drugstore market s.r.o. is the cheapest. If, on the other hand, we had to interpret these results to find out which drugstore is the least advantageous to shop at, it would be mainly the Top drugstore CR s.r.o., which was the most expensive in the results compared to the Teta drugstore and pharmacy CR s.r.o.

Which retailer is the most visited by consumers? Most often, consumers buy the goods from the drugstore section of shopping centers, such as Penny or Kaufland supermarkets. Other places where consumers shop are Top drugstore CR s.r.o., Rossman, Teta drugstore and pharmacy CR s.r.o. and the least visited is the Dm drugstoremarket s.r.o.

Do consumers prefer price to quality or vice versa? Thanks to the questionnaire survey, we are able to answer that consumers really do prefer price over quality. However, the most important factor for consumers when shopping is product design. After that comes organic packaging, which is currently a heavily supported factor by most retailers, not only in terms of drugstores, but also in other industries, such as the food industry, and only after the organic packaging comes the price. Uncommon factors include recommendations from friends or family for a specific range or product, and in the last place, what is least important to consumers is the quality of the product, which is a very interesting discovery.

The limit of the research is the selected drugstores, because if the research was conducted again, different results could occur, due to the fact that the author is located in different part of the Czech Republic and the drugstores he would visit could have somewhat different prices for the same assortment chosen by me.

During the research, new questions arose that would be very interesting to include in the research. The question is: What would be the results after selecting the same drugstores and assortment if the research were carried out in cities other than those visited in this research. These could be, for example, the towns of Moravské Budějovice, Dačice and Třebíč. The second question that emerges from the research is what results would be obtained if the author chose the same assortment, but in different drugstores than those that have now been selected. I believe that the new issues should be addressed through document analysis, the method of observation and, finally, the use of the comparative method.

The results of the research will be beneficial not only for consumers, but also for the retailers themselves, which were mentioned in the research. For example, their management could change the current prices of the product assortment and the overall approach to consumers, so that their drugstore is the most preferred and popular among customers.

Conclusion

The aim of the paper was to analyze and then compare the prices of cosmetics and drugstore goods and find out which of the brick-and-mortar drugstores is the most advantageous to visit compared to online drugstores due to persistently low prices and also find out whether it is more advantageous to shop at brick-and-mortar drugstores or online drugstores.

The goal was met. In the results chapter, we responded to this goal by saying that the prices in brick-and-mortar drugstores for cosmetics are the most advantageous in the Dm drugstore market s.r.o., which always had the cheapest prices of hair, skin, body and

decorative cosmetics. The drugstore goods, which is also mentioned in the results chapter, were surprisingly also the cheapest in the Dm drugstore market s.r.o., which is a very interesting result.

The question of whether it is more advantageous to shop in brick-and-mortar or online drugstores was examined in more detail in the results and then interpreted in the discussion of results, which clearly showed that it is more advantageous to shop through online drugstores, due to the fact that the difference between brick-and-mortar and online drugstores is 681 CZK.

On the way to achieving the aim of the paper, we found out the limits of research, which are the selected drugstores and selected assortment. If the research were carried out by another author, different results would have been obtained, provided that the author of the work visited other cities than Moravské Budějovice, Dačice and Třebíč. Another situation where the results of the research would be different would be that other drugstore chains than those examined in this research were selected.

Another potential research goal could be to analyze the prices of the same range in other drugstores than those currently selected, or if it would be possible to apply research to other areas, such as the food industry, or it would be very interesting to conduct the same research in the pharmaceutical industry, specifically in pharmacies.

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Contact address of the authors:

Ing. Tomáš Krulický, MBA, PhD., Institute of Technology and Business in České Budějovice, School of Expertness and Valuation, Okružní 517/10, 370 01 České Budějovice, Czech Republic, e-mail: krulicky@mail.vstecb.cz

Martina Kyprá, bachelor student, Institute of Technology and Business in České Budějovice, School of Expertness and Valuation, Okružní 517/10, 370 01 České Budějovice, Czech Republic, e-mail: 27323@mail.vstecb.cz

Online communication within a company: Case study of small company

Jiří Kučera[1], Miloslava Smolková[2]

[1]University of Žilina, Faculty of Operation and Economics of Transport and Communications, Department of Economics
[2]Institute of Technology and Business in České Budějovice, Okružní 517/10, 370 01 České Budějovice, Czech Republic

Abstract

This work aims to introduce the basic concepts and tools related to online social networks and their implementation in small companies. Data for research are collected through social network analysis, a questionnaire survey and interviews. Twenty-seven respondents will take part in the questionnaire survey and two respondents from management positions will be interviewed. The risks and benefits of introducing social networks into small companies are examined at a practical level. The greatest risk in the results arises from the threat of data loss, the greatest benefits are increased productivity and improved interpersonal relationships in the workplace, including cost optimization. Yammer social network Yammer is the recommended suitable online social network for implementation in a small company doing business in the production of aluminum structures.

Keywords: Social networks; communication; companies; network security; small and medium enterprises; Yammer.

Introduction

In recent years, the reach and expansion of social networks has increased (Kaplan and Haenlein, 2010). Since 2008, they have begun to penetrate intensively into the internal company sphere, where they have supplemented or replaced hitherto very widespread methods of communication, such as telephone, fax or email (Mullaney, 2012). Especially during the last year, due to the limitations imposed by the pandemic situation, the undeniable benefits of social networks have become apparent. Online social networks, which allow the

incorporation of multimedia content, combine the benefits of some offline means of communication and direct contact. From the very nature of social networks, it is clear that it brings its users various benefits, but also great risks, mostly of the nature of security. In the corporate sphere, there is a key dichotomy between higher employee productivity and higher profits on the one hand and the possibility of stealing valuable data on the other (Gloor, 2017).

The benefit of solving this problem brings great benefits mainly to companies that are going to move part of the communication in the internal sphere to the environment of social networks. It is important to know the risks associated with entering this environment, but also the benefits. From the positions of managers and executives, communication through social networks in companies can represent an improvement in the efficiency of operation and profitability of the company.

With the help of conceptual analysis and definition of key terms such as communication, social networks, social media, social business, their meaning can be more clearly determined. It is important for corporations to determine the results of social network benefits analysis (Mengbin, 2019). If a company decides to use modern communications, it is essential to address the economic, psychological and social advantages and disadvantages of internal use of social networks, or tools of so-called social business to increase business efficiency (Gloor, 2017; Kušen, Strembeck and Conti, 2019). The incorporation of social networks into corporate intranets plays an essential role for easier corporate communication. This system is used primarily for large international corporations, in which they enable fast real-time communication across hierarchical barriers, which enables immediate feedback (Bányai, 2016). The use of social networks poses significant risks, associated primarily with the use of public networks and networks using cloud services. It is good for managers and executives to have an overview of the most important and latest business social networks that can benefit the company. The aim of the thesis is to analyze the benefits and risks of deploying social networks in the internal company environment and to recommend a suitable social network for internal communication to a company operating in the Czech republic, which has not started using social networks as a means of communication. On this basis, the following research questions were identified:

1) From a management point of view, does the use of social networks in internal company communication contribute to the growth of work productivity?

2) Does the use of social networks in internal company communication contribute to better interpersonal relationships in the workplace?

3) What possible risks may arise to the company in connection with the use of internal social networks?

4) What social network is the best choice for a small company with up to 50 employees?

Literature research

The current form of organizations is based, among other things, on the needs of today's society. One of the main features of modern society is its dependence on information

provided by social networks. The basic definition of digital social media is offered by Obar and Wildman (2015), who focus on the definition and management of social media. They define social media as social platforms (e.g. Twitter, Facebook etc.), when we meet their icons at every turn and they entice us to join the supposed online revolution. For security on social networks, authentication is essential, which they describe as verifying the user's identity by checking the data that the user enters when logging in to an application, network or information system. The username and password are most often verified according to the list of authorized users. The contributions of scientists in the field of communication policy to address a number of regulatory challenges posed by social media are also gathered here.

The use of social networks in the company environment is now a modern way of communication between employers and employees. He dealt with various forms of interpersonal communication, which also occur in the corporate environment, which also defined the basic structure of the act of communication. He relied on the theory of H. D. Lasswell (1948), where the roles of communicator and communicant alternate. Nakonečný (2020) came to the fact that the proper functioning of communication depends on the understanding of the recipient of the message. The communication must be clear about who it wants to address and what reactions to achieve. It is therefore important that the communicator selects the appropriate communication channel for the information transmission and the recipient's feedback channel.

Ove (2019) analyzed the use of social networks in internal company communication and presented the possibilities of using social media in order to achieve a higher degree of efficiency in the innovation of corporate environment management. When using an online social platform to increase the effectiveness of internal communication and to innovate processes within corporations, two complementary worlds need to be considered separately, but they need to be combined and harmonized because they are closely linked: the creative phases of flexible and uncontrolled information exchange, as well as the world of linear processes, which is needed for business management of the company's mission. Ragozini and Vitale (2020) summarized the latest state of research in the field of Social Network Analysis (SNA). They dealt with advanced methods and theoretical development of the analysis of social networks and applications in many fields. New trends concerning network measures, multilevel networks and clustering in networks are examined here. The relationships between statistical methods for data mining and social network analysis are also deepening here. Along with new methodological developments, they offer interesting applications for a wide range of areas, from organizational and economic studies, collaboration and innovation. They also point out how fundamental thinking is essential in the analysis of social networks. Mengbin (2019) studied various ways of advanced mathematical SNA, based on a study of how individuals develop social strength with each other during network interactions. The mathematical method of agent-based models of opinion dynamics is used here. The mathematical model here describes the dynamics of the agent, and conversely the agents react according to mathematical models that describe the rules or processes that occur during the interaction. Modeling of social networks, data recovery and dynamics of their processes were discussed by Dickinson, Magnani and Rossi (2016) and also Commendatore

et al. (2016). Dickinson, Magnani and Rossi (2016) sought to unify existing practical and theoretical knowledge about multilayer networks, including data collection and these separate research communities, leading to the development of several independent models and methods for solving the same set of analyzes, modeling and extraction of multilayer social network systems, interconnected development social networks, to dynamize the practical usefulness and potential shortcomings of different methods. Researchers from all areas of network analysis will learn new aspects and future directions of this emerging field. The use of real datasets demonstrates the practical applicability of processes such as information dissemination. One real dataset is used to illustrate the concepts presented throughout the study, demonstrating both methods.

Freeman (2004) mapped the development of SNA and lists the entire storyline that led to the emergence of social networks. Detailed historical knowledge of various scientists about the methods of SNA development is presented. He also discusses various specialties such as sociometry, quantitative methods, etc., associated with the history of social networks. He summarizes the entire development and organization of SNA. An important factor for corporations is the analysis of major online social networks (Arnaboldi et al., 2015). Human cognitive limitations on Facebook and Twitter provide a new perspective on the structural features of personal online social networks and the mechanisms that support human online social behavior. He deals with the use of large data sets to study the structural properties of online ego networks and their comparison with the properties of general human social networks and other properties. Users will find the data collected and the conclusions drawn useful during design or research initiatives that include online and mobile social networking environments. He discusses the original structural and dynamic properties of the human social network through the analysis of social networks.

Kaya and Alhajj (2019) also dealt with working with psychological factors in social media. They focused on the analysis of influence and behavior in the broader context of social networking and social media applications. They analyzed the twitter accounts of telecommunications companies. They identify sources in finite graphs with boundary effects using messaging algorithms. Progress in social networking, analysis and mining is highlighted here. The results of this research are beneficial for researchers and students working in the analysis of social networks and social media. Rauber and Almeida (2017) addressed a similar issue; Kuran (1997), who showed how people hide their motivations in social behavior. Brennecke (2019) conducted research focused on employees looking for help in solving problems with co-workers using "dissonant links": network links to co-workers that are both positive and negative. It provides an analysis of employee willingness, instrumental behavior in the network, and suggests a formal hierarchical order, term, and membership in organizations. In the empirical analysis, he use data from surveys and interviews from engineers in large manufacturing corporations. The findings confirm that seeking co-workers' problem-solving assistance brings performance benefits. Internal social networking platforms can also help solve problems. Maiorescu-Murphy (2020) contributes to a specific application in large American corporations. He states that sales of software for running corporate social networks are constantly growing and will continue to grow. Social media has

the potential to be as important to the wider economy as more obviously business information technologies, such as mobile phones and cloud computing. Companies can also use internal blogs and social sites to bring customers into the product design process. The strong use of social tools has a statistically significant correlation with profitability, according to Maiorescu-Murphy (2020).

Processing of data obtained from SNA analyzes can be used to process data obtained from analyzes of so-called social machines, which are the result of interactions between the human brain and technology, or artificial intelligence (AI). A key factor in the use of social networks is the security of data, the security of their sharing and their eventual anonymization (Tripathy and Bakhta, 2018), (Giffin et al., 2017). Closely related to data security on social networks is the issue of spreading fake news, misinformation and false reports, which can significantly damage labor productivity and a company's reputation (Shu et al., 2020). It serves as a suitable entry point for researchers, professionals and students to understand problems and challenges, learn state-of-the-art solutions to their specific needs and quickly identify new research problems in their field. Progress is described in three related sections: (1) user involvement in the dissemination of information disorder; (2) techniques for detecting and mitigating misinformation; and (3) trends in issues such as ethics, blockchain, clickbaits, etc. It addresses students, researchers, and professionals working on fake news and misinformation on social media from a unique point of view.

Data and methods

The work is based on research of theoretical literature and subsequent evaluation of the benefits and risks of the implementation of social networks as a means of internal communication. The analysis will be performed on the basis of data and information obtained by interviewing the management and employees of the company.

Data

Data collection will take place through a questionnaire survey and semi-structured interviews. Two managers from different organizations will undergo a semi-structured interview. The aim of the interview will be to gather information from the respondent in the field of social networks in the company. The first organization uses social networks as a means of communication with employees. The interview will focus on issues related to the benefits and risks associated with the use of social networks. The second interview will be conducted with the top manager of a company less than 50 employees, who will only begin to introduce a social network as a means of communication within the company. The manager will be asked questions that will determine his expectations from communication on social networks, future benefits and possible risks associated with the use of social networks.

The data and information obtained through the questionnaire survey will take two forms. The first form of the questionnaire will be compiled for managers and employees of the company who use the social network as a means of communication, so they have experience with social networks and can say whether it is beneficial for the company. The

questionnaire will contain questions about the benefits of the company's social networks, or possible risks associated with it. The second form of the questionnaire will be intended for all persons who are active users of social networks. The survey will show what job position and in which field the respondent is, and which social network prevails in the given positions. Data for the use of the social network in a small company with less than 50 employees will be obtained by interviewing management and employees through a questionnaire survey in both forms. The aforementioned semi-structured interview will be set up, which will be attended by the interviewer and the top manager. The aim of the interview will be to identify future strengths and weaknesses of the use of social networks in internal company communication. Based on the interview, a suitable social network, which the company could implement, will be recommended.

Methods

The method of data collection will be carried out using a questionnaire survey and semi-structured interviews. The questionnaire survey will take the form of online questionnaires and interviews will take place through the Microsoft Teams platform. Two interviews will take place with managers of two different companies. While one company already has an established online internal social network, the other company does not use any social network for communication.

In the semi-structured interviews, questions will be asked primarily with regard to the assessment of the positives and negatives of the implementation of online communication from the perspective of the company's manager. Furthermore, the respondents will be allowed to comment on the online communication in the company.

In addition, a total of two questionnaire surveys will be conducted. The aim of the first questionnaire survey will be to find out how social networks perform as a means of communication in the company and what benefits they provide. In this questionnaire survey, respondents will be asked a total of 11 questions:

Question 1: Are all employees located on the company premises?

Question 2: To what extent do your co-workers value your opinions?

Question 3: Do you think social networks speed up communication between employees and superiors?

Question 4: Do you think that social networks help with the marketing of a company?

Question 5: How satisfied are you with the supervision of you if the communication is conducted via social networks?

Question 6: Do you publish data on social networks that could affect the company's image or the company's marketing strategy?

Question 7: Are you satisfied with communication via social networks?

Question 8: Does communication via social networks improve your relations with co-workers and superiors?

Question 9: Which social network do you use the most and find reliable and easy to use?

Question 10: In your opinion, does communication via social networks contribute to the growth of work productivity?

Question 11: Do you think that thanks to the social network in the company, there is more openness among employees?

The aim of the second questionnaire survey is to find out the opinion on online communication within the company from the point of view of employees/users of social networks.

In this questionnaire survey, respondents will be asked a total of eight questions:

Question 1: What is your gender?

Question 2: What is your age?

Question 3: What is your job position?

Question 4: What field do you work in?

Question 5: Do you use social networks to perform work as an employee?

Question 6: As a manager, do you use social networks for work activities?

Question 7: If you are an employee, do your superiors use social networks for work?

Question 8: If, as a supervisor or employee, you use a social network for work, which social network do you use most often for your work?

Subsequently, the results of data collection will be analyzed and evaluated, graphically processed and the possible implementation of online social networks as a means of internal communication will be evaluated. For effective analysis of the use of social networks in companies, it is necessary to pay attention to the results of social network analysis (SNA), which use the CAWI method to identify the basic structural elements and relationships on social networks. Based on interviews and a questionnaire survey, the risks and benefits of social networks in the company will be identified.

Results

By enabling the flow of information or the dissemination of human opinions on social networks, SNA (Social Network Analysis) provides greater opportunities for creativity for individuals and companies, ensuring better use of the skills and knowledge of their employees, which is reflected in their greater motivation to work.

Interviews:

Interview 1: The interview was conducted with the manager of a company in which communication using social networks is already implemented. The questions focused on the use of social networks in the company, their benefits and possible risks associated with the implementation of social networks. In the case of the first interview, the respondent was a manager who works with a team of up to 15 members and works in a computer technology

environment. When asked whether social networks are a good tool to support communication, the manager clearly answered yes. It's about sending and forwarding files quickly, and recipients are motivated to respond faster. The manager stated that he uses the social network Messenger as a communication tool. According to him, the social network had a positive impact on relations between employees and the manager, when relations opened up and improved. He said that this communication makes employees more open to managers, as they have a sense of understanding and are used to using social networks. The manager assessed that he also perceives a positive impact on the growth of labor productivity, as people are motivated to work more thanks to a quick response from superiors. When asked whether the manager noted any risk associated with the use of internal social networks, he mentioned the loss of barriers at the level of the superior and the employee, which can lead to a very informal type of communication and a possible loss of authority in the superior. He sees another problem in personal profiles on social networks, where employees can look at the personal profiles of managers and vice versa. Both parties are therefore limited in their contributions and must carefully consider what they put on their profiles and how they present themselves there. The manager did not deny that the workers abused social networks during working hours, however, according to him, the employees are more satisfied, and happy to return to work.

Interview 2: The second interview was conducted with a top manager, who represents a company specializing in the production and installation of sunrooms in the field of construction. The company has 50 employees and has not yet established an internal social network as a tool for communication between managers and employees. As the reason for not introducing a social network, the manager stated the size of the company. The company is new on the market, so this step was not necessary. However, he associates the prosperity of his company is with the awareness of the need for early introduction of social networks as a means of communication within the company. The manager stated that they use a social network only for marketing purposes. When asked whether the company's profile on social networks increased the company's profit, he unequivocally said yes. In his opinion, the social network is the strongest influencer of human thought. Advertising on social networks is the cheapest tool and human reasoning is based on it, which may ultimately be the reason for buying a product or service. The manager assessed that communication via social networks will definitely lead to faster communication, but not to growth in labor productivity. This company deals in manual work, where a person cannot be persuaded to perform faster or output higher quality work through any social network, despite the fact that people are used to communicating through social networks. Regarding risks of implementing social networks, the manager cited the leakage of sensitive materials and information from the company, which could in some way affect the media image or marketing strategy of the company. Besides this, hosting, where the data is not under the direct control of the company, can also pose a risk. For example, there may be an outage and a potential customer will suddenly not find the company's website. He finds another risk in losing respect for managers, as communication on social networks is more of a chat of friends for many people. Thus, the supervisor can easily find himself in the position of a friend, when he is distracted and can be exposed to the employee's private information. The

manager stated that he does not think about the risk of information leakage through future established social networks. In his opinion, people today use social networks as a means of boasting personal success rather than publishing company intelligence. If an employee wants to disclose sensitive information about the company, he will do so, whether the communication is based on social networks or not. The manager stated that when implementing a social network in the company, he requires that the network be a fast communication tool, be open to all employees of the company and that employees can contribute their previous work successes. He imagines that the employee will have his profile, where he will enter his job position and career. The employee will be able to publish more detailed information about himself on the profile, such as his hobbies in his free time.

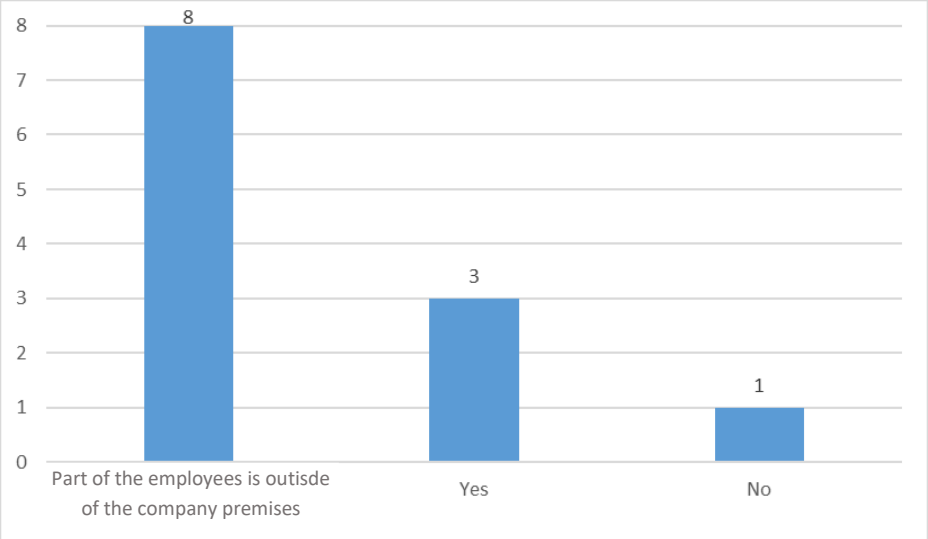
Survey research:

Questionnaire 1:

The questionnaire survey was created in order to find out how social networks perform as a means of communication in the company and what benefits they provide. The respondents here are managers and employees of various companies.

Figure 1 shows that out of a total of twelve respondents, eight respondents said that some employees travel outside the company. Three respondents replied that all employees of their companies were located directly in the organization and the remaining one respondent replied that he was not in the company.

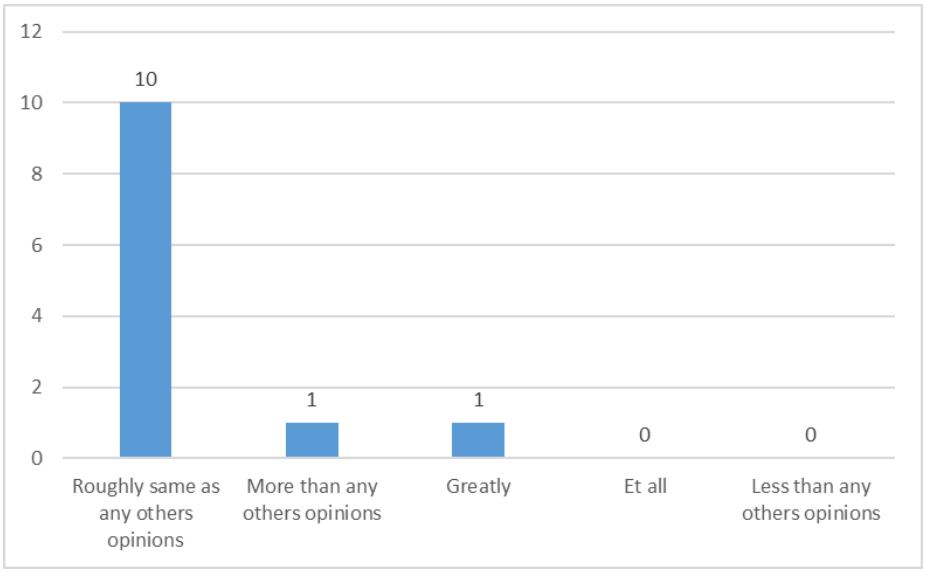
Figure 14: Question 1 Are all employees located on the company premises?



Source: Author.

To question no. 2 (see Figure 2), ten out of twelve respondents answered that co-workers value their opinions roughly as much as the opinions of others. One respondent answered this question that his opinions are highly valued by his co-workers and the other one that his is valued more than the opinions of others.

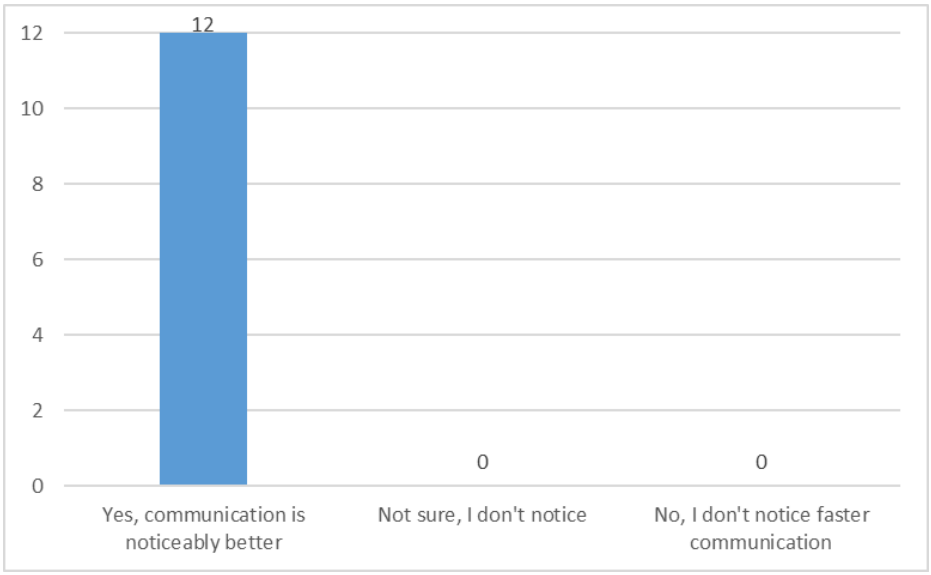
Figure 15: Question 2 To what extent do your co-workers value your opinions?



Source: Author.

Figure 3 shows the frequency of respondents' answers to the question whether, in their opinion, social networks speed up communication. Here, all twelve respondents agreed on the answer that communication through social networks is noticeably faster.

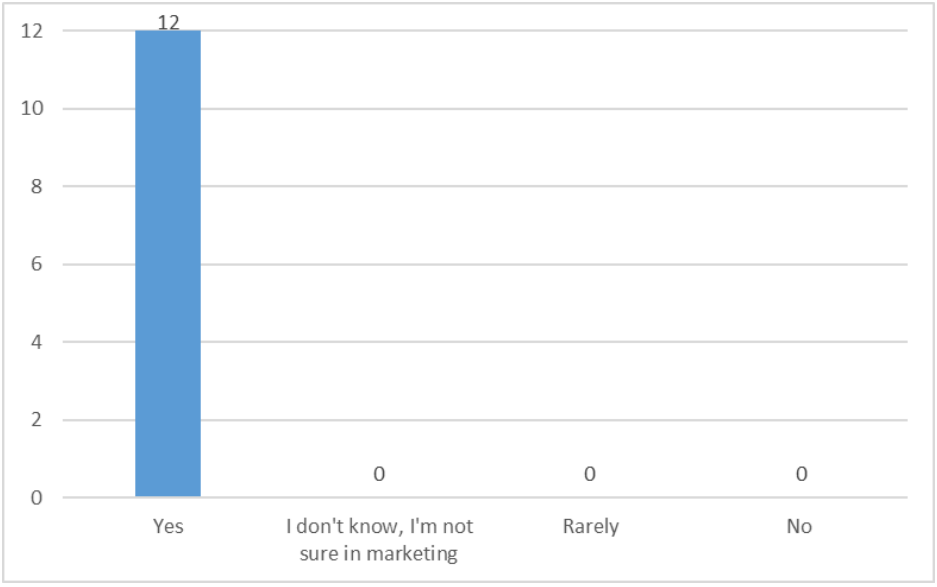
Figure 16: Question 3 Do you think that social networks speed up communication between employees and superiors?



Source: Author.

Question no. 4 (see Figure 4) was devoted to management, where we asked whether the respondents thought that social networks also help management. Again, the respondents agreed on the answer yes, with a total number of 12 of them.

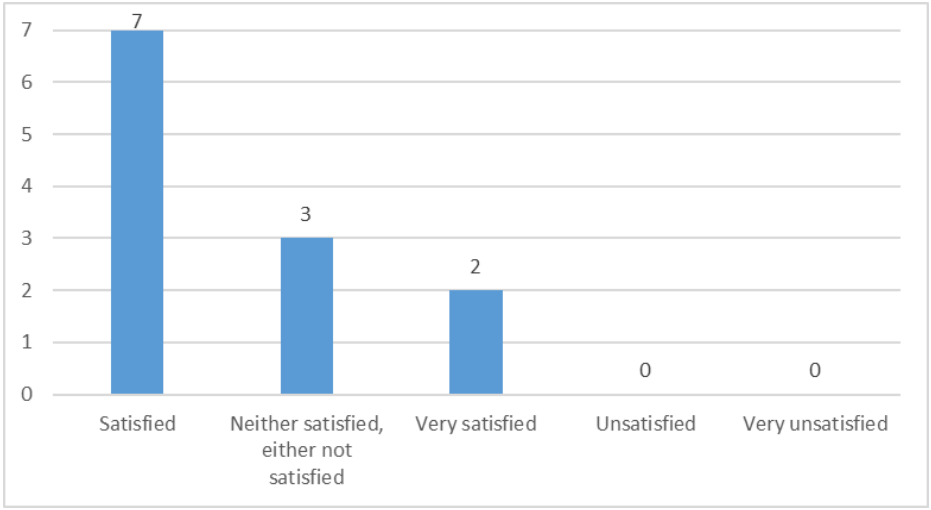
Figure 17: Question 4 Do you think that social networks help with the marketing of a company?



Source: Author.

Figure 5 shows how satisfied the respondents are with the supervision conducted through social networks. Nine respondents answered very satisfied or satisfied. The other three replied that they were neutral, therefore neither satisfied nor dissatisfied.

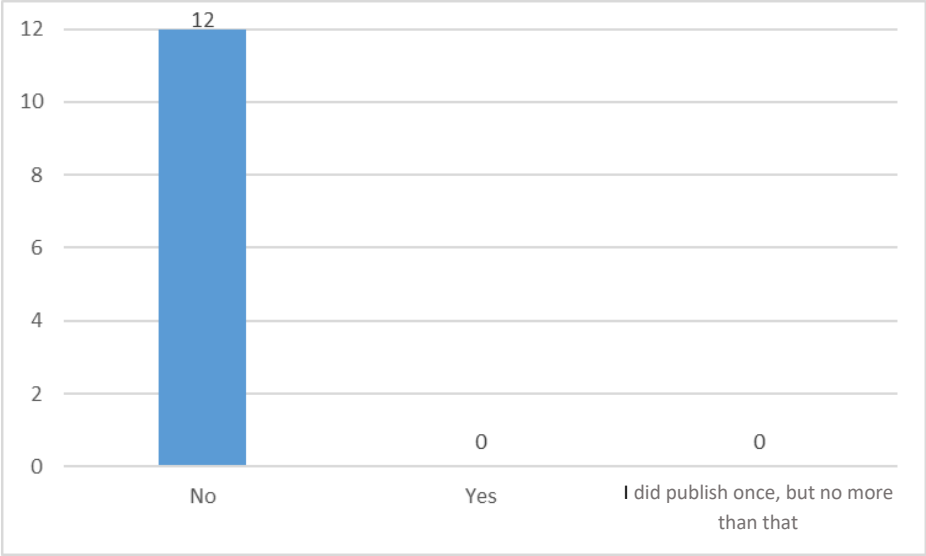
Figure 18: Question 5 How satisfied are you with the supervision of you if the communication is conducted via social networks?



Source: Author.

In the case of question no. 6, all respondents agreed that they do not publish data on social networks that could in any way affect the media image or marketing strategy of the company (see Figure 6).

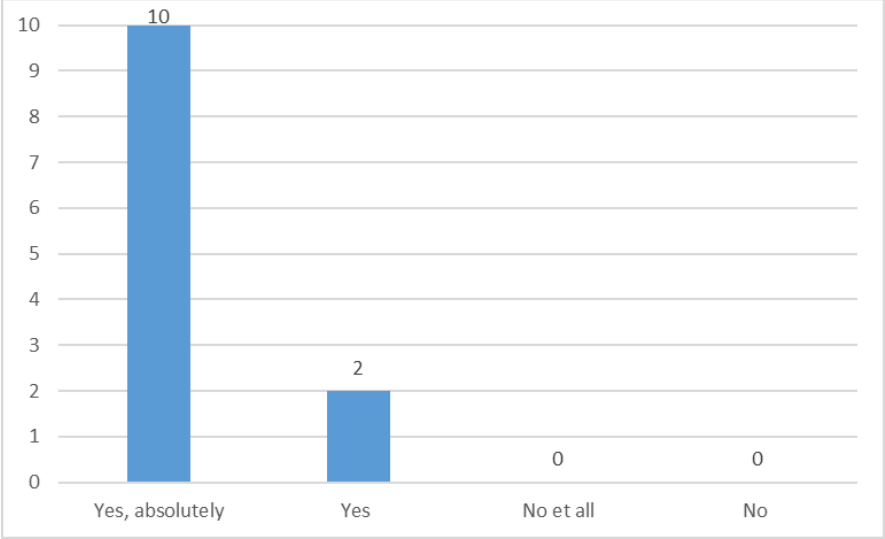
Figure 19: Question 6 Do you publish data on social networks that could affect the company's image or the company's marketing strategy?



Source: Author.

Figure 7 and the bar graph of the frequency of responses shows how satisfied the respondents are with communication via social networks. Here, ten respondents answered that they are very satisfied with communication via social networks and the other two respondents answered satisfied.

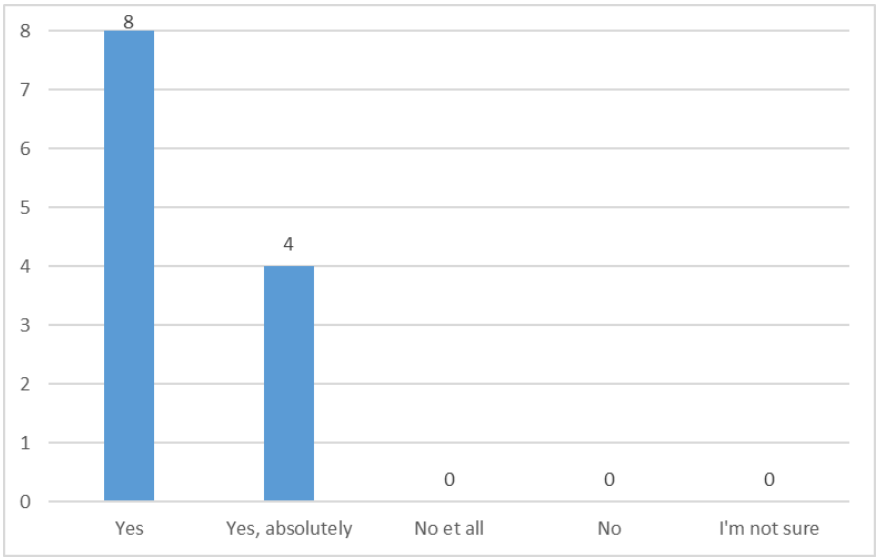
Figure 20: Question 7 Are you satisfied with communication via social networks?



Source: Author.

Question 8 (see Figure 8) was answered by eight respondents that social networks help to improve relations with co-workers and managers. Four respondents answered yes and very much. None of the respondents chose a negative answer.

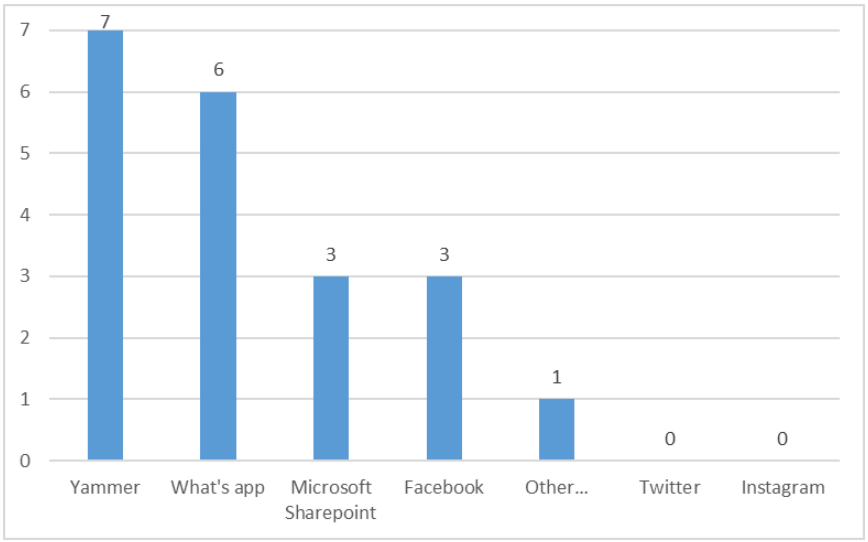
Figure 21: Question 8 Does communication via social networks improve your relations with co-workers and superiors?



Source: Author.

Figure 8 shows which social network respondents prefer and use the most and consider it reliable and simple. The most used, reliable and simple social network is the Yammer social network for seven respondents. The social network WhatsApp was chosen by six respondents. Three respondents chose the Microsoft Sharepoint network and the other three respondents chose Facebook.

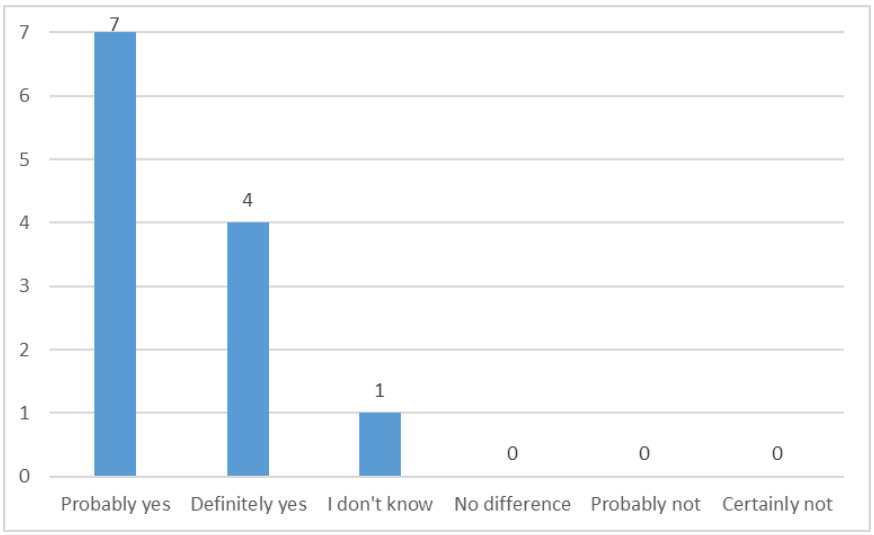
Figure 22: Question 9 Which social network do you use the most and find reliable and easy to use?



Source: Author.

Figure 10 shows the frequency of answers to the question of whether respondents consider social networks to contribute to work productivity. Seven respondents said they probably do. Four respondents are confident and chose the answer yes, and the remaining one respondent said they did not know.

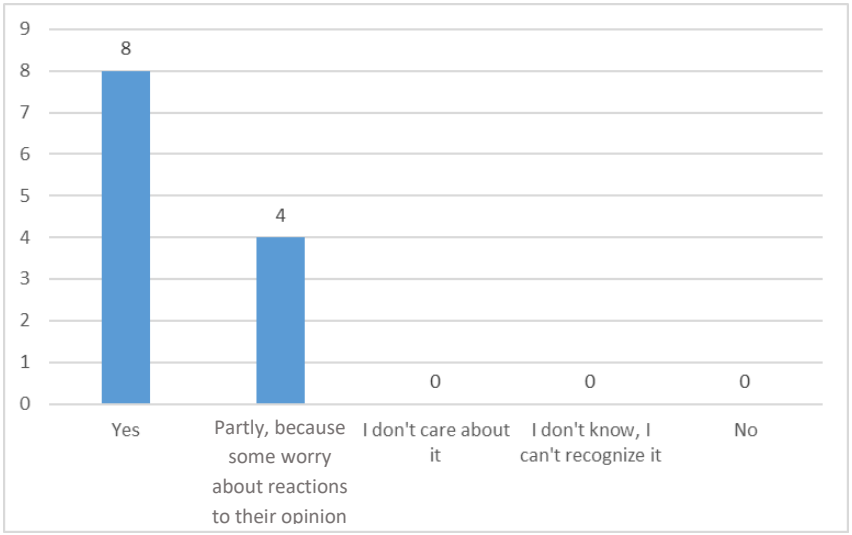
Figure 23: Question 10 In your opinion, does communication via social networks contribute to the growth of work productivity?



Source: Author.

The last, 11th question focused on whether the respondents feel greater openness of employees and superiors thanks to communication via social networks. Eight respondents answered yes and the remaining four answered partially yes, as some are afraid to express their opinion (see Figure 11).

Figure 24: Question 11 Do you think that thanks to the social network in the company, there is more openness among employees?

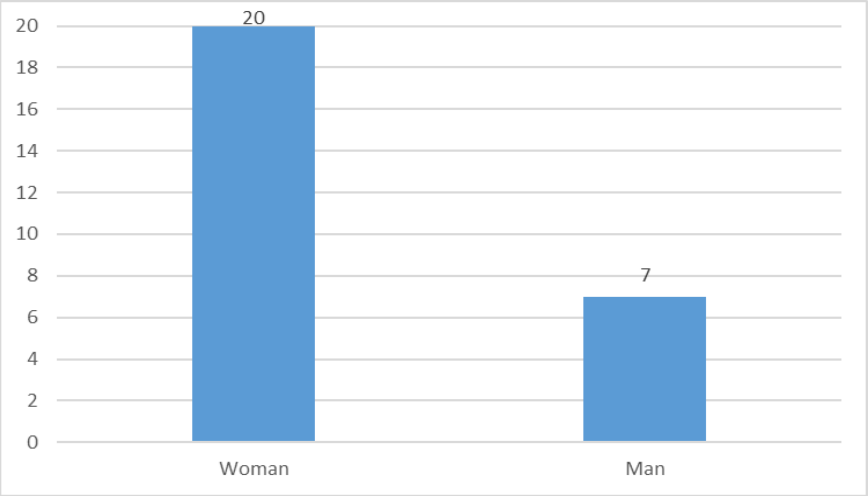


Source: Author.

Questionnaire 2:

The focus of the second questionnaire was on social network users. Here, the total number of respondents varied, as some questions were not required to answer. Women outnumbered men in the questionnaire survey, as there were only seven men who answered the questionnaire and twenty women (see Figure 12).

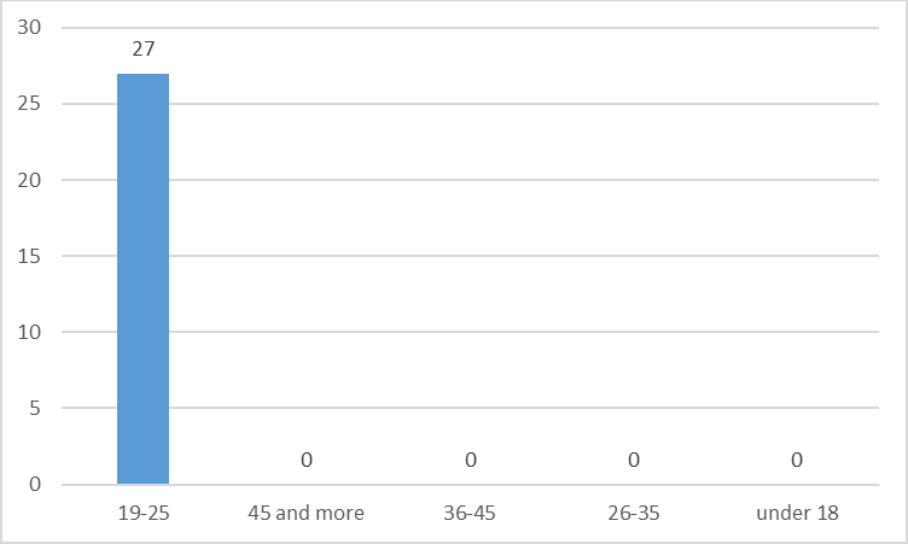
Figure 25: Question 1 What is your gender?



Source: Author.

According to Figure 13, the age group of all twenty-seven respondents is on a scale of nineteen to twenty-five years.

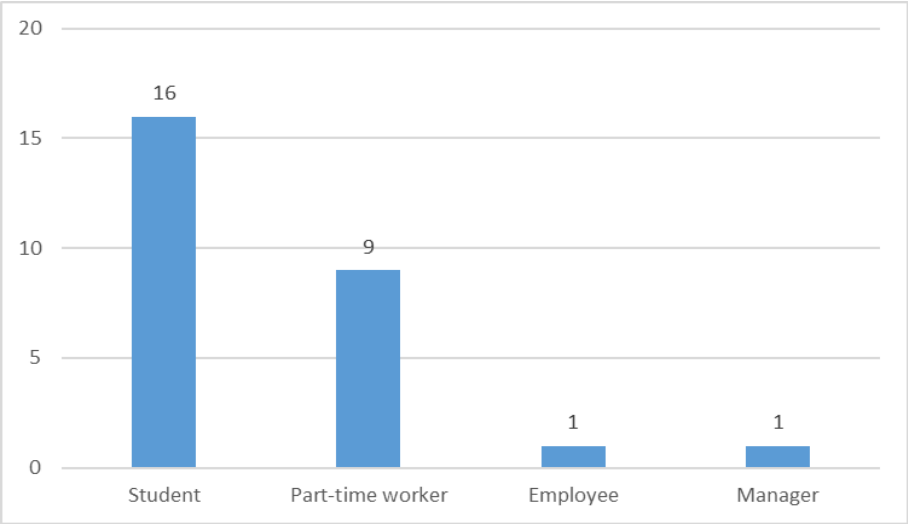
Figure 26: Question 2 What is your age?



Source: Author.

To question no. 3 (see Figure 14), sixteen respondents out of twenty-seven answered that their job is only to study, so they have no job or part-time job. Nine respondents are in the position of a part-time worker, one respondent is a full-time employee and the remaining one respondent is a manager.

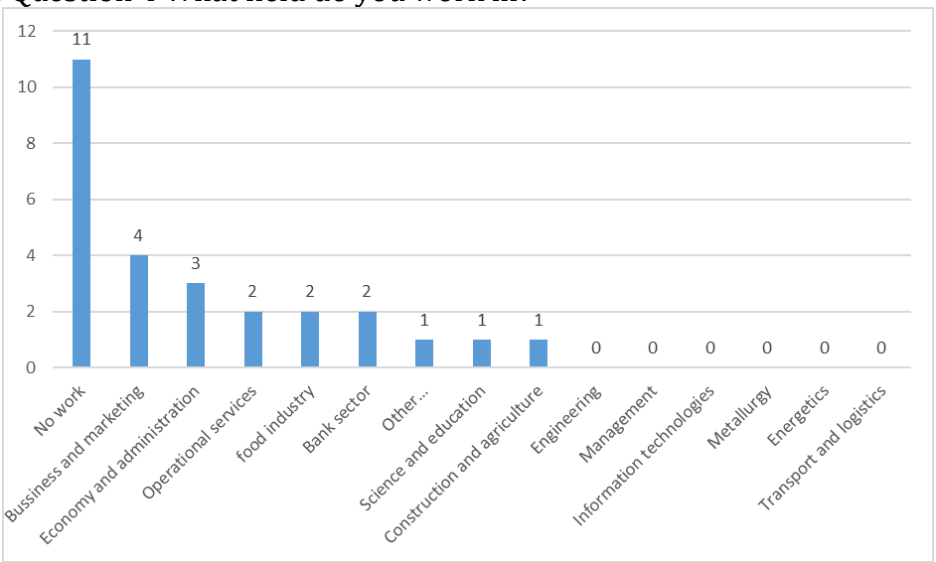
Figure 27: Question 3 What is your job position?



Source: Author.

Figure 15 shows where the respondents work. Eleven respondents answered that they do not currently work anywhere. Four respondents chose the answer trade and marketing, where there are positions such as warehouse worker or sales assistant. Three respondents answered that they work in economics, human resources and administration. Two respondents work in the field of services and another two in the field of food. Banking, finance and insurance were chosen by two respondents. One respondent works in construction and agriculture, another respondent works in the field of science, education and sports, and the remaining one respondent chose other fields of work.

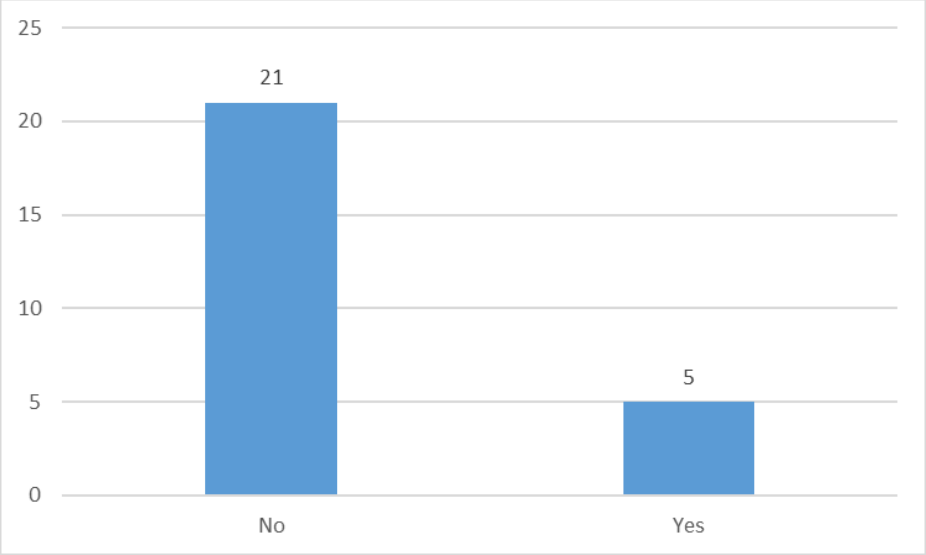
Figure 28: Question 4 What field do you work in?



Source: Author.

Of the twenty-six respondents, twenty-one answered no and five respondents answered yes to question no. 5, whether they use social networks for work activities (see Figure 16).

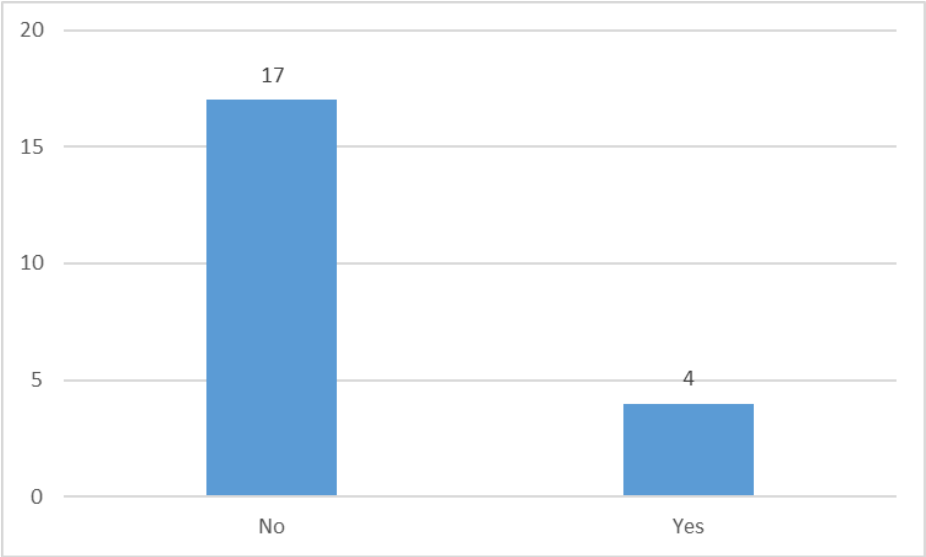
Figure 29: Question 5 Do you use social networks to perform work as an employee?



Source: Author.

Figure 17 shows whether the respondent, as a manager, uses social networks. Seventeen out of twenty-one respondents answered no and four voted yes.

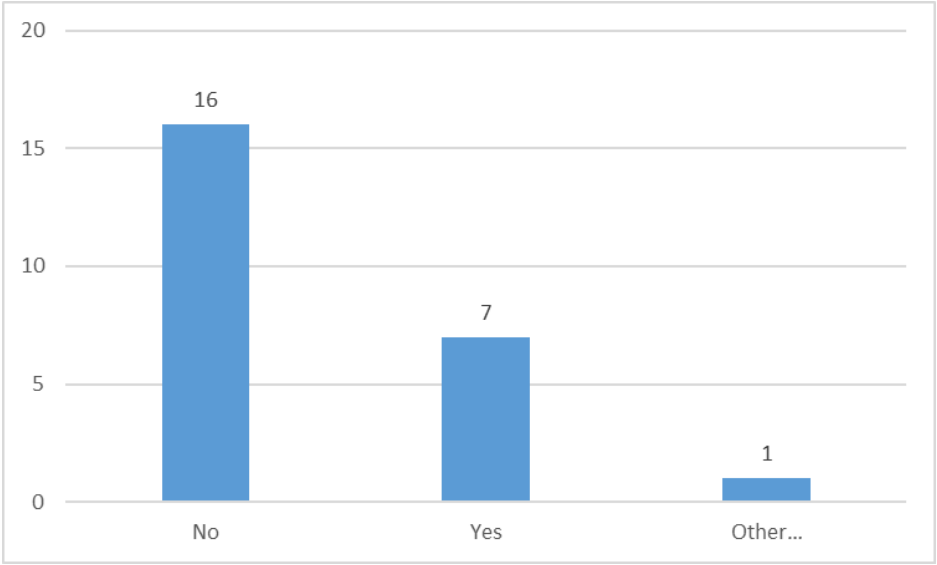
Figure 30: Question 6 As a manager, do you use social networks for work activities?



Source: Author.

Question No. 7 (see Figure 18) deals with respondents who are employees. The question is whether their superiors use social networks for work. Of the twenty-four respondents, sixteen answered no, seven said yes, and one stated other.

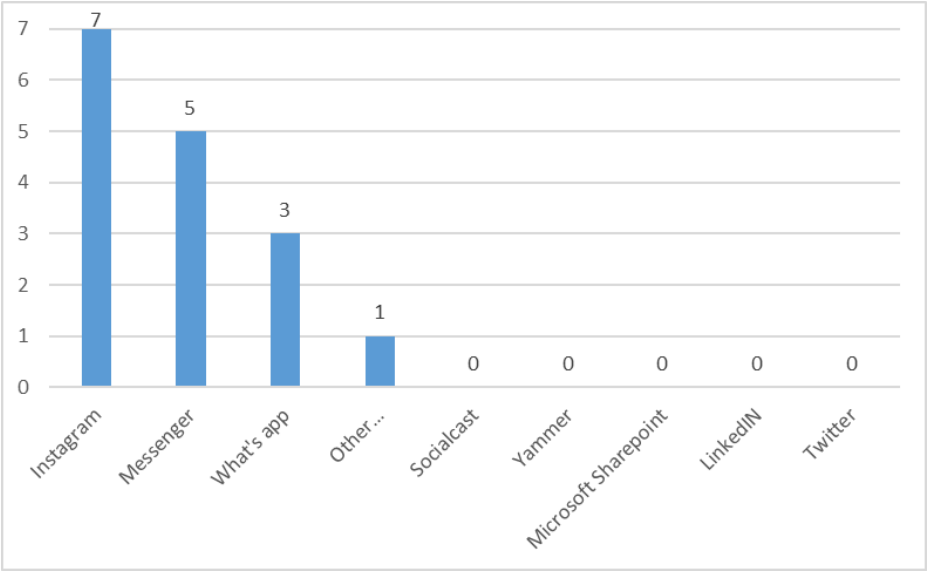
Figure 31: Question 7 If you are an employee, do your superiors use social networks for work?



Source: Author.

Figure 19 shows which social network the respondent uses for his work. A total of sixteen respondents answered this question. Seven respondents use the social network Instagram for their work. Five respondents use Messenger, three WhatsApp and one respondent mentioned another social network.

Figure 32: Question 8 If, as a supervisor or employee, you use a social network for work, which social network do you use most often for your work?



Source: Author.

Discussion

The interviews and the questionnaire survey show that respondents have a positive view of the use of social networks and perceive them as a benefit for communication in companies. No respondent had a negative view of social networks and encountered any risks using social networks. The interviews and the questionnaire survey helped to answer research questions from the methodological part of the work:

1) From a management point of view, does the use of social networks in internal company communication contribute to the growth of work productivity?

The manager, in the form of the first respondent of the semi-structured interview, stated that social networks in his company contribute to work productivity. The manager of a company producing aluminum structures stated that the main factor here is manual work, which is not based on communication, but on the physical activity of employees, so the social network does not affect work productivity. The questionnaire survey showed that respondents are of the opinion that social networks are most likely to contribute to the growth of work productivity. When it comes to manual work or physical activity, it can be said that social networks do not affect work productivity in any way. For non-manual activities, social networks generate higher employee productivity by optimizing better use of their knowledge, experience and skills. This is made possible primarily by the speed of communication and the wide possibilities of sharing expertise, files and information between all employees, which has a positive effect on their work performance.

2) Does the use of social networks in internal company communication contribute to better interpersonal relationships in the workplace?

Interview 1 and a questionnaire survey showed that communication via social networks has an impact on interpersonal relationships in the workplace. They allow employees to be more open, making it easier for them to discuss their ideas or comments and to receive the opinions and comments of colleagues or superiors. To a certain extent, this eliminates the social barrier between employees, or between employees and the company's management, and conversely, creativity and efforts to innovate are strengthened. The respondent who was interviewed said that employees are more open due to this communication and that their relationships have improved, as employees feel understood and more comfortable communicating via social networks. This statement was also confirmed by the questionnaire survey, where all respondents answered "Yes" or "Partly yes" to the question whether the social network contributes to better interpersonal relationships in the workplace. It is therefore possible to positively evaluate the impact on interpersonal relationships of workers.

3) What possible risks for the company may arise in connection with the use of internal social networks?

The IT manager mentioned the risk of losing respect. He also sees a problem in personal profiles on social networks, where employees can examine the profiles of superiors. Subordinate profiles may contain inappropriate content in the form of personal

information, so it is important what both parties put on social platforms. The manager is not aware of any leakage of information that could affect the good name of the company. Checking the available information on open social networks confirmed this data. This is a positive piece of information for the manager, as he sees that employees are aware of the responsibility for the company's sensitive materials. The manager of a construction company sees a potential risk after the implementation of social networks in the leakage of sensitive information that could affect the media image or marketing strategy of the company. He mentioned the risk in hosting, where customers may decrease in the event of an outage. This manager again sees the risk of loss of respect here, as social networks are more of a chat between friends. To reduce this risk, it is important to keep the conversation going at a correct level.

4) What social network is the best choice for a small business with less than 50 employees?

Based on an interview conducted directly with the top manager of the organization and the results of a questionnaire survey, the best solution for the company is to choose a cloud service offered by the Yammer social platform. Yammer is a relatively lesser-known social platform, as its goal is not marketing and reaching customers, as is the case with Instagram or Facebook. Yammer is a social networking tool that enables the involvement of all people in an organization. It provides a connection to your work team, where your communication is completely secure and visible only to people in your organization. Yammer has the advantage of allowing better management of the results of social network analysis and also has integrated tools that allow, for example, the recognition of moods among employees. It is not financially demanding to acquire and the user has control over the management of the hardware infrastructure.

Similar research has been conducted by Brennecke and Rank (2017), who use a multi-level network approach to examine how a company's knowledge network affects the work interactions between its inventors. Empirically, they combine data from surveys of 135 inventors working in a multinational high-tech company with information derived from the company's 1,031 patents. The results of multilevel exponential graph models show that the various dimensions of inventors' knowledge derived from the knowledge network shape their incorporation into the counseling network in unique ways. Research shows how the structural features of a company's knowledge pool affect the interpersonal interactions between its inventors, thereby influencing the in-house dissemination of knowledge and the social process of generating innovation. Ove (2019) examined the potential of using social media to achieve a higher degree of efficiency in managing innovation in a corporate context. The findings were based on practical observation of employee behavior in the real world in the context of the organization, contributing to a better understanding of when and how to use online social media tools in organizations. He also clearly shows that the implementation of new IT systems in organizations is not just a fabrication of today's modern age, but promotes interpersonal relationships in the workplace and employee productivity. The paper concludes with a recommendation to create an innovative supportive organizational culture as a prerequisite for effective online use of social media in companies.

The findings show that the transfer of internal company communication to the sphere of social networks seems inevitable, as this trend is rapidly spreading among companies. One of the key features of internal social networks is real-time communication and the possibility of close cooperation between employees. Another identified feature of social networks is easy availability and portability (mobile phones, tablets). An important bonus of the implementation of social networks in the corporate environment is the fact that employees are already used to social networks and can work with them. Based on the results of the research, it can be said that social networks contribute to labor productivity and to the formation of better interpersonal relationships within the company. In this context, the priority is the security of corporate data, especially in the event of information leakage and identity theft on social platforms.

The research will be beneficial for corporate managers who are considering the implementation of social networks in the company. The results of the research questions will help answer their questions about the benefits and risks associated with the use of social networks as a means of communication in the company.

Conclusion

The aim of this research was to analyze social networks as a means of communication in organizations. Research of theoretical literature and methodology of academic work was performed, based on finding answers to set out research questions. Through interviews and a questionnaire survey, data were collected and then processed and analyzed in detail. The discussion of the results was based on the obtained data, thanks to which the research questions were answered and an overall evaluation of the research results was performed.

The results show that the use of social networks as a means of communication has a positive impact on interpersonal relationships in the company, contributes to greater openness of employees and helps to communicate faster. The risk that arises from this research is the leakage of information that can harm the company and the risk of violating the authority of a superior. The limits in research occur when the company focuses only on manual work and employs workers who work exclusively manually. Follow-up research could be focused on cross-sectoral comparisons of the degree of impact of the implementation of communication through the social network on individual aspects of workplace relations.

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Contact address of the authors:

Ing. Jiří Kučera, University of Žilina, Faculty of Operation and Economics of Transport and Communications, Department of Economics, Univerzitná 8215/1, 01026 Žilina, Slovakia, e-mail: kuceraj@mail.vstecb.cz

Miloslava Smolková, bachelor student, Institute of Technology and Business in České Budějovice, School of Expertness and Valuation, Okružní 517/10, 370 01 České Budějovice, Czech Republic, e-mail: 27356@mail.vstecb.cz

DOI: https://doi.org/10.36708/Littera_Scripta2022/1/4

Current trends in e-marketing – empirical analysis of selected social platform

Bohdana Lukach[1], Yaroslava Kostiuk[1,2]

[1]Institute of Technology and Business in České Budějovice, Czech Republic
[2]University of Žilina, Slovakia

Abstract

The issue of e-marketing communication is currently very topical since today, in the time of the rapid development of digitization processes caused by the coronavirus crisis, it is an important part of business operation. As a result, it is important for businesses to consider which strategy to choose in order to achieve a long-term prosperity. Nowadays, the cooperation with influences is highly effective, since by means of sharing and recommendations on social platforms, they may present a given product or service to the public. The objective of the paper was to determine the criteria for the optimal selection of a candidate to represent a business in the online environment. In order to achieve the objective, there was used a dataset consisting of 504 representatives engaged in influencer activities at the beginning of the year 2020, when the first wave of the Covid pandemic appeared in the Czech Republic. The data were processed using the mathematical methods – Sturges rule and calculation of the width of the interval in order to divide the criteria according to the frequency. Based on the results, businesses are recommended to choose based on the data on the number of Comments and reactions from the influencers´ followers. The benefit of the given research in practice is mainly in determining the marketing strategy and in applying the identified criteria in the decision-making process concerning the selection of the most suitable online representative. The proposed methodology enables the businesses to optimize the costs of the promotion of their products, services, and brand itself.

Keywords: innovations, marketing communication, consumer, influencer, marketing

Introduction

In current turbulent times, in the times of large development of technologies, marketing management reaches a new level. If a company´s efforts are focused on building up a market presence as well as the long-term prosperity, its marketing goals and strategies need to be constantly improved. Nowadays, there are many ways in the business world for as good public presentation of the company as possible. A successful company needs to keep its products, services, and its brand in the customers´ awareness, as it enables the company to build up the value of its brand. From the customers´ perspective, the value of a brand arises if the customers are well aware of a given brand, i.e. they are well informed and have strong positive associations with the brand (Keller, 2007). This applies for both current and potential consumers. A company can choose from a number of various effective methods for marketing communication.

Of course, the more modern and original method, the more effectively it becomes known to its surroundings, since over time, consumers gradually become more resistant to certain marketing influences. The purpose of marketing should be a sensitive and easy integration of advertisements in the interest groups of a specific target group (Procházka and Řezníček, 2014). There are thus various trends within marketing communication. If a given trend works, it is gradually adopted by mainstream entities (Pollák and Markovič, 2021b). Thanks to these trends, companies are trying to keep up with the time and constantly reach new consumers and retain the current ones. Therefore, marketing campaigns must correspond to the determined communication goals. This could be e.g. raising product awareness, influencing consumer attitudes or increasing brand loyalty (Karlíček, 2018).

One of the most up-to-date forms of marketing is Influencer Marketing (IM). Influencer Marketing is considered a hybrid of old and new marketing tools (Strejc, 2020). Basically, it is about influencing consumers with the help of people who are well known in the media and are able to promote the product of a given company. A company as a communication resource is not very interesting for the public (Přikrylová, 2019). IM is a widespread method e.g. in tourism, where influencers most often cooperate with companies on the basis of barter agreements. Influencer Marketing is popular in many other industries, e.g. in selling cosmetic products or food products. In terms of geographical location, this method is most commonly used in US; however, it is becoming increasingly popular even in the Czech Republic. As for the method of communication, the most popular one is through social platforms, such as Facebook, Instagram or TikTok.

The knowledge of the trends in the area of marketing communication enables companies to choose the right direction in determining their marketing strategy and subsequent communication with customers. The objective of the contribution is to find out which method could be used for companies to verify their criteria of selecting optimal alternative of a representative for promoting their brand both from the financial point of view and the perspective of effectiveness of the cooperation with the chosen representative.

Currently, in the times of global economic crisis, the knowledge of trends and challenges in the area of marketing communication represents a chance for a company to survive. Marketing management in companies is no longer working only in the traditional way only, i.e. one-way, from the company to the customer, but also vice versa, where a new trend are the rich consumer experience on the internet, based on which new customers have enough information to decide whose product or service they will buy in the future.

The implementation of marketing activities on various platforms in the online environment is characterized by various observations. The digital environment is playing an increasingly important role in customer decision-making (Soviar et al., 2019). It is also a place for sharing opinions and experience with a specific company, where a dissatisfied customer can pose a risk to the reputation of the company (Pollák and Markovič, 2021a).

The main advantage when using Instagram as a platform is advertising through photos. People prefer advertising through photos to written text. This also applies to TV advertising. It was found that in 2019, US consumers spend more time on their mobile devices than watching TV, which averaged more than 3.5 hours a day. An interesting fact is that the time spent listening to digital audio and watching videos represents the largest share of time spent on social media (Levin, 2020). Consumers are looking for even easier ways to get information, and nowadays, mobile devices are the means they prefer they prefer and use. That is what makes Instagram so popular (Sammis, Lincoln and Pomponi, 2015). It is probably influenced by today´s fast-paced times, when people are not willing to spend time reading advertisements, if there are other means to obtain information quickly. Before going to bed, consumers watch over a thousand of advertisements (Brown and Hayes, 2008). This is the answer to the question of why it is so important to accelerate the transformation of information to consumers. Moreover, this form of promotion is much more interactive than written text. Research conducted by Meiselwitz (2019) found that brands use social media platforms, such as Instagram, to bring their products on the market to a growing number of consumers by means of a high frequency of targeted posts that influence customer emotions.

Based on the aforementioned findings, it can be confirmed that consumer emotions are more easily influenced by photos than by text. An important milestone were InstaStories that emerged in 2016 (Mikulíková and Machovec, 2019). They provided even faster transfer of information to the users of this social platform users.

The fact that people prefer faster methods of obtaining information is reflected also in the behaviour of consumers on social networks. Customers prefer faster reactions to sharing, by means of “likes”. On the basis of data from the web Sintera (Kubizňák, 2020a), we can see a percentage of reactions by means of “likes” and comments. The data are for the period of one month, specifically May 2020. The number of reactions to posts by means of “likes” was 50,39 mil and 3,17 mil. by means of comments. In percentage, “likes” accounted for 94.09%, which is the vast majority of the total reactions. It shows that

respondents prefer a faster way of transfer of information in both directions. It is undeniable that the digital revolution has changed the way marketing communications are presented and perceived (Egan, 2014).

Since its beginnings, Instagram has become a very interesting marketing channel focused mainly on the visual content. In the Czech Republic, it has more than 2,6 million users, and more than 1 billion users worldwide (Kubizňák, 2020a). A huge number of people can be reached and influenced by means of social networks in a very short time (Jahnke, 2018).

When focusing on the classification of the data obtained from Sintera by gender (Kubizňák, 2020b), it can be seen that the representation of men and women in the case of Instagram users is equal (50 % to 50 %). Companies that aim to start influencer marketing need to know which audience to reach (Matthews, 2013). The issue of targeting is an essential part of the development process of efficient marketing communication campaigns (Yeshin, 2012). In the case of a similar gender representation, it is recommended to choose a content of company communication that will be interesting for both men and women. However, according to Mediar statistical data (Médiář, 2021), it is not the case. In the Czech Republic, the strongest categories on Instagram are those targeted at female users or followers. About 25 % of contributors are focused on beauty and fashion, then yoga and fitness (9.3 %) and travelling (6.8 %) (Médiář, 2021). This means that the two most common categories are focused mainly on female users.

To select a correct marketing communication strategy in the area of Influence marketing, it is important to compile a data overview and determine the target group. If a company is able to choose correct target segment, it can choose, based on the statistical data, the most suitable influencer both for the company and the brand. Important data to be considered are e.g. the number of followers of the given influencer, the categories of his/her posts, relations and other parameters. Based on the data obtained from the server Sintera (Kubizňák, 2020b), it can be seen that the respondents use Instagram mostly in their free time, either after work or at weekends. In the morning, late evening or at night, the activity decreases. Using the information, the company can determine the conditions for the cooperation with the influencer, e.g. posts mostly in the most popular time. Properly established cooperation with instagrammers brings the best possible results for an optimal price (Kubizňák, 2020b). When choosing an Instagram influencer, it is necessary to consider the relations of posting, but it is not the most decisive factor. It is good to keep in mind that high frequency of contribution does not necessarily lead to desired objective. This is confirmed by the data from Sintera (Kubizňák, 2020a), which show that first ten most important influencers (according to the number of followers) post on average 14 posts a month. It is thus irrelevant whether the influencer posts five more posts, since despite of this, they might not get to the Instagram users.

When determining the target segments, companies often use a strategy also known as targeted marketing (Camilleri, 2018). Using targeted marketing is a key step for a company, based on which it may decide for the cooperation with a specific influencer.

The main factor in choosing an influencer is mainly his/her basic group of followers, the category in which he/posts, and also the number of followers. When selecting an influencer, it is recommended to have an overview of the number of his/her current followers, about his/her ability to attract new followers, but the information about who is gradually losing his/her followers is equally important. Based on the data from the server Sintera, when focusing on the size of the followers´ platform within the Czech market (Kubizňák, 2020a), it shows that the largest platform contains 1,7 million followers. The top ten most followed influencers have on average 1 million followers. When selecting a follower, the company must also consider the costs of the cooperation with the specific influencer with such a large number of followers. It is obvious that a higher number of followers is reflected in the costs of the influencer´s work. For the company, the question is whether the company is willing to pay more for the cooperation with a popular influencer. On the other hand, it is not a general rule that the cooperation with less popular influencer means lower profits. In practice, it is often the other way round. Until a not-so-well established influencer fits into the marketing strategy of the company, the cooperation with him/her might be very inefficient (Kubizňák, 2020b).

Based on the literary review, it can be seen how important it is for the company to correctly determine the target segment of customers, to determine the acceptable amount of costs, and only then to choose an influencer who would best represent the specific company. Therefore, the objective of the paper is to propose a method which companies could use to verify the criteria of selecting a future representative of their products. Following the objective of the paper, one research question is formulated: Which of the criteria provide the most accurate information about the representatives?

Methods and Data

As part of the research aimed at analysing the decisive criteria for selecting representatives of a company, the basic data source is the dataset from the analytical company Sintera (Kubiňák, 2020). The dataset consists of 504 most followed Czech and Slovak influencers (units) on the social platform Instagram. The dataset also includes additional information on the influencers, such as the number of their followers, the number of posts and reactions to the posts. The dataset is processed in MS Excel (version 2019). Within the time interface, the data from May 2020 will be used, i.e. from the time of the first wave of the pandemic, when the reactions of companies and consumers were the most unpredictable in the history of online platforms. In the paper submitted, the method of scientific analysis is used. The methodology of the research includes:

1) Exclusion of units with zero reactions and zero comments from the given dataset.
2) Using the function *LARGE* and *SMALL*, *first and second, the highest and the lowest statistical observation* from the column *Comments and reactions.*
3) In the next step, the calculation of Sturges rule *1+3.3*LOG(n*) is used to determine the number of intervals, where the value *n* is replaced by a *total number of units* cleansed by zero statistical observations from the column *Comments and reactions.*
4) Subsequently, the width of the interval is calculated. Since the first and the second highest statistical observation show a large interval between them, the width of the interval is calculated by means of the second highest statistical observation from the column *Comments and reactions.* The width of the interval is calculated as follows:

$$Width\ of\ interval = \frac{(second\ highest\ statistical\ feature - first\ lowest\ statistical\ feature)}{number\ of\ intervals\ (calculated\ using\ Sturges\ rule)} \quad 1)$$

5) For better data clarity, the result of the calculation is rounded.
6) We will compile a table of intervals according to the calculated width and the number of intervals. Then we calculate the frequency.
7) To determine the most suitable influencer, we will use the column of the absolute frequency. Absolute frequency is calculated using the function of *FREQUENCY*. Similarly, the absolute frequency of statistical observations from the column *Followers* and *Posts* is calculated.

Based on the above method, it is possible to determine which criteria provide the companies with the most relevant information about the potential representatives of their brand. As part of the research, a response for the following research question will be sought: Which of the given criteria (Comments and reactions, Followers, and Posts) provides the most accurate information on the representatives?

Results

Based on the applied method, it was possible to find that the highest number of influencers (423 out of 504 units) had 0 – 272,191 Comments and reactions from their followers in their profiles, in the category Comments and reactions. The analysis of the number of followers showed that most influencers have 0 – 156,344 followers. An exception was an influencer who was followed by 1,701,702 followers within the monitored period. Another finding was that most influencers posted 0 – 7 posts. There was also an exception of two influencers, whose number of posts in the monitored period was more than 64 units.

Subsequently, a frequency analysis was performed by the intervals for the statistical observation *Comments and reactions* presented in Table 1.

Tab. 1: Frequency by intervals for statistical observation Comments and reactions

Intervals		Absolute frequency	Relative frequency	Relative frequency in percentage
1-	272191	423	0.898089172	90%
272192-	544383	33	0.070063694	7%
544384-	816575	8	0.016985138	2%
816576-	1088767	3	0.006369427	1%
1088768-	1360959	0	0	0%
1360960-	1633151	1	0.002123142	0%
1633152-	1905343	2	0.004246285	0%
1905344-	2177535	0	0	0%
2177536-	2449727	0	0	0%
2449728+		1	0.002123142	0%
In total		471	1	100%

Source: Author based on Kubizňák (2020a).

The data in Table 1 show the total number of data and reactions of the statistical observation *Comments and reactions* with 471 units. The absolute frequency is thus 471, which is then distributed among the individual intervals in the range calculated by means of Sturges rule and also the calculation of the width of the interval mentioned in the Data and Methods chapter. Based on the results obtained, it can be determined the percentage share of the individual posts in the relative frequency in individual intervals.

Table 2 presents the results of the frequency analysis by intervals for the statistical observation *Followers.*

Tab. 2: Frequency by intervals for statistical observation Followers

Intervals		Absolute frequency	Relative frequency	Relative frequency in percentage
0-	156344	319	0.677282378	68%
156345-	312689	86	0.182590234	18%
312690-	469034	31	0.06581741	7%
469035-	625379	19	0.040339703	4%
625380-	781724	7	0.014861996	1%
781725-	938069	4	0.008492569	1%
938070-	1094414	3	0.006369427	1%
1094414-	1250759	0	0	0%
1250760-	1407104	0	0	0%
1407105-	1563449	1	0.002123142	0%
1563450+		1	0.002123142	0%
In total		471	1	100%

Source: Author based on Kubizňák (2020a).

Table 2 shows the data on the statistical observation *Followers* with 471 units, which is analogous to the previous criterion *Comments and reactions.* The total number is the same for all statistical observations. Based on the results of the percentage distribution of the relative frequency, it can be seen that the data are more distributed among individual intervals. However, the first interval still contains more than 50 % of the total number of units, as in the case of the category *Comments and reactions*.

The last analysis within the given research was aimed at the frequency by intervals for the statistical observation *Posts.* The results are presented in Table 3.

Tab. 3: Frequency by intervals for statistical observation Posts

Intervals		**Absolute frequency**	**Relative frequency**	**Relative frequency in percentage**
0-	7	167	0.354564756	35%
8-	15	165	0.350318471	35%
16-	23	72	0.152866242	15%
24-	31	38	0.080679406	8%
32-	39	20	0.042462845	4%
40-	47	5	0.010615711	1%
48-	55	1	0.002123142	0%
56-	63	1	0.002123142	0%
64+		2	0.004246285	0%
In total		471	1	100%

Source: Author based on Kubizňák (2020a).

Table 3 shows 471 units for the statistical observation *Posts*. As seen from the table, the first two intervals in the column Relative frequency in percentage have a similar number of units; moreover, the units are distributed among intervals. The first three intervals contain the majority of the units. The following part of the paper focuses on the more detailed analysis of the findings and their implementation in practice.

Discussion

Within the research, we were looking for the answer to the formulated research question: Which of the criteria (*Comments and reactions*, *Followers*, and *Posts*) provide the most accurate information about the representatives?

Based on the performed analysis, we were trying to find out which frequency by given intervals was demonstrated for individual statistical observations of the analysed units. The results provide the information based on which companies can select the most suitable and efficient influencer for promoting the companies and their products.

The research analysis confirmed the statement mentioned in the literary research, according to which the number of followers or the number of posts is less relevant than

the number of reactions to such posts (Kubizňák, 2020a). This confirms the importance of the quality of influencers´ online activities and the importance of whether their activities fall under the sector the influencers are engaged in and what are the expectations of the target group, or how successful the influencers are in interconnecting these facts.

Companies which expect a return on their investment from this kind of cooperation in their effort to bring their products and services to the attention of the customer should focus on the largest and best reaction of the public, since public response is what potential customers are looking for before making decision on purchase.

Therefore, companies are recommended to decide based on the data, statistical observations, specifically based on the number of reactions and comments. Although the given units often do not have the largest number of followers, their posts are most commented by their followers, which enables them attract the attention of potential users.

If a company decides to cooperate with the influencer with the highest number of posts, it should take into account that consumers may not perceive such promotion positively but rather as annoying and coercive. In contrast, if a company decides for an influencer with the largest number of followers, this does not automatically mean that it is the target group suitable for the given company or that the followers actively follow the given influencer.

The statistical observation of reactions and comments is the only statistical observation that enables companies to get closer to current and potential consumers. Moreover, the costs related to the cooperation with the influencer will probably be lower, since the influencer with the highest number of reactions to his/her posts does not necessarily have the largest number of followers based on which the price of the cooperation is determined most often. It is thus advantageous for the company, both from the perspective of productivity and finance, to decide based on the criterion of reactions.

Within the preparation of the paper, potential questions for further research arose, specifically how individual waves affected the decision-making of companies when selecting influencers or whether some other criteria were added to the existing ones, e.g. the influencer´s attitude to various societal issues (support for fair trade, local suppliers, etc.) and how the criteria will be perceived by followers or research on consumer behaviour when selecting products or services from an unknown company examining based on which the information from influencers are considered as trustworthy (e.g. based on expertise, practice, personality traits, etc.).

The results of the paper will be beneficial for researchers or for companies that are trying to adapt to the times and are aware of the importance of the cooperation with influencers (representatives) in the online environment. The proposed criteria of selecting a suitable representative based on the proposed methodology enable companies to decide who they want to cooperate with in the future. The given methodology also enables them to make a decision on their own, without consultations with external companies, which is advantageous for the company also from the financial perspective.

Conclusion

The knowledge of current trends in the area of marketing communication positively influences the competitiveness of companies and the growth of their profitability caused by better consumer awareness of their products or services. Awareness of the given issue became highly topical in the times of accelerated and mass digitization, which represented the most important skill for the survival of companies in the times of global crisis caused by the Covid-19 pandemic in the year 2020.

The objective of the paper was to identify the criteria companies should consider when selecting a future promoter of their products or services. The objective was achieved by means of the proposed methodology of three criteria for selecting influencers any company should focus on before making the decision on influencers, namely *Comments and reactions*, *Followers* and *Posts*).

Based on the calculation of frequencies, the percentage share of units (influencers) was determined who fall into individual intervals. The results show that the number of reactions to individual influencers is more important than the number of posts a given unit (influencer) posts in a certain period. Another finding was that the unit that falls into the width of an interval with a higher number of reactions does not automatically falls into the interval with higher values for other statistical observation, e.g. *Followers*.

Based on the results, it can be stated that before a company decides to cooperate with a specific influencer (promoter), it should perform an analysis by criteria such as *Followers* and *Posts*, where the greatest attention should be paid to the values achieved by the given influencer in the criterion *Comments and reactions*.

This enables companies to make a quality decision when selecting its marketing strategy. The right decision leads the company to an efficient cooperation and enables getting closer to consumers.

The limitation of the research is the missing view of the followers and the lack of information on based on which criteria they decide on which influencer´s information they will consider trustworthy. Further research could thus focus on the consumer point of view.

In practice, the research findings are beneficial for the companies that want to improve their marketing communication with their current and potential customers. The proposed criteria enable companies to choose the most suitable promoter, while the correct choice enables them to determine optimal costs for the promotion of their products, services or the brand.

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Contact address of the author(s):

Bohdana Lukach, Institute of Technology and Business in České Budějovice, Faculty of Corporate Strategy, Okružní 517/10, 370 01 České Budějovice, Czech Republic, e-mail: 27126@mail.vstecb.cz

Mgr. Yaroslava Kostiuk, University of Žilina, The Faculty of Operation and Economics of Transport and Communications, Department of Economics, Univerzitná 8215/1, 010 26 Žilina, Slovakia;
Institute of Technology and Business in České Budějovice, Faculty of Corporate Strategy, Okružní 517/10, 370 01 České Budějovice, Czech Republic, e-mail, e-mail: 26567@mail.vstecb.cz

DOI: https://doi.org/10.36708/Littera_Scripta2022/1/5

Marketing Communication of a Business Subject on the Consumer Electronics Market during Covid-19 Pandemic

Karolína Mikulová[1], Martin Vítek[1]

[1]Institute of Technology and Business in České Budějovice, Faculty of Corporate Strategy

Abstract

Most successful companies have established effective marketing communication as a useful tool for selling their products to customers. The research explored the ways of communication of a selected internet subject, its methods of addressing customers and how effective the communication of the specific enterprise is not only during covid19 pandemic. We carried out a SWOT analysis, conducted a questionnaire survey and made detailed comparisons. The results showed that the enterprise uses various communication tools to their maximum potential. The submitted outcomes may be beneficial to individual subjects, with the view to exploring the future trends in the marketing communication of the consumer electronics market. It will also give feedback to individual subject which areas of their communication is worth keeping the same and which ones are meant to be worked on in the future. The analysis also revealed that continuous monitoring of the competition is imperative for companies to move forwards. On the other hand, the research is confined to examining the consumer electronics market only during Covid19 pandemic, which means that the achieved results would be radically different from when the world comes back to normal.

Keywords: marketing communication; e-shop; consumer electronics market; online marketing; online marketing communication tools; Covid19

Introduction

The presented research deals with e-shop marketing communication during Covid19 pandemic. Marketing communications are considered as a process of transmitting information to the target audience that updates all the components of this connection. (Kazanskaya and Kotelnikov, 2020). Online environment favours advertisement,

promotion, public relations, e-mailing or social network marketing. These strategic instruments feature both – pros and cons (Prymon, 2013).

To keep customers satisfied, we need to establish good communication, besides other things. It involves pre-purchase and after purchase services, such as appointing shopping assistants to handle complaints (Mašínová and Švandová, 2014). Customers' requirements related to the purchase itself should always be dealt with and fulfilled by the appointed personnel.

Online marketing has been witnessing a great consumer boom, as a large number of companies channel their marketing activities predominantly into the digital sphere (Rrustemi, Podvorica and Jusufi, 2020). This is so because consumer behaviour has recently been subject to significant changes, partly due to the millennial generation joining the consumer community. Such an abrupt transition is the most evident by comparing the lifestyle and general characteristics of older generations with peers born into this technological discourse (Escandon-Barbosa et al., 2020).

Covid19 pandemic, which we have been struggling with since last year, was also significantly impactful on marketing communication, compelling enterprises to readily adapt their online marketing strategies to the current situation. The crisis has made a lot of companies and consumers resort to selling and purchasing items via social media (Rrustemi, Podvorica, Jusufi, 2020). Five years ago, people hardly ever bought anything on the internet. Today, the situation is quite different. We can see an increasing number of e-shops and people preferring online purchase. In spite of our reluctant attitude towards this type of purchase in the beginning, nowadays we have been witnessing an increasing number of e-shops and people preferring online purchase. Online shopping has gradually won our trust and has become an integral part of our everyday activities (Kusa and Zazikova, 2018). Moreover, the substantial majority of shops have been closed in the last half-year, so people have had no other choice but to purchase through e-shops. Kucia Mazurek and Kotula (2021) suggest some advantages arising from this situation. Companies can encourage customers in utilizing the online environment and thus assume effective control over the whole process of co-creating values for both – consumers and themselves.

This paper focuses on assessing marketing communication of a selected e-shop. We formulated two reserch questions.

Q1: How does the selected e-shop interact with customers?

Q2: How effective is the communication of this e-shop?

Marketing communication has already been subject to examination using the method of observation and analytical evaluation of websites of hotel chains (Pilar, Slivar and Floricic, 2019). The analysis involved 10 largest European hotel chains assessed by 37 indicators divided into 6 main groups. The research revealed that the internet has become an essential channel of marketing communication. The rapid development of online promotional strategies presents one of the basic elements of success. We can thereby

argue that the internet and online environment has grown in importance in recent years.

People much prefer e-shopping to traditional ways of purchasing. Thangavel, Pathak and Chandra (2021) suggest that new generation Z is more eager to online shopping than older age groups. The authors conducted a survey involving 503 respondents using factor analysis of main variables with promax rotation and ANOVA Model. They explored consumers' decision–making processes prevailing in today's generations through the internet. The factor analysis revealed that price, comfort (home) and social viability are the crucial factors of making a purchase.

Our research aimed at identifying basic critical issues relating to an effective use of online marketing tools (Cabiddu et al., 2020). The relevant data were amassed by electronic questionnaires and semi-structured interviews involving 376 respondents. We found out that complexity of individual tools, deficiency in human resources, time and finance, past unsettling experiences and lack of knowledge rank amongst the burning issues of effectively using online marketing tools.

Mobile instant messaging refers to a service using quick sending of messages via mobile applications such as Meebo, Google Talk, BlackBerry or Messanger. This concept was thoroughly analysed by Marino and Lo Presti (2019). Their research monitored the use of mobile service by consumers. The survey focused on how customers view the utility and usefulness of this new communication channel. The results show that customers regard Mobile instant messaging as an effective tool of customer care.

The research further proved that not all people are fond of communicating via the internet. Portuguese company BRABBU carried out an analysis focused on the communication through social networks by interviewing employees. The research questions was formulated as follows: do people think that social networks help, or prevent business. Rodrigues et al. (2018) suggested that social networks can heavily contribute to good communication, yet they may not fully substitute the human factor. The authors concluded that it is necessary to reach an agreement between younger and older generations.

In the state of Illinois, an online research regarding the use of social media was conducted. The survey involved managers of agricultural markets and special crops cultivators, revealing that Facebook, Instagram and Twitter were the most utilized platforms. This analysis demonstrated that social networks are an essential tool for customer relations, marketing strategies and business promotion (Tao et al., 2020). Social networks, if used as a digital marketing instrument, have great potential to attract people to popular brands, products or services.

Wibowo at el. (2021) explored the influence of social media on marketing communication. The study comprised 413 online questionnaires which were further analysed and assessed by SmartPLS 3 – professional statistical software with graphic user interface for modelling structural equations using partial least square path modelling. The results showed that the marketing activity on social networks and customers' experiences are highly impactful on the customer relationship quality and satisfaction.

Rajkovic at al. (2021) proved that social media creates consumers' loyalty to the company. The authors carried out research amongst social network users in Beograd, determining social networks as a key instrument of online communication. The amassed data were processed by covariance structural equation modelling. The analysis proved that social media offer space for creating loyalty to a company and trust between consumers. The outcomes also indicate a correlation between loyalty and purchasing purposes, both relating to the consumer's willingness to be informed.

Youtube has become the largest global communication channel of digital video information and communication technology. It is a number-one worldwide distribution channel via which companies target their brands to younger markets using effective marketing communications (Duffett, 2021). The study focused on detecting the influence of the marketing communication through Youtube based on traditional attitudinal relationships. The research involved multistage method of collecting a sample and structural equation modelling. The survey found out that Youtube marketing communication had a favourable impact on all conventional attitudinal relationships.

The product price, credibility of the website and communication with the retailer via chat include the strongest factors affecting the decision on a purchase through an e-shop (Zavadsky, Satanova and Hvizdova, 2017). The survey explored consumers' opinions on the effectiveness of public relations on the internet. The study comprised detailed questionnaires and four hypotheses involving 357 respondents throughout different age and social groups.

Smartphone applications have recently seen a great boom, including games and online streaming in particular. These gaming programs create complex interactive audio-visual online marketing (Liao and Chiu, 2021). The research involved 1020 respondents divided into 3 groups using big data analytics and cluster analysis and association rules. The survey was instrumental in deciphering preferences and principles of individual gamers. With this knowledge, companies tailor offers exactly to these specific needs.

Almost all websites use chatbots, which facilitate communication and customer support (Arsenijevic and Jovic, 2019). Chatbots are designed to solve basic problems, encourage purchase or send online leaflets. The authors carried out research related to behaviour, habits and expectation of respondents using different communication channels. The emphasis was put on carefully monitoring the utility of chatbots. The results indicated that chatbots are best applied providing simple and easy-to-get information. On the drawbacks, respondents fear chatbots which have already disclosed false information. Organizations should thereby consider employing chatbots not only in the event of problems with customer communication, but also to keep up with an increasing number of consumers.

User experience involves techniques and methods for designing websites. This set of behaviors lays out components of the homepage space in a way that is logical and intuitive. User interface comprises the visual aspect of websites including everything that can be seen and worked upon. Kadir at al. (2020) closely investigated these two methods.

Their research involved questionnaires based on the snowball technique to examine knowledge of 30 experts from the design industry and structured interviews with 9 randomly chosen people, to find out their perspectives. The study concluded that 60% of design experts recognize the necessity of this new approach. Understanding user experience has increasingly become a hot issue within the paradigm of the market design, as it helps designers reveal critical factors including user's preferences, context of the use, function of the product and their mutual relationships (Yang et al., 2019). Martin Laudát also confirms the imperative of unconventional approaches to designs in his public lectures.

Kindness in communication goes a long way, as it directly reflects business results (Kemp et al., 2021). The authors analysed endeavours of companies to approach and interact with consumers interviewing their respective owners. The research explored how small enterprises exploit storytelling to interact with customers, boost income and gain reputation. The results show that a good story about their label can raise the product value.

The best method to test the research questions involves data collection from websites of a specific subject. Next, I will use structured questionnaires to assess the selected e-shop and also competing e-shops. The obtained results will be subject to thorough analysis and close comparison.

Methods and Data

First, we will collect data on marketing communication tools used by Subject A for the communication or interaction with customers. The data will be amassed from websites of the selected Subject A, providing the information on particular communication tools employed by Subject A. The same procedure will apply to Subject B, Subject C and Subject D. All the aforementioned entities have penetrated the consumer electronics market to a large extent. The specific naming of the companies is to remain silent about the commercial secret.

The next data-gathering will focus on effective communication of Subject A and other three subjects - B, C and D. This part of the research will aim at the primary data acquisition conducted by a qualitative survey using structured online questionnaires drawn up in Google Formuláře. The questionnaire will contain the information and answers to both research questions and will be filled in by people responsible for long-term marketing communication in given e-shops. We will start by an introductory sentence informing the respondents on the inquiry. Then, we will refer to the amount of time roughly taken by responding, the purpose of the survey and a plea for cooperation. The first part will consist of four filtration questions to verify if competitors of Subject A are to be dealt with. To make a close comparison, it is imperative that these subjects are the actual competitors of Subject A. In order to honestly answer the formulated research questions, we must find out how effective the communication tools of the main Subject A

are. After identification questions have been fully answered, fifteen carefully framed meritorious questions follow, which comprise the crucial part of the research. To give respondents a free hand for answering, all these meritorious queries will remain open. The closing words will include expressing thanks for the cooperation with the presented questionnaire, which we will send via e-mail to people involved in the marketing communication in specific e-shops.

The captured data will be put through SWOT analysis, focusing on strengths and weaknesses, opportunities and threats of marketing communication tools used by the monitored subjects in the Covid-19 pandemic. First, we will identify strong points and drawbacks of the designated communication tools. Then we will focus on opportunities and threats, all compiled into the SWOT matrix. The systematic analysis will also show the information about the communication effectiveness of the given e-shop.

The synthesis of the information acquired by SWOT analysis and questionnaire survey will allow comparing marketing communication of the monitored competing subjects. The comparison will observe the effectiveness of online communication of the selected e-shops. SWOT analysis and a close comparison will also reveal which enterprise has established the most efficient communication and which tools it applies. In this way, we will be able to recommend the enterprise useful instruments that may boost its effectiveness.

We expect that the communication effectiveness of given e-shops will be almost identical and on a very high level despite the pandemic, as all the enterprises put together expert teams for creating good marketing communication. However, we presume that the detailed comparison of the unique mix of marketing communication of the monitored subjects will indicate which of the designated entities exploits marketing communication to the strongest effect.

Results

The websites of the inspected subjects during Covid19 pandemic provided the information in the first part of the experiment - data collection, which was subsequently interpreted by SWOT analysis. Table 1 suggests strengths, weaknesses, opportunities and threats of marketing communication tools used by Subject A. The entry “Strengths” lists a large number of advantages, mostly including social networks like YouTube, Instagram, Facebook, Twitter and LinkedIn, followed by telemarketing, e-mailing, mobile marketing, websites, mascots, newsletter, sponsoring, sales support, e.g. special offers, sales, loyalty bonuses, voucher gifts or special offer days such as Black Friday. The entry “Opportunities” involves blogging and “Weaknesses” contains chatbots, whereas the “Threats” listing includes public relations.

Tab. 1: SWOT analysis of marketing communication tools of Subject A

	POSITIVE	NEGATIVE
INTERNAL	**STRENGTHS** - social networks - telemarketing - e-mailing - mobile marketing - sales support - websites - mascot - sponsoring - newsletter	**WEAKNESSES** - chatbots
EXTERNAL	**OPPORTUNITIES** - blogging	**THREATS** - public relations

Source: Author.

Table 2 suggests that the competing Subject B also exploits strengths from marketing communication technologies, including social networks Facebook, Instagram and YouTube, followed by e-mailing, mobile marketing, websites, mascots, sales support involving special offers and sales, loyalty bonuses, vouchers, gifts and special offer days. The entry also contains public relations, in particular press releases, telemarketing and blogging. Opportunities involve sponsoring, weaknesses record chatbots, and threats encompass newsletter.

Tab. 2: SWOT analysis of marketing communication tools of the internet Subject B

	POSITIVE	NEGATIVE
INTERNAL	**STRENGTHS** - social networks - e-mailing - mobile marketing - websites - mascot - sales support - public relations - telemarketing - blogging	**WEAKNESSES** - chatbot
EXTERNAL	**OPPORTUNITIES** -sponsoring	**THREATS** - newsletter

Source: Author.

Table 3 shows that Subject C also extensively exploits the strengths of marketing communication tools. On the other hand, we can see some significant weaknesses here as well - chatbot and blogging. The entry "threats" involves mascots, whereas "opportunities" include sponsoring. All the same, as in previous cases, "strengths" list the largest number of things comprising Facebook, Instagram, Twitter, YouTube, sales support in form of special offers and sales, vouchers, loyalty bonuses and special offer days. Strengths, on the other hand, further contain public relations including press releases, e-mailing, passive telemarketing, mobile marketing, newsletter and websites.

Tab. 3: SWOT analysis of marketing communication tools of the internet Subject C

	POSITIVE	**NEGATIVE**
INTERNAL	**STRENGTHS** - social networks - sales support - public relations - e-mailing - telemarketing - mobile marketing - newsletter - websites	**WEAKNESSES** - chatbot - blogging
EXTERNAL	**OPPORTUNITIES** - sponsoring	**THREATS** - mascot

Source: Author.

Table 4 indicates that the last tested e-shop, the competing Subject D, plays to its strengths as well, including Facebook, Instagram, YouTube, LinkedIn, e-mail marketing, sales support in form of special offers and sales and loyalty bonuses, newsletter, passive telemarketing, public relations involving press releases and websites. Opportunities contain sponsoring. Subject D employs a slightly larger number of tools listed in the negative part of SWOT analysis. Weaknesses involve chatbots and blogging, while threats suggest mobile marketing and mascot.

Tab. 4: SWOT analysis of marketing communication tools of the internet Subject D

	POSITIVE	NEGATIVE
INTERNAL	**STRENGTHS** - social networks - e-mail marketing - sales support - newsletter - telemarketing - public relations - websites	**WEAKNESSES** - chatbot - blogging
EXTERNAL	**OPPORTUNITIES** - sponsoring	**THREATS** - mascot - mobile marketing

Source: Author.

The following part of the research included data captured through questionnaires completed by all four addressed competing subjects. We subsequently processed the data using comparative methods.

The answers of the competing subjects revealed roughly parallel portfolios and business size, indicating keen competition even during Covid19 pandemic. Most online communication tools used by Subjects A, B, C and D are suggested in Tables 1-4 and classified according to their nature - strengths, weaknesses, opportunities and threats.

The answers of the questionnaire survey showed that all four competing subjects consider their marketing communication as effective, irrespective of the pandemic. The replies regarding the assessment of the effectiveness of the communication tools were rather vague, although hinting that such a measurement takes place. Subject A refers to assessing the effectiveness of communication tools by various techniques, declaring it cannot be reliably measured by only one method as it employs different communication tools. Similar claims were made by the other competing respondents. Above all, Subject B factors in a close comparison of its profit margin. Subject C suggested different methods and techniques of measuring tool effectiveness, pointing out monitoring the impact of the interaction with customers on their attitude adoption. Subject D emphasized an extraordinary variety of techniques and methods with a recent focus on social networks measured by a number of clicks on the link to the respective website. All aforementioned subjects follow different principles of measuring the effectiveness of communication tools, leaving no possibility to reliably identify the best one.

The question how much the specific e-shop spends on on-line marketing communication remained unanswered as it would disclose confidential information which may not be open to the public. Table 5 suggests the data compared according to specific

communication tools considering the profit margin. The list below ranks the communication tools starting with the most useful ones regarding profit margin and ending with the least practical ones.

Tab. 5: Ranking communication tool of individual subjects considering profit margin. The order of comunitation tools was arranged and evaluated in this way on the basis of the percentage representation of the given tool of the subjects, their acquisition price, and how many customers it roughly affects.

Rank	**SUBJECT A**	**SUBJECT B**	**SUBJECT C**	**SUBJECT D**
1.	Websites	Sales support	Sales support	Social networks
2.	Mascot	Websites	Social networks	Websites
3.	Sales support	Social networks	Websites	Sales support
4.	Social networks	Mascot	E-mailing	E-mailing
5.	E-mailing	E-mailing	Telemarketing	PR
6.	Telemarketing	Telemarketing	PR	Telemarketing
7.	Newsletter	Mobile marketing	Mobile marketing	Newsletter
8.	Sponsoring	PR	Newsletter	Sponsoring
9.	Mobile marketing	Blogging	Sponsoring	Blogging
10.	Blogging	Sponsoring	Blogging	Chatbot
11.	PR	Newsletter	Chatbot	Mascot
12.	Chatbot	Chatbot	Mascot	Mobile marketing

Source: Author.

Discussion

Based upon the collected data, We may answer the aforementioned hypotheses.

How does the selected e-shop interact with customers?

Subject A interacts with potential or long-standing customers via various communication tools. The strongest ones involve social networks, passive telemarketing, e-mailing, mobile marketing, sales support, websites, mascot, sponsoring, newsletter and blogging. On the other hand, Subject A is threatened by a limited use of public relations, lagging behind its competitors in its content.

How effective is the communication of this e-shop?

This question does not provide an easy answer. Neither Subject A, nor its competitors revealed enough information, as it deals with confidential data. Subject A employs various techniques and methods of measuring communication effectiveness regarding a bewildering variety of available marketing communication tools. Overall, all subjects consider their communication approaches as effective. In view of the profit margin of these instruments, websites rank amongst the most efficient ones, displaying their content to the largest number of users. Websites are followed by mascots, sales support,

social networks, e-mailing, telemarketing, newsletter, sponsoring and mobile marketing. As proved by the SWOT analysis, Subject A belongs to the better enterprises interacting with their customers and environment, compared to the other competitors. Namely, the company shares the first place with the competing Subject B, both including the most communication tools in "strengths" entry.

The results may vary depending on different research limits. This analysis involved enterprises from the Czech Republic of similar size, portfolio and with the focus on the consumer electronic market. Covid19 pandemic also plays an essential role. Outside the pandemic, conducted surveys could achieve various results. The back-to-normal situation will require a different communication mix, aiming at a new variety of viable options of interaction with customers, e.g. a stronger representation of out of home advertisement.

Our research showed that social networks constitute the key communication tools within the examined enterprises. Similar results were revealed by Tao et al. (2020). The authors explored the utility of social networks in the state of Illinois using social media including Facebook and Instagram. Duffett (2021) arrived to the same conclusion, pointing to YouTube being the crucial communication channel for enterprises.

The major drawback the research suffers from is the unavailability of confidential data that might be of interest to the public. This secret information involves, for instance, a comprehensive statement on costs associated with the communication mix.

However, there are still burning questions which remain unanswered. These include not only costs and expenses arising from the specific communication mix, but also new challenging issues, e.g. the future development of marketing communication tools of both - the examined subjects and the internet environment. So will we have new and more effective communication instruments in the future?

The experiment confirmed the formulated hypotheses. The research further revealed the most practical on-line communication tools used in the consumer electronics market during Covid19 pandemic. The results may also help the subjects realize which communication tools they should improve on, or be inspired by instruments effectively used by their competitors. We recommend that Subject A should mostly work on chatbots. This improvement could save employees time and effort, providing customers with a quicker response to their frequent questions and problems.

Conclusion

The article explored the channels of communication of a specific e-shop with its customers and whether a particular interaction is effective. By collecting data from the websites and a follow-up SWOT analysis, We found out how the specific e-shop communicates with its customers. To assess the effectiveness of the subject, We processed the information from SWOT analysis and questionnaires filled in by the monitored Subject A and its competitors. Then, We compared the obtained data to confirm the formulated hypotheses. The objective was thereby fulfilled.

The severe deficiency of this research was that inspected subjects remained silent about essential information, which must be kept confidential. For that reason, the enterprises were designated as Subjects A, B, C and D. All these companies fulfilled all requirements: they penetrated the consumer electronics market, came from the Czech Republic, are of similar size and offer the same product portfolio during Covid19 pandemic.

A relevant question which remains unanswered is the allocation of available funds to the enterprises for their marketing communication tools, which is not possible to answer until the companies disclose this confidential information. We will further be able to inspect the development of marketing communication tools in the on-line environment in the consumer electronics market, as contrasted to today's findings. The research also revealed the necessity of carefully monitoring competitors to be knowledgeable about their strategies and together move the development forwards. We must also be sensitive to changes in consumer behaviour and global socio-economic transformations caused by Covid19 pandemic. With the oncoming end of the pandemic, people will prefer to spend more time outside, compensating for the periods of strict lockdowns. Enterprise will thereby have to adapt their communication mix to the out of home advertisement.

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Contact address of the author(s):

Karolína Mikulová, Institute of Technology and Business in České Budějovice, Faculty of Corporate Strategy, Okružní 517/10, 370 01 České Budějovice, Czech Republic, e-mail: 27528@mail.vstecb.cz

Ing. Mgr. Martin Vítek, Ph.D., MBA, Institute of Technology and Business in České Budějovice, Faculty of Corporate Strategy, Okružní 517/10, 370 01 České Budějovice, Czech Republic, e-mail: vitek@mail.vstecb.cz

DOI: https://doi.org/10.36708/Littera_Scripta2022/1/6

Determination of the risk premium for the environment of the Czech Republic based on a comparison of the established rating from rating agencies and the model from Damodaran

Michaela Procházková[1], Mario Bogdanovic[2], Iva Klementová[1]

[1]Institute of Technology and Business in České Budějovice, Faculty of Corporate Strategy
[2]Istrian University of Applied Sciences in Pula

Abstract

This paper describes the general methods of the risk premium calculation and compares them with Damodaran approaches and the rating assigned by specialized agencies. The determination of the risk premium represents the amount of money that an investor obtains when taking the risk of an investment in a particular market. The simplest option for obtaining a risk premium appears to be the risk premium assigned by the credit rating agencies. However, there is currently a plethora of such agencies in the market and the investor must ensure that they will take the right decision. In the analysis of different methodologies in the methodological part of the paper, the most appropriate model for determining the risk premium for the Czech environment is identified. In the discussion of the results, the weaknesses of each method are described in more detail to identify the recommended method for the Czech Republic. In the conclusion of this conference paper, a modification of the risk premium calculation is proposed to obtain more accurate results.

Keywords: Damodaran, risk premium, credit rating, rating agency, investor

Introduction

We understand the risk premium as a bonus paid to investors for being willing to take some risk. In the recent years, various studies have tried to identify whether or not investment can be diversified. Page and Panariello (2018) look in more detail at situations where risk diversification does not yield the desired results. When the amount of risk premium is determined for investors, you should always bear in mind that this is historical data. For this data to be meaningful in the future, you must presume that the investor has the same

approach to risk as in the past. Investors make investment decisions by comparing the investment cost against the expected return on that investment. This includes a bonus for the risk assumed in the form of a risk premium which is influenced by the level of risk in the Czech Republic. To determine the level of risk, the credit rating assigned by the credit rating agencies following the Damodaran example is used to determine risk for a specific country based on data drawn from research carried out in the past. However, this method of calculation is not appropriate for the Czech capital market as Damodaran considers the US capital market with AAA rating. The aim of this paper is to identify the most appropriate alternative for calculation of the risk premium applied in the Czech environment.

The risk premium is an important measure of the value of financial investments. According to Horvath (2020), the risk premium of developed countries is significantly different from developing countries. In view of potential risks, risks are more severe in developed countries as opposed to developing countries where these are idiosyncratic. According to Finta and Aboura (2020), a financial crisis in one market may cause the global investors to simultaneously reassess risk in other markets. Lampérière et al. (2016) identify the risk premium as one of the pillars of modern finance theory.

Several methods can be used to calculate the risk premium. Othieno and Biekpe (2019) say that 5 common estimating methods can be used to calculate ERP (Equity risk premium):

- Historical estimation
- Demand estimation
- Offering method
- Approach-based survey
- Implied ERP estimation

Fassas and Papadamou (2018) refer to the risk premium as the uncertainty of return variance which leads to variance of the risk premium. These variations are then understood as differences between statistical and risk-neutral expectations. A credit rating is used to assess the risk premium incurred in investing. In the recent years, the level of risks of a particular country is determined from credit ratings set by the special credit rating agencies. This credit rating is used and recognised worldwide. For investment in riskier countries, investors can use the credit rating to more easily estimate the level of risk taken and thus determine the risk premium. According to Pleßner and Blaschke (2019), almost all financial market companies in the UnitedStates are rated by Standars and Poor´s, Moody´s or Fitch. In their study, they focused on ratings in recent years in order to understand the current position of these rating agencies. Damodaran (2020) uses the local currency ratings, specifically Moody's, to estimate the premium for a long-term stock. However, some countries do not have a rating from Moody's, but there is a rating determined by S&P (De Moor et al., 2018). Bartels (2019) compares the world-renowned credit rating agencies with smaller credit rating agencies that are more independent in their credit ratings.

To calculate the risk premium, it is necessary to determine how risky a given asset is relative to other assets. CAMP (Capital Assets Pricing Model) can be used for the calculation. This model is based on the capital market. To calculate the risk premium, the beta coefficient must

be used. This coefficient shows the change in return on the firm's stock which is dependent on the change in the capital market. The CAMP model relies on complete insurance and ignores the risks associated with the consumption of illiquid assets. These risks are non-marketable and therefore uninsurable against risk. According to Semenyuk (2016), the CAPM model cannot be used to estimate the capital cost for developing countries precisely because of the lower level of liquidity and capitalization. Therefore, this should be taken into account when the CAPM model is used to determine the risk premium. The so-called beta coefficient is used for calculation of the risk premium based on the CAPM model. Hrdý and Pláničková (2019) point out that determining the beta coefficient is by far more complicated and requires access to the market data. On the other hand, Gonzales (2018) reminds that the beta coefficient is an important measure of the systematic and undiversified risk that must be assumed by investors.

Chien and Naknoi (2015) explain the global capital market imbalances. They also point out about the higher participation rate in the US stock market than in the rest of the world. Aye, Deale and Gupta (2016) remind that widely used macroeconomic and technical predictors may not adequately capture the dynamics of the risk premium. In this context, they focus on a predictor to help explain the equity market.

The CAPM model can be used to calculate the risk premium, but it is often based on unrealistic assumptions. The most criticized factor is the way risk is measured using variance. For financial investments, this method of determining risk is inappropriate because the variance reflects the probability of loss. Also, the CAPM model relies on the symmetry of investor assumptions and investor rationality. The beta coefficient is only related to one specific stock, so the result cannot be taken across the board, but only in relation to the portfolio. The way the credit rating agencies determine the credit rating can also be considered insufficient. Credit rating agencies determine ratings on the assumption that all known risks have been assessed. However, these credit ratings can still be criticized because the rating scales are not structured well enough to distinguish between countries in detail. Some countries can achieve the same credit rating scale and yet exhibit different market conditions.

Methods and Data

Several common techniques can be used to calculate the risk premium. One of the most common methods is to use the credit ratings that shareholders take from credit rating agencies.

Credit Ratings

Damodaran (2020) uses Moody's credit ratings to determine the sovereign rating. Moody's ratings are illustrated below with respect to future comparison of ratings with Damodaran.

Tab. 1:Moody's Credit Rating Scale

Credit Rating Groups	**Total ERP**	**Country RP**	**Moody´s Agency**
Investment Group			
Aaa	5.81%	0.00%	Germany, Netherlands, Austria, USA, Switzerland, Finland, Norway, Denmark, Sweden, New Zealand, Canada, Singapore, Australia, Luxembourg
Aa1	6.41%	0.60%	Belgium
Aa2	6.56	0.75	Kuwait, France, Korea, United Kingdom
Aa3	6.71	0.90%	Taiwan, Saudi Arabia, Chile, **Czech Republic**, Hong Kong
A1	6.86%	1.05%	Estonia, Israel, Japan, China
A2	7.09%	1.28%	Poland, Ireland
A3	7.61%	1.80%	Malaysia, S. Africa, Malta, Slovakia
Baa1	8.21%	2.40%	Mexico, Lithuania
Baa2	8.66%	2.85%	Kazakhstan, Latvia, Spain
Baa3	9.11%	3.30%	Croatia, India, Bulgaria, Romania, Iceland, Hungary, Portugal, Italy
	Speculative Grades		
Ba1	9.56%	3.75%	Slovenia, Russia
Ba2	10.31%	4.50%	Indonesia, Brazil
Ba3	11.21%	5.40%	Egypt
B1	12.56%	6.75%	Mongolia, Vietnam, Turkey
B2	14.06%	8.25%	Turkmenistan, Bosnia and Herzegovina, Ukraine
B3	15.56%	9.75%	Pakistan, Cyprus
Caa1	17.06%	11.25%	Cuba, Moldova, Argentina
Caa2	19.31%	13.50%	Greece
Caa3	20.81%	15.00%	-
Ca	23.82%	18.00%	-

Source: Author based on Moody´s investors services (2015).

The credit ratings of the individual countries are divided into several groups, but these groups are divided into 2 basic groups - investment and speculative grades. The investment group includes ratings from Aaa to Baa3. The speculative groups range from Ba1 to Ca. Moody's has placed the Czech Republic in the Aa3 rating group which has the overall risk premium of 6.71% and the country risk premium of 0.90%. Thus the Czech Republic has been upgraded by one notch for the first time in 17 years and has received the highest credit rating ever in the country's credit rating history.

In creating the credit rating scale, the credit rating agencies cooperate with the countries' major institutions such as central banks, ministries, government agencies and others. Subsequently, the data collected are analysed and a specific rating is assigned to each country to indicate the riskiness of the country. The most developed countries with low

inflation and unemployment rates while good infrastructure and a high level of education of the population have the highest ratings. Countries with high levels of debt and insolvency have lower ratings. The credit rating of the countries may differ, so each investor must consider in advance which credit rating agency to follow and take into account.

Risk Premium According to Damodaran

According to Damodaran, other methods can be used to calculate the country risk premium.

Method 1 for discount rate adjustment

The first way is to calculate the discount rate using this formula

$$DR_D = R_F + RP \quad (1)$$

where:

DR_D is the discount rate
R_F is the domestic risk free interest rate
RP is the country risk premium determined by the difference between the host country's and the home country's credit ratings.

The calculation formula for the risk premium can then be derived from this formula:

$$RP_{CR} = RB_{CR} - R_{aaa} \quad (2)$$

where:

$RP_{CR}$is the risk premium of a specific country, i.e. the Czech Republic

RB_{CR} is the real interest rate of the Czech Republic

$R_{aaa}$is the real interest rate of a country rated AAA

According to Damodaran, the country risk premium can also be appropriately calculated as the difference between the yield on the country's sovereign bonds and a risk free country with the highest possible AAA rating. Therefore, Damodaran uses the US rating for this calculation. The resulting risk premium is then the result for all countries in a particular rating group. To achieve better results for a given country, volatilities within the countries have to be exploited. Using the first adjustment of the discount rate, the risk premium can be calculated for unrated countries by simply calculating the real interest rate for a particular country and subtracting the real interest rate of a country in the AAA rating group. This method is propitious for countries that do not provide sufficient capital market data for use in the CAPM model (Damodaran, 2021).

Method 2 for discount rate adjustment

The second method for calculating the risk premium is to determine the risk premium using historical data and the long-term rating of a particular country. The calculation formula is as follows:

RP_c= country default risk * (stock market volatility/bond market volatility) (3)

The country default risk is determined by its long-term local rating. For the capital market risk premium, Damodaran (2020) uses data obtained from the U.S. and thus relies on country credit ratings. Volatility is expressed using standard deviations of returns. This provides an important first step to measure the country risk premium, but it only relates to the risk of country default, so the risk premium has to be slightly increased. There are two obstacles faced if the country risk premium is determined as explained above. The first is the volatility of the stock market which may differ between countries. The other obstacle is the estimation of the bond market volatility. Damodaran recommends to use a 1.5 factor for convenience. In this case, however, countries need to have a fixed credit rating and at the same time a late response to market changes.

The second adjustment of the discount rate is based on the CAPM model which is based on the WACC model. Here it is important to know the country credit rating, preferably a long-term rating published by the credit rating agencies. This credit rating is then translated into the risk premium (the difference between the yield on bonds with the same rating and US government bonds). The country default risk is only a reflection of the creditor's view. The shareholder's view is important for estimating the risk premium. Therefore, the difference between the volatility of a country's stock market and the volatility of that country's government bonds is used for calculation.

Country Risk Model

The third method for calculating the country risk premium is to derive it from the country-specific cost of equity capital formula

$$RPZCR = NVKCR - RfUSA + B * RPTUSA \quad (4)$$

where:

R_{fUSA} is the risk free rate of return from the US

NVK is the cost of equity capital in the Czech Republic

B is the BETA coefficient

RPT_{USA} is the US capital market risk premium

RPZ_{CR} is the country risk premium (CR)

This model is based on the cost of equity capital of a particular country minus the risk free return of the highest rated country plus a multiple of the beta coefficient and the risk premium of the country with the highest available rating. According to Mařík and Maříková (2008), the BETA coefficient is adjusted according to the specific characteristics of the company, which take into account its current risks from a business and financial point of view. The US rating is used for Damodaran's calculations. The country risk model is the most commonly used but least efficient method for determining country risk. According to Mařík and Maříková (2014), this method is the least effective for calculating the risk of specific companies precisely because all companies in said country are exposed to country risk to the same extent.

CAPM Model

For the calculation of the risk premium, the Capital Asset Pricing Model (CAPM) is used. The risk premium is determined by the formula:

$$RP = B * (R_M - R_D) \quad (5)$$

where:

B is the BETA coefficient
R_M is the average annual return on a stock market portfolio
R_D is the average annual return on government bonds

CAPM uses the beta coefficient which can be generally defined as the correlated relative volatility. The beta coefficient is calculated using historical data, the covariance of the return of the i-th stock and the market index. The resulting value has the following meaning:

- **B = 0…….risk free assets**
- **0< B<1……. defensive stock**
- **B = 1…….. neutral stock**
- **B> 1……. aggressive stock**

The beta coefficient should always reach 1. Where the values of the beta coefficient exceed 1, this indicates a higher level of systematic risk. On the contrary, if the value is less than 1, this indicates a lower level of systematic risk.

The equation for calculating the risk premium using the CAPM model is commonly used, but in general, this model does not exactly correspond to reality. This is mainly due to the beta coefficient which is only an estimated future value.

Results

The credit rating assigned by the credit rating agencies seems to be the simplest way as this risk premium assessment from a specific credit rating agency is used by investors. It is therefore very important for investors to consider which agency's rating they will use. Whether they will use a credit rating from one of the 'big three' agencies, namely Moody's, S&P or Fitch. And you should also mull over whether the three agencies are still credible or whether it would be a better choice to use a rating from one of the smaller agencies that are less commercial. The credit rating agencies have to analyse data from the major institutions of the countries to determine the risk premium. In most cases, the credit rating agencies perform this analysis on a yearly basis, hence they are not able to respond promptly to changes.

The CRA has the disadvantage of breaking down countries into credit rating groups. There may be significant differences between countries in a particular group, but the differences are not apparent at first glance due to the grouping, and then investors have to recalculate the country risk premium into the specific country risk premium. The risk premium used in the Czech Republic in group Aa3 is set to 0.9%.

Damodaran applies ratings in his models to calculate the risk premium. In the first model, he subtracts the rating of the country with the highest possible AAA rating from the real interest rate of the country for which he wants to determine the risk premium. Damodaran compares all his calculations with the US. This approach is very often criticized as it cannot be said with certainty that the US rating is still AAA.

Damodaran's second model applies credit ratings to determine the default risk of a given country. In this model, the stock and bond market volatility data are also used. To simplify the calculations, Damodaran suggests to use the 1.5 coefficient as a proxy for the ratio of stock market volatility and bond market volatility. However, the use of this universal coefficient leads to biased risk premium results. This simplification leads to a phenomenon where the risk premium increases while the credit rating decreases. If this model is used, it is more efficient to follow the methodology developed by Mařík a Maříková (2014).This methodology applies a higher ratio of standard deviations of stock and bond returns calculated from the actual data of the Czech Republic instead of the universal coefficient of 1.5.

The CAPM (Capital Asset Pricing Model) uses the beta coefficient, the average annual return on a market stock portfolio and the average annual return on government bonds to calculate the risk premium. If this model is to be used, however, there must be a perfect market in which investors expect the same future developments. But it seems unrealistic in a given situation. The CAPM model relies on the necessary database which should contain information about the capital market of a particular country. The Czech Republic has a short history of the database.

In the CAPM model, the beta coefficient plays an important role in the calculation of the risk premium. This coefficient determines the level of risk relative to the market, but it only measures systematic risk. Given the fact that historical data are again used to calculate the beta coefficient, the resulting risk premium can only be considered indicative. To determine the risk premium for the Czech environment, the use of the capital market to estimate the risk premium and the beta coefficient should be considered.

Discussion

Damodaran's risk premium models (Damodaran, 2020) have often been under criticism by subject matter experts. Damodaran himself is often criticized for his pragmatism. Although Damodaran has set out several ways of calculating the risk premium, none of them is preferred by Damodaran himself. Also, his models are often criticized on the grounds that insufficient studies are available to confirm that more mature markets are more reliable than markets that are emerging gradually. At the same time, there is also lack of support for the claim that country-specific risk cannot be countered by diversification.

In general, the most commonly used approach for determining the risk premium is to use a rating from credit rating agencies. Although this credit rating is rather generalized. Credit rating agencies primarily use historical data provided by the governmental institutions to determine the risk premium. However, this data may not fully reflect the future of the Czech

markets. The Czech Republic is still considered to be an emerging country in the financial sector. Therefore, to determine the risk premium in the Czech Republic only based on historical data is considered inadequate. This is clearly supported by the fact that the Czech Republic was assigned a higher credit rating in 2019 than ever before. The Czech Republic is now in the Aa3 credit rating group along with countries such as Taiwan, Saudi Arabia, Chile and Hong Kong. Those are all countries with different living standards and therefore it is not possible to compare these countries with each other. In this context, it would be appropriate to extend the credit rating groups into sub-groups by the individual risk premium of the countries. This extension would make it obvious at a glance which countries in one credit rating group are more or less risky than other countries in the same group.

Damodaran often directly uses credit ratings in his models to calculate the risk premium or to calculate the country default risk, and thus again to calculate the risk premium. Of course, all of this information is based on historical data, so it is important to keep this in mind at all times as a fact that these are not perfect markets. The future value may not always be the same as the historical value. This statement can be verified in periods of financial crisis. It is not appropriate to use historical data to determine the risk premium of the Czech Republic as it is an emerging country with an emerging capital market. In his risk premium models, Damodaran often compares results with the US which is supposed to have the highest possible rating.

In order to determine the real risk premium in the Czech Republic, it is best to calculate the risk premium individually, and then compare the result to the credit rating. In this way, you can identify whether the real risk premium of the country corresponds to the credit rating and how it differs from other countries in the same credit rating group. For the Czech Republic, the use of data provided by the local capital market which is used both to estimate the risk premium and to determine the beta coefficient should be considered.

Damodaran's second model of discount rate adjustment for determining the risk of the Czech Republic appears to be the best solution. Currently, the Czech Republic is an emerging country in terms of the equity market. The data available on Damodaran's website can be used to calculate the risk premium using volatilities. This data is regularly updated and therefore the risk premium can always be calculated according to the current needs. For the Czech Republic, the most appropriate method how to determine the risk premium is to use Damodaran's method and his second method of discount rate adjustment using the calculation of volatilities.

Conclusion

The aim of this paper was to identify the most appropriate method for determining the risk premium in the Czech environment by comparing Damodaran's models and the credit rating assigned by credit rating agencies.

The methodology of the paper describes the most commonly used methods for determining the risk premium in the Czech environment. In the discussion of the results,

the different methods are then compared. The credit rating agencies are unable to respond immediately to changes in the emerging markets such as the current equity market in the Czech Republic. On the other hand, the CAPM model is slowly being abandoned because it uses the beta coefficient which is based on historical data. Therefore, the entire CAPM model is irrelevant as it is based on historical data and it is impossible to fully ensure that the results will be valid in the future.

To determine the risk premium using credit rating agencies appears to be the simplest way, but it may be the least specific. There are several countries in one credit rating group which may differ significantly in their risk levels. Here I would recommend to restructure the credit rating groups into sub-groups where the countries would be further differentiated from each other to make it obvious at a glance which country is more or less risky than the other countries in the same credit rating group. The last major disadvantage of credit ratings is that they are not up-to-date and they are unable to respond quickly to changes in the markets.

The most optimum method of calculation for the Czech Republic was the second method of the discount rate adjustment by Damodaran, which uses the volatility of the stock / equity and bond markets. In this model, however, Damodaran recommends to use a universal value of 1.5 to simplify the calculation.However, if this coefficient was used, it would lead to biased results as in all other models. Therefore, I recommend that data available at Damodaran's website is used for calculation using stock market volatility and bond market volatility or using calculations from the actual Czech data.

In conclusion, the stated aim of the work paper was fulfilled. The best methodology for calculating the risk premium is the adjustment of the discount rate according to Damodaran which can be used to determine the risk premium in the Czech Republic, or in specific markets of the Czech Republic.

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Contact address of the author(s):

Ing. Michaela Procházková, Institute of Technology and Business in České Budějovice, Faculty of Corporate Strategy, Okružní 517/10, 370 01 České Budějovice, Czech Republic, e-mail: 20328@mail.vstecb.cz

Mario Bogdanović, PhD, Senior research associate, College professor, MSc in Economics & MA in Economics, MA in Psychology, Istrian University of Applied Sciences in Pula, Croatia

Ing. Iva Klementová, Ph.D., Institute of Technology and Business in České Budějovice, Faculty of Corporate Strategy, Okružní 517/10, 370 01 České Budějovice, Czech Republic, e-mail: klementova@mail.vstecb.cz

Technical analysis of selected stock time series based on stock value screening

Jiří Sulek[1]

[1]Institute of Technology and Business in České Budějovice, Faculty of Corporate Strategy

Abstract

The paper deals with using stock value screening in order to identify companies suitable for long-term investments. The paper includes technical analysis of the company Intel Corporation (INTC), which was evaluated as a suitable company for long-term shareholding on the basis of stock value screening. The paper provides a theoretical background necessary for understanding and performance of stock value screening and technical analysis. The next chapter presents and specifies the individual parameters of screening and indicators of technical analysis as well as a systematic and logical description of the whole paper elaboration. Another part of the paper summarizes and presents the individual results of the stock value screening based on which two companies are evaluated as suitable, with detailed comments. Furthermore, it explains why the technical analysis is performed on Intel corporation. The performed technical analysis shows the growing trend of the share price growth; therefore, a recommendation is made for the investors not to postpone the purchase of the shares. All results of the technical analysis are summarized in a table with a relevant comments and explanations. A very interesting signal is created based on a long-term, specifically three-year support line, and on the creation of the so-called double bottom pattern. In the conclusion, general recommendations are made for investors.

Keywords: stock value screening, data analysis, technical analysis, financial markets, investment

Introduction

Given the current situation in the global market, financial markets show large profit potential. Due to the Covid-19 pandemic, the global market shows a certain decrease. This

is the right time for both large and small investors, who can appreciate their capital by units or even tens of percent in the current situation. The appreciation may be caused by long or short position. The paper submitted deals with the stock growth strategies, so the profit through long position. Stocks can be acquired by means of direct purchase, ETF or some trading option strategies. Currently, a lot of information is available for free and within a short period of time, which makes investors´ work much easier. Quality stocks protect investors against inflation and generate profit passively. Stocks represent historically the best investment tool (except for active business). Stock market surpasses bonds, gold or even currency. To choose the correct stock, an investment strategy must be selected, which is different for each investor. The selection of a specific stock is a time-consuming process; therefore, there are several methods to narrow down the choice. One of them is screening, which is the main issue of this paper. After screening, each stock needs to be subject to both fundamental and technical analysis. The advantage of stock market investing and trading is the unlimited potential of selecting a strategy. There is theoretically an unlimited profit, which goes hand in hand with the theoretical loss of capital, which may occur within a few minutes in an extreme case. The advantage of this type of business is that the result is not directly influenced by any colleague, employer, or supervisor. The entire result depends on the analytical skills of the investor or speculator, if not taking into account the decisions of companies, the state and other institutions that the investor cannot influence.

Literature Research

Nowadays, there are many was to invest. This paper focuses mainly on equity investment. Currently, a stock can be purchased on the Internet within a few minutes. Information necessary for analyses are relatively easy and quick to find compared to the situation in the past when stocks were bought directly in the stock market (brick-and-mortar) or at the presence of a stockbroker, who intermediated trade to the clients, most often over the phone. Back then, information necessary for analysing were not as easy to obtain as today and most people made investments on the basis their trust in their broker. If an individual decides to invest through stocks, they may choose from several options of how to make the investment. The first option is a direct purchase of stocks, when the investor chooses interesting stocks in accordance with his/her requirements. Another option is to invest through equity fund, which is often described by equity index or it has its own portfolio (Kohout 2010). The third option is to purchase stocks through option strategies (Štýbr, Klepetko and Odráčková, 2011; Rejnuš, 2016). This paper focuses on direct investment, where the investors themselves choose specific stocks. There are more ways to choose stocks. The best known, most widely used and globally most accepted are the value-based and growth-based approaches. When investing in value stocks, the investor chooses the stocks with their intrinsic value higher than their current market price. Such stocks are generally referred to as cheap. The investor´s goal is to purchase such a stock whose price will increase to fair value in time. In the case of growth-based approach, the investor aims

to find stocks of companies which show a great growth potential in the future. Such companies are usually small or have a specific competitive or technological advantage over their competitors but their potential as not been revealed yet (Kohout, 2010). At the same time, the investors must be able to rationally assess their own attitude to risk, i.e. whether they want to make cautious rather than aggressive investments, or whether they want to have a diversified portfolio that will contain stocks with their risk rate. In general, more aggressive stocks show a potentially higher profit but also loss and vice versa (Graham and Zweig, 2007, Shiller, 2010). To reduce the risk of losing the capital, it is necessary to diversify the portfolio, either across the industries, in which the companies whose stocks the investor wants to buy operate, or to invest a part of the portfolio outside the stock market (Shiller, 2010). After selecting the investment strategy, the investor starts to choose stocks to buy. Currently, it is not possible for the investor to have an overview of all listed companies. For this purpose, there are screening applications available, such as Finviz (FINVIZ, 2021) or xtb screener. Using these portals, screening can be easily performed, compared to the situation in the past when the process was manual and time-consuming. Stock value screening is a quantitative method to easily and quickly find a cheap stock to buy. The goal of screening is not to determine the intrinsic value of stock but to find potentially undervalued stocks in accordance with specified criteria. Therefore, the prerequisite is that the investor has adequate knowledge and skills to meaningfully define the screening criteria (Gladiš, 2015). These criteria include the size of company´s capitalization, the field of business, and various financial ratios. The most commonly used criterion is the P/E ratio, which represents the ratio of the market price of stocks and net profit per stock. In other words, P/E shows how much the investor is willing to pay for one dollar of profit. Another criterion can be looking only for companies which generate an average profit increase of 4 % over a certain time horizon (so that the company is able to overcome low inflation and equates nominal economic growth). The investor may also look for companies with low indebtedness, high liquidity, reasonable stock price with respect to sales, good return on assets, etc. (Fotr and Souček, 2015, Gladiš, 2005). After finding several stocks, fundamental and technical analyses are performed on specific stocks. Generally, it can be said that screening is a discipline of fundamental analysis. After screening, the individual stocks need to be analysed in more detail. Fundamental analysis serves to examine the financial health of a company, where the information is obtained from the balance sheet, income statement, and various other statements. Moreover, the industry in which the company operates is analysed. Investors should also consider the political situation in the world or the scope of business activities of the company (Sojka and Dostál, 2008). This paper emphasizes screening and subsequent technical analysis. Technical analysis considers the fact that the stock price changes depending on certain models, rules, and over certain periods of time. Technical analysis works with the historical development of price and volume of trade only. It is a study of supply and demand over time (Stibor et al., 2011). For the purposes of this paper, technical indicators of moving average, relative strength index (RSI), volume of trade, support and resistance and graphic patterns of Japanese candlestick over time. The basic indicator of the price development is a trend. Its advantage consists in the simplicity of

determination even without having to use complex mathematical apparatus. Trends can be divided into rising (bull) or falling (bear) (Hong, Yu and Yuxiang, 2016). Moreover, the trends can be divided into short-term and long-term trends. It is common, for example, that a short-term trend is bullish, while long-term trend is bearish and vice versa (Kolkova, 2018). Trend recognition is a basic skill of any investor or speculator. Trends are often repeated, more often and more regularly for some types of assets. Such a trend can be repeated seasonally or cyclically (Stratimirovic et al., 2018). The seasonal component usually repeats within one year; cyclical, within a period of more than one year. Analysts must be aware of the fact that trends are not infinite, they can slow down, stop or turn. The end of the trend can be anticipated and determined on the basis of basic composition of a combination of Japanese candlesticks on the price graph of a given asset (Chmielewski, Janowicz and Orłowski, 2016). Japanese candlestick is globally the most commonly used type of illustrating the price level graphically. It contains four basic pieces of information about the price. The first one is the opening price, closing price, the minimum and the maximum price between the opening and closing. Japanese candlestick usually has two colours in order to clearly distinguish whether the asset price increased or decreased in the monitored period (Hong, Yu and Yuxiang, 2016). One of the most commonly used technical indicators is Moving Average. There is a wide range of MA – simple MA, weighted MA, linear or exponential MA and many others. MA has its own period which can be adapted to the analyst´s needs; the most commonly used one is 50-day and 200-day period (Shalini, Pranav and Utkarsh, 2019). Moving average is used for an easier and clearer identification of trend even with a high volatility (Sobreiro et al., 2016). By combining two identical types of MA with a different period, a trading signal for opening a short or long position can be created. If a shorter-term moving average crosses below a longer-term moving average, a long signal is created and vice versa (Frömmel and Lampaert, 2016). Relative Strength Index (RSI) is the most widely used oscillator used as a technical oscillator. RSI shows the internal strength of assets and based on RSI value, the signal of whether the asset is oversold or overbought is generated (Marek and Šedivá, 2017). RSI works with the recent data on the price development of a given asset and is one of the short-term to medium-term indicators (García et al., 2018). RSI´s period can be adapted to the analyst´s need; the most commonly used one is a 14-day RSI with 30/70 levels (Crowell, Bock and Liu, 2016). Investors of speculators must also consider volatility, which determines the "mood" of the market. The higher volatility, the higher risk but also potential profit. Volatility is a fragmentation of the market, which is directly influenced by the number of open trading positions (Moreira and Muir, 2017). High volatility is not good for small investors and speculators, since large asset movements can drain their trading account in a very short time (Basak and Pavlova, 2016). High market volatility occurs mainly in the times of crises and recession. Moreover, it is increased by political uncertainty at the global and local level. This occurs mainly in the case of assets directly dependent on the behaviour and decisions of the state (Baker, Bloom and Davis, 2016). The objective of the paper is to set a screening filter that selects stocks suitable for a buy-and-hold strategy, which are then subjected to technical analysis. This enables us to enter the trading position more effectively.

Hypotheses

H1: The screening filter will evaluate a maximum of 5 companies as suitable for the Buy & Hold strategy (in the order of decades).

H2: The screening filter does not evaluate any company as suitable for the Buy & Hold (in the order of decades) and it will be necessary to adjust the parameters of filters.

H3: The technical analysis will not show any coming decrease in the stock price; therefore, it will be recommendable to buy the stocks of the surveyed company soon.

Methods and Data

The dataset includes stocks traded on three United States stock exchange. The largest and the best-known stock exchange is the NYSE (New York Stock Exchange), which currently trades almost 4,000 stocks. The second largest US stock exchange is NASDAQ (National Association of Securities Dealers Automated Quotations), which currently trades more than 3,000 stocks. The third largest stock exchange is AMAX (American Stock Exchange), trading over 500 stocks. In total, 7,638 stocks from more than 50 countries all over the world can be traded. Each stock comes with the following information: Ticker (stock symbol), Sector (business sector), Industry (more detailed specification of the sector), Country (the country where the company operates), Market Cap, P/E (ratio of market price to the profit per stock; this is relevant for the companies that report profit), Price (current stock price), Change (percentage change in the stock value per 1 day), Volume (volume of trades) and Chart (development of stock price in the form of graph). There can also be more detailed information about the company, such as ROE, ROA, SMA, P/B and others. These are key parameters for creating a screening model. For subsequent technical analysis, only the historical data on the development of a given stock price, volume, are needed. The data can be downloaded to excel, where they are arranged as follows: date, opening price, closing price, the maximum price per interval, minimum price per interval, and volume of trades. Excel-compatible data can be downloaded for free from finance.yahoo.com, separately for each stock. For the needs of technical analysis of the stock time series, a data model from 1.1.2020 to 31.11.2020 is used. One Japanese candle represents the price movement in one day.

Parameters of stock value screening and their reasoning

For the purposes of stock value screening, 8 parameters will be used in order to filter stocks with high potential and stability for future in the order of decades. These parameters are arranged so that it is possible to find companies with higher reliability, which may be at the expense of the overall profit. The selected company is subject to technical analysis to determine the short-term development of stock price and thus predict the price level of the optimal entering in trading position. Stock value screening is

performed on finviz.com (https://finviz.com/screener.ashx). The individual parameters and their meaning are presented in the Table 1 (arranged according to finviz.com).

Tab. 1: Parameters and their meaning in stock value screening

Parameter	Parameter value	Meaning
Market capitalisation	+Large (over $10bln)	Financially stable company able to overcome various crises
EPS growth past 5 years	Over 10 %	Company which increases its profit in the long run
Dividend Yield	Positive (>0 %)	Dividend company (paid dividends can be reinvested)
P/E ratio	Under 25	Generally recognised value as rational (it can be understood as return on investment in years)
Sector	Technology	Information about technological companies is easy to obtain even without deeper knowledge
Sales growth past 5 years	Over 5 %	Company which increases its profit in the long run
ROE	Over 20 %	High efficiency of using equity
Average volume	Over 1M	Higher volumes eliminate the risk of large fluctuations of stock price, if a large trader/fund etc. enters in trading position

Source: Author based on finviz.com.

If the screening application evaluates more companies as suitable, the one with the highest market capitalization will be selected due to its highest financial stability and strength. Subsequently, the given company is subjected to technical analysis.

Indicators of technical analysis and their use

The purpose of technical analysis is to predict a short-term price development of a given stock and thus determine the time of entering in trading position. The graph of the selected stock, which consists of Japanese candlesticks, will represent simple 200-day, 100-day and 50-day moving average. There will be examined the difference between the current stock price and the SMA value and how the individual parameters intersect. Simple moving average can be calculated as follows:

$$SMAn_p = \frac{1}{n} \sum_{i=p-n+1}^{n} c_i \qquad (1)$$

Where:
SMA – simple moving average
n – length of moving average calculation period
p – current position of the monitored period
c_i – closing price of stock on trading day

Other information on the given stock is provided by the Relative Strength Index (RSI). For the purposes of the technical analysis in this paper, 14-day RSI is used, which is the most

commonly used and recognised period. RSI is one of the leading indicators. This does not mean its importance but its ability to provide signal on the movement of the price even before the market moves up or down. RSI indicates whether the asset is overbought or oversold. Under normal conditions, RSI has a similar demographic development as the price level of the analysed asset. RSI is calculated using the formula below:

$$RSI = 100 - \left(\frac{100}{1 + RS}\right) \tag{2}$$

Where:

RSI – relative strength index
RS – relative strength ratio

$$RS = \frac{AVG\ gain}{AVG\ loss} \tag{3}$$

Where:
AVG gain – average increase in the asset price in the monitored period
AVG loss – average decrease in the asset price in the monitored period

The movement of the stock price development trend can be indicated also by the volume of trades on a given asset. According to the Dow Theory, the trend is confirmed or refuted by the volume of trades. The relationship of the asset price and the volume of trades can be described by one of the situations presented in Table 2. The subject of the analysis is searching for one of those situations.

Tab. 11: Relationship between stock price and volume of trade over time

Current trend	**Volume of trade**	**Predicted future trend**
Bear (falling) trend	Rising	Bear (falling) trend
Bear (falling) trend	Falling	Bull (rising) trend
Bull (rising) trend	Rising	Bull (rising) trend
Bull (rising) trend	Falling	Bear (falling) trend

Source: Author based on DJ theory.

Another way to predict price movement is based on the size and combination of Japanese candlesticks in relation to the trend line referred to as resistance and support. Resistance does not allow asset price to get above this level, while support does not allow it to fall below this level. It is an imaginary boundary of the trend. These two levels can be parallel or their direction can be towards each other or away from each other. Based on these levels, certain graphic pattern can be found and determine when the price development can change rapidly or slow down. Such patterns enable speculators to set stop loss.

After applying those indicators, the results are graphically presented in a price graph with an RSI graph. All graphs are prepared in excel based on the data from finance.yahoo.com.

Afterwards, the results and their prediction are summarized in a table. This is the basis for the recommendation of whether to buy the stock immediately or wait for a possible decrease in price. The final stock should be suitable for the Buy & Hold strategy. It shall also me mentioned that for higher reliability of the analysis, fundamental analysis should be performed as well.

Econometric analysis

The issue is solved using econometric analysis, which means that mathematical statistic is applied to analyse the economic data, i.e. values of HDI (Human Development Index), GDP (Gross Domestic Product), economic development, economic growth, unemployment rate, import and export, international trade, education, industry and the associated extraction of raw materials, agriculture, etc…

This method enables the identification and evaluation of the main key factors of the economic growth and economic development of third world countries over a specific period. The data for the analysis are secondary data from the database of UNDP (United Nations Development Programme), which is a special organization established in 1966.

The output of the econometric analysis are data for a given period in the form of line graphs divided into given groups, which are subsequently compared with each other, i.e. the data of the individual states are compared. The comparison provides findings and responses to the hypotheses formulated, which enables identification of possible key factors with the highest effect on the economic growth and economic development in the selected third world countries over a given period.

Four pillars are created based on the selected factors. The economic and social pillars analyse the data concerning e.g. GDP, import and export, unemployment rate. The demographic pillar analyses factors related to HDI and education. The environmental pillar is focused in the effect of industry, extraction of raw materials and agriculture on the areas under review over a given period.

The selected period for analysing the data of the selected third world countries is 1990 – 2018, i.e. the period for which the data are available in the aforementioned UNDP database.

Results

Stock value screening was performed on the aforementioned web finviz.com, which contains a database of all companies listed on US stock exchanges (almost 8,000 companies). All screening parameters can be easily entered in the web application, which means that the investor does need to calculate anything. After entering these parameters, the application evaluated two companies as suitable, namely Intel Corporation and Applied Materials, Inc. The comparison of both companies is presented in Table 3.

Tab. 3: Comparison of INTC and AMAT parameters

Parameter	**Intel Corporation (INTC)**	**Applied Material, Inc (AMAT)**
Market capitalisation	USD 195.55 billion	USD 76.01 billion
EPS growth past 5 years	15.20 %	26.70 %
Dividend Yield	2.78 %	1.06 %
P/E ratio	9.30	21.09
Sector	Technology	Technology
Sales growth past 5 years	5.20 %	10.00 %
ROE	28.30 %	32.90 %
Average volume	33.35 mil	8.19 mil

Source: Author.

The performed screening evaluated and compared the two above companies. As for market capitalization, the amount is nearly three times for Intel than for AMAT, which indicates that this company is better able to survive economic recessions or longer crises. It is currently threatened by more problems that its competitor; however, this company is able to cover loses in the long run and thus reduce the risk of bankruptcy. The percentage of EPS growth past 5 years means that in the given company, the profit per one stock has been growing for the past 5 years. This indicates a better position of AMAT; however, 15.20 % in the case of INTC is also a very good result (comparable with its largest competitor in the field of manufacturing computer processors, AMD, whose result is 20 %). Dividend Yield means the amount of dividend per stock; in this case, the table shows INTC is in better position. With a long-term holding, the higher amount can be reinvested. P/E ratio is probably the best-known parameter, whose value is extremely low in the case of INTC. P/E below the value of 10 is not usual; it indicates the undervaluation of the stock or the whole company. Another row in the table contains sector; the selected sector is strictly technological. The value of Sales growth past 5 years is higher in the case of AMAT; however, for long-term holding (decades), increasing sales by "only" 5 – 10 % is not such a big problem in the short run. The resulting value of ROE is nearly identical and expresses the efficiency of using equity of the company. The last row in the table contains Average volume, which represents the average volume of trade per one day for the last 3 months (the long-term graph shows even a longer period) based on the underlying asset. A higher value of INTC shows higher volatility but also higher resistance in the case of large investor, fund, etc. entering the trading position. Such a large trader does not move the price very much either up or down.

Subsequent technical analysis will be performed on the company Intel Corporation (INTC) based on the market capitalisation, which is three times higher than in the case of AMAT. Therefore, it was Intel Corporation, which was subjected to further analysis.

Data for technical analysis were obtained from the web finance.yahoo in the format *.csv. The dataset was converted into the format *.xlsx and individual columns and rows were

modified so that excel was able to plot a stock graph – Figure 1. Technical indicators were calculated using mathematical tools described in the methodology chapter.

Figure 1: Development of INTC stock price and technical indicators

Source: Author.

First, 50-day, 100-day and 200-day moving averages were calculated (based on the Close values). For an easier presentation of their results, SMA values are included in the price graph of the INTC stocks. All these averages are calculated per day for the whole monitored period, i.e. from 1 January 2020 to 30 November 2020. The resulting values change dynamically over time. As seen from the stock price graph, SMA with a shorter period responds faster to the changes in the underlying asset price. The values of all three SMA are falling; SMA with the shortest period shows the lowest value.

Subsequently, RSI indicator was calculated, specifically, a 14-day RSI, which, as already mentioned, is the most widely used and considered the most relevant. As in the case of SMA, the values of RSI are counted for every day of the monitored period. The resulting RSI values are illustrated over time in a separate graph. The graph also shows the limits for indicating overbought and oversold asset, which is 70 for overbought asset and 30 for oversold asset. These levels are used in the majority of cases for a 14-day RSI.

Other values reflected in the stock price graph are the total volumes of transactions per each interval of the monitored period, specifically every single trading day. These values

were included in the dataset downloaded from the web finance.yahoo. The values for volume are marked "Volume" in the graph; in the last month, they are slightly above their average but showing a decreasing trend.

In the next step, support was included in the price graph, which has been respected by the marked since the beginning of November 2017. Support keeps the price level above its value and does not allow it to fall unless there is a strong foundation. Moreover, a graphical pattern was included in the graph, specifically a double bottom. This means that the stock price fell twice to nearly the same lower limit or area in a short time. After such a pattern, the price usually rises.

Discussion

Within this paper, the results are divided into two parts, with the first one presenting the suitable companies positively evaluated by the stock value screening, namely Intel Corporation (INTC) and Applied Material, Inc (AMAT). INTC was chosen for subsequent technical analysis. The company was established in 1968 and it is known primarily for the production of computer processors. The company also produces PDA processors, chipsets, flash memory, various types of chips or equipment for multimedia households, etc. Intel has been the largest producer of processors for many years. Currently, its major competitor AMD is gradually stealing Intel´s market share, with the ratio of their production being 60/40 in favour of Intel. From the results of the stock value screening, especially P/E ratio shall be pointed out, with its value achieving 9.30, which is the lowest value for the last 7 years. This means two things: first, the stock is very cheap, the company generates large profit in relation to the stock price. A stock price increase or decrease in profit can be expected (due to some fundamental reason). The company loses its market share to AMD; however, the company is strong enough to be able to make profit in the future. The P/E ratio is expected to grow in the future, mainly due to the stock price increase required by the investor. INTC is constantly increasing its sales and profits and the dividend paid is nearly 3 %.

The second part of the results concerns the technical analysis. The values of all three moving averages are above the current stock price and decrease slightly. They last crossed at the turn of July and August. Currently, it seems that the short-term averages cross below the long-term averages. If this happened and the averages would show a growing trend, a longer bull trend could be expected. Another indicator is a 14-day RSI, whose current value is 50 but shows a growing trend. This indicates the market "mood", where the investors believe in the future growth of the stock price and therefore buy it. Subsequently, the relationship between the stock price and the volume trend was examined. The volumes are now relatively high and show a decreasing trend. In the short term, it is a sideway trend. This indicates no significant movement of the stock price; moreover, due to a significant dropdown on 22 October 2020, which was caused by publishing the results of the third quarter, the indication on the basis of price and volume trends is not relevant. What is interesting is a long-term support at the amount of USD

43,50 USD/stock. This support has been respected by the market since 25 October 2020 and can be considered an extremely strong support, which does not allow the price to fall below this level and rather pushes it upwards. Therefore, an increase in stock price and the subsequent bull trend can be expected. Finally, a graphical pattern was sought. Double bottom was found, after which the price is usually in the bull trend. The list of indications and recommendations formulated on the basis of the above is presented in Table 4 below.

Tab. 4: Results of technical analysis

Results of technical analysis of Intel Corporation (INTC)			
Indicator	*Development*	*Signal*	*Investment timing*
Simple Moving Average SMA 200 – SMA 100	Averages move apart from each other and both are falling	None	Cannot be determined
Simple Moving Average SMA 100 – SMA 50	Averages moving closer to each other, both are falling	Future bull trend	Buy now
Relative Strength Index RSI 14	Neutral value of about 50, but growing trend	Short-term bull trend	Buy now
Price trend vs Volume trend	Price moving sideways, decreasing volumes	None	Cannot be determined
Support and resistance	Strong support about USD 43,50	Bull trend or sideways trend	Buy now
Graphical pattern	Double bottom	Short-term bull trend	Buy now

Source: Author.

After evaluating 6 indicators of technical analysis, the impulse for the stock price increase in a short time was evaluated 4 times. For a long time, fundamental analysis needs to be used. It can thus be said that the investment in INTC should not be postponed and the stocks should be bought as soon as possible, since it is currently at a very low price level and its increase is expected.

Stock value screening confirmed the first hypothesis, according to which screening finds a maximum of 5 companies which are potentially suitable for long-term holding, since the screening evaluated only two as suitable. This is due to relatively strict parameters. The result thus rejects the second hypothesis, according to which the screening will not find any company suitable for long-term holding. The last hypothesis concerned technical analysis. According to the hypothesis, technical analysis will not generate a signal for the price decrease in the short term. This hypothesis was confirmed, since 4 out of 6 indicators predict a short-term stock price increase, while the remaining two do not generate any signal for either price rise or fall.

Prior to buying stocks, potential investors need to think about the strategy, whether they want to make a one-time purchase - in such a case, technical analysis is important for the proper timing of the purchase, or whether they want to buy a certain amount of stocks regularly – in such a case, technical analysis does not play an important role, while emphasis is placed on the fundamental analysis only. A prudent investor does not buy

stocks only on the basis of screening and technical analysis. For long-term investment, fundamental analysis is essential and should always be performed. Moreover, each investor needs to think about which type of stocks they want to buy, for which purpose, and what risk they want to take. When selecting a stock to buy, the method of stock purchase shall be considered, i.e. whether to buy directly, by means of CFD with leverage, ETFs, or through options where they can fix the price.

Conclusion

The objective of the paper was to identify the parameters of stock value screening, based on which a company was selected, whose stocks were subjected to technical analysis in order to help determine the proper timing of purchasing the stocks of the company for a long-term investment. The screening evaluated two companies as suitable for long-term investment, namely Intel corporation and Applied material. Due to the lower value of P/E ratio and higher market capitalization, Intel was subjected to technical analysis. The results of the technical analysis performed are summarized and explained in the chapter Discussion of results. In total, the signal for bull trend in a short time was generated 4 times, while 2 indicators did not generate any signal. Therefore, stock price increase is assumed and it is thus not recommended to postpone the investment. The relevance of the indicators used is confirmed by their high popularity in the case of investment or hedge funds, large speculators and investors for decades. The credibility of the indicators is enhanced by a large number of studies which confirm their effectiveness. The indicators are also suitable for other types of underlying assets, such as commodities, currency pairs, precious metals, or cryptocurrencies.

In conclusion, it can be stated that the objective of the paper was achieved. The objective of the paper was to create a screening filter to find stocks suitable for long-term holding and based on the screening, to find a company, which would be subjected to technical analysis. 4 out of 6 indicators assume price growth; therefore, the immediate purchasing of stocks is recommended.

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Contact address of the author(s):

Ing. Jiří Sulek, Institute of Technology and Business in České Budějovice, Faculty of Corporate Strategy, Okružní 517/10, 370 01 České Budějovice, Czech Republic, e-mail: 20003@mail.vstecb.cz

DOI: https://doi.org/10.36708/Littera_Scripta2022/1/8

Emotional Appeals In Advertising: Literature Review From 2009-2019

Valeriya Alferova

Prague University of Economics and Business Faculty of Management
Jarosovska 1117/II, 377 01,
Jindrichuv Hradec, Czech Republic

Abstract

This research aims to show how emotional appeals and their use in advertising were studied from 2009 to 2019 and to show the research gap for further research in that sector. This study can be used as a solid background for further research. PRISMA is used in the research. The focus literature comprises 34 studies from 2009 to 2019. All the studies examined focus on the use of emotional appeals in advertising in the different market sectors (insurance, healthcare, alcohol and cigarette consumption, food and beverages, etc.). This review provides guidelines within the studies aimed at showing how to employ emotional appeals in modern advertising. Study has a limitation such as a subjective choice of the articles. Only one person chose the studies for the literature review. As a result, study shows how emotional appeals were used in advertising of firms and, how customers may react to those emotions. Chosen studies provides information about different emotions form the dissimilar point of view, that can be helpful for better understanding of the topic.

Keywords: emotional advertisement, humour, guilt, rational appeal, PRISMA, Weight of Evidence

Introduction

The significant role of emotions in advertising has been discussed over many decades (Poels and Dewitte, 2019). Different emotional appeals are used to make customers feel something about the product or brand that can entice them to buy. This phenomenon has been discussed by many authors. Between 2009-2019, humour, fear, disgust, passion, anger, guilt, pride, and many more emotional appeals were debated in research, which aimed to describe how those appeals can affect costumers and their reaction to the advertisement. For example, Kemp et

al. (2017) in their research "Understanding the power of hope and empathy in healthcare marketing" examined how hope and empathy appeals impact advertising in the healthcare segment. The study aimed to examine if words said by a cancer patient and an expert in hope/empathy advertisement, affects healthcare consumers more than objective information (Kemp et al., 2017). Another study was made by Cockrill and Parsonage (2016) – "Shocking People Into Action: Does It Still Work? An Empirical Analysis of Emotional Appeals in Charity Advertising". The main part described in the research was shock appeal and how it can be used in charity advertising. All the work was built on three advertisements: ads with neutral, positive and shock appeal. Based on the questionnaire results from 312 participants, the main research question was answered – how advertising with those appeals impacts customers in their need to donate money to charity and speak about charity organisations with friends and family members (Cockrill and Parsonage, 2016). The results of the study show that the most effective way to impact people is positive and shocking appeals – ads with positive emotions create pleasantness and calm while shock creates fear and sadness. In their conclusion, the authors state that shock advertisement is more shocking for costumers than a positive advertisement is positive for them (Cockrill and Parsonage, 2016). Many more studies were written from 2009 to 2019 and will be described in the literature review.

This study is showing chosen articles about usage of emotional appeals. Articles was chosen from different life spheres. Also, there are different emotional appeals, that have been described. Thanks to that, study can provide the readers with big sample of articles about emotional appeals in advertising from the many point of view.

Emotions are the part of our everyday life and the firms marketing and advertising is not an exception. As have been shown above, there is a lot of authors, who are interested in describing usage of emotional appeals in advertising, which shows the importance of the chosen topic. Not only those articles can be interesting for customers to know, how firms are using emotions to keep their interest on top, but also, the topic needs to be the main interest of marketers, so they know how to use those emotions for their benefit. Due to the fact, that every advertisement is using some kind of emotional appeals, the attractivity of the topic can be confirmed.

The main aim of the article is to examine the literature about emotional appeals in advertising between 2009-2019 and to show the research gap for further research in that sector. This study can be used as a solid background for further research. Study will show answers to research questions: what emotional appeals are the most common in chosen studies, how those can affect the customer behaviour and what is the research gap for further research.

There is a large sample of studies about emotional appeals in advertising from different years. For the literature review, a total of 749 studies were chosen: 363 articles found in the Web of Science (WoS) database and 386 found in Scopus. Not all of them were chosen for the literature review. The number was reduced based on the relevant information in each study and the applications for the topic. The results and steps of the reduction are shown using PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) graphic

representation. The final 34 studies were chosen because of their relevance and usage for the review of different emotional appeals in advertising. All the articles chosen to describe the use of advertising in different life sectors and how emotional appeals can impact customer behaviour, purchase intentions, and feelings towards the brand or a specific phenomenon. The final number of articles were used as the basis for fulfilling the aim of the literature review.

The article provides the list of the literature, which describes emotional appeals. That helps to create a good literature base for readers, who want to know more about the topic and who want to continue in the research. Also, the article provides the direction for further study. As a practice use, article can be useful for marketing workers, who creates the advertisements. Thanks for grouping the articles from different life spheres and about different emotional appeals the study can bring important information for firms advertising and how to concentrate customers attention on their products by using emotions.

Methods and Data

The whole article is built as a literature review about the usage of emotional appeals in advertising. For the purpose of the review, the articles from years 2009-2019 were studied. Year 2020 and 2021 wasn't chosen for the article purpose. A lot of articles from those years are concentrated on the Covid-19 pandemic and the advertising during the world pandemic. The study is aimed to make the overlook of classic advertising process. The literature review is based on 34 chosen studies about the topic. The steps that were taken to choose those articles are described and shown using PRISMA – a graphic representation of the steps taken. Articles are described as follows: aim of the study, emotional appeal, method, and results.

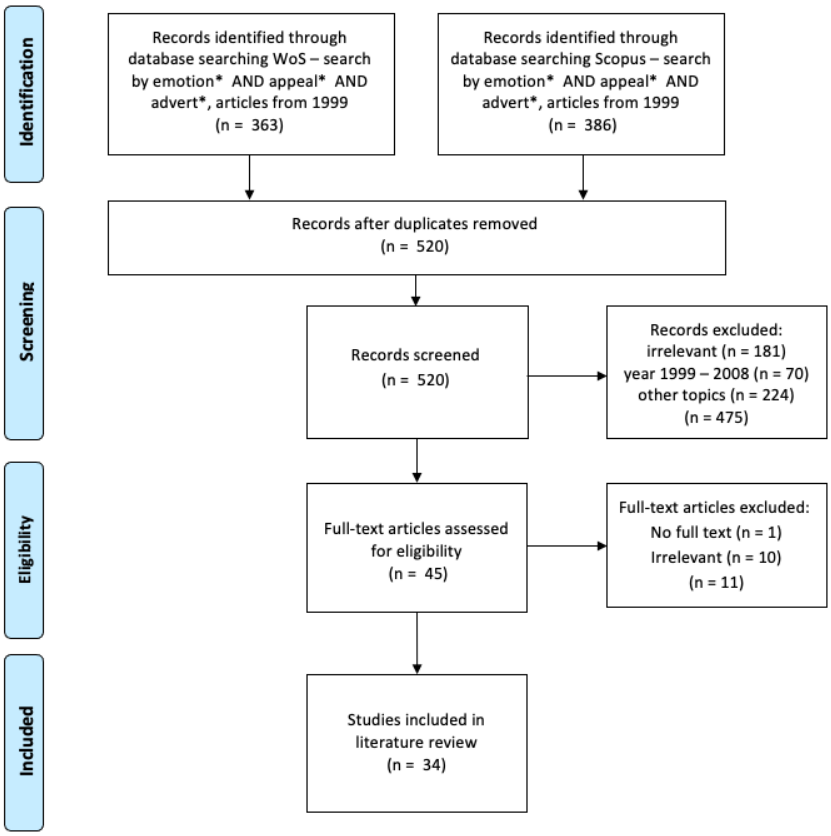
Search strategy

The first step for the search strategy was to find a raw sample of the articles, which might be useful for further study. For the literature review about emotional appeals in advertising, a total of 749 studies were found: 363 articles were found in the WoS database and 386 found in Scopus. WoS database shows, that 162 studies out of 363 were written in USA (nearly 40 %) and most of them are from business (190) and communication category (98). Scopus database shows, that 130 studies out of 386 were published in USA and the most common subject area is business, management, accounting and social sciences. All the works were searched using the query Emotion* AND appeal* AND advert* since 1999. PRISMA shows articles from that year because at the start of the literature review there was a need to take older information into account. After ridding the abstracts and introductions to articles, the decision to choose works from 2009-2019 was made. For the further steps of writing the literature review, there was a need to choose which studies will be used from the raw sample.

Selection of studies

After the raw sample of usable literature was found, the next step was to select the studies. First, 229 studies were omitted from the review due to duplicity. For the needs of the literature review, the years from 2009 to 2019 were chosen. Therefore, the next step was to omit articles from the earlier timeline. The initial reason for finding those studies was to evaluate the topics from earlier years up to 2009-2019 (n=70). Many were irrelevant from the advertising point of view, but on the other hand, are useful for terminology. The next step was based on the article abstracts. After screening, the number of articles that were chosen was reduced because of their irrelevance or study of another topic (n=405). The last step in selecting the studies for the literature review was the in-depth reading of the full texted articles. One article was excluded due to no available full text. Ten more studies were excluded because of the irrelevance of the chosen topic. The final sample of thirty-four articles was chosen for the literature review of emotional appeals in advertising. The whole paper is presented as a literature review about emotional appeals used in advertising. The main graphic representation technique used in the literature review is preferred reporting items for systematic reviews and meta-analyses (PRISMA). PRISMA is useful for reporting systematic analysis and reviews (Liberati et al., 2009). The steps that were taken are graphically reflected by the PRISMA shown in Graph 1.

Graph 1: PRISMA



Source: Own processing

Describing the chosen articles

A total of 34 studies was chosen for the literature review. The following paragraphs describe all the chosen articles and show the purpose of each study and the results obtained. The first study was written by Leonidou and Leonidou (2009) and compares emotional versus rational messages in newspaper advertisements. This is based on more than 100 articles that contain text, art and layout. The next four studies used in the literature review are from the years before 2009. Taute, McQuitty and Sautter (2011) studied advertising of public services and using emotional management in those ads. The result shows that people who can naturally better control their emotions can better handle negative appeals. However, calls for positive valence can be of great benefit to them because they use positive affective states to respond to emotional problems. Geuens, De Pelsmacker and Faseur (2011) promote literature examining (1) whether and (2) how a product category can moderate managing non-emotional and emotional advertising. The results of the study show that emotional ads usually outperform ads without using emotional appeals in terms of attitudes toward advertising and branding. Although this result was expected for product-consistent emotional appeal and product-incompatible emotional attractiveness for low-engagement products, both were expected to negatively affect product-incompatible emotional advertising. The next study from 2011 was written by McKay-Nesbitt et al. (2011). This article explores how the individual characteristics of need for cognition (NFC), age, and affective intensity (AI) interact with structures of advertising appeal with attitudes towards advertising, engagement, and memories. Young people find emotional attraction more appealing than rational ones; they remember emotionally formulated calls better than rational ones. Older people have more positive reactions when faced with rational calls than negative ones.

Soscia, Turrini and Tanzi (2012) examined the impact of various emotional messages in HIV/AIDS prevention campaigns using print advertising in 2012. The effectiveness of calls for humour versus calls for shock and fear are specifically observed. The results show that addressing fear is much more effective than other appeals in preventing HIV = AIDS, while humour, an emotional stimulus widely used in print advertising campaigns against HIV = AIDS, has a weaker effect. The same year Morales, Wu and Fitzsimons (2012) examined the role of aversion in improving fear compliance. Three studies have been provided by that article. Study 1 – the participants showed a greater degree of persuasion and compliance in response to advertising with fear calls compared to non-fear appeals and control calls. Study 2 showed that fear and disgust can be stimulated without the use of images. It is important to realise that textual aversion and the call to fear strengthened faith, as did its visual counterpart; participants in a state of disgust and fear were more likely to avoid unprotected sunlight and to use more sunscreens than those who are in neutral or only fear conditions. Study 3 – according to the hypotheses, participants in a state of disgust and fear continued to demonstrate increased confidence and compliance compared with participants in awe or neutral conditions on all learning and behaviour measures. The last study chosen from that year was written by Mukherjee and Dube (2012) and showed that humour can decrease the defensive replies and thus increase the persuasiveness of advertising with fear appeals. The results from both studies with advertisements for sunscreen showed that increased arousal

from the fear went from weak to strong persuasion when humour was included in advertisements but decreased when there was no humour included. The article also showed that the collaboration of humour and fear was mediated by decreased defensive responses to advertisements, as measured by positive thoughts about the brand and perceived vulnerability to threat.

In 2013, Krisjanous et al. (2013) proposed and tested a theoretical model that examines the "threat" in terms of effectiveness on students with high levels of anxiety, one of the main target groups of counselling services. The study examines affective and cognitive reactions to threat calls and their impact on attitudes and behaviour. The results show that people with a high level of anxiety do not show their negativity towards the advertisements, while it is the opposite for people with lower anxiety. Negative emotions also have no significant impact on creating customers' positive reaction towards the advertising, but positive emotions do. The same year Stanton and Guion (2013) explored the use of emotions, especially guilt and fear, in food advertising and the responses of parents of young children. The results show that parents are less likely to make optimal choices for their children when their emotions are used. Emotional insinuations lead parents to a subset of product attributes and elevate them to levels of anxiety (fear, guilt and anxiety) and implicitly distract them from other attributes that may be equally relevant to the person's own context. The next study from Parry et al. (2013) compared the response to shock advertising in commercial (FP) and non-profit (NFP) organisations. Focus group responses were much more favourable to NFP ads provided the questions were clarified and relevant to viewers, while the strongest backlash was from FP ads highlighting the high-risk strategy of using such tactics in a business context. The study also found that consumer response is somewhat dependent on religion and gender.

A year later, the study by France et al. (2014) assessed three different advertising concepts related to alcohol and pregnancy: threat appeals, positive appeals promoting a self-efficacy report, and a concept combining the two. The main goal of the study was to measure the helpfulness of the concepts shown in the topic of women's intentions not to drink alcohol during pregnancy. As a result, it was found that threatening concepts were significantly more effective than self-observation. A concept that combines threat and self-efficacy is suggested to be used for development in a media campaign because it has strong persuasive potential, balances positive and negative emotional responses, and is unlikely to have defensive or unintended consequences. Another article written by Wyllie, Carlson and Rosenberer (2014) examines the intensity of sexual stimuli (overt or moderate) in print advertising and assesses its impact on advertising performance and how it varies by gender among Australian consumers. The study found that the use of mild and explicit sexual stimuli in advertising has a positive effect on the overall system of relationships between the effects and attitudes of male consumers. However, there was one notable exception, where there was a negative impact between the approach to advertising and the intention to buy, and between the attitude towards the brand and the intention to buy for male consumers exposed to explicit sexual incentives. The last article from that year by Chang (2014) explores how selfish (rather than altruistic) appeals in charity advertising can help to regulate feelings of guilt and lead to more favourable attitudes towards advertising and donations in three studies. Study 1

supports the idea that the impact of previous experience with a donation is greatly mitigated by advertising calls, so selfish challenges amplify the effect. Study 2 confirms that the impact of guilty advertising stories on predictive beliefs, attitudes toward advertising, and the intention to donate is greatly mitigated by the call for advertising. Study 3 shows that the influence of guilty-provoking advertising stories on predictive beliefs is significantly moderated by advertising calls. It is also important to mention the pattern of remedies in three studies, which suggest that altruistic appeals are ineffective when people feel guilty; otherwise, altruistic, and selfish emotional appeals appear to lead to similar results.

Of the four studies chosen from 2015, Yoon (2015) recognised the potential of humour to increase the persuasion of threat reports, but research on humorous persuasion at risk has been limited, which is why the current research is being conducted. The result shows that while fear and anger appeal and perceived threat were higher for non-humorous ads than for humorous ads, positive emotions and message discrediting were significantly higher in humorous ads than in non-humorous ads. Surprise, guilt, and avoidance of defence did not differ between advertisements, suggesting that the presence or absence of humour did not significantly influence these responses. The next study by Bleakley et al. (2015) examined the direct and indirect impact of using emotions in public service advertising (PSA) broadcasts between 2010 and 2012 on adolescents' intentions to reduce their intake of sugar-sweetened beverages (SSBs). The result of the article reveals that the fear effect is mediated not only by the power of arguments but also by the perceived strength, self-efficacy and threat to choose. Such important predictors as negative or positive beliefs about sugar-sweetened beverages were not affected by the described emotional appeals. The study by Das, Galekh and Vonkeman (2015) proposed an empirically reliable way to test the persuasiveness of various emotional appeals (control, humour and sex) by comparing them in terms of levels of pleasure and excitement. The overall picture of the research findings suggests that attraction and arousal do not affect persuasion when levels of pleasure are high. Sexual attraction overcomes asexual attraction only when pleasure is mild and arousal is high. Sexual appeals are less influential than nonsexual appeals for regulating pleasure and arousal. The results show that the pleasure principle is critical to explaining the persuasiveness of advertising: pleasant advertising creates a favourable attitude towards the advertisement and the advertised brand and promotes higher buying intent, whether the call to sell uses sex, humour or other elements. The last article from that year is by Antonetti, Baines and Walker (2015). Their framework combines the study of the communication of emotional appeals with how they are experienced during decision-making. As a result, the study shows two options for applying the elicitation-consumption framework while studying guilt or fear, and social marketing.

Two studies were chosen from the next year. Cockrill and Parsonage (2016) answered the question about how effective charity shock advertising is. The results show that shock ads were considered shocking, more intimidating, sadder, and more informative than positive and neutral ads. Positive ads had the highest scores for the positive, pleasant, and encouraging variables, while neutral ads had lower scores for all variables. Shock ads were perceived as much more shocking than positive ads were considered positive. Another study

from Shen and Morris (2016) offers an integrated approach that combines a visual self-assessment scale to measure the emotional response to television advertising. The chosen ads were about anti-fur calls, Coca-Cola, Evian and Gatorade. The anti-fur video evokes anxiety, sadness, and a feeling of aggression, while others lead to positive feelings, kindness, and happiness. A higher level of customers responses was also detected in anti-fur and Gatorade videos, due to the actions in the advertising, that can trigger emotions – action and shock. Only one study from 2017 was chosen for the literature review. The study by Kemp, et al. (2017) examines the effect of emotions on advertising in healthcare. Two independent consumer groups presented with advertisements for two types of healthcare providers show that hope and empathy are better than unemotional advertisements. The findings also support the fact that appeals based on hope and judgment provided by experts are more effective than other ad formats tested. The hope of reaching a cancer treatment centre was more effective than the appeal for empathy, while when the ad targeted a diabetes centre, the appeal for hope was targeted better.

Four studies were selected from 2018. Kujur and Singh (2018) explore how emotional attraction is used in YouTube ads to promote products by looking at various big brands from different industries in an emerging market, such as India. As a result, the article states that positive emotional appeals such as love and happiness have a hugely positive impact on customers, while negative emotional appeals such as fear and shame leave customers feeling unpleasant. Therefore, those appeals have a lower influence than positive appeals. Pounders, Lee and Royne (2018) examine the interaction of emotional appeal (guilt x shame) and regulatory messages (encouragement x prevention) of consumer reactions to a social marketing campaign. The result shows that guilt appeal is effective when used with a message focused on promotion. That appeal is associated more with problem-solving coping. In contrast, shame appeal can be effective when using a message focused on prevention. The appeal is associated with avoidance coping. Akram, McClelland and Furnham (2018) also examined the negative appeal – fear appeal. The article is concerned with how chosen appeal TV commercials lead to better memory for advertisements but also weakens memory for programme information that either precedes or follows advertisements. The results of this study show that inducing a slight amount of fear in participants can improve memory, as measured by remembering advertising. The results also show that the search for information in the second half of the programme was lower with fear than without it. This finding suggests that the use of fear content in advertisements results in impairment of the ability to recognise information after advertisements. The last is the study of Allred and Amos (2018), where the helpfulness of images of disgust in the context of a non-profit organisation as part of a wider paradigm of social marketing was examined. The output of the research states that images with disgust evoked the lowest intentions for donation while, at the same time, evoked more sympathy among the subjects. Lower donation intentions, despite higher levels of empathy, support the dominant side effects of using aversion imaging. Competitive mediation implies that while the image of disgust elicited higher levels of empathy, empathy does not explain the subjects' intentions for lower donations.

The next article was processed by Dobrenova et al. (2019). The study investigated the use of various promotional messages in the healthcare sector – breast cancer advertising. The results show the use of fear, shame, erotic and humour appeal: fear appeal – usable in breast self-examination (BSE), less likely in mammography advertisements. Shame – guilt appeal – more related to mammography advertisements than to BSE. Humour appeal – positive effect in BSE. Erotic appeal – usable in BSE but not in mammography advertisements. A few more studies were published in the same year. Septianto and Tjiptono (2019) examined how pride and compassion appeals affect customers' motivation to donate. The result shows that matching pride with past positive results and compassion for past negative results increases donations. Li (2019) investigated how some exact emotional appeals can affect buyer response to travel advertising on TV. Research shows that emotional appeals such as humour have a greater impact on the customer than rational appeals. This effect is related to both physiological pleasure and physiological awakening. Soscia, Prayag and Hesapci (2019) examined the possibility of reducing guilt without causing a difference in the happiness level of the customers in vacation advertising. This was all done by using guilt-decreasing appeal. The results of the articles show that the chosen emotional appeal is strengthened by the credibility of the ad. The study confirms that by using customers' psychological processes in vacation advertising, there can be a positive increase in the happiness level caused by using guilt-reducing appeals. Pounders, Royne and Lee (2019) work used the constructive level theory. An experiment to show the contact between time frame in risk transfers and emotional attractiveness in health reports was conducted. As a result, the effect of guilt and shame appeal was shown guilt appeal – works better while making someone guilty for self-hurting behavior rather than pointing to future problems that their behavior may cause. Also, that appeal is more useful when addressing people at an earlier age. Shame appeal – is better in pointing to the near future than the present time. Moraes, Kerrigan and McCann (2019) answer the question of how clients see marketing communication which is based on threat appeals. The study shows that even though the threat appeals are taken as negative, in some cases shock can be taken positively by customers. Skurka (2019) aimed to answer the research question about the possibility of persuasive appeals to change the point of view of the soda industry to halt the activism around the topic and support the marketing regulations. The result of the study shows that the participants, drawn to the low level of anger appeal, were less supportive of marketing policies than participants with high anger appeal. Poels and Dewitte (2019) worked on a literature review, which aimed to provide a new understanding of the behavioural potential of the emotions put into advertising messages. The review concentrated on integral emotions, especially in the digital media environment. Hendriks and Strick (2019) have examined the effect of humour appeal in alcohol advertising on the frequency, duration, and significance of conversations about alcohol and its advertising. The results show that humour appeal leads to longer and more frequently positive conversations about advertising and alcohol. This communication and its valence were later associated with the appreciation of advertising, branding and alcohol. The newest study was written by Coleman, Royne and Pounders (2020) and aimed to examine usefulness appeals such as pride and guilt in CRM advertising. The study shows that people who have a promotional orientation had a better connection to advertising and the brand. There is also a

greater possibility of them spreading positive word of mouth when it comes to pride appeal. This outcome was not found within guilt appeal.

Discussion and results

The present literature review aims to show the problem of using emotional appeals in advertising. Overall, 34 studies were chosen from the raw sample of 749 articles about different emotional appeals. The Table 1 shows chosen studies.

Tab. 1: Chosen studies

Study	Appeal studied	Method	Aim of the study
Leonidou and Leonidou (2009)	Emotional versus rational	Empirical, quantitative, chi-square, 2 250 randomly chosen advertisements	Compare the usage of chosen appeals in newspapers
McKay-Nesbitt et al. (2011)	Emotional versus rational, Positive versus negative	Empirical, Qualitative research: questionnaire, ANOVA, 151 younger and 124 older adult participants	To show how individuals interact with advertising appeals
Geuens, De Pelsmacker and Faseur (2011)	Emotional versus non-emotional, erotic appeal	Empirical, Quantitative research: Study 1 - pretest, Questionnaire, MANOVA. Study 2 - pretest, evaluate seven erotic pictures from foreign magazines (1=not erotic, 4= very erotic). Questionnaire. Study 3 - questionnaire, content analysis. Study 1 - pretest - 22 respondents, 400 participants. Study 2 - pretest - 22 respondents, 391 participants. Study 3 - 909 respondents	How the category of the product can moderate advertising
Taute, McQuitty and Sautter (2011)	Empathy	Quantitative research: pretest - PSAs were tested by 92 students. 280 complete responses, Confirmatory factor analysis, four-factor EIM model	To study how to use emotional management in public service advertising
Mukherjee and Dube (2012)	Humour	Empirical, Quantitative research: Study 1 - questionnaire. Study 2 - questionnaire, manipulation checks Study 1 - 124 undergraduate students. Study 2 - 132 undergraduate students	How humour can decrease customers defensive replies, how fear can increase persuasiveness
Morales, Wu and Fitzsimons (2012)	Fear, disgust	Empirical, Quantitative research: Study 1 - questionnaire. Study 2 - questionnaire. Study 3 - questionnaire Study 1 - 155 undergraduate students. Study 2 - 139 undergraduate students. Study 3 - 82 adults	The role of aversion with using fear appeals
Soscia, Turrini and Tanzi (2012)	Fear, humour and shock	Empirical, Qualitative, and quantitative research: focus group. Questionnaire Focus group: 2 groups, 4 participants each. Questionnaire: 240 students (60 per experimental group) from a major Italian university.	How different emotional appeals impact HIV/AIDS advertising

Parry et al. (2013)	Shock	Empirical, Qualitative research:12 billboard, Focus group, 19 participants	To compare commercial and non-profit organisations' shock commercials and how customers respond to them
Stanton and Guion (2013)	Happiness, pleasant, confident, surprise, intrigue, worries, guilt, fear, shame, and sad	Empirical, Quantitative and qualitative research: Study 1 - content analysis. Study 2 - Personal interviews. Study 1 - 684 ads. Study 2 - 18 women, all with children under 10 years old	How parents of young children respond to guilt and fear advertising
Krisjanous et al. (2013)	Threat (fear)	Empirical, Quantitative research: 130 completed the experiment questionnaire and 32 students completed the respective control questionnaire (pre-and post-tests but no exposure to the advertisement), parametric tests, Factor analysis, ANOVA. 162 subjects	Effectiveness of threat appeal for a student with a high level of anxiety, a test of the theoretical model
Chang (2014)	Egoistic versus altruistic	Empirical, Quantitative research: Study 1 - questionnaire, ANOVA. Study 2 - questionnaire, ANOVA. Study 3 - 2 x 2 factorial design: ad appeals (egoistic versus altruistic) and guilt-evoking stories (high versus low guilt), ANOVA. Study 1 - 80 participants. Study 2 - 80 participants. Study 3 - 120 participants	How selfishness can regulate the feeling of guilt in charity advertising
Wyllie, Carlson and Rosenberger (2014)	Sexual appeal	Empirical, Quantitative research: questionnaire, analysis, utilised partial least squares (PLS). 242 surveys used for data analysis	How the impact of sexual stimuli varies by gender in print advertising in healthcare
France et al. (2014)	Self-efficacy, Control and Threat	Empirical, Quantitative research: questionnaire. 354 participants	To measure the helpfulness of concepts related to alcohol and pregnancy
Antonetti, Baines and Walker (2015)	Fear and guilt	Qualitative research: The elicitation–consumption framework	How emotional appeals are experienced during decision-making
Das, Galekh and Vonkeman (2015)	Sex, humour and control	Empirical, Quantitative research: Study 1 - online questionnaire, ANOVA. Study 2 - online questionnaire, ANOVA. Study 1 - 162 Dutch consumers. Study 2 - 120 participants	To propose the way of testing persuasiveness of different emotional appeals
Bleakley et al. (2015)	Humour, fear and nurturance	Empirical, Quantitative research: Statistical Analysis. 805 adolescents ages 13–17 years	How direct and indirect use of emotional appeals impacts the intake of sugar-sweetened beverages
Yoon (2015)	Treat and humorous	Empirical, Quantitative research: Study 1 - t-tests. Study 2 - Regression Analyses Study 1 - 100 students were recruited from a Southeastern university. Study 2 - 297 undergraduate students were recruited from a Southeastern university	To show the potential of humour to increase the persuasion of threat reports

Shen and Morris (2016)	All emotional appeals	Empirical, Qualitative research: focus group, Localization of Brain Activation, BOLD signals recorded through fMRI and self-reported feelings on AdSAM. 12 adult participants	To offers an integrated approach that combines a visual self-assessment scale to measure the emotional response to television advertising
Cockrill and Parsonage (2016)	Shock	Empirical, Quantitative research: questionnaire, Likert-type scale. 312 fully completed questionnaires	To show the effectiveness of shock in charity advertising
Kemp et al. (2017)	Hope and empathy	Empirical, Quantitative research: Study 1 - questionnaire, ANOVA. Study 2 - questionnaire, ANOVA. Study 1 - 293 participants. Study 2 - 315 participants	To examine the effect of emotions in healthcare advertising
Allred and Amos (2018)	Negative emotions (disgust), Empathy, Guilt	Empirical, Quantitative research: questionnaire, MANCOVA. 167 subjects via Amazon's Mechanical Turk	To show the use of disgust in non-profit organisation advertising
Akram, McClelland and Furnham (2018)	Fear	Empirical, Quantitative research: 6 questionnaires, analyses of covariance (ANCOVAs). 54 participants	To show how fear appeal leads to better memory in TV commercials
Pounders, Lee and Royne (2018)	Guilt and shame	Empirical, Quantitative research: ANOVA. In total, 190 subjects were recruited from Amazon's Mechanical Turk	To examines customer reaction to interaction with emotional appeal and regulatory message
Kujur and Singh (2018)	All emotional appeals	Empirical, Quantitative research: Content analysis. 150 video advertisements	How emotional appeals are used in YouTube advertising
Hendriks and Strick (2019)	Humour	Empirical, Quantitative research, Questionnaire, ANOVA. 113 students	How humour is used in alcohol advertising
Poels and Dewitte (2019)	Lower-Order Emotions, Higher-Order Emotions, Discrete Emotions'	Literature review	To create a literature review, which provides a new understanding of the behavioural potential of emotions
Skurka (2019)	Anger	Empirical, Quantitative research, ANOVAs. 701 participants	To answer the question if persuasive appeals can change the point of view of the soda industry
Moraes, Kerrigan and McCann (2019)	Treat appeal (fear and shock)	Empirical, Qualitative research, In-depth interviews, Focus group. 8 participants for in-depth interview, 10 participants for the focus group	How clients see marketing communication based on threat appeals
Pounders, Royne and Lee (2019)	Guilt, Shame	Empirical, Quantitative research, ANOVA, PROCESS SPSS macro for bias-corrected bootstrapping. 104 participants	To show the contact between time frame in risk transfers and emotional attractiveness in health reports
Soscia, Prayag and Hesapci (2019)	Guilt, happiness	Empirical, Quantitative research, ANOVA. 57 graduate students	To show if there is a possibility of reducing guilt without reducing the happiness level

Li (2019)	Humour	Empirical, quantitative, partial least squares. 101 students	How humour appeal can affect customer response to travel advertising
Septianto and Tjiptono (2019)	Pride, Compassion	Empirical, Quantitative research, two-way ANOVA. Study 1: 297 participants. Study 2: 163 participants	How pride and compassion can affect the need for a donation
Dobrenova et al. (2019)	Fear appeals, Shame-guilt appeals, Humor appeals, Erotic appeals	Empirical, Quantitative research, content analysis. 456 advertisements collected by keywords in February 2016	To show the use of fear, shame, humour and eroticism in breast cancer advertising
Coleman, Royne (Stafford) and Pounders (2020)	Guilt, Pride	Empirical, Quantitative research, questionnaire. Study 1: 179 respondents. Study 2: 202 respondents. Study 3: 88 undergraduate students	To examine the use of guilt and pride in CRM advertising

Source: Own processing

The whole study aims to examine the literature about emotional appeals in advertising between 2009-2019 and to answer research questions: what emotional appeals are the most common in chosen studies, how those can affect the customer behaviour and what is the research gap for further research. As can be seen through the Table 1 the answer for the first question is: humour, guilt, empathy and treat appeals. As have been described above those appeals have significant effect on customers. Most results show that using emotional appeals is more suitable for better advertisement and brand awareness than non-emotional or rational appeal. The influence of the effect then depends on the chosen emotional appeal and the market sector where it is used. For example, the results of some studies about healthcare show that using fear and guilt appeal in advertising is more effective than using humour appeal – "The use of advertising appeals in breast cancer detection messages: a web content analysis" Dobrenova et al. (2019). When it comes to charity, empathy is much more powerful in increasing donation intentions than disgust. At the same time, disgust can increase sympathy for the person or the exact problem much better than empathy appeal. Overall, the influence of appeal depends on the market sphere where those are used.

The main question is what research gap can be seen for further research? All the chosen research was based on only one particular ethnic group and age dispersion. As a result, one research gap can be detected – there is no study about how emotional appeals can impact different groups of people. The next gap is that every study is based on only one type of advertisement – print, TV, online, etc. There is no article about all advertisement types, so that can be used for further research. Also, there is a large field for studying emotional appeals from the gender point of view. There is only one study that uses gender-based research. A further gap is found in the actual advertisements. These can not only be international but also local, regional. There is a need to value the impact of emotional appeals in advertising according to the purpose of the advertisement. The final gap can be seen in the companies chosen. Most of the studies were based on fictional advertisements for non-existent firms. Even though some articles were also based on real companies, none of them examined how

the same firm uses emotional appeals in different countries. For example, McDonald's uses a different advertisement in each country. What emotional appeals are used and why? This question can be used as a start for further research.

Conclusion

As confirmed by the author of the chosen studies, emotional appeals are important when discussing their use in advertising. It is useful to know how the exact appeal can be perceived by customers in some market sectors. This can help boost sales and clearly understand the needs and reactions of the customers when using the emotions. This means that this study can be used as a guide for marketers. When building the strategy of using emotional appeals in advertising, the literature review can be helpful because it summarises and describes studies from 2009-2019. As a result, companies can see how exact appeal can impact customers in the exact market sector.

Chosen studies describes different emotional appeals and their usage in everyday life. The main idea is that emotional patterns in advertising is more effective than non-emotional. Also, they describe, which concrete emotional appeal is more suitable in concrete market. For example, fear and guilt is more effective in healthcare, humour and happiness is more likely to be used in travel advertisement etc. For future research those studies can be used as the informative platform, which could be expanded with research of usage of concrete emotional appeal in chosen market for ethnic group, age group or gender.

The study has limitations. First of all, the chosen years of the articles. As have been mentioned before, the reason behind of that is the pandemic situation started in 2020. Most of the articles are concentrated on the pandemic and advertising during this time. As for year 2021, this article was written in the middle of the same year, so it wasn't appealing to include studies published only from the half a year. Another limitation of the study is the number of chosen articles. For deeper analysis there is a need to include more studies.

Acknowledgement

This research was supported by the Internal Grant Agency project of the Prague University of Economics and Business, grant number IG632021.

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Contact address of the author(s):

Ing. Valeriya Alferova, Faculty of Management, Prague University of Economics and Business, Jarosovska 1117/II, 377 01, Jindrichuv Hradec, Czech Republic, e-mail: alfv00@vse.cz

An evaluation of Visegrad group business environment

Ladislav Mura[1], Noémi Fóthy [2]

[1] University of Economics in Bratislava, Faculty of Commerce, Slovak Republic
[2] J. Selye University, Faculty of Economics and Informatics, Slovak Republic

Abstract

Evaluation of the business environment and enterprises is a key element of the economic success of countries. The Doing Business indicator issued by the World Bank is used to characterize the business environment and compare the economies of over 190 countries. The present paper is focusing to examine and compare the selected indicators of Visegrad 4 countries in order to obtain information about the position of the countries in relation to one another. The aim of this study is to assess the economic situation of the V4 countries (Slovakia, the Czech Republic, Hungary, Poland) based on the Doing Business research and examine the changes in the past five years. The chosen indicators to be examined and compared are the indicator starting a business, paying taxes, getting credit and resolving insolvency.

Keywords: SMEs, entrepreneurship, business environment, Visegrad countries

JEL: F18, L26, M16

Introduction

Based on the research conducted by the EU, small and medium-sized enterprises (SMEs) are one of the most important pillars of the economy with an increased opportunity for help by the state. SMEs contribute to regional job creation, have local economic influence and increase the gross GDP of the state (Jean Vasile et al 2021; Dudić et al., 2020). The aim of this paper is to compare the specific economic aspects of the V4 countries by using the analysis of the World Bank. Visegrad Four countries are an important part of the European economy. The SME sector is contributing to job creation by 67% in the Czech Republic, 72% in Slovakia, 68% in Poland and 69% in Hungary (Kotaskova et al., 2020; Zsigmond, Machova & Zsigmondova, 2021).

Governments play a key role in creating effective, transparent and accessible regulations that define the business environment (Fabus, Dudas & Cihelkova, 2021). Regulations have to be easy to implement in order to facilitate the establishment and expansion of enterprises. Doing Business project launched by the World Bank in 2002 (World Bank 2019) provides objective measurements about business regulations, economic interactions and the cost of resolving business disputes (Ruiz, Cabello & Gladish, 2017). The Doing Business indicators examine small and medium-sized enterprises in 190 countries as well as analyze the regulations of these countries during a lifecycle (World Bank 2019). Doing business is a project launched in 2002 that examines small and medium-sized enterprises in 190 countries and analyzes the regulations of these countries during a lifecycle. A country may show strong performance in one area of regulation, while weak performance on other field, while the average-based aggregation does not always reflect this fact. Although the World Bank database has been widely used by the governments and scholars (Kumar, 2012; Svobodová, Hedvicakova, 2015; Fabus, 2018), several authors have acknowledged several weaknesses of the Doing Business project of the World Bank e.g. the quality of information and the amount of information in rankings (Ruiz, Cabello & Gladish, 2017).

The analysis is comparing the achievement of V4 countries on the basis of four factors: starting new businesses, paying taxes, getting credit and resolving insolvency. According to the research results conducted by Svobodová, Hedvicakova (2015) before 2015, the best position in establishing new businesses was achieved by Hungary, followed by Poland, Slovakia and the Czech Republic. Poland achieved the best results in terms of tax payment, followed by Hungary, Slovakia and the Czech Republic. The compared four indicators of the countries have improved in the research period, but still have not reached the average level of the OECD countries (Svobodová, Hedvicakova, 2015). The international business environment is very important for business doing (Leonavičienė, Burinskienė, 2021).

Based on the research of Kotaskova et al. (2020), the countries of V4 address the financial risk correctly during their business activities. The research evaluated the financial performance of SMEs. The results were mainly positive. Hungarian entrepreneurs were the most positive about their business activity among the V4 countries (Kotaskova et al., 2020).

According to the study of Belas et al. (2020), the business conditions have improved in Slovakia and the Czech Republic in the past five years based on the report of entrepreneurs. The conditions for the transport sector are the most suitable in the Czech Republic, while Slovakia offers favourable business environment for companies in the transport sector. The production sector assessed the changes neutral (Belas et al., 2020).

Extensive research has addressed the factors influencing the business start-ups and the government regulations that act as obstacles to establishing new businesses (Herrendorf, Teixeira, 2011; Hrivnak, Moritz, 2021; Klapper, Laeven & Rajan, 2006) or catalysts (Dreher, Gassebner, 2013; Poschke, 2010; Chowdhury, Terjesen & Audretsch, 2015). Tax payment and regulations associated to pay tax as a factor influencing business start-ups are being studied by an increasing number of researchers. Chowdhury, Terjesen &

Audretsch (2015) found that higher taxes can severly hinder businesses to enter the market. High taxes, complicated regulations and tax laws can discourage business start-ups (Bacher, Brülhart, 2013). Tax administration burden has the most negative impact on businesses in early stage of their operation (Braunerhjelm, Eklund & Thulin, 2021).

The research results of Dreher, Gassebner (2013) show that the administrative burden necessary to establish a business and the high level of minimum capital requirements are harmful to entrepreneurship. Fonseca, Lopez-Garcia & Pissarides (2001) studied the impact of start-up costs on employment. According to the results, higher start-up costs discourage the entrepreneurs from establishing a business (Svobodová, Hedvicakova, 2015).

Maintaining viable businesses is one of the most important goals of insolvency schemes. A well-functioning insolvency scheme has to prevent the liquidation of sustainable businesses at an early stage of their functioning. It should also hinder the lenders from introducing high-risk loans, as well as prevent managers and shareholders to apply for high-risk loans and make disputable financial decisions (Djankov et al., 2008). The economy-specific research has shown that insolvency reforms that encourage debt rescheduling and debt restructuring reduce both the bankruptcy rate of small and medium-sized business as well as the liquidation of profitable businesses (World Bank, 2019).

Commercial credit is one of the traditional forms of financing SMEs (Kozubíková, Homolka & Kristalas, 2017). Commercial loans can affect the operation efficiency and cost increase. They can decrease the uncertainty of cash payments and provide higher flexibility for companies in case of demand changes on the market. According to Hambur, La Cava (2018), easing the lending standards result in low interest rates (for a certain company profile), which will initiate more investment. Based on the research of Rahman, Rozsa & Cepel (2018), the younger enterprises of V4 use the opportunities offered by commercial loans more frequently than the established ones. It can be explained by limited financial resources of these companies. Businesses with high ownership concentration also use these types of loans more frequently than the companies with scattered ownership pattern (Rahman, Rozsa & Cepel, 2018).

Methods and Data

The aim of this study is to assess the economic situation of the V4 countries (Slovakia, the Czech Republic, Hungary, Poland) based on the Doing Business research and examine the changes in the past five years. The world-renowned and extended Doing Business study by the World Bank has become a respected evaluation in the recent years, which provides an outline about the development of the business environment in different parts of the world for professionals, entrepreneurs and the public. Our study is focusing on getting insights into and evaluation of secondary empirical data about the Visegrad Four countries.

In this paper we used secondary sources and materials. The research is based on secondary data of the World Bank. We assessed and systematized the data of Doing Business studies. It was important to filter and organize the obtained data. The collected data were evaluated according to several indicators – indicators of the business environment. These indicators are concentrated in four areas, while each area assessing different sphere of the business environment. The first group of indicators is focusing on evaluation of facts, which are directly connected with establishing a business. These are often considered crucial when starting a business. The second group of indicators is focusing on the assessment of solvency, which can be a significant threat when conducting entrepreneurial activity. The third group is formed by indicators, which are focusing on tax payment. These are important in terms of maintaining competitiveness, and the share of the state drawing resources from generated volume of business. The fourth group of indicators is focusing on the assessment of insolvency solutions with a focus on time, costs and further facts related to solvency of the business. All sub-indicators grouped below are characterized in details. The data is presented in Microsoft Excel, and assessed based on years and countries considering the desired indicators. The evaluation is performed on the basis of calculated ratio indices and relative frequencies. Descriptive statistics and standard logical-cognitive methods were applied. The time interval of 2016-2020 was chosen to elaborate this article since complete data is available from the indicated period. Data for the year 2021 were not available at the time of drafting the article, which can be indicated as a limiting factor in terms of processing up-to-date data.

Starting a business summarizes the factors listed below (Doing Business according to World Bank):

- **Score-Starting a business**: the value obtained as a sum of the indicators examining starting a business. It contains the number of procedures, costs and time of starting a business.
- **Procedures - (number)**: the number of procedures necessary to start and operate a business. It takes into account all the procedures that take place between the entrepreneur and the second party.
- **Time - (days):** Calendar days that specify the length of time necessary to start and operate a business. It refers to a minimum amount of time necessary to complete the tasks.
- **Cost - (% of income per capita)**: financial resources necessary to start the business. Calculated as a percentage per capita income. All the costs and fees associated with the procedures to start a business are involved.

The indicator of credit payment summarizes the following factors:

- **Score-Getting credit**: The score for obtaining credit is indicated on a scale from 0 to 100, where 0 refers to the worst regulation performance, while 100 presents the best regulation performance.

- **Strength of legal rights index (0-12)**: The strength of legal rights index measures the degree to which collateral and bankruptcy laws protect the rights of borrowers and lenders and thus facilitate lending. It also examines whether certain factors that facilitate lending exist in a particular country. The index ranges from 0 to 12.
- **Depth of credit information index (0-8)**: The depth of credit information index measures the coverage, scope and availability of credit information offered by credit information providers e.g. credit bureaus or credit registers. The index ranges from 0 to 8.
- **Credit registry coverage (% of adults)**: reports the number of individuals and companies listed in a credit registry's database as of January 1, 2015. The number is expressed as a percentage of the adult population.
- **Credit bureau coverage (% of adults)**: reports the number of individuals or firms listed by a private credit bureau with current information on repayment history, unpaid debts or credit outstanding as of January 1, 2015. The number is expressed as a percentage of the adult population.

The indicator of tax paying summarized the following factors:

- **Score - Paying taxes**: The score of tax payment is the average of the scores of individual component metrics.
- **Payments (number per year)**: Payments record the total number of taxes and contributions paid, frequency of payments and the frequency of filing tax. This includes the taxes withheld by the company, e.g. sales tax, VAT, employment tax paid by the employees.
- **Time (hours per year)**: Time to comply with tax law (corporate tax, sales tax, labour taxes, including payroll taxes and the social security contribution).
- **Total tax and contribution rate (% of profit)**: The total tax and contribution rate measures the amount of taxes and mandatory contributions paid by the company in the second year of its operation, expressed as a proportion of commercial profit.
- **Profits tax (% of profit)**: Profits tax measures the amount of corporate income tax in the second year of company operation, expressed as a proportion of commercial profit.
- **Score-Postfiling index (0-100)**: The postfiling index is based on four components—time to comply with VAT refund, time to obtain VAT refund, time to comply with a corporate income tax correction and time to complete a corporate income tax correction. The score is indicated on a scale from 0 to 100, where 0 equals to the worst and 100 to the best regulation performance.

The resolving insolvency indicator involves the following factors:

- **Score-Resolving insolvency**: The score of resolving insolvency is an average of the scores for each component indicator.

- **Outcome (0 as piecemeal sale and 1 as going concern)**: The result determines whether the company investigating the case study will be excluded from the proceedings as an operating business [1] or the company assets are sold in pieces (0).
- **Time (years)**: The time of insolvency settlement refers to the time interval to settle the debt expressed in calendar years.
- **Cost (% of estate)**: The cost of settling insolvency is a percentage of the debtor's assets.
- **Strength of insolvency framework index (0-16)**: Strength of the insolvency framework index measures the legal framework of reorganization and liquidation proceedings. The index consists of four components: the commencement of insolvency proceedings, management of debtor's assets during the proceedings, reorganization proceedings and creditor participation.

Results and discussion

This part of presented paper deals with research results and we make a discussion. The Doing Business analyses several factors. The next chapter examines the four factors mentioned above, providing the analysis of the Czech Republic, Hungary, Slovakia and Poland. The analysis processes the data from 2016 to 2020. At the end of the chapter, the aggregate DB Index of the countries and their ranking is compared. Here is a text of your paper. Here is a text of your paper. Here is a text of your paper. Here is a text of your paper. Here is a text of your paper. Here is a text of your paper.

Analysis of the situation in the Czech Republic

Tab. 1: Starting business and getting credit

	Starting a business				Getting credit				
Year	Score-Starting a business	Proce-dures	Time	Cost	Score-Getting credit	Strength of legal rights index	Depth of credit informat-ion index	Credit registry coverage	Credit bureau coverage
DB2016	81,34	8	30.5	6.7	70	7	7	6.7	78.7
DB2017	82,96	8	24.5	5.7	70	7	7	6.8	79.2
DB2018	83,55	8	24.5	1	70	7	7	7	79.5
DB2019	82,09	9	24.5	1	70	7	7	7.2	80.5
DB2020	82,06	9	24.5	1.1	70	7	7	7.3	81.1

Source: own processing based on data from http://www.doingbusiness.org/

Starting business in the Czech Republic was simplified in 2018. The financial investment required to start a business accounted for 5.7% per capita income fell to 1% in 2018. However, the number of proceedings to start a business increased to 9 in 2019. The OECD average of proceedings required to start a business was 4.9 in 2020. In the case of applying for credit, there has been a steady increase in the number of individuals and businesses applying for loan since 2016 until 2020. The OECD average was 24.4 in 2020. The coverage of credit bureaus is 81.1, while the OECD average is 66.7.

Tab. 2: Tax payment in the Czech Republic

	Paying taxes					
Year	**Score-Paying taxes**	**Payments**	**Time**	**Total tax and contribution rate**	**Profit tax**	**Score-Postfiling index**
DB2016	81,57	8	222	46.5	5.6	90.75
DB2017	81,75	8	222	46.1	5.1	90.75
DB2018	81,21	8	236	46.1	5.1	90.75
DB2019	81,42	8	230	46.1	5.2	90.75
DB2020	81,35	8	230	46.1	5.2	90.50

Source: own processing based on data http://www.doingbusiness.org/

In terms of tax payment, the worst performance of the Czech Republic was recorded in 2018. The time required to comply with the tax law was 236 hours a year, while the corporate income tax accounted for 5.1% of the revenue. The number of payments in the reviewed period remained 8, while the OECD average was 10,3. It means that the country performed better than the OECD average. The time required to comply with the tax law decreased to 230 hours in 2019. The total score for post-processes was 90,5 in 2020, while the OECD average is 86.7%.

Tab. 3: Resolving insolvency in the Czech Republic

	Resolving insolvency				
Year	**Score-Resolving insolvency**	**Outcome**	**Time**	**Cost**	**Strength of insolvency framework index**
DB2016	79,29	1	2.1	17	14
DB2017	79,55	1	2.1	17	14
DB2018	79,82	1	2.1	17	14
DB2019	80,05	1	2.1	17	14
DB2020	80,08	1	2.1	17	14

Source: own processing based on data http://www.doingbusiness.org/

The score related to resolving insolvency increased in the period under review. While the score resolving insolvency was 79,29 in 2016, it reached the value of 80,08 in 2020. The cost of resolving insolvency is expressed as a percentage value of the debtor's assets. This value is 17, while the OECD average is 9,3.

Analysis of the situation in Hungary

Tab. 4: Starting a business and getting credit in Hungary

	Starting a business				Getting a credit				
Year	Score-Starting a business	Proce-dures	Time	Cost	Score-Getting credit	Strength of legal rights index	Depth of credit informat-ion index	Credit registry coverage	Credit bureau coverage
DB2016	87,10	6	7	7.5	70	9	5	0	88.6
DB2017	87,28	6	7	7.1	70	9	5	0	89.8
DB2018	87,60	6	7	5.4	75	9	6	0	89.8
DB2019	87,89	6	7	4.9	75	9	6	0	91.2
DB2020	88,19	6	7	4.5	75	9	6	0	91.1

Source: own processing based on data from http://www.doingbusiness.org/

The score related to starting business in Hungary was increasing during the reviewed period, while the financial costs to start business were decreasing. It accounted for 7.5% per capita income in 2016. This value decreased to 4.5% in 2020. The OECD average was 3% in 2020. The number of proceedings necessary to start business was 6, which did not change during the period considered. 7 calendar days are required to complete the proceedings to start a business. The OECD average is 9,2.

The availability of information about applying for a loan increased in 2018. Credit record data were not available for analysis, so this score is not assigned to the research results. The percentage of individuals in the database of credit bureaus had steadily increased during the reviewed period. While the percentage of the adult population registered in a credit bureau database was 88,6% in 2016, this ratio in 2020 increased to 91,1%. The OECD average was 66.7%.

Tab. 5: Tax payment in Hungary

	Paying taxes					
YEAR	**Score-Paying taxes**	**Payments**	**Time**	**Total tax and contribution rate**	**Profit tax**	**Score-Postfiling index**
DB2016	70,84	11	277	48.2	11.8	63.94
DB2017	71,56	11	277	46.3	9.9	63.94
DB2018	76,97	11	277	46.4	9.9	85.58
DB2019	79,22	11	277	40.3	9.1	85.58
DB2020	80,57	11	277	37.9	9.4	87.51

Source: own processing based on http://www.doingbusiness.org/

The number of taxes paid in Hungary did not change during the reviewed period (11 occasions annually), while the OECD average was 10,3. The time to comply with tax law remained unchanged in a 5 years period (277hours/year), which is higher than the OECD average. The OECD average was 158,8. The total amount of tax paid and the contribution rate expressed as a percentage of profit had steadily decreased in the examined period. It was 37,9% of the profit in 2020, when the OECD average was 39,9. The profit tax had become favourable for businesses. It accounted for 9,4% of the profit in 2020. The total score of the post-processes was 63,94 in 2016, while it reached 87,51 in 2020. The OECD average was 86,7.

Tab. 6: Resolving insolvency in Hungary

	Resolving insolvency				
Year	**Score-Resolving insolvency**	**Outcome**	**Time**	**Cost**	**Strength of insolvency framework index**
DB2016	53,70	0	2	14.5	10
DB2017	54,38	0	2	14.5	10
DB2018	54,75	0	2	14.5	10
DB2019	55,03	0	2	14.5	10
DB2020	55,03	0	2	14.5	10

Source: own processing based on http://www.doingbusiness.org/

The value related to resolving insolvency increased from 53,70 to 55,03 in the period between 2016 and 2020. The strength of the Insolvency Framework Index was 10 in the reviewed period. The OECD average was 11,9.

Analysis of the situation in Poland

Tab.7: Starting a business and getting a credit in Poland

	Starting a business					Getting a credit			
Year	Score-Starting a business	Proce-dures	Time	Cost	Score-Getting credit	Strength of legal rights index	Depth of credit informat-ion index	Credit registry coverage	Credit bureau coverage
DB2016	82,71	5	37	12.2	75	7	8	0	91
DB2017	82,75	5	37	12.1	75	7	8	0	92.5
DB2018	82,78	5	37	12	75	7	8	0	85.7
DB2019	82,85	5	37	11.8	75	7	8	0	98.1
DB2020	82,91	5	37	11.6	75	7	8	0	100

Source: own processing based on http://www.doingbusiness.org/

The Starting a Business Index had steadily increased in Poland in the reviewed period. The index stood at 82,71 in 2016 then reached the value of 82,91 in 2020. The number of proceedings was 5 that had not changed during the reviewed period. This value is lower than the values detected in the Czech Republic and Hungary. This value is close to the OECD average, which stood at 4,9. The number of days necessary to complete these proceedings is 37. The financial costs required to start a business had decreased. It accounted for 11,6% income per capita in 2020.

The score of applying for credit had not changed in the reviewed period (75). The strength of legal rights index was 7, which is higher than the OECD average (6,1). The Credit Information Index was 8 in the examined period. The value is over the OECD average (6,8). The credit bureau coverage in 2020 was the highest among the examined countries (100%).

Tab. 8: Tax payment in Poland

	Paying taxes					
Year	Score-Paying taxes	Payments	Time	Total tax and contribution rate	Profit tax	Score-Postfiling index
DB2016	79,14	7	269	40.3	14.5	77.36
DB2017	79,11	7	269	40.4	14.5	77.36
DB2018	79,50	7	258	40.5	14.5	77.36
DB2019	76,49	7	334	40.7	14.5	77.36
DB2020	76,43	7	334	40.8	14.5	77.36

Source: own processing based on http://www.doingbusiness.org/

Tax payment in Poland involved 7 procedures in the examined period, while the time required to spend with these procedures increased. The time to comply with tax law was 269 days in 2016. It reached 334 days in 2020, which is higher than the OECD average (158,8). The total tax and contribution rate increased during the examined period. This

rate was 40, 3 in 2016, which has reached 40,8 in 2020. The total score for post-processes is 77,36, which is lower than the OECD average (86,7).

Tab. 9: Resolving insolvency in Poland

	Resolving insolvency				
Year	**Score-Resolving insolvency**	**Outcome**	**Time**	**Cost**	**Strength of insolvency framework index**
DB2016	70,43	1	3	15	12.5
DB2017	76,37	1	3	15	14
DB2018	77,71	1	3	15	14
DB2019	76,48	1	3	15	14
DB2020	76,53	1	3	15	14

Source: own processing based on http://www.doingbusiness.org/

The number of insolvency proceedings in Poland increased from 70,43 to 76,5 in the examined period. The highest score in Poland was achieved in 2018. The number of years to settle insolvency was 3 years in the reviewed period. The cost of settling insolvency accounts for 15% of the debtor's assets in Poland. The strength of the Insolvency Framework Index increased to 14 in 2017. The OECD average in the reviewed period was 11,9.

Analysis of the situation in Slovakia

Tab.10: Starting a business and applying for loan in Slovakia

	Starting a business				**Getting a credit**				
Year	**Score-Starting a business**	**Proce-dures**	**Time**	**Cost**	**Score-Getting credit**	**Strength of legal rights index**	**Depth of credit informat-ion index**	**Credit registry coverage**	**Credit bureau coverage**
DB2016	81,83	8	26.5	1.5	70	7	7	3.2	67.3
DB2017	81,92	8	26.5	1.1	70	7	7	3.1	76.4
DB2018	81,96	8	26.5	1.1	70	7	7	3.2	79.4
DB2019	82,02	8	26.5	1	70	7	7	3.3	80.7
DB2020	84,81	7	21.5	1	70	7	7	2	85.4

Source: own processing based on http://www.doingbusiness.org/

The score of starting a business in Slovakia increased from 81,83 to 84,1 during the examined period. The number of necessary proceedings in 2020 decreased from 8 to 7. The number of days spent on completing procedures decreased from 26,5 to 21,5 in 2020. The financial costs to start business were the highest in 2016, which accounted for 1,5% of the income per capita. This amount decreased to 1,1% in 2017, and further decrease was detected to 1% in 2019. The OECD average was 3%.

Getting a credit score had not change during the reviewed period. Slovakia reached 70 points by assessing the various indicators. The information index necessary to get a credit reached a score of 7, which is higher than the OECD average (6,8). The percentage of the adult population registered in a credit bureau database was 3,2% in 2016. This value decreased to 2% in 2020. The OECD average was 24,4 in the examined period. The coverage of credit institutions increased from 67,3% in 2016 to 85,4% in 2020.

Tab. 11: Tax payment in Slovakia

	Paying taxes					
Year	**Score-Paying taxes**	**Payments**	**Time**	**Total tax and contribution rate**	**Profit tax**	**Score-Postfiling index**
DB2016	79,25	11	188	50.4	9.4	87.17
DB2017	80,46	8	192	50.1	9.5	87.17
DB2018	80,46	8	192	50.1	9.5	87.17
DB2019	80,62	8	192	49.7	9.1	87.17
DB2020	80,62	8	192	49.7	9.1	87.17

Source: own processing based on http://www.doingbusiness.org/

The number of tax payments realized were 11 in 2016. This number decreased to 8 in 2017. The time to comply with tax law increased from 188 to 192 days in 2017. The total tax and contribution rate was 50,4 in 2016, which was modified to 50,1 in 2017. A further decrease was detected in 2109, which accounted for 49,7% of the profit. The profits tax had also increased in the country. In 2016 it accounted for 9,4% of the profit, in 2017 this ratio was 9,5% and fell to 9,1% in 2019. The total score of post-processes in the reviewed period was 87,17, which is higher than the OECD average (86,7%).

Tab. 12: Resolving insolvency in Slovakia

	Resolving insolvency				
Year	**Score-Resolving insolvency**	**Outcome**	**Time**	**Cost**	**Strength of insolvency framework index**
DB2016	70,04	1	4	18	13
DB2017	70,53	1	4	18	13
DB2018	66,08	1	4	18	13
DB2019	66,90	1	4	18	13
DB2020	65,45	1	4	18	13

Source: own processing based on http://www.doingbusiness.org/

Table 12 presents resolving the insolvency in Slovakia from 2016 to 2020. The score of resolving insolvency had been gradually falling in the reviewed period. The score of resolving insolvency was 70,4 in 2016. This value was 65,45 in 2020. The time required to resolve insolvency in Slovakia was 4 years in the reviewed period. The OECD average was 1,7 years. The cost of resolving insolvency remained unchanged from 2016 to 2020.

This accounted for 18% of the debtor's wealth. The maximum achievable value of the Insolvency Framework Index was 16. The Slovak Insolvency Framework Index was 13, while the OECD average was 11,9.

Analysis of aggregate data

Tab. 13: Analysis of aggregate data 1.

	DB Year	Ease of doing business rank	Ease of doing business score	Rank-Starting a business	Score-Starting a business	Rank-Getting credit	Score-Getting credit
Czech Republic	2020	41	76,34	134	82,06	48	70
	2019	35	76,32	115	82,09	44	70
	2018	30	76,42	81	83,55	42	70
	2017	27	76,39	81	82,96	32	70
	2016	36	76,11	93	81,34	28	70
Hungary	2020	52	73,42	87	88,19	37	75
	2019	53	73,24	82	87,89	32	75
	2018	48	72,68	79	87,60	29	75
	2017	41	71,38	75	87,28	20	70
	2016	42	71,07	55	87,10	19	70
Poland	2020	40	76,38	128	82,91	37	75
	2019	33	76,93	121	82,85	32	75
	2018	27	77,86	120	82,78	29	75
	2017	24	77,68	107	82,75	20	75
	2016	25	76,93	85	82,71	19	75
Slovak Republic	2020	45	75,59	118	84,81	48	70
	2019	42	75,45	127	82,02	44	70
	2018	39	75,15	83	81,96	55	70
	2017	33	75,03	68	81,92	44	70
	2016	29	74,84	68	81,83	42	70

Source: own processing based on http://www.doingbusiness.org/

Table 13 shows the ranking of the countries during the period under review. The ranking is presenting the position of countries in terms of key indicators during the examined period of 2016-2020. The table above presents the rankings achieved in analysis starting a business and the rankings associated with getting a credit.

While a few years ago Slovakia was considered a tiger in improvement of business environment, currently a worsening situation and worsening conditions for entrepreneurship can be detected. On the contrary, the situation in the northern neighbouring country is improving. In terms of all the examined indicators, Poland achieved the best score as a V4 country in 2020. In terms of removing barriers and simplifying the conditions for entrepreneurship, the southern neighbour is at the forefront. However, Hungarian entrepreneurs are the best in starting a new business. The Czech Republic provides the least favourable conditions for business start-ups. This finding is not positive, as it would be in the interest of the state to optimize the economic

policy in order to incentivise and support the entrepreneurial activity. Getting a credit score was similar for Hungary and Poland. Slovakia proved to be the most unfavourable country for getting credit among the V4 countries.

Tab. 14: Analysis of aggregate data 2.

	DB Year	Rank-Paying taxes	Score-Paying taxes	Rank-Resolving insolvency	Score-Resolving insolvency
Czech Republic	2020	53	81,35	16	80,08
	2019	45	81,42	15	80,05
	2018	53	81,21	25	79,82
	2017	53	81,75	26	79,55
	2016	122	81,57	22	79,29
Hungary	2020	56	80,57	66	55,03
	2019	86	79,22	65	55,03
	2018	93	76,97	62	54,75
	2017	77	71,56	63	54,38
	2016	95	70,84	65	53,70
Poland	2020	77	76,43	25	76,53
	2019	69	76,49	25	76,48
	2018	51	79,50	22	77,71
	2017	47	79,11	27	76,37
	2016	58	79,14	32	70,43
Slovak Republic	2020	55	80,62	46	65,45
	2019	48	80,62	42	66,90
	2018	49	80,46	42	66,08
	2017	56	80,46	35	70,53
	2016	73	79,25	33	70,04

Source: own processing based on http://www.doingbusiness.org/

In the second aggregated group of indicators, we focused on presentation of results for individual countries in terms of tax indicators, tax payment and insolvency as a crucial issue. Table 14 presents a thematic comparison of the countries between 2016 and 2020. The table shows the conditions of paying tax and analysis of resolving insolvency in the examined countries. Taxes are considered by businesses and entrepreneurs as a negative aspect of entrepreneurship, especially in terms of drawing resources in favour of the state. Therefore, entrepreneurs are very sensitive to any change regarding tax liability, tax rates and further conditions. Based on the data provided, Poland has the most favourable tax environment among the V4 countries. The lowest score was achieved by the Czech Republic. Economic downturn and bankruptcy, as an unpleasant situation is perceived very sensitively by the entrepreneurial sector. Companies that have to undergo these procedures, it is important to ensure the least complicated and financially acceptable conditions. It turned out that in terms of handling bankruptcy, the most successful were the Czech businesses. The most favourable conditions for resolving insolvency were

detected in the Czech Republic, while the lowest score in this category was achieved by Hungary taking into account the factors provided in the analysis.

Conclusion

The economic situation and the business environment of the Visegrad Four (V4) countries has an impact on the development of the region, so analysis of their economic development is important. The article compared the countries along the selected indicators in order to get a more accurate and transparent overview about the similarities and differences of the countries. The article is based on an internationally recognized analysis.

The research revealed that starting a business in the Czech Republic was simplified in 2018, based on the Doing Business evaluation of the Visegrad Four Group. Starting a new business is the easiest in Hungary, where the shortest time is required to complete the procedures to start a business. According to the overall analysis, applying for credit is the easiest in Hungary and Poland, since the mentioned countries have the highest credit information index and the credit bureau coverage indicator. The Czech Republic offers the most favourable tax payment conditions, with the highest total number of post-processing scores. The least favourable conditions are offered by Poland, despite having the lowest number of payment procedures related to tax payment. The Czech Republic performed the best among the Visegrad Four countries in terms of insolvency resolution index.

Based on the overall ranking, Poland performed the best in the analysis of the Visegrad Four Group, followed closely by the Czech Republic. Taking into consideration the examined factors, the only factor where Poland provided the best performance was applying for business credit. Based on the overall analysis, Hungary ranked the lowest among the Visegrad Four countries.

The small and medium-sized enterprises have significant impact on the economic success of the country. The development within each of the examined factors contributes to the success starting a business, thereby improving the performance of the economy. These comparisons support the awareness of the countries in which areas it is necessary to determine new directions.

It is necessary to deal with the improvement of business environment on a regular basis in order to point out the limits and opportunities for improvement. Quality business environment generates innovative and competitive businesses. In order to make a continuous contribution to GDP, employment and regional development, the regional economic policies of the Visegrad Four countries should focus on proactive incentives to encourage the entrepreneurial activity. This step is crucial in terms of competitiveness and efficiently functioning economies. The upcoming research may assess the achieved results in details and pointing to regional opportunities. Limiting factors of the current evaluation are: access to adequate data (time interval selected for data analysis was 2016-2020; there were no accessible data in 2021, when the article was completed, which

would result in methodologically incorrect and distorted evaluation) possibility of evaluation of achieved macro data and regional disparities.

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Contact address of the authors:

Doc. PhDr. Ing. Ladislav Mura, PhD., MSc., Department of Services and Tourism, Faculty of Commerce, University of Economics in Bratislava, Dolnozemská cesta 1, 852 35 Bratislava, Slovak Republic, e-mail: ladislav.mura@euba.sk

Mgr. Noémi Fóthy, Department of Economics, Faculty of Economics and Informatics, J. Selye University, Bratislavská cesta 3322, 945 01 Komárno, Slovak Republic, e-mail: 120318@student.ujs.sk

DOI: https://doi.org/10.36708/Littera_Scripta2022/1/10

Chasing up the value-added by implementing newest trends of Industry 4.0 – Evidence from Slovak automotive industry

Marek Nagy[1], Stanislav Zábojnik[2], Katarina Valaskova[1]

[1] University of Žilina in Žilina, Faculty of Operation and Economics of Transport and Communications, Univerzitna 1, 010 26 Zilina, Slovakia
[2] University of Economics in Bratislava, Faculty of Commerce, Dolnozemska cesta 1, 852 35 Bratislava, Slovakia

Abstract

The main purpose of the paper is the identification of Industry 4.0 (I4) in a selected sector of the Slovak economy with emphasis on a single case study in the company PSA, which is a key player in the market in the analysed automotive sector.. In the paper, three research questions are determined together with the methods through which the analysis is carried out, mainly the method of exploration, explanation and description using the secondary data, financial and annual reports published by the PSA and Slovak authorities. The crucial finding of the paper is the presentation of opportunities for value-added growth and a specific case study of PSA Group Slovakia and its application of the Industry 4.0 concept as a driving force for value-added growth in car exports. Based on the research outputs, the proposals and recommendations are proposed as a series of steps and recommendations for the Slovak Republic with the intention of becoming an innovative country.

Keywords: Industry 4.0, globalization, value-added, global value chain, digitization, innovation, export, automotive industry.

Introduction

In January 2003, the Government of the Slovak Republic accepted the investment plan of the French automobile concern PSA Group (at that time the second-largest automobile producer in Europe) to build a new production plant in the Slovak Republic. According to PSA Group's strategic expansionist considerations, it was most advantageous to build a factory near new core markets closer to the centres of Central and Eastern Europe (CEE; as a fast-growing region with huge sales potential). At the time of the investment, the investors and experts analysed and presented the following circumstances leading to the decision to build a new production plant within CEE in Trnava, Slovakia (Tab. 1).

Tab. 1: Criteria for deciding on a new PSA Group site in CEE

Localization criteria officially published by the investor:	**Other factors** of the investor's decision-making - according to analysts:
• position in central Europe • building land with an area of 190 hectares, which is easily accessible by rail, highway, and navigable river • the possibility of creating a supply park near the plant • the industrial tradition of the region, and available workforce with a good level of education • proximity to important markets in which the PSA Group is expanding rapidly	• political stability • reform and integration-oriented government • government activity and involvement in the project • established and potential subcontracting base • quick access to the airport • proximity to Vienna, where the children of French managers can study in their mother tongue schools • plans of the Slovak school system to open French schools in Trnava as well • openness of universities in Trnava and Bratislava for cooperation with the investor • the potential to efficiently install and use the technical equipment of the plant • the potential to increase the added value of own car manufacturer

Source: Authors.

The Government of the Slovak Republic naturally agreed with this investment plan and provided several investment incentives. The rationale for supporting this project was primarily the benefit for public finances (taxes, levies, reduction of social expenditures), the growth of the volume of industrial production in the Slovak Republic, and the increase in overall economic growth (Stock et al., 2018). After the start of the operation, the volume of production was estimated at 100 billion SKK per year (approximately €3.32 billion). The value-added realized by the new investor was estimated for 2006 by government advisers at the level of 10 billion SKK (approximately €332 million) represented up to 1% of Slovak GDP at that time. Thanks to this investment and the creation of value-added within the new plant, Slovak GDP would grow by 1% in the future. The government's ambition was to increase the share of domestic suppliers to increase added value in exported cars. Another positive impact was employment growth (and a decrease in high unemployment at the time) and a positive impact of investment for the trade balance (export growth and a promising decline in imports due to greater involvement of Slovak suppliers).

This study aims to identify the available technological components and their potential use in the company PSA, which over time can bring the required increase in added value.

Based on the above mentioned and following the main aim of the paper, three research questions were formulated:

RQ1: Can the application of the Internet of things (IoT) and other components significantly change the nature of production and increase the quality of products, which will increase the required added value of the entire company?

RQ2: Is the application of these technological components necessary to maintain the current market position of the company?

RQ3: Do the technological components of Industry 4.0 affect the production and the added value of the products?

The paper is divided as follows: The first part of the paper presents a literature review, the content of which are the most relevant sources for the topics of the fourth-generation industry and added value. The next part depicts data and methods through which the analysis is carried out. The last section is devoted to the proposals and recommendations and contains a series of steps and recommendations for the Slovak Republic with the intention of becoming an innovative country.

Literature Research

There are currently many ways how to improve added value in any industry. This paper focuses mainly on the automotive industry, especially in Slovakia and in PSA Group SVK. At present, this sector is the strongest in Slovakia and brings the highest profit to the whole country. To properly understand the issue, it is necessary to state the basic theoretical background of these topics. As early as 1985, Mr. Porter characterized the basis for knowing value, understanding it as the amount the buyer pays for what goods or services a particular company provides. The term "global value chain" (GVC), has also been used this year. It has continued its research, essentially to the present day. Its main solution area focuses on the competitive position of companies and their mutual struggle for primacy. GVC means a set of activities that are gradually added to society and in which the value of products or services is gradually created (Porter, 1993). Slovak group of authors Balaz et al. (2020) emphasize the need and essentiality of scientific progress, which they consider to be one of the most important accelerators of the growth dynamics of international trade. Through the development of relevant technologies, the value chain can be virtualized, which will significantly reduce market entry barriers for more marginal service providers, in short outsourcing and offshoring (Martinez-Noya and Garcia-Canal, 2014). Zabojnik (2015) points to the history of globalization and presents two dimensions of its development as striking. These are, above all, tangible changes in the world of technology and a diversity of forms of social and economic understanding. Already in connection with Industry 4.0, Marcon (2016) describe all previous industrial revolutions and also mention their significant impact on globalization as such. The term Industry 4.0 was first used in the German city of Hanover in 2011 by Professor Kagermann and his team. It was used in conjunction with the strategic program for the development of advanced production systems. The goal was to increase the productivity and efficiency of the national industry (Kagermann and Wahlster, 2013). The fourth industrial revolution was launched based on the beginning of the use of the Internet in all available areas of industrial production, which allows different types of real-time communications such as machine-machine, man-machine and their combination. The driving force behind Industry 4.0 is the Internet and self-configurable networks, which can operate fully autonomously (Clayton and Kral, 2021). He also introduces the fourth industrial revolution as Internet technologies that are integrated into various branches of

industrial production. Hermann, Pentek and Otto (2015) point to the need for interconnection through information from both worlds, virtual and physical. The concept of digitization is a striking part of Industry 4.0, and it is used for horizontally integrated processes, which are indicated within values and their flow. This is the production and application of Industry 4.0 components, this interconnection means the term "digitization." According to Rüttimann and Stöckli (2016), it is important to present a significant increase in the need to implement technologies that are interconnected and thus achieve full connectivity. Durana, Perkins and Valaskova (2021) understands Industry 4.0 comprehensively, i.e., it takes into account the entire industry and its efforts to adapt to this phenomenon. Koderova (2016) presents Industry 4.0 as a transformation of production to fully automated. This is achieved by creating complex global networks, the essence of which is the interconnection of production facilities into cyber-physical systems CPS (Cyber-Physical Systems). Such systems are the basis for creating "smart factories" (Mehmann and Teuteberg, 2016). He also lists the potential positives and negatives of a given phenomenon, where the positive effects significantly predominate and its onset is necessary. The Ministry of Economy of the Slovak Republic also points to significant changes in the social spheres of society, especially in the ability to use the Internet correctly. Dalenogare et al. (2018) talk about the ability of data to create value and also points out the originality and important roles of individual technologies. They also point out the importance of developing the role of man in intelligent work. Digitization can also increase the efficiency of the value chain by reducing costs and creating more collaboration and innovation (Hoffmann, 2019). Hoffmann (2019) joins several authors, arguing that the rise of Industry 4.0 will not be a path of revolution, but of evolution. Minarik, Zabojnik and Pasztorova (2022) present Industry 4.0 on the concept of automation as a technological advance. Its flexibility will depend on the intent of politics, companies, education and a quality workforce in the field of innovation. Zavadska and Zavadsky (2020) emphasize the important role of corporate management in planning a business strategy in connection with digitization. Global developments in terms of Industry 4.0 can bring about a marked development of national economies and thus move the imaginary bar of innovation of these countries forward. The potential for the implication of Industry 4.0 in the Slovak Republic is measured through the DESI index, which is authored by the European Commission (2021). According to Said et al. (2021), industry 4.0 is largely dependent on the Internet of Things and smart sensors. Zhong et al. (2021) present a wide range of possibilities for quantification and processing of data in real-time through mathematical-optimization models, which are based on multicorrelation dependencies. In the current threat of the COVID-19 pandemic, Belhadi et al. (2021) cite cooperation between supply chain stakeholders as essential. It can then significantly overcome potential challenges and also speed up the use of digital technologies. The conclusions of the issue of digitization predict the importance of investing in the right measures to adapt to the overall digital revolution.

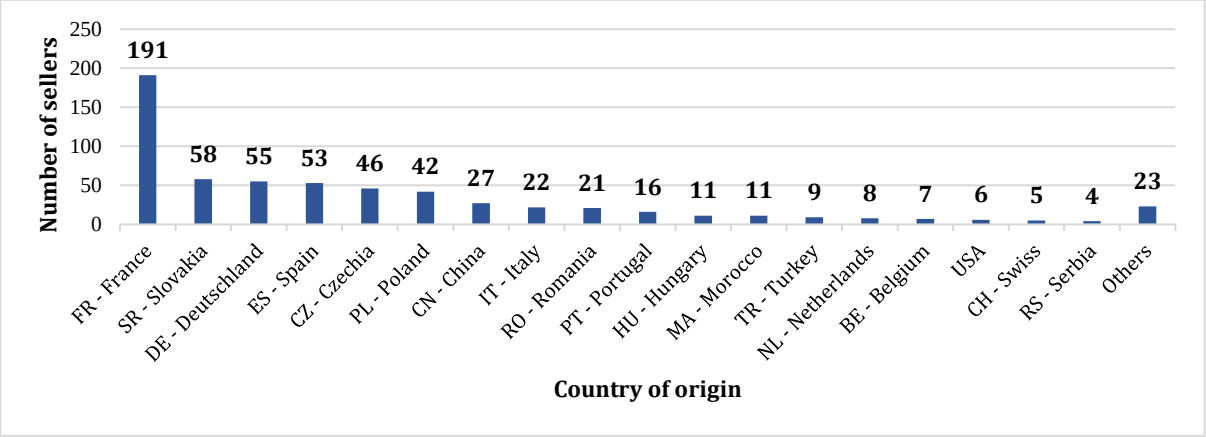
Methods and Data

To be able to meet the main aim of the paper and answer the research questions, the method of exploration, explanation and description using the secondary data, financial and annual reports published by the PSA and Slovak authorities was applied. Secondary analysis is the practice of using secondary data in research. As a research method, it saves both time and money and avoids unnecessary duplication of research effort. As stated by Hinds, Vogel and Clarke-Steffen (1997), secondary analysis is based on a usage of existing data (financial and annual reports in case of our study), collected for the purpose of a prior study in order to pursue a research interest which is distinct from the original work, setting different research questions and alternative perspectives.

Describing the data used in this analysis, there is a need to present the basic information about the company and slightly also about the Slovak automotive industry, applying the methods of collecting secondary data (collecting information available on the internet, using sources of commercial information, and public sources and libraries). The carmaker based in Trnava is a leader in producing small vehicles in the B-mainstream segment. It currently produces the extremely popular Citroën C3 and Peugeot 208 models. In July 2020, the carmaker had already produced 3.5 million vehicles. Serial production at the carmaker plant began in 2006, and its products are aimed at satisfied customers on almost every continent. At a production cadence of 62 vehicles/h, it produces approximately 1,395 vehicles per day (PSA, 2022). Trnava carmaker directly generates almost 4,400 jobs. In addition, it employs almost 20,000 people through its subcontractors located in Slovakia. In 2019, the carmaker in Trnava ranked 4th among the largest non-financial companies in Slovakia. It also has a dominant position in the foreign trade of the Slovak Republic. In 2019, it became the third-largest exporter within Slovakia. It currently ranks fourth. In 2020, it produced 338,050 vehicles. In the seventh consecutive year of year-on-year growth, production at the Trnava production centre increased by 5.1% compared to the previous year, 2019. Of the total number of vehicles produced, 33,334 were electric, with the e-208 monogram. Last year, the "battery-factory" completed 35,922 battery packs. The establishment in Slovakia of the parent company made and still makes sense; the production is situated in the middle of the automotive cluster within the V4 region. The cumulative value of the Group's foreign direct investment in Slovakia has already exceeded € 1.2 billion (PSA, 2022). The main objective of this case study is to analyse PSA's attitude toward the Fourth Industrial Revolution, innovation, electromobility and use particular examples from production management to identify how this trend significantly affects and helps more efficient and error-free production, which in turn generates also increased value-added in car exports and at the same time point out sufficient resp. insufficient state support in the parameters of the business environment. The right business environment and conditions for innovation activity can be seen as a major incentive for Slovak suppliers to participate more in subcontracting for PSA Group and thus increase the rate of the value-added generated in the Slovak Republic (and thus maximize the positive effects of FDIs for the

host economy). To characterize and answer these questions, the case study identifies the primary areas where it is possible to define the innovation potential of this company, also based on the supply structure to identify potential gaps and analyse the attitude to environmental policy (since decarbonization policy has seriously impacted the European industries).

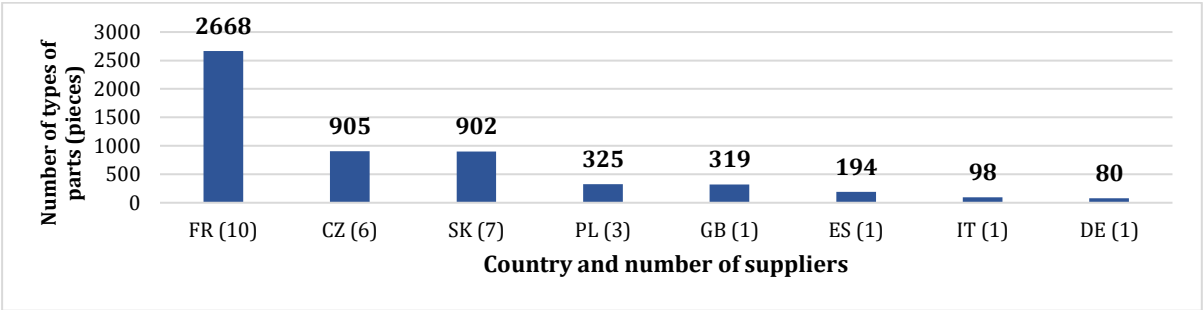
Figure 1: PSA Group SVK supply structure by supplier's home country



Source: Authors.

Figure 1 represents all suppliers based on the country of origin (categories – specific and joint suppliers) in 2020. The figure represents the international supply chain, the number of suppliers has increased to 615 compared to other years, and in the international context, their structure is more fragmented. The first, most robust suppliers are suppliers from France with 191 companies (approximately 31%); this country, therefore, represents a particular supplier leader, which the registered office of the parent company could be assumed. The second is the Slovak Republic with 58 suppliers (approx. 9.43%), and the third place is represented by Germany (55 – approx. 9%). In the analysis of previous years, it can be identified that in each year the number of suppliers was dominated by France. It also directly creates the highest value-added, as it is a French carmaker, which is dominant on the so-called "smile curve" (the highest value-added). The influence of suppliers from the Slovak Republic is less significant: it represents the second place in terms of the number of suppliers (Figure 2).

Figure 2: Suppliers of PSA Group SVK by part types in pieces (2019)



Source: Authors.

Looking at PSA Group's suppliers by type of parts (Fig. 2), France is the first to import about 2,700 types of parts to the carmaker (10 companies – 2,668 types of parts). Import from the Czech Republic follows; PSA Group Slovakia imported 905 types of parts from six Czech companies. The third place belongs to the Slovak Republic – domestic supplies (7 companies – 902 types of parts). When the French carmaker was established in the Slovak Republic, the share of domestic suppliers was naturally high; Slovak companies carried out 90% of construction works during the plant's construction. Unfortunately, Slovak subcontractors, who would participate in creating value-added intended for export (serial production activities), do not have such a significant role in the production of cars. The leading suppliers related to production in Slovakia are Faurecia, Lear Corporation Seating Slovakia, Plastic Omnium, Visteon Electronics, Eurostyle Systems, Slovakian Door Company, Bourbon Automotive Plastic. Approximately 54% of the company's revenues come from Central and Eastern Europe (V4 + Romania), 21% of turnover from Slovakia (Tab. 2).

Tab. 2: The most important Slovak suppliers of PSA Group SVK by number of imported types of parts (2019)

Order	Seller	Town (Region)	Products	Parts (pcs)
1.	Faurecia Automotive SVK s.r.o.	Trnava (TN)	Car seats	279
2.	Adhex Technologies	Senec (BA)	Foam parts	158
3.	Lear Corporation Seating SVK	Presov (PO)	Seating systems	119
4.	Eurostyle Systems s.r.o.	BnB (TR)	Plastic parts	95
5.	SMRC Automotive Solutions	Nitra (NR)	Modules, cockpits	92

Source: Authors.

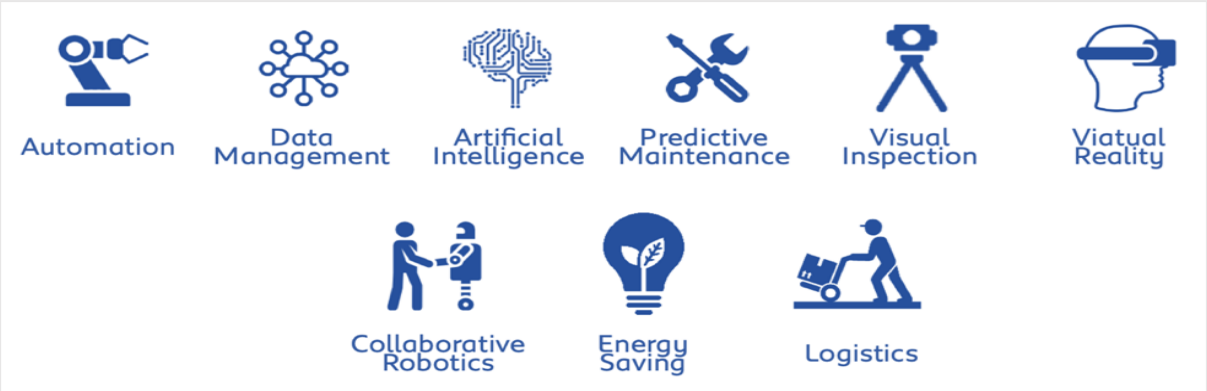
The priority intention of the French management was to produce at lower costs in the Slovak Republic and subsequently export to other European countries using the barrier-free single market of the EU, which is also confirmed by current export statistics. From the point of view of the territorial structure of PSA exports, most exports are to the EU (80%) and other countries, such as Japan, New Zealand, or Egypt. The transport of vehicles to customers is provided by the subsidiary GEFCO (60% of the vehicles produced in PSA Group SVK reach customers by rail, others by truck). Faurecia Automotive Slovakia s.r.o. is the most critical Slovak supplier for PSA TT. Based in Trnava, which manufactures car seats, and exhaust systems and deals with innovations in these areas. It dominates by importing 279 kinds of parts. The second company is Adhex Technologies (158 foam parts), and the third is Lear Corporation Seating Slovakia, based in Presov. Its main area consists of seating systems, which it imports with 119 parts. The Slovak Republic contributes to the production of cars (the year 2020) by sourcing materials and components approximately 9.43%, with the number of 58 suppliers. However, these are mainly plastic components with a lower rate of value-added. The cars are manufactured in Slovakia; they are mainly engaged in domestic assembly. Insufficient expenditures and a weak focus on research and development in the automotive industry (concept I4) represent the lower value-added in subsequent exports. Quality education and innovative

activity of employees within subcontracting companies are also important. Employees´ training and development play a crucial role in the perspective creation of the value-added. In 2020, the costs of training employees amounted to €178 000, 63 567 hours, including training for both regular and agency staff. The training with the most funds was: technical training in industrial automation and robotics (Boost school project), legislative training, and English language training. The training with the most significant number of realized hours included the primary activities of the operation – assembly, initial training of newly hired employees, technical training of industrial automation, and robotics (Rogers and Zvarikova, 2021). Education helps to meet the company's main goals and, of course, also to meet legislative requirements, especially in the field of environment, safety standards, and fire protection, which is also one of the company's main goals. In the dual education system in 2020, there were 43 pupils in the teaching and study fields: Car-repair worker – electrician, mechanic – electrician, and mechanic – mechatronic. As a part of dual education, the Trnava car company cooperates with three secondary vocational schools (SOS automobilova Trnava, SOS technicka Galanta and SOS elektrotechnicka Trnava). In 2020, 6 new students passed the selection procedure for dual education. For each new employee who joins group PSA Slovakia, the education department will prepare a training plan related to his / her job classification and socio-professional category (Hopkins and Siekelova, 2021). This plan aims to prepare the best possible employee to acquire the competencies necessary for the performance of their job position. The negative impact of car production on the environment cannot be eliminated, but the company is trying to minimize it. The paint shop is the most critical production process in terms of environmental impact and falls under the law on integrated pollution prevention and control. It is a significant source of volatile organic compound (VOC) emissions to air, wastewater, and hazardous waste (Galbraith and Podhorska, 2021). In order to limit these effects, the Trnava carmaker uses water-based primarily paints. The paint shop also includes a physicochemical wastewater treatment plant, which treats wastewater from the surface and painting processes. Heavy metals from these waters are precipitated here in the form of sludge. The biological wastewater treatment plant, which is located on the premises of the production centre, treats sewage and industrial wastewater. Sewage sludge is further recovered (Lăzăroiu and Harrison, 2021). At the beginning of March 2020, due to the COVID-19 risk, it was decided to stop production unprecedentedly in all European PSA plants. The production line in Trnava did not run for 55 days since March 19. As a result of the shutdown of the production line, more than 72,000 vehicles lost production. At the first production change, the gradual start of production began on May 12. Since Saturday, June 6, as the first carmaker in Slovakia, Trnava returned to production at total capacity (Burke and Zvarikova, 2021). A significant milestone in PSA's development activities was establishing the InoLab team in 2020. The main task of InoLab is to connect the traditional production plant with the world of intelligent technologies and the university environment. The main activities of InoLab include (Figure 3): development of automation solutions for the production and logistics process, digital business transformation, building cooperation with universities, technology companies,

and state institutions, management of EU grants, contributions, and funds, cooperation with students of Slovak and French universities (PSA, 2022).

Trnava carmaker does not carry out activities in product research and development (Lawrence and Durana, 2021). This is one of the fundamental problems of creating higher value-added in the long run. Shortly, the application of research will be an essential part of the carmaker's innovation activities to remain competitive (Klingenber, Borges and Antunes, 2019). The carmaker's priorities will be indicators of client quality, economic efficiency, and operational performance. In addition to continuing the transformation project "Future in our hands" to increase efficiency from its resources, the priority is the carmaker's partnership with the Slovak government and improving the external business environment in Slovakia. The good news came at the beginning of 2021: the merger of the Fiat Chrysler Automobiles FCA Group and the Groupe PSA Group, of which the Trnava carmaker is a part, created a new company, Stellantis, on 16 January 2021. This is good news for the future of the carmaker. In addition to the new identity, the company in Trnava is gaining new opportunities from the new global potential. The merger of two world car players and the emergence of Stellantis, which is the fourth largest carmaker in the world, is not caused by the crisis. It connects the potential of two healthy groups. The goal is not to be big but strong in products and services and thus better prepared for the industry's challenges – compliance with demanding CO2 limits and meeting customer demand for new and innovative types of mobility (PSA, 2022).

Figure 3: Main areas of InoLab in PSA Group SVK



Source: Authors.

Results

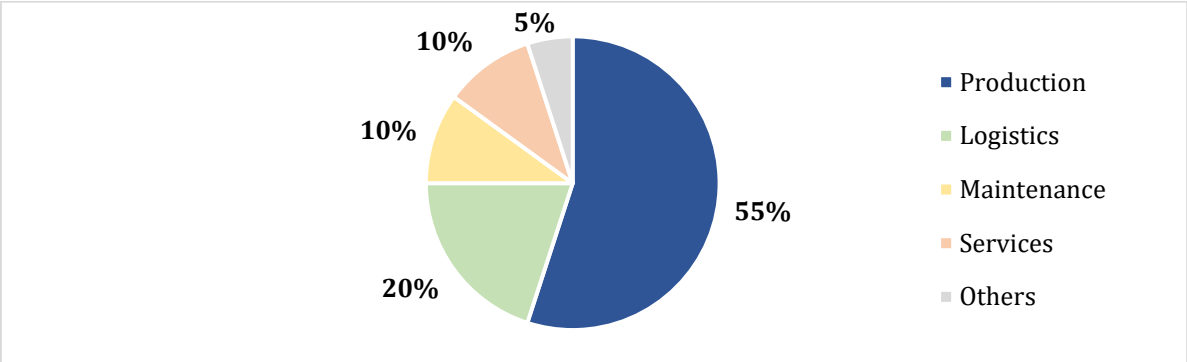
The following part was prepared based on a structured interview, which was prepared with the employees of the Industry 4.0 department and the digitalization of the company's production at the beginning of 2022. This interview was conducted with approximately 40 experts in various fields for Industry 4.0. Following all the results of these interviews, a follow-up analysis was performed. It can be listed and characterized through the answers to a comprehensive questionnaire and identified key conclusions

that this interview and subsequent synthesis of conclusions brought. The first goal of the interview was to find out the knowledge of the employees of the selected company about the Industry 4.0 concept. The second goal was to determine the readiness of PSA Group SVK for the transition to a digital company as a tool for technological – product, and process innovations in the company and thus increase value-added in the company. The prerequisite was the establishment of innovative approaches based on the transformation (upgrade) of GVCs at the level of process upgrades and/or product upgrades for value-added growth. Through an organized interview, the respondents confirmed the key role of Industry 4.0 in the Slovak Republic, especially in the future. It is Important to implement this concept and address it at the national level, as innovation and investment in research and development can move the Slovak economy and industry forward. Due to the dominance of the automotive industry in the Slovak Republic and thus the technical industry, the Industry 4.0 concept is of significant importance. By applying the Internet of Things link, the machines will be able to communicate with each other faster and more efficiently. The whole race will cooperate and communicate with each other, which will make the race intelligent. With Cloud and Big Data applications, it will be able to synchronize and receive various requests, data and "order," in real-time. The digitization process eliminates excess paper consumption and also enables faster communication. This results in reduced product error rates, greater control and a smoother production process.

PSA Group understands digitization as a better, more comprehensive and faster interconnection of products, suppliers, customers and car manufacturers themselves. It is a digital supply chain. In production, the communication of line and machine workers is currently being digitized (it has replaced paper production). The fact is that everything cannot be digitized yet, it is a very difficult and lengthy process, but significant changes will be seen in the near future. Staff training, various training, retraining and the like are also key. Automation in PSA Group SVK takes place mainly in the "core" areas, i.e., in the main activities, such as assembly lines with robots (675 robots). With the advent of the Peugeot 208, laser welding, with and without consumables, “Full Kitting”" was introduced, which is a way of supplying the edge of the line in operation (3.5 million parts distributed daily) or laser geometry control. The following chart shows the areas where PSA Group SVK currently focuses most on automation elements.

From the Figure 4, we can observe the dominance of automation in production, which is about 55%. This mainly concerns robotic processing (675 robots) and laser solutions. Logistics follows this with a 20% share, and maintenance and services with a 10% share. 95% are automated core solutions, and the remaining 5% are other activities. Investment activity of the company in new technologies, machines, and equipment for the last five years was rich.

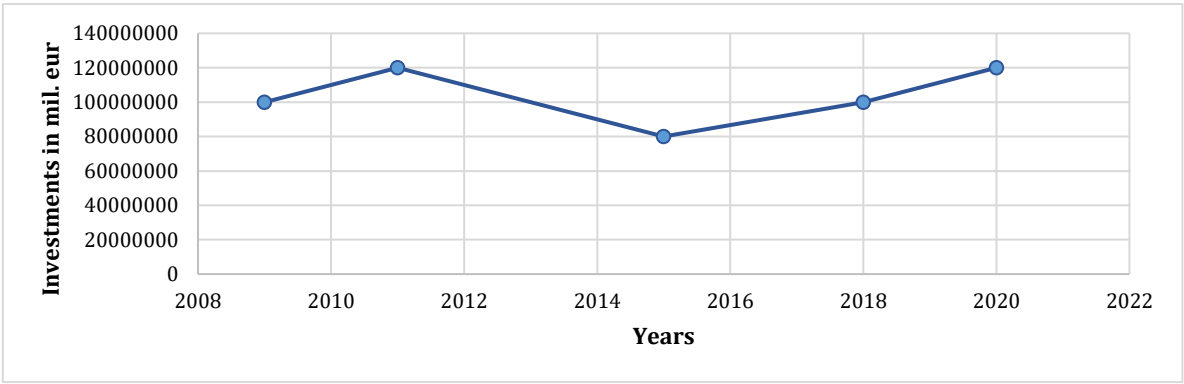
Fig. 4: Areas of automation in PSA Group SVK



Source: Authors.

Selected investments by years: investment in the construction and start of production of the 1st Peugeot 207 model: €700 million, investment in the start of production of the Citroën C3 Picasso: €100 million, investment to start production of the Peugeot 208: €120 million per year (2011), investment to start production of the new Citroën C3: €80 million (2015), investment to start production of the new generation Peugeot 208 and e-208: €100 million (2018). The total amount of the group's investments in Slovakia: more than 1.2 billion € (Fig.5).

Fig. 5: The most interesting investments of PSA Group SVK



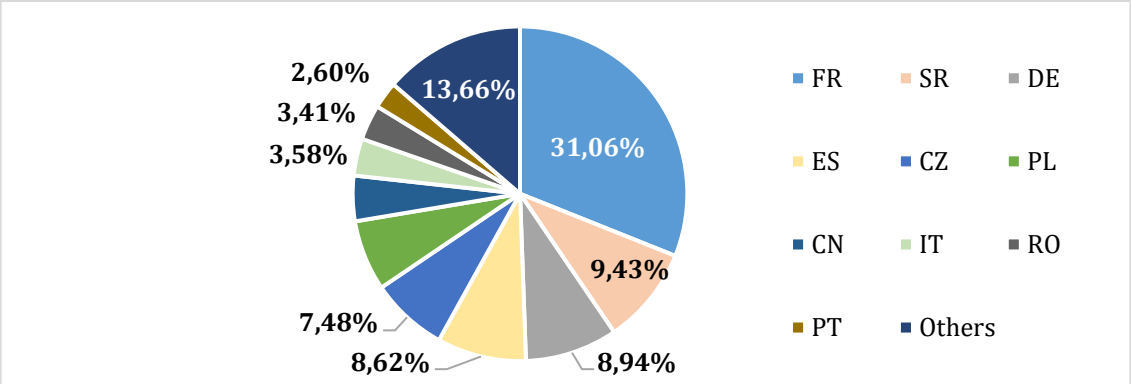
Source: Authors.

The company currently invests heavily in electromobility (battery production) and the environment (over 20% compared to last year), also develops the projects and technologies in laser solutions, automated logistics systems, and the like. Electromobility is currently the driving force of the company. Of the complete package of manufactured vehicles, 33,334 were electric, with the e-208 monogram. Last year, the battery factory completed 35,922 battery packs. The investment to start the new generation Peugeot 208 and e-208 amounted to 100 mil. € (2018). The first battery assembly plant was also exhibited and applied in Trnava. Currently, from the perspective of Industry 4.0, PSA Group SVK has received an investment in a new segment B production program at its production centre in Trnava (2021). The gradual start of production of the new production program of segment B is planned for 2023. In order to significantly contribute to increasing carbon neutrality, a large part of the production program will also be represented by fully electric motors. Industrial

investment in the new production program will also mean a significant mobilization of activities related to innovation, further application of Industry 4.0 technologies, reduction of energy intensity, and environmental protection (Kovacova and Lewis, 2021). According to experts, I4 certainly brings more positives, such as higher competitiveness, cost minimization, lower stocks, higher production efficiency, etc. Respondents included the possible loss of some job positions as negatives/threats. They also confirm the need to apply this concept in its entirety and shortly, mainly due to higher competition from neighbouring countries. The Industry 4.0 concept positively affects the car company's exports. It can transform it into an intelligent, digital enterprise in which all parts of production, machines, and people are connected in real-time, which enables higher production efficiency, lower error rates, and production costs. As a result, the company can dominate with a higher number of quality goods with a quality supply network. These segments will also positively affect its subsequent export and contact with customers (PSA, 2022).

Based on the analysis of available company data for the years 2020-2021, we found that the percentage of value-added for C3 and 208 vehicles consists of several countries; the parent country of the company creates the highest value, i.e., FR (31.06%), followed by Slovakia with almost 9.5% share, it is mainly assembly work. FR dominates only thanks to the fact that it is a French carmaker; the vehicles were invented right here, and the most modern technologies were applied for their design, design, etc. The Slovak Republic will probably not reach the same level of value-added as FR, as it is not the parent country of the company, but the Slovak goal must be to maximize the share of value-added of Slovakia in the production process and increase this share every year (Fig. 6).

Fig. 6: Percentage of value added by country for C3 and 208 vehicles (2020-2021)



Source: Authors.

By applying innovations and essential research and development, with which the company does not yet dominate in Slovakia, the products will achieve higher value-added. However, it is questionable when and how the Slovak government and overall legislation will be able to respond to this trend in order to support companies with innovative policies, better conditions, and laws. In particular, two parties, the company and the state are needed to make the innovative concept a reality. Respondents consider this to be a weak point of the Industry 4.0 concept in the territory of the Slovak Republic. Legislative conditions are currently insufficient and, in some places, chaotic compared to the outside world. When companies

have the necessary capacities for their research and development, only then will the path of the Slovak Republic grow exponentially in terms of added value.

Discussion

There is a strong need to spread the idea of Industry 4.0 across all sectors so that these industries understand and benefit from it (Tab. 3). The vision and one of the most important goals of the Slovak industry is to combine research and development activities, together with innovation, including broad-based application, which will enable the contribution of all relevant technologies, knowledge, and skills from industry and enterprises in various sectors to society and quality of life in Slovakia (European Commission, 2021; Stock et al., 2018).

Comprehensive analyses must achieve all this, and it is necessary to create a so-called "Slovakia's Intelligent Industry Platform". We can understand this Platform as the leading and managing body of Industry 4.0, consisting of a group of experts, which will consist of key actors and government bodies. The right step would be to appoint ambassadors for each sector, with the aim of continuous improvement and support for implementing expert recommendations.

Tab. 3: Comprehensive table of recommendations

Areas	Recommendations
Awareness raising and cooperation	1. Information campaign
	2. Support for IoT experimentation
	3. I4 Implementation Manual
	4. Better promotion
Industry Research 4.0	1. Support for applied research
	2. Research agenda for Industry 4.0
	3. Sector-oriented consortia
	4. Efforts to reduce the amount of rest. costs and R&D
Smart Factory	1. Support for the introduction of new technologies and materials
	2. Standardization (reference architecture)
	3. New models and their entry into supply chains
	4. Use of Big Data
Financing	1. Better funding mechanisms
	2. Address the needs of the research agenda
	3. Innovative public procurement
	4. Implementation of pilot projects
Labour market and education	1. Analysis of the main requirements of the present
	2. Creating predictive curricula
	3. Providing more specialized skills
	4. Following the European agenda (new skills)
Legislation and E-Government	1. Continuous development of skills in the public sector
	2. Commercial use of data (Big Data)
	3. Active participation of the government in supporting the implementation of I4
	4. Proposal of a transparent VS digitization plan

Source: Authors.

The main document of this Platform would be an "action plan" that would be specifically designed for a specific area. This plan would bind the platform and set long-term goals in the field of various strategies of energy, materials, nanotechnology, robotics. Environmental policy, which is also essential in matters of progress, must also be remembered and addressed. Recommendations for EP:

1. The Slovak government needs to create favourable conditions for businesses to become green, which is in its interest to attract foreign investment.
2. Businesses in Slovakia must press the government to create the proper regulatory framework for greening.
3. The car headquarters needs to work with its suppliers in Slovakia to help them adapt to new technologies and production processes through retraining staff.
4. Retraining and improving the quality of staff to meet the job requirements of the emerging e-mobility sub-sectors requires new training programs and cross-cutting cooperation between the public and private sectors and academia.

Conclusion

Based on the answers from a comprehensive questionnaire, it is possible to characterize a high level of knowledge about the latest trends in PSA Group Slovakia and a quality workforce that is ready for the challenges of this concept. The conclusions of the questionnaire confirm the significant impact of I4 on the company's product portfolio growth with value-added growth and point to insufficient state support, especially in the areas of education, financing (”R&D”), and legislation. This confirmed the first research question, but it should be noted that the EU will only run into the already established phenomenon of Industry 4.0, so it will not be a pioneer in this regard. The last part of the study is the proposals and recommendations of the authors. The content of this section contains two concepts of recommendations, the first in terms of the implication of Industry 4.0 for Slovak industry, in six areas/steps that follow the need of Slovakia to innovate, apply the latest available technologies, change educational programs and thus achieve high value-added in the industry and subsequent exports of the goods and services through the Action Plan. The second concept is devoted to the environmental policy of the Slovak industry, its importance, and its impact. Based on implementing these proposals and recommendations, the Slovak Republic can acquire the proactive character of an innovative country, otherwise, it will remains as an "assembly country."

However, despite the detailed intent of the analysis, the study has several limitations. It should be noted that this is a study that was conducted in one country and in one company. However, it must be said that the socio-economic environment or culture and especially the legislative environment are significant in Industry 4.0, so this shortcoming can also be considered a meaning and a positive feature. Our next challenge is to analyse and compare I4 and its implementation in the automotive sector as well as in other sectors for which it could be essential. It is also a challenge to compare the V4 countries or Central Europe.

Acknowledgements

This research was supported by the institutional research 1/KE/2021: The use of quantitative methods to assess corporate indebtedness of the Faculty of Operation and Economics of Transport and Communications, University of Zilina.

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Contact address of the author(s):

Ing. Marek Nagy, University of Zilina, Faculty of Operation and Economics of Transport and Communications, Univerzitna 1, 010 26 Zilina, Slovak Republic
e-mail: nagy.marek33@gmail.com

Assoc. prof. Ing. Stanislav Zabojnik, PhD., University of Economics in Bratislava, Faculty of Commerce, Dolnozemska cesta 1, 852 35 Bratislava, Slovak Republic
email: stanislav.zabojnik@euba.sk

Assoc. prof. Ing. Katarina Valaskova, PhD., University of Zilina, Faculty of Operation and Economics of Transport and Communications, Univerzitna 1, 010 26 Zilina, Slovak Republic
email: katarina.valaskova@fpedas.uniza.sk