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THE IMPACT OF THE PANDEMIC CRISIS ON INTEREST LEVEL AND SCHOPPING BEHAVIOUR WITHIN THE DISCOUNT PORTALS

VPLYV PANDEMICKEJ KRÍZY NA MIERU ZÁUJMU A NÁKUPNÉ SPRÁVANIE NA ZĽAVOVÝCH PORTÁLOCH

Abstract

The pandemic situation prevailing around the world has weakened all areas of society as a whole. It has caused significant changes that, in the long term, certainly do not contribute to economic happening. This paper deals with the impact of the pandemic crisis on the level of interest and consumer behaviour on discount portals operating at Slovak market as an important element of sales promotion. The analytical part of the paper provides an analytical view of the development of selected factors related to website attendance of discount portals as a potential purchase market. The results bring a clear consensus that the pandemic situation, together with its strict restrictions significantly eliminates the interest in buying through discount portals.

Key words: Discount portals. Covid-19. Pandemic situation. Visit rate.

JEL classification L83, M31, M37

Introduction

The global relatively calm situation in the world has changed rapidly due to the enlargement of the so-called Covid-19, which has had a significant impact on global developments. Its health danger paralyzed the world and its activities. Over the course of one year, a number of studies have been written that describe this phenomenon as well as its effects. On the side-lines of global events, for example, the author Gallo states that "the current period is characterized by a significant crisis, which has caused a decline in the development of the world and national economy. It has hit all sectors hardly, but especially tourism. In tourism, there has been a significant drop in productivity due to a sharp drop in sales" [1].

At present, a number of factors affect the consumer. They influence his shopping behaviour and purchasing decisions. The promotion of products and services is an integral part of marketing in any area that can change customer behaviour in purchasing decisions and the process. A very dominant factor that affects consumers in the area, especially in this long-term pandemic period, is price and price discounts [2]. A great advantage in the area of sales is recorded by modern technologies, which in a virtual environment can usually provide a better price for goods and services.

At the current market, there is clearly seen change to transfer our interest of shopping in virtual surrounding instead passing time in stone shops. In this case, digital technologies might play important role for the sellers as well as a significant competitive market advantage.

Especially in these difficult times, modern digital technologies are more the needed at the affected market. Kotler [4] paid attention to these technologies and stated that digital technology may support most business activities. Some scholars distinguish between ecommerce to: digital technology supporting sales, distribution and customer service processes; e-procurement: digital technology supporting sourcing, procurement, tendering and order fulfilment processes; and e-manufacturing: digital technology supporting demand and capacity planning, forecasting and internal supply chain integration. By focusing on the various activities taking place in the company supply chain, this three-group classification relates to a supply chain management approach. The term e-business has been proposed as one that includes all activities taking place in the supply chain as well as the company's internal use of digital technology [4].

Discount portals

Discount portals and discount aggregators became very popular, whether on the demand or supply side. More and more sellers realized that they can be an useful partner. They serve as an effective complement to the marketing mix. Discount coupons or vouchers are an effective sales marketing tool or occasional sales channel through which discount portals offer products. "The power of marketing activities of modern companies is significant. The discount portal tool is no exception. It represents a „modern way of promotion provides services and products with markedly reduced prices in limited time span" [7]. „By their position, they concerns unique marketing tool that brings better economic benefit to the companies. Discount portals´ policy is based on selling the discount through internet" [6].

The number of people interested in shopping on discount portals or bulk shopping was constantly rising during last years before pandemic situation appeared [5]. The offer of discount portals as well as their structure was adapting to changing market demand. While in the past, in the context of tourism at discount portals appeared several categories (especially Slovakia, Czech Republic, hiking, mountains and metropolis), nowadays their portfolio is more adapted to multiple segments (eg. Spa, neighbouring countries: e.g. Hungary etc.). It can be assumed that the discount portals have proved as advantageous means of sales [2]. The biggest boom within the discount portals in Slovakia was in years 2014-2015, when, according to the Slovak Association of Collective Shopping Portals, there were about 200 of portals on national market. However, most of them were forced to close down. At the end, there were only ten left. "A certain decrease was caused by overpressure in the market and also by unscrupulous providers of discounts. They ended the cooperation with such more important portals, which again cleaned up the market a bit [5]. Many discount portals have disappeared because they have frozen in place. They could not develop and reflect customer requirements, bring new things. The needs of Slovaks have changed significantly in five years. The discount is no longer a place where people search for a huge discount, but they search for an inspiration. Currently, most people are attracted by a diverse offer in one place, quality services and proven quality of the brand [9].

Discount portals have become really popular and despite the arrival of the time with relatively good economic stability and favour, their offer continued to be sought. For example, iSita [3] mentioned that, despite a thriving post-crisis economy, people are still searching for discounted products and services. The time has brought an increase in a separate category of discount portals in this area, which do not offer discount offers for specific products and services. By this, are meant portals that combine discounts, promotions, sales in the form of discount codes for discounts for purchases in well-known, long-standing and well-proven online stores" [3]. The fact that discount certificates are a source of earnings was also evidenced in the past by the fact that Facebook also tested a new type of advertising based on discount coupons.

Impact of the pandemic on discount portals

As seen from the statistics, Slovaks like to shop online very much. Based on this fact, it is not surprising that Slovakia is one of the leading countries in the region of Central and Eastern Europe in terms of the number of customers buying online. According to the volume of total revenues in the online store, Slovakia has so far ranked fourth before the pandemic started. In 2019, these revenues amounted to 1.36 billion euros, which was 260 million more than in the previous year [8]. The results of 2020 are debatable. On the one hand, the purchase has been transferred to the Internet environment. On the other hand, it is evident that during the pandemic crisis, purchasing decisions trend still changes and consumers are more cautious. But, the Business centre points out, that there are segments that will be marked by the Covid disease crisis significantly more than others [8].

In the times of crisis, the pandemic did not avoid even the discount portals. The shopping behaviour has changes and still shows it force. For instance, the ZľavaDňa discount portal reports a 75% drop in its sales. Martin Rakovský who is the company's CEO confirmed this information. The drop in sales is mainly caused by the coronavirus epidemic, which forced people to stay at home and not use the services of discount portals. The worst situation is presented in the travel and experience segments, where sales have virtually stopped since the corona crisis broke out. As they make up the majority of the range, the portal recorded a drop in sales of 75% [10].

Today, discount portals try to keep clients by extending the validity of coupons that were purchased before the crisis. This happens most often in the case of holiday coupon purchase. The accommodation facilities have to be closed or have so strict restrictions that they close. There is also a significant restriction of closed ski areas so there is no chance to take the advantage of these coupon holiday options.

What concerning the other products, the interest changed. For instance on portal ZľavaDňa, the offer also changed at first glance. Protective gear, tires or an annual subscription to hobby titles came to the fore. At the time of the coronavirus, most protective equipment such as drapes, respirators or gloves are bought through discount portals. There is no lack of disinfectants or tire replacement [10].

Material and methods

The main aim of the paper was to find out, whether the pandemic situation changed the interest of potential consumers/customers to purchase the products through the possibility of discount portals that represented a significant as well as very popular purchasing online tool.

The survey was done using the data of the similarweb.com page that identifies the marketing statistics of webpages all over the world. The data obtained from the web page are evaluated in 6 months interval. For the purpose of this paper, the time interval of evaluation was July 2020 to December 2020 (6 months). This period was chosen intentionally because of the finding what pandemic crisis caused with the interest of potential consumers.

For the theoretical part, the method of scientific abstraction was chosen to find the theoretical base oriented to discount portals issue. For the analytical part of the paper, the method of analysis was chosen in combination of mathematical and statistical methods to evaluate the obtained data. For the purpose of broader knowledge of selected issue, 3 the most significant discount portals were chosen at the example of: Zlavomat, Zlavadna and zlavy.sme.sk. Because of the reason of their marketing performance evaluation, the comparison method of valuation was used. The observed data were: development of portal (web page) attendance during the period July-December 2020; the rate of instant purchases; interest markets; sources of attendance to individual portals, etc. The analytical part of the paper in general deals with performance and data.

Results and discussion

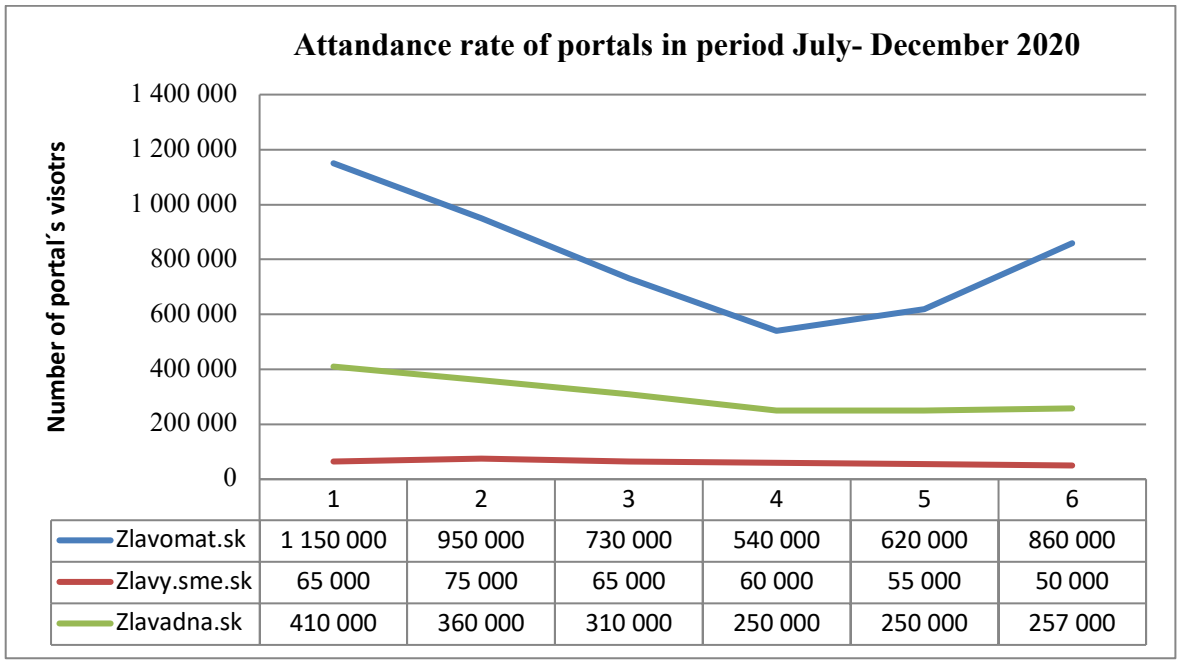
The customer develops under the influence of several factors as in other spheres. Thanks to an accurately measurable online purchase, every owner of a discount portal can monitor traffic, sales and measure the impact of marketing. It is possible to come to interesting data [3]. Purchase within discount portals has generally no exception.

The first monitored data was the number of visits to the pages of discount portals. The first selected discount portal monitored at the time (although in the meantime it changed its strategy to the largest bulk shopping server) was Zlavomat.sk, which had the highest number of visitors in a six-month period, a total of 3,700,000 visitors. Within the mentioned time horizon, most people viewed its page in July 2020, as the first monitored month. The lowest recorded interest in the site was in October 2020, when this month is generally perceived as a "weaker" shopping month. In the context of pandemic measures, the interest in products and services has clearly decreased, as well as official economic statistics mention that the consumer in pandemic times considers the purchase of individual goods and services more than ever, in the times of favour. Due to the fact that the sale of travel and holiday options, which were significantly limited this season and which were subject to various measures, was very dominant in the offer of discount portals, the performance of sales through discount portals was also significantly lower. Broad-spectrum measures, changing conditions for the provision of services as well as strict restrictions and lockdowns have confused the tourism market and also selling the holiday stays through discount portals. Despite the efforts of many portals to create more suitable conditions

for the use and application of coupons, the consumer, in the pressure of change, preferred to postpone the purchase.

One of the most significant supporting elements on the part of discount portals in the case of the purchase of a holiday stay was the extension of the coupon. This fact could occur only with the mutual consent of the provider, e.g. accommodation service. Many accommodation providers, such as Polish hotels, no longer wanted to exercise this option, as the measures in their country were not as strict as at home at the time. In the case of the purchase of, for example, seasonal ski passes, many resorts have decided to provide additional vouchers for future use due to the total closure. A big precondition for discount portals in general was an increase in the attention and rate of purchase by consumers in the pre-Christmas period. Although the rate increased significantly compared to the weakest month of October, but portal managers also claim that the records did not fall. Zlavomat.sk clearly had the highest share at the domestic market.

Graph 1: Development of attendance rate of selected portals



	1	2	3	4	5	6
Zlavomat.sk	1 150 000	950 000	730 000	540 000	620 000	860 000
Zlavy.sme.sk	65 000	75 000	65 000	60 000	55 000	50 000
Zlavadna.sk	410 000	360 000	310 000	250 000	250 000	257 000

Source: own processing up to the data provided by similarweb.com 2021

The second monitored portal was the Zlavy.sme.sk portal, which had the highest rate of visits and interest in products and services in August 2020. From the aforementioned month, its traffic decreased continuously until the end of the year. Even the Christmas period did not help the portal to advance and apparently, the pandemic situation caused the situation. In total, the share of visits compared to Zlavomat.sk was 10%, which represented 370,000 visitors to the portal in half a year.

The third monitored portal was the portal Zlavadna.sk, where the visits were significantly higher. The biggest interest in the site was in the month of July, when the summer season worked relatively positively, although with measures. As with the Zlavy.sme.sk portal, this

portal was not saved by the Christmas period either, but its total attendance has been declining since the summer. The month of December increased by only 7,000 visits compared to the months of November and October, which had the same number of visitors,

Other monitored factors that were monitored in the pandemic period on the example of portals were: Total website attendance development; Average duration of a page visit; Pages per Visit on website and Bounce Rate. Of the three monitored portals, only Zlavomat.sk had a positive development of total traffic compared to the previous period. This fact was mainly due to the strong month of July, as mentioned above. The other two portals saw a decline in interest in visiting the site at all. The average browsing time of the page as another observed parameter was the longest on the Zlavomat.sk portal. The second longest viewing time on the website was for the Zlavadna.sk portal, whose average viewing time was only one minute shorter than for Zlavomat.sk.

Zľavy.sme.sk had the shortest browsing time on the website with less than two minutes of viewing. In terms of pages viewed, Zlavomat.sk again dominated, with less than seven pages. In this case, Zlavadna.sk, even in second place, had a significant difference from Zlavomat.sk by almost half. The discount portal Zlavy.sme.sk again had the least. An interesting figure was the one concerning the rate of immediate purchase-bounce rate. Despite the clear dominance in all monitored factors, in the case of the rate of immediate purchase- bounce rate, the Zlavomat.sk portal was the worst. Of the three monitored discount portals, it had the lowest rate of immediate purchase. The Zlavy.sme.sk portal turned out the best, having the weakest performance in all the previous factors. Its share climbed to 63.26%.

Table 1: Attendace development in the context of seleceted criteriors

Portal	Total website attendance development	Average duration of a page visit	Pages per Visit	Bounce Rate
Zlavomat.sk	plus 39,57%	05:39 minutes	6,91	32,59%
Zlavy.sme.sk	minus 11,18%	01:37 minutes	1,8	63,26%
Zlavadna.sk	plus 7,22%	04:35 minutes	3,52	48,92%

Source: own processing up to the data provided by similarweb.com 2021

Among other monitored factors for the implementation of the comparison were chosen: sources of attendance of individual portals. They tracked the attendance rate of the websites via: direct visit, referrals, through search, social nets or e-mail. The result of individual portals varied. The best in terms of direct visit to the site was Zlavomat.sk. From the point of view of referrals, Zlavy.sme.sk portal clearly had the highest number of visitors. The discount portal that was searched the most via the "Search" function was the Zlavadna.sk portal. Social networks dominated in the case of Zlavovat.sk and the e-mail offer appeared in the case of Zlavomat.sk the most.

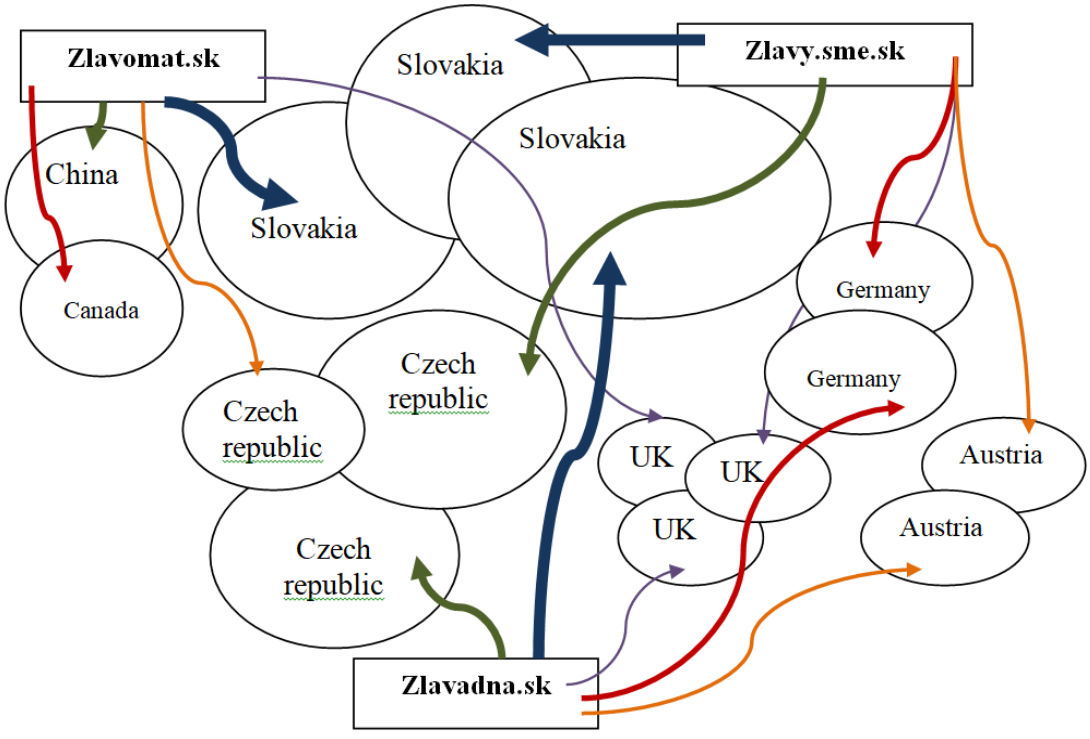
Table 2: Sources of attendance of individual portals

Portal	Direct	Referrals	Search	Social	Mail
Zlavomat.sk	44,44%	0,75%	41,38%	9,27%	3,36%
Zlavy.sme.sk	16,28%	34,90%	0%	0%	0%
Zlavadna.sk	33,37%	3,05%	57,33%	5,03%	0,42%

Source: own processing up to the data provided by similarweb.com 2021

Another surveyed factor was Source markets/countries of portals´ attendance. The results are shown in the scheme below.

Scheme 1: Source markets/countries of portals´ attendance



Source: own processing up to the data provided by similarweb.com 2021

All portals were clearly visited the most by potential applicants from the home country, and therefore the Slovak visitor took first place at all three portals. In second place, together for

Zlavadna.sk and Zlavy.sme.sk, was the second most important market, where there was interest in the offer of portals, was the Czech Republic. Only for Zlavomat.sk was surprisingly second China. As for the previous two portals Zlavadna.sk and Zlavy.sme.sk, the third country was Germany. Canada again took third place for zlavomat.sk. again differently as in prevous two cases. Again, Austria was in fourth place for Zlavadna.sk as well as for Zlavy.sme.sk. The Czech Republic appeared fourth in the case of Zlavomat.sk. The fifth introduction riniels surprise and for all portals together was the fifth country with the highest interest in the site from the United Kingdom.

Summary

The situation brought by the Covid-19 pandemic to the global market has a significant impact on many areas of social life. Sales and its services as we have known it so far began to change its versions and forms. The further away, the more people move their purchases to the Internet. The situation was no different on the example of discount portals. The survey of attendance and performances on selected discount portals showed that the level of interest in visits to discount portals is declining despite the initially strong periods of the year. Experts from this type of sales claim that in the case of discount portals before the pandemic, the customers were relying on the credibility of the portal, active customer support, the ability to use online chat or call, website design and ease of orientation on the site, but especially reviews [9]. At present, even these mentioned criteria did not help the fact that the pandemic, despite the significant transfer of purchases to the Internet environment, affected the interest in purchasing through discount portals. Neither the discount amount factor, together with the evaluation and validity of the coupon, motivated potential customers to previous, performances, or even to visit the pages of discount portals, which was the intention of this paper. This year, as can be seen in the number of visitors, there was a clear decline, despite the fact that due to pandemic measures, purchases of Christmas gifts have moved in masse to the online environment. Although according to the HNonline Strategies [9] in the years 2015-2017, there was an observable trend of postponing the purchase of gifts until the last minute, this did not happen this year. In view of the findings, it is appropriate for discount portals to start paying more attention to their marketing activity on the domestic market and to sell, in particular, services and products, which are not subject to ever-changing measures and restrictions.

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BASIC ECONOMIC ISSUES ACCORDING TO THE IATF

ZÁKLADNÉ EKONOMICKÉ OTÁZKY PODĽA IATF

Abstract

The paper discusses the problem of the correct setting of a business plan in a manufacturing company in the automotive sector. The aim of the work was to point out the significant penetration of economic standards in the IATF technical standard, to point out its requirements and possible implementations on examples. Based on the facts, the aim was to formulate specific questions that each similar company should ask and to derive measures in terms of optimization from the answers.

Key words

Business plan, IATF, Risks, Competences, SWOT, Processes, Knowledge, KPI.

JEL classification

A10; D12; L10; M20

1. Introduction

Basic economic issues can be formulated from different angles, by type of economy, by type of products or services, and so on. Simply asking yourself the question of what, how and for whom to produce is just one small group of essential questions that follow but also other questions. Many private organizations as well as the public sector, either voluntarily or based on the requirements of the state, institutions or business partners, had to pass various certifications. In my work I will focus on the automotive industry and the IATF16949 standard. Gradual transformation of ISO9001 standards, later ISO / TS16949 up to IATF16949, technical standards were also added to technical standards, e.g. resource planning, risk management and action planning, the need for an emergency plan and the like. In a way, modern certification according to these standards does not only deal with the purely technical side of production of products or provision of services, but also tasks the organization in accordance with the chapter "leadership" to take on all assigned tasks arising from defined competencies and powers. The work will point out the penetration of the economic and technical world and the aim will be to formulate the basic economic issues in the above models and outline a business plan.

2. Materials and Methods

To determine the basic economic issues, it is necessary to define several basic assumptions. Entrepreneurship as such is guaranteed in Slovakia by the Constitution of the Slovak Republic, Article 35 and paragraph 1. Everyone has the right to do business or carry out other gainful activity in the country. At the level of laws, business is also regulated by the Commercial Code. It regulates business, institutes related to it, business actors, business procedures, regulates documentation related to business and also manages business and legal relations between stakeholders. Entrepreneurship means a continuous activity that is carried out by an entrepreneur with the aim of making a profit or a measurable positive social impact. Entrepreneurship is not only a basic precondition for the functioning existence of a market economy but also human activity, which causes an equilibrium state in the economy.

Assumptions for successful business activity can be divided into objective and subjective. By objective we mean business activity on market stimuli, monitor them and use them effectively. Entrepreneurial competencies, such as intellectual, emotional or economic abilities, are classified under subjective assumptions in business. Both assumptions should be in some balance for a successful business process. The research goal of my descriptive research design is a manufacturing company in the automotive industry that is certified according to the IATF16949 standard. This company has been operating on the market since 2007, which means that it is well-established and, based on the results, successfully defends its position on today's market. The already mentioned economic questions of what, how and for whom to produce are not the subject of everyday communication, as the company is already integrated in the market. However, these issues may arise during operation during reprofiling, depletion of all production capacities or major changes in the market. Based on the above facts, we will focus the issue of economic issues on the procedural level. The aim of the business, resp. company is not only to monitor the economic result, the amount of profit, but also the efficiency of individual processes. This view will provide us with more detailed information about the individual activities of the company, about the inputs and generated outputs, the profitability of processes and the like. The IATF16949 standard also defines from an economic point of view several meaningful attributes that need to be declared for processes:

• inputs,

• outputs,

• interconnection of processes,

• measuring the efficiency of processes through indicators,

• identify resources for the running of processes,

• assign responsibilities and powers; and

• define and assess risks and measures.

3. Results

We will take an exemplary process of "business activity". The purpose of the attributes is to methodically contribute to the implementation of business activities in order to improve this process, satisfy the basic economic goals of the owner and the requirements and expectations of other stakeholders such as suppliers, customers, the state and the like. A smooth function of this process is to apply for new projects for the organization at the customer. From a strategic and economic point of view, this is one of the most important processes, given that all others are dependent on this process, the output of this process ensures the future and fluidity of all other processes. This process strategically and prospectively shapes the company and ensures its future operation, employees work and owners, provided profitability profit. **The inputs** to the process can be considered:

• demand, technical documentation,

• requirements for products, annual quantities,

• internal information on manufacturability, capacity, technology and

• documentation and offers from suppliers.

After the transformation, the process can generate the following **outputs:**

• comprehensive offer with price and business requirements,

• order from the customer,

• framework contract and

• information and data for the following processes.

In this case, we do not define any previous processes, the process has only subsequent processes:

• project management,

• technological preparation of production and

• realization of production.

Key Performance Indicators (KPIs) are commonly used to **measure process efficiency.** The main indicator is:

• sales revenue.

Revenues are an additional mirror of the efficiency of the business process with an interval of approximately one year. This is due to the fact that the currently acquired project cannot be immediately reflected in sales, as the implementation of the project is a time-consuming process. Strategically, this process can be evaluated additionally after about a year. However, with an established organization, this may not be a problem, it is essential to maintain continuity in sales and avoid stagnation. It is generally known that projects in the automotive industry are limited in time and when there is a cessation of production, respectively. life of the project, it is necessary to replace it with a new one in terms of continuity of production. The following image shows monthly sales with a rising trend line. The strategic goal of the company was to maintain the lower level of sales of 14 mil. euros. We can state that the goal was mostly met. The non-fulfillment in the first three months and partly in the tenth month can be analyzed by quiet periods in car sales on the market. At the beginning of the year, new models are always released, the old ones are sold out, this phenomenon can be considered the cause of non-compliance. An inseparable reason is also the winter period, which psychologically not positively affects buyers. It is obvious that during the spring and summer months there is a peak curve. The December exit can be argued for a company-wide holiday in the races. In this case, they are often supplied in advance. After analyzing the results, it is necessary to define strategic measures, if possible, in order to preserve as much as possible the financial continuity of the company with the aim of business sustainability.

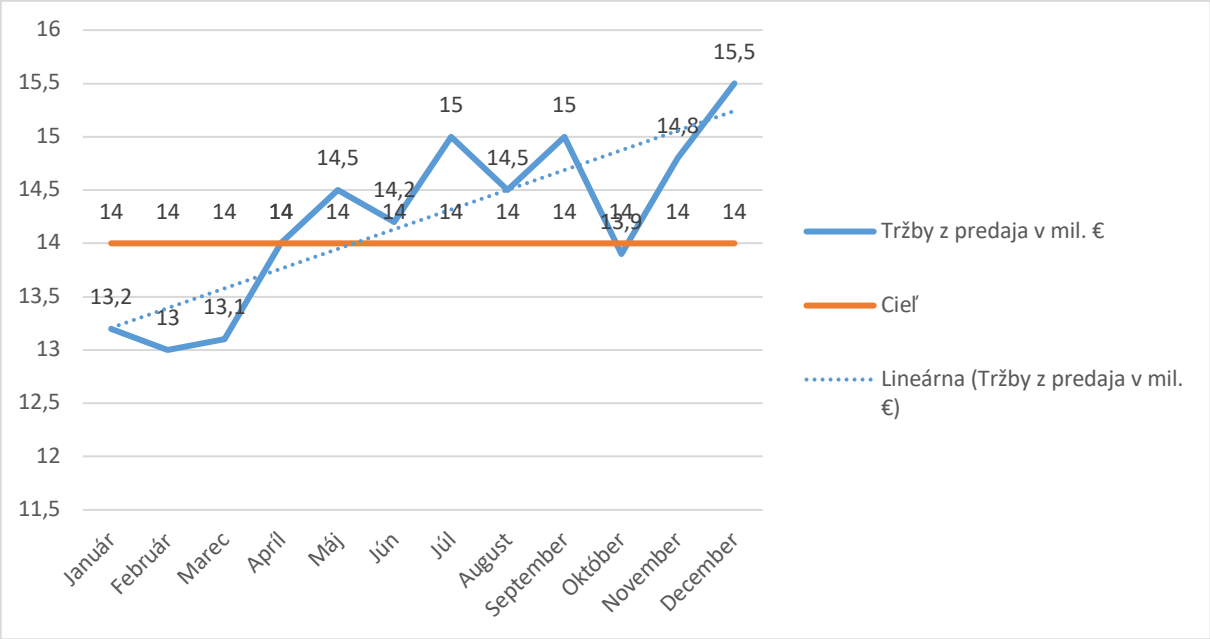

Figure 1. KPIs of Business

Source: own processing

The organization must identify **resources** for the implementation of processes. In doing so, it must take into account the capabilities and limitations of current internal resources and the possibilities of external resources. Sources can be identified as follows:

• staff (operators, managers),

• infrastructure (buildings, equipment, transport, technology),

• environment for the operation of processes (social, social spaces),

• sources of monitoring (measurement of qualitative indicators),

• knowledge of the organization.

Not only financial institutions but also the IATF standard requires the company so-called. business plan. It is not aimed only at the period of starting a business, but the standard is strictly prescribed by the plan to deal with, to update it in specified periodicals and to plan on the basis of it. The plan contains four basic pillars:

• the financial budget of the organization for the calendar year and the planned investments,

• setting strategic goals of the company and goals of management systems,

• development of company policies and management systems a

• vision of the company.

The company's budget is made up of current overhead costs as a basis; based on the analyzes, it is not very likely that they will change significantly during the year. These costs are usually included in the calculations and do not represent an unpredictable situation. On the contrary, it is with additional expenses such as:

• professional training for employees,

• investment in software,

- costs of maintaining management systems,
- new bicycle stands, new interlocking tiles,
- replacement of parts on devices.

Such extraordinary costs are difficult to anticipate, so it is good to think about such costs that may occur during the creation of a business plan for the coming year, so that the organization reserves funds in advance for such events. For each single point, it is necessary to state the possible amount of costs and then continuously evaluate the drawing from this so-called. fund.

The strategic goals of the company are the sum of economic, technological, tactical goals, which are interconnected and to some extent interdependent. The IATF standard talks about setting primarily measurable goals. This means that the goal must be specific, e.g. achieving a specific profit, innovation of a specific technology, gaining a specific client. We will give an example of the developed complex goals of the company. They must include specific deadlines for implementation, responsible and sometimes specific action plan in the case of complicated objectives, the fulfillment of which must be monitored on an ongoing basis.

Table 1. Strategic goals

Goal:	Responsible:	Date:	Fulfillment:	Note:
Achieving an "A" rating from the customer	Mr. Molnár	06/2021	25%	Expected audit in June 2021
Maintain the total annual turnover compared to the previous year	Mr. Tóth	12/2021	0%	
New quality spaces	Mr. Molnár	10/2021	50%	See project
Modernization of measuring equipment with a new type of Zeiss SMM	Mr. Filip	12/2021	0%	Min. 3 offers
Maintain the total annual quality costs compared to the previous year	Mr. Molnár	12/2021	0%	
Fulfillment of KPIs of individual processes	Process managers	12/2021	0%	

Source: own processing

The development of company policies is aimed at the implemented policies in the organization:

- quality policy,
- environmental protection policy,
- information security policy,
- code of ethics,
- trade policy.

The organization should communicate, mediate and update these policies in the company. It is essential that all relevant staff are made aware of these policies, that they take these rules, expectations and the like into account in their activities. After certain periods, it is good to update them, it is possible that the profile of the organization changes partially or completely, then the policies may change in some way. More or less, all policies have a legislative background, such as a code of ethics. In some way, this document declares compliance with the Labor Code, anti-social legislation, the Commercial Code and the like. This area has also been elaborated in technical standards ISO26001 and SA8000. Routine audits are performed in the VW network for this purpose. All policies must be published and understood in the organization. They must also be examined for suitability.

The company's visions are perceived more from a long-term perspective. Here is an example of visions for the period 2021-2026:

• Transfer of the supporting external project management process from Austria to Slovakia

  o about resources

    - office and its complete equipment,
    - description of directives and other documents.

• Extension of land

  o examine the surrounding land and re-evaluate possible investments,

  o Percentage evaluation of possible capacity expansion.

• Automation and digitization

  o Nationwide introduction of BAR codes,

    - evaluate the necessary resources.

The knowledge of the organization means all the skills, abilities, know-how of the company for smooth operation. It is knowledge from trivial activities from the production environment to the skills and experience of traders how to win an order. All this information is the property of the company and it is in the interest of the company to document it for the purpose of substitutability. It is a mistake if a skilled sales director who uses his methods to negotiate the organization of the contract and after his departure the customer is lost. Every process, every asset must be as replaceable as possible.

Top management must ensure that **responsibilities and authorities** are assigned to persons for relevant tasks. The sales director needs to have the right to sign when winning new orders. In case of incorrect calculation, he must bear full responsibility for financial loss and the like. All these situations bring some risks for the company, so it is necessary for the employer as well as the employee to set the best and most correct conditions, respectively. labor relations and business relations.

We will follow up on the topic of **risks** that are part of every process. From a business point of view, the SWOT analysis in the following figure is often used.

Silné stránky	kr.	1	2	3	4	5	suma	váha	E1	E2	E3	suma	váha
Orientácia na zákazníka	1		0	1	0	0	1	0,1	1	3	2	6	0,2
Firma so zahraničnou účasťou	2	1		1	1	1	2	0,2	2	2	2	6	0,2
Technická odbornosť personálu	3	0	0		0	1	1	0,1	1	1	2	4	0,13
Poloha spoločnosti	4	1	0	1		0	2	0,2	2	2	1	5	0,17
Držiteľ certifikátov kvality ISO 9001, TS 16949	5	1	0	0	1		4	0,4	4	2	3	9	0,3
Súčet							10	1	10	10	10	30	1

Slabé stránky	kr.	1	2	3	4	5	suma	váha	E1	E2	E3	suma	váha
Úverové zaťaženie	1		1	0	1	1	3	0,3	3	3	3	9	0,3
Nováčik na trhu	2	0		1	0	0	1	0,1	1	1	2	4	0,13
Nestabilná finančná situácia	3	1	0		1	1	3	0,3	3	3	2	8	0,27
Fluktuácia personálu	4	0	1	0		0	2	0,2	2	2	2	6	0,2
Špecializácia podnikateľského zamerania	5	0	1	0	1		1	0,1	1	1	1	3	0,1
Súčet							10	1	10	10	10	30	1

Príležitosti	kr.	1	2	3	4	5	suma	váha	E1	E2	E3	suma	váha
Rozvíjať marketingové aktivy do nových regiónov	1		0	0	1	1	2	0,2	2	2	2	6	0,2
Príchod nových automobiliek na Slovensko	2	1		0	1	0	2	0,2	2	3	2	7	0,23
Ponúknúť nové služby	3	1	1		1	1	3	0,3	3	1	1	5	0,17
Rozšírenie výrobných priestorov	4	0	0	0		1	2	0,2	2	3	3	8	0,27
Zakúpenie nových zariadení na prevádzku	5	0	1	0	0		1	0,1	1	1	2	4	0,13
Súčet							10	1	10	10	10	30	1

Hrozby	kr.	1	2	3	4	5	suma	váha	E1	E2	E3	suma	váha
rast konkurencie	1		1	1	1	1	4	0,4	4	4	2	10	0,33
skladovacie priestory	2	0		0	1	0	1	0,1	1	2	2	5	0,17
poruchy zariadení	3	0	1		0	0	1	0,1	1	2	1	4	0,13
neinformovanie kompetentných o havarijnej situácii	4	0	0	1		0	1	0,1	1	0	2	3	0,1
výrobná spôsobilosť	5	0	1	1	1		3	0,3	3	2	3	8	0,27
Súčet							10	1	10	10	10	30	1

Figure 2. SWOT analysis

Source: own processing

The aim of the analysis is to identify the strengths and weaknesses of the company. Eliminate possible business opportunities and threats. The result of this analysis is a guide to improve business, the direction in which the organization should be directed business and strategically. The output can be an action plan with optimizations of individual processes, areas, specific managers and the like.

4. Conclusion

The output of my work is the formulation of basic economic issues of the research sample.

- What inputs must the organization provide for the smooth and efficient operation of processes and what outputs does it expect?

- How many and what processes does the organization have to ensure to fulfill the business plan?

- What are the process indicators, are they effectively managed?

- What resources does the company have to plan for its operation?

- Are the set employment and business-legal relations optimal?

- What are the business risks of the organization and what do they entail?

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ANALYTICAL VIEW OF THE CONSUMER BEHAVIOR OF MILLENNIALS

ANALYTICKÝ POHĽAD NA SPOTREBITEĽSKÉ SPRÁVANIE MILENIÁLOV

Abstract

E-commerce plays an important role in today's world of commerce. Many customers shop online. The e-commerce is booming mainly because today's consumers use the Internet on a daily basis, they like to try new things, brands and products, but they are also modern, demanding and like convenience. The aim of this paper is to identify Generation Y consumer behavior when purchasing goods and services. Based on the above analyzes, it can be stated that Millennials buy goods and services online several times in six months. Based on the average value/ median, it can be stated that the least frequently purchased items are lottery, auto-moto, music, PC and insurance. On the other hand, the most frequently bought clothes and jewellery, services such as cinema tickets, holidays or tickets for cultural events, travel tickets or cosmetics and perfumes

Keywords

e-commerce, purchase, consumer behavior, millennials

JEL classification

M30; M31

1. Introduction

E-commerce is a subset of e-business. Electronic commerce can be described as the use of any information and communication technology in order to carry out mutually beneficial transactions between the seller and the buyer (Bystrická 2013). The implementation of an information system into business processes, or the creation of an information infrastructure does not mean that we talk about electronic commerce. A company conducts e-business only if it conducts communication with customers mainly through information and communication technologies (these can also be used by the implemented information system) (Laudon and Traver 2016). According to Dorčák (2012), all business activities and services implemented through electronic data transfer tools, and directly related to the implementation of business, can currently be perceived as electronic trading. As for the software or other information, these

can also be transmitted to the end consumer electronically. At present, e-commerce can be carried out not only using personal computers but also mobile communication platforms (Xanthidis and Nicholas 2004). Suchánek (2012) states that one of the first examples of electronic trading of physical goods between a large number of sellers and buyers was the Boston Computer Exchange established in 1982. E-commerce is a purchase, sale and distribution of goods or services where the contact between the seller and the buyer takes place through electronic systems. E-commerce is essentially a business between people in which information and communication technologies are used (Thongpapanl and Ashraf 2011; Štefko a kol. 2018). Manzoor (2010) states that the main elements of e-commerce are online stores and related issues. However, most activities falling under online marketing are also well represented here, e.g. e-mail marketing, various affiliate programs, online advertising and all activities related to the promotion of Internet commerce (Leong and Ibrahim 2015). In a broader sense, e-commerce can also include any websites that offer specific products or services which can be ordered, e.g. via e-mail. The first e-shops in the world began to emerge around 1994 (Amazon, eBay,…). According to Tiaga and Tiaga (2012), online commerce is currently the fastest growing segment in increasing business performance and productivity. E-commerce is included in the field of direct sales, as customers can choose the goods without having to physically visit the brick-and-mortar shop or shopping center (Gerrikagoitia 2015). E-commerce is a fast-growing segment that is a common part of today's businesses (Shim et al. 2001). Its essence is based on the use of information and communication technologies. Today, online stores make it easier and faster to do business. As e-commerce is a form of direct sales to customers, it is easier to buy goods directly from the comfort of home. E-commerce covers a range of technologies, the use of which leads to increased efficiency of business relationships (Vanhoose 2011). By consumer behavior we mean primarily obvious and observable acts, such as purchase and consumption, which are fundamental aspects of the consumer's decision-making process. This concept is much broader than the mental and social processes that take place (Kita 2005): before purchasing - awareness of need, formation of attitude, evaluation of alternatives, choice of product and place of purchase; during the purchase - the shopping behavior itself; after purchase - after purchase evaluation of usefulness, comparison of expected reality, satisfaction or dissatisfaction, consumption process (post-purchase dissonance). According to Petr and Olson (2008), consumer behavior can be defined as a dynamic interaction of affect, knowledge, behavior and environmental influences, on the basis of which people manage exchange relationships in their lives. Consumer behavior also represents the dynamic interactions of people and environments that contain emotions, knowledge and actions people carry out to meet their needs (Jiang and Benbast 2004). In other words, consumer behavior has an affective, cognitive, and conative component, that is, it involves the feelings, thinking, and actions people perform in connection with the process of consumption (Richter et al. 2005; Jenčová and Vašaničová 2019). With regard to consumer behavior, great emphasis is placed on examining how and why consumers decide on a given product or service, what response a purchase may trigger, how satisfied consumers are with the product, whether they are willing to make further purchases, in which way the product did not meet their expectations, etc. (Ďaďo et al. 2006).

2. Methodology

Based on the analysis of the current state of consumer behavior of the new generation of customers, the main goal of the paper is to identify the behavior of Millennials when buying goods and services. This goal will be met using descriptive and frequency analysis of the findings from the questionnaire survey.

In relation to the main objective, the following sub-objectives have been formulated:

- identify the frequency of Millennials making purchases in general,
- identify the frequency of Millennials making purchases in relation to selected items.

Primary data was obtained using a questionnaire. The link to the electronic questionnaire was placed on the relevant Facebook pages, it was also distributed evenly within the regions of the Slovak Republic by e-mail (the author's private database). A total of 962 respondents filled in the questionnaire. However, the research focused only on the Millennials/ Generation Y (born 1984 - 2000), i.e. respondents 21 to 37 years old (Young 2017). After removing unfit observations, a total sample of 824 respondents was used for the purposes of this paper. The obtained data were processed using Microsoft Excel. The individual analyzes were processed in Gretl and Statistica 13. Furthermore, the results are presented in figures and tables below. Inputs to the analysis were obtained by implementing the CAWI (Computer Assisted Web Interview) method. To obtain the necessary primary sources of information and data for the purposes of this paper, we used the exploratory method: the questionnaire. The aim of the questionnaire is to obtain data based on subjective answers of respondents, which in this case is Generation Y/ Millennials who shop online. The questionnaire consisted of closed questions. Data was collected in October 2020.

3. Results

The results in Table 1 show, based on the median value, that respondents aged 21 to 37 shop online only rarely (several times every six months).

Table 1. Descriptive statistics for the question "How often do you shop online?“

Variable	Mean	Median	Modus	Standard Deviation	Minimum	Maximum
Purchase frequency	2,75	3	3	0,674	1	4

Source: own elaboration

Respondents were also asked about the frequency of purchase of selected items. The following Table 2 shows the absolute and relative numbers of answers to the question concerning the purchase of these items.

Table 2. Frequency of responses for the frequency of purchase of selected items

Variable	Frequently		Rarely		Very arely		Never	
Auto-moto	3	0.36%	31	3.76%	151	18.33%	**639**	**77.55%**
Travel tickets	162	19.66%	**239**	**29.00%**	231	28.03%	192	23.30%
Electronics	19	2.31%	249	30.22%	**394**	**47.82%**	162	19.66%
Music (CD / DVD)	25	3.03%	71	8.62%	171	20.75%	**557**	**67.60%**
Food/ groceries	64	7.77%	101	12.26%	144	17.48%	**515**	**62.50%**
Cosmetics / perfumes	78	9.47%	**309**	**37.50%**	252	30.58%	185	22.45%
Books	57	6.92%	**295**	**35.80%**	277	33.62%	195	23.67%
Medicines	23	2.79%	150	18.20%	165	20.02%	**486**	**58.98%**
Lottery / betting	17	2.06%	32	3.88%	90	10.92%	**685**	**83.13%**
Clothing / jewelry	155	18.81%	**372**	**45.15%**	200	24.27%	97	11.77%
PC (hardware / software)	15	1.82%	76	9.22%	223	27.06%	**510**	**61.89%**
Insurance	7	0.85%	76	9.22%	257	31.19%	**484**	**58.74%**
Services (cinema, vacation, ...)	118	14.32%	**330**	**40.05%**	274	33.25%	102	12.38%
Sports equipment	39	4.73%	187	22.69%	282	34.22%	**316**	**38.35%**
Furnishings of an apartment / house	45	5.46%	223	27.06%	**345**	**41.87%**	211	25.61%

Source: own elaboration

For this question/ for its individual items, descriptive statistics are also given in Table 3. It was found that none of the listed items is bought by respondents at least once every 2 days (very often). Based on the average value/ median, it can be stated that the least frequently purchased items are lottery, auto-moto, music, PC and insurance. On the other hand, the most frequently bought items are clothes and jewellery, services such as cinema tickets, holidays or tickets for cultural events, travel tickets or cosmetics and perfumes. The lowest variability, i.e. the difference within the partial answers, was found for the items auto-moto, lottery and betting. On the contrary, the highest variability was recorded in the purchase of travel tickets, food and groceries, cosmetics and perfumes.

Table 3. Descriptive statistics for the frequency of purchase of selected items

Variable	Mean	Median	Modus	Standard Deviation	Minimum	Maximum
Auto-moto	4,73	5	5	0,542	2	5
Travel tickets	3,55	4	3	1,050	2	5
Electronics	3,85	4	4	0,754	2	5
Music (CD / DVD)	4,53	5	5	0,777	2	5
Food/ groceries	4,35	5	5	0,969	2	5
Cosmetics / perfumes	3,66	4	3	0,929	2	5
Books	3,74	4	3	0,897	2	5
Medicines	4,35	5	5	0,872	2	5
Lottery / betting	4,75	5	5	0,624	2	5
Clothing / jewelry	3,29	3	3	0,905	2	5
PC (hardware / software)	4,49	5	5	0,738	2	5
Insurance	4,48	5	5	0,697	2	5
Services (cinema, vacation, ...)	3,44	3	3	0,884	2	5
Sports equipment	4,06	4	5	0,893	2	5
Furnishings of an apartment / house	3,88	4	4	0,855	2	5

Source: own elaboration

With regard to the frequency of purchase of selected items, the mutual relations in their purchase are also calculated. Spearman's coefficient was used for the performed calculation. The values in Table 4 marked in red were statistically insignificant at the significance level $\alpha = 0.05$. On the other hand, the darker the color of the cell, the more significant the relationship. It can be seen that the respondents' designations for "electronics" and "PC (hardware / software)" matched the most ($rs = 0.42$) followed by “sports equipment” and “apartment and house furnishings” ($rs = 0.33$); "cosmetics / perfumes" and "clothing / jewellery" ($rs = 0.31$); "PC (hardware / software)" and "insurance" ($rs = 0.31$).

Table 4. Contexts within the frequency of purchase of selected items

	Auto	TT	El	CD	Food	Cosm	Book	Meds	Loto	Cloth	PC	Ins	Serv	Sport	Apart
Aut	1,00	-0,02	0,19	0,15	0,03	0,01	0,05	0,07	0,19	-0,04	0,28	0,19	0,01	0,16	0,15
TT		1,00	0,14	0,05	0,04	0,00	0,03	0,02	0,07	0,08	0,11	0,13	0,19	0,10	-0,01
El			1,00	0,28	0,05	0,10	0,19	0,16	0,04	0,04	0,42	0,20	0,22	0,25	0,26
CD				1,00	0,09	0,12	0,20	0,17	0,11	0,07	0,27	0,23	0,15	0,20	0,15
Aut					1,00	0,15	0,09	0,13	-0,01	0,09	0,04	0,11	0,08	0,11	0,13
Cosm						1,00	0,19	0,30	0,10	0,31	0,00	0,09	0,16	0,18	0,26
Book							1,00	0,23	0,02	0,10	0,14	0,11	0,19	0,20	0,27
Med								1,00	0,20	0,13	0,17	0,21	0,09	0,20	0,22
Lot									1,00	-0,01	0,18	0,20	0,03	0,10	0,01
Clo										1,00	-0,04	-0,01	0,17	0,21	0,19
PC											1,00	0,31	0,11	0,21	0,15
Ins												1,00	0,15	0,22	0,16
Serv													1,00	0,30	0,20
Spor														1,00	0,33
Apar															1,00

Source: own elaboration

4. Discussion

Our findings complement or expand the research of several authors, such as Nguyen and Khoa (2019) dealing the issue of trust in online shopping, Frieze and Pegden (2018) dealing the issue of online purchasing under uncertainty, Dsouza and Sharma (2021) dealing the issue of changing consumer behavior and expectation during COVID-19 times and Chen, Yuan and Zhu (2020) dealing the issue of the motivational factors that have significant positive impacts on browsing behavior.

The results of the paper correspond to the results of the above studies in the following key areas. Our results compare to findings of authors Frieze and Pegden (2018) confirm that millennials most often buy several purchases at intervals of six months. Our findings confirm what authors Nguyen and Khoa (2019) claims, that by increasing the amount of information about products and services on the part of sellers, or by greater involvement of customers in purchasing, the frequency of shopping can increase.

Our findings do not correspond with findings of authors Dsouza and Sharma (2021) in area of changing of consumer behaviour because our study was conducted before the COVID-19 pandemic broke out. Another difference in our findings and the results of the study by Chen,

Yuan and Zhu (2020) is the fact that the motivation factors of millennials to shop online differ from the motivation factors of the general population of all generations.

This paper has several limitations that create interesting opportunities for future research.

The sample of respondents to the research was probably not interested in all the products that were offered to them in the questionnaire and thus did not have to be highly motivated to answer. However, most respondents certainly purchased the products in question during the data collection for the research, or in the months following the research, so it can be stated that their level of motivation may have been appropriate.

Nevertheless, future research could try to collect data from consumers who are more likely to buy the products in question on a regular basis in order to achieve a higher level of motivation. In addition, respondents were not familiar with the research context when asked questions about purchasing the products in question.

6. Conclusion

Life before the Internet is unimaginable for many Millennials. Generation Y uses the Internet in almost every aspect of their lives. Whether it's looking for trusted resources to write seminar papers, order food, watch online TV, or meet new people through cyberspace, the Internet has become an integral part of their lives. While widespread use of the Internet may not necessarily be negative, it has lasting effects on the lives of Millennials. All these actions implemented in the process of e-commerce are necessarily related to uncertainty, especially at the level of its perception and subsequent reduction. This dissertation thesis examined uncertainty in the context of the quality of sellers and their products and services.

Based on the above analyses, it can be stated that Millennials buy goods and services online several times in six months. Based on the average value/ median, it can be stated that the least frequently purchased items are lottery, auto-moto, music, PC and insurance. On the other hand, the most frequently bought items are clothes and jewellery, services such as cinema tickets, holidays or tickets for cultural events, travel tickets or cosmetics and perfumes. The lowest variability, i.e. the difference in the partial answers, was found for the items auto-moto, lottery and betting. On the contrary, we recorded the highest variability with regard to travel tickets, food and groceries, cosmetics and perfumes.

The added value of the implemented research lies in the fact that this is the first research carried out in the given issue in the conditions of electronic trading in Slovakia. While other studies focus on consumer behavior within the general population, the research carried out in this paper focuses on a new generation of customers (Generation Y), e.g. millennials, such research is unparalleled in the world at the level of this sample.

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TRANSFORMATION OF THE INFORMATION SECURITY SYSTEM ON TISAX

TRANSFORMÁCIA SYSTÉMU INFORMAČNEJ BEZPEČNOSTI NA TISAX

Abstract

The paper is about the transformation and possible complications from the ISO / IEC27001 standard to the TISAX standard. The aim of the work is to point out the differences of similar but still different two standards, the modern attitudes of automobiles in order to create a standard that is not only in the financial but also in the automotive world and will bring a high level of information and personal data protection. Information security management is becoming a direct part of business as such and directly supports secure communication and protection of trade secrets.

Key words

ISO/ IEC 27001, TISAX, information security, information exchange, personal data, protection.

1. Introduction

TISAX or Trusted Information Security Assessment Exchange is a standard that came into force in 2017 as a novelty in the German automotive industry. It is a kind of modified successor to the ISO / IEC27001 standard. Perhaps Europe's largest supply chain for the automotive industry is working with a lot of sensitive information, such as prototypes. Improper treatment poses major business risks, which car manufacturers must avoid. Until now, the burden has been to verify compliance on the part of manufacturers, but this is gradually changing and this new standard leads to joint evaluation and data exchange. The beginnings of this reform date back to 2003, when the German Automobile Industry Association (VDA) created the so-called working group on information security. The aim of this project is to create a modern standard and the result was the VDA information security standard, including the ISA evaluation catalog. The catalog is anchored and part of the already mentioned ISO / IEC27001 standard. The catalog is freely available and serves for self-assessment of the state of information security. Requirements with control questions as well as risk assessment are the basis of the catalog, resp. cooperation of partners in this industry. The VDA has designated the French association ENX as the neutral, governing and supporting body of the TISAX standard. ENX is in the position of approver of audit providers and oversees the results of the audit.

2. Materials and Methods

In July 2020, the White Paper "Information Security Risk Management" was published, which talks about confidentiality, integrity and availability. Describes information assets, respectively. assets, processes or information that need to be protected, e.g. designs, constructions, development know-how of the company and the like. A threat is a circumstance or event that internally or externally threatens an asset and thus the protection of information security. Gaps in processes and systems are defined as vulnerabilities that can directly affect societal threats.

Therefore, if we miss the vulnerability in information security, which activates the threat, it can damage and disrupt the company's strategic goals. This manual only serves as a supplementary document when implementing the requirements of the ISO / IEC27001 and TISAX standards. It describes selected states in the field of information security, which in some way describes and guides the correct implementation of specific sub-areas of these standards. The following table compares some of the requirements of the White Paper and ISO / IEC27001, in the chapters where penetration is necessary, it is necessary to pay attention to both standards. The overall complex differences will be evaluated at the end of this work.

Table 1. Comparison of standards

ISO/IEC27001	VDA White Paper „Information Security Risk Management“
4.1 Understanding the organization and its context	Context of the organization, page 4
4.2 Understanding the needs and expectations of stakeholders	Context of the organization, page 4
4.3 Determining the scope of the information security management system	Scope of ISMS, page 6
4.4 Information security management system	
5.1 Leadership and commitment	
5.2 Policy	
5.3 Organizational roles, responsibilities and powers	Roles, competencies and responsibilities, representation in roles, page 6.
6.1 Activities to address risks and opportunities	Risk Management, pages 6 to 16
6.2 Information security goals and planning to achieve them	
7.1 Resources	
7.2 Competences	
7.3 Awareness	
7.4 Communication	
7.5 Documented information	Documentation and report, page 17
8.1 Operational planning and management	
8.2 Information security risk assessment	
8.3 Addressing information security risks	
9.1 Monitoring, measurement, analysis and evaluation	
9.2 Internal audit	

9.3 Management review	
10.1 Nonconformity and corrective actions	
10.2 Continuous improvement	

Source: own processing

3. Results

Let me describe a few basic rules of risk management under the VDA ISA. The role of the risk manager is to control the risk management in the company, consolidate them and report the current situation to the top management. The role of the manager is to define processes, appropriate methods, including tools for ensuring the target quality of risk management. Each defined risk has an assigned owner who is responsible and evaluates his risks. It can define the implementation of evaluation and treatment, but not responsibilities. The identification of threats is the responsibility of each employee, who must report such a fact to the risk owner or risk manager. Risks must be systematically recorded during the course of other processes, but must be taken into account in the short term in the context of risk management. The result of the collection is a risk register, where it is necessary to classify very high, high, medium and low risks and at the same time assign owners. The register is the absolute basis for risk management. Risk assessment consists of identification and analysis.

Identification has various aspects such as the identification of assets, threats and vulnerabilities. Possible tools for risk identification are workshops, self-assessments and the like. The identification of relevant threats consists primarily of the experience of technical experts in the information structure, the experience of previous incidents and standardized threat catalogs. An integral part of risk identification activity is regular testing of infrastructure vulnerabilities.

Risk analysis consists in assessing the existing risk in risk classes. The risk class can be defined, for example, by a multiple of the probability of occurrence and potential damage. Probability of occurrence defines the probability of exploiting a vulnerability. Each risk is therefore assessed according to the probability, occurrence and extent of the damage. Based on these properties, it is possible to define a matrix in which we can evaluate the significant risks that the organization should address. Ultimately, there are these options for dealing with the final risks, avoiding them through measures, mitigating the risks, transferring or accepting the risks. Risk avoidance is acceptance, resp. failure to take measures, processes that cause risks. Risk mitigation is the most common way to deal with risk. These are usually technical, organizational or procedural measures that mitigate the risk ultimately. The transfer, or transfer, of the risk is usually done through a third party, that is, instead of performing a specific risk process internally, the process is purchased. The owner decides on the acceptance of the risk, who must take into account the possible consequences. In order to continuously manage risk management, it is necessary to establish a procedure for monitoring the defined measures from the risk analysis. Where necessary, room for countermeasures must be guaranteed in the event of the original measures being ineffective.

We are moving directly to TISAX and thus a credible exchange of information security information. The research goal of my descriptive research design is to review the implementation of the TISAX standard in an automotive organization with ISO / IEC27001 certification. It is a process through which the partner demonstrates its level of information security according to the VDA ISA and will communicate these results securely, resp. exchange. TISAX is intended for all organizations that need or want to demonstrate their level

of information security. One of the ways to prove an effective information security system is certification according to ISO / IEC27001. TISAX recognizes and recommends this standard for the creation of a management system. At the same time, the main actors of the VDA agreed to create a system by which suppliers and all partners in the chain can exchange information about the level of information security they meet. This system is called TISAX and purpose-built for the automotive industry. It consists of three main steps:

- test by provider,

- exchange of information on the result of the test with partners.

Registration means providing contact and billing information, accepting the terms and conditions and defining the scope of information security control on the ENX portal. The essential difference between the TISAX standard and ISO / IEC27001 is that we are only talking about participants in the information exchange. This means that we do not use the term customer or supplier. The organization that seeks to demonstrate the level of information security is in the position of an active participant, the organization that will require, respectively. exchanging result information is a passive participant. The following figure is an example from the above research sample.

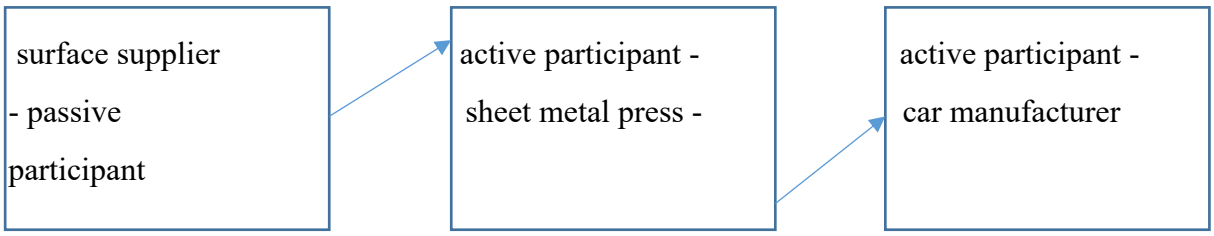

Figure 1. TISAX participants

Source: own processing

It is clear from the figure that participants can become both active and passive participants in the whole process. During registration, an agreement is concluded between the active participant and TISAX in this case, the general conditions of TISAX participation. The terms and conditions govern the relationship between the participants, including rights and obligations. The most important point of the conditions is the confidential treatment of the evaluation results. The rules are the same for everyone without distinction. As a next step, it is necessary to define the scope of evaluation, resp. SCOPE. Specifies what the provider must verify with the subscriber. It is essential to maintain a high degree of precision in defining the scope. Otherwise, the test result may not be a reflection of the current situation and the costs of the verification may differ from those planned. The scope of the test can be standard or custom, tailored to your own needs. It is usually a good idea to choose a standard range, as it is predefined and does not need to be modified.

The standard scope comprises all processes and involved resources at the sites defined below that are subject to security requirements from partners in the automotive industry. Involved processes and resources include collection of information, storage of information and processing of information.

Examples for involved resources: Work equipment, employees, IT systems including cloud services such as infrastructure/ platform/software as a service, physical sites, relevant contractors

Examples for sites: Office sites, development sites, production sites, data centres

Examples for involved resources: Work equipment, employees, IT systems including cloud services such as infrastructure/ platform/software as a service, physical sites, relevant contractors

Examples for sites: Office sites, development sites, production sites, data centres

Figure 2. TISAX standard range

Source: TISAX-Teilnehmerhandbuch Version 2.2.pdf

The participant may also decide to shorten or extend the standard scope. As a rule, it is not recommended to shorten the scope, it may happen that other participants may not recognize the results. In case the participant, ie the company has more branches, it is necessary to consider how the scope will be defined. Sometimes it is better to define your own scope for each branch. The reason is, for example, the result of a branch, which conditions the issuance of a central result with one scope for all branches, or already verified branches will be blocked by the issuance of the result by branches that have not yet been audited. It is necessary to gather a lot of information about the company when registering and defining the scope, such as company name, supplier number, branches, company protection, area of operation, number of employees, number of employees in the information area and certificates issued. The clerk and his representative with whom the process will be communicated are also mentioned. It is necessary to know the ID of the active participant so that we can share the current status with him, resp. process results. The participant can decide with whom he wants to share his result and to what level.

During registration, the objectives of the evaluation are defined, determining the relevant requirements of the information security management system. It is based on the type of data that is processed with the partner. Another option, the most used, is to set the "AL" rating level, as shown in the next figure.

Nr.	TISAX-Prüfziel	Assessment-Level (AL)
1.	Informationen mit hohem Schutzbedarf Information with high protection level	AL 2
2.	Informationen mit sehr hohem Schutzbedarf Information with very high protection level	AL 3
3.	Datenschutz Gemäß Artikel 28 ("Auftragsverarbeiter") der Datenschutz-Grundverordnung (DSGVO) Data protection According to article 28 (“Processor”) of the European General Data Protection Regulation (GDPR)	AL 2
4.	Datenschutz bei besonderen Kategorien personenbezogener Daten Gemäß Artikel 28 ("Auftragsverarbeiter") mit besonderen Kategorien personenbezogener Daten wie in Artikel 9 der Datenschutz-Grundverordnung (DSGVO) angegeben Data protection with special categories of personal data According to article 28 (“Processor”) with special categories of personal data as specified in article 9 of the European General Data Protection Regulation (GDPR)	AL 3
5.	Schutz von Prototypen-Bauteilen und -Komponenten Protection of prototype parts and components	AL 3
6.	Schutz von Prototypenfahrzeugen Protection of prototype vehicles	AL 3
7.	Umgang mit Erprobungsfahrzeugen Handling of test vehicles	AL 3
8.	Schutz von Prototypen während Veranstaltungen und Film- und Fotoshootings Protection of prototypes during events and film or photo shootings	AL 3

Figure 3. Assignment of TISAX targets to AL (Assessment-Leveln)

Source: TISAX-Teilnehmerhandbuch Version 2.2.pdf

The AL 1 assessment level is intended for internal self-assessment, in which the examiner checks the completeness of the self-assessment without providing evidence. It is the lowest level of reliability and therefore this level is not commonly used in TISAX.

The level of AL 2 assessment differs not only from the completeness check but also from the evidence presented at all sites examined. It is usually checked verbally or by conference and usually the on-site test is not performed except for exceptions such as prototype protection.

The AL 3 assessment level is a complete review of all tests as at the previous level, but all controls will be comprehensive and in-depth examined on site and through face-to-face interviews.

Table 2. Comparison of standards

Test method	AL 1 (normal)	AL 2 (high)	AL 3 (very high)
Self-propelled	Y	Y	Y
Evidence	N	Verification	Detailed verification
Interviews	N	Conference	Personally in place
On-site verification	N	As needed	Y

Source: vlastné spracovanie

TISAX does not require suppliers to be subject to the same requirements. However, it is necessary to follow all the principles that have been established in the field of information security when communicating with other parties.

We will move on to the VDA ISA form itself, which contains three sheets of criteria that need to be addressed. The main form is named "Information Security". The questions in it are mandatory for all levels of the TISAX exam. Other "Data Protection" and "Prototype Protection" sheets are optional. The generalization of the requirements is described in the following table.

Table 3. General requirements of the standards

General requirements	AL 1 (normal)	AL 2 (high)	AL 3 (very high)
Requirements for access to information and applications are dedicated. The authorization procedure is defined and contains at least the following aspects: - application, inspection and approval procedure, - use of authorizations, - separation of functions, - the principle of minimization. The instructions are binding for all users. Access rights are constantly being tested and monitored.	x	x	x
Access rights are released through the responsible user. Access rights are regularly tested, for example on a quarterly basis.		x	x
Functions in applications are limited by users as much as possible and necessary. Prevent unauthorized access, such as passwords, physical locking, and the like.			x

Source: own procesing

The manual also mentions the method of payment, price list and the like. The price list is public and is available on the ENX portal. In principle, TISAX certification is cheaper than ISO / IEC27001 certification due to the fact that TISAX is inspected every three years, while after ISO / IEC27001 certification two more control audits are needed in an annual cycle, which makes the whole certification more expensive. However, it is important that even when tested according to TISAX, a complete implementation of the ISO / IEC27001 standard is required, on which TISAX is based and regulated by new rules.

After successful completion of all previous points, a self-assessment follows according to the current form from the ENX portal. Its version can change continuously, so it is necessary to monitor the portal and always use the current version. We are currently working with VDA version ISA 5.0.2, it is only available in German and English. The first sheet is welcome, it is necessary to fill in the second sheet with information about the organization, ID and the like. The third sheet describes in detail the levels of maturity of the information security system. For the organization, the research sample, we chose the highest level of AL3, which results in a level of maturity 3, ie an established information security management system. Sheets that are subject to self-assessment are highlighted in orange, the first is the area of information security, the second is focused on prototypes and the third on data protection. Levels AL1 and AL2 correspond to at least the first sheet, or the second if relevant. The third sheet is voluntary and mandatory for level AL3. In the information security sheet, it is first necessary to fill in the level of maturity, which in this case is level 3. The next column is for the self-assessor, who provides links to individual documents where the requirements of the line are implemented. In a provider test, the auditor will use these links to guide and review compliance. The following table translates the requirements of Chapters 1.1. Each subchapter has a main question and then a supplementary question according to the level. We chose the highest level of AL3, which means that all the supplementary questions are relevant.

Control question	Objective	Requirements (must)	Requirements (should)	Additional requirements for high protection needs	Additional requirements for very high protection needs	Addressed protection objectives	Usual person responsible for process implementation	Reference to other standards
IS Policies and Organization Information Security Policies								
To what extent are information security policies available?	The organization needs at least one information security policy. This reflects the importance and significance of information security and is adapted to the organization. Additional policies may be appropriate depending on the size and structure of the organization.	+ The requirements for information security have been determined and documented. - The requirements are adapted to the goals of the organization. - A policy has been created and approved by the organization's management. + The policy includes objectives and the significance of information security within the organization.	+ The information security requirements based on the strategy of the organization, regulative and contractual obligations are reflected in the policy. + Responsibilities for the implementation are defined. + The policy indicates consequences in case of non-conformance. + Further relevant information security policies are prepared. + Periodic review and, if required, revision of the policies are established. + The policies are made available to employees in a	None	None	Confidentiality, integrity, availability		Reference to ISO 27001: A5.1.1 and A5.1.2

Figure 4. Information security questions 1.1

Source: VDA ISA 5.0.2 EN

The requirements are very extensive and the form also serves as a guide for the first certification or for the first implementation of the requirements. The questions interpret all the requirements of ISO / IEC27001. It is good to note that an established system can occur only after a long period of operation of the information security management system. Logically, a passive participant cannot reach maturity level 3 or AL3 immediately after implementing the requirements. The participant must mature to this level through a living system. The

requirements are structured up to chapter 7.1. After completing the entire questionnaire, respectively. all relevant sheets are passed the results to the mediator. The date of the audit will be agreed according to the specified scope.

The test consists of four steps, namely preparation, selection of the provider, examination of the security of the information and the result of the test. The TISAX audit has the same requirements as all other ISO audits. The auditor must comply with the requirements of ISO19001 and take into account the requirements of ISO / IEC27001 to which TISAX refers when auditing. The auditor goes through the individual questions and looks for compliance with the requirements in the documents to which the passive participant referred. According to the audit plan, the auditor also verifies the effectiveness of the system in practice, by observation, physical examination, interviews and the like. The scope of the audit is significantly shorter than that of ISO / IEC27001, which means that only the effectiveness of the operation of the information security management system is actually verified. If the audit does not show compliance, there is no room for further discussions, non-compliance is automatically evaluated, resp. a derogation which must be rectified in accordance with the rules by a specified date, until which time the TISAX label cannot be issued. The auditor after the audit of the report, resp. The ISA VDA form is sent to the provider's headquarters, and after an internal veto, the message is uploaded to ENX, where an independent check of the results and completeness of the form takes place. Only after the successful completion of this step can the results be exchanged between the participants.

The last step is the exchange, respectively. sharing the evaluation result with partners. The result is valid for three years and then needs to be renewed in the same way. For participants, this is an advantage in terms of a reduced frequency of audits, it can also result in a negative, where the system is not monitored by a third party and is less maintained. The results are easily shared with the partner ID on the ENX portal. This exchange concludes the TISAX process for a period of three years.

4. Conclusion

The research goal of my descriptive research design was to review the implementation of the TISAX standard in an automotive organization with ISO / IEC27001 certification. At the end of my work I evaluate the fulfillment of the goal. The following findings have been made. Obtaining the TISAX label is only possible after implementing the requirements of the ISO / IEC27001 standard. This extensive standard defines a number of documentary and technical measures that an organization has the ability to regulate in terms of selecting certain requirements that it will not implement. These unimplemented requirements may be assessed by the organization as accepted residual risks. The auditor must consider such acceptance and will not affect the outcome of the audit. With the TISAX standard, the regulation is strict and it is not possible to correct it from the participants. There are clear levels of AL to which the individual questions in the chapters belong. In case of non-compliance it is not possible to issue a TISAX label, the standard does not recognize exceptions or exclusions. From this point of view, TISAX is more efficient, is subject to active communication between the passive and active participants, and the scope of the requirements of the individual levels is identical for all applicants. The exchange of results is private, secure and directly bridges participants through the ENX portal. There is a presumption that this form of result exchange will be used in other international standards in the future. In my work, I pointed to a new standard in the automotive industry, where special emphasis is placed on the secure processing of sensitive information and personal data, a comparison of the standard with existing standards and a short manual to

familiarize yourself with the verification process. In general, there is a smooth transition of participants from ISO / IEC27001 to the TISAX standard, provided that, depending on the level, requirements are added that may have been exempted as accepted in the original system.

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ANALYSIS OF SELECTED ATTRIBUTES OF SENSORY MARKETING IN THE CONTEXT OF SELECTED SOCIO-DEMOGRAPHIC CHARACTERISTICS

ANALÝZA VYBRANÝCH ATRIBÚTOV SENZORICKÉHO MARKETINGU V KONTEXTE VYBRANÝCH SOCIO-DEMOGRAFICKÝCH CHARAKTERISTÍK

Abstract

The aim of the research was to identify and specify the differences and connections between the assessment of selected attributes of sensory marketing and selected socio-demographic characteristics of customers. Mutual gender differences and connections within the age of the respondents were characterized. The goal was realized through the questionnaire method and the results were processed in the SPSS statistical program. In the context of the topic of sensory marketing, there was examined the existence of statistically significant differences in selected attributes of sensory marketing between men and women. By examining statistically significant relationships in selected attributes of sensory marketing in terms of age, there was found statistical significance in the attribute of visual marketing.

Keywords

Sensory marketing. Socio-demographic characteristics. Customers.

JEL Classification

M31, M39

Introduction

Sensory marketing stems from the fact that in 80% of cases, a purchasing decision is made suddenly. It follows that shopping is far from just a rational matter, but depends on our feelings. The intention of sensory marketing is therefore primarily to use sensory perception, induce a positive shopping experience and participate in creating an emotional connection with the point of sale, product or its brand. To achieve these goals, the path leads through the customer's sensory modalities, in other words, through the control of his/her perception by sight, smell, hearing, touch and possibly also taste [17], [2]. Sensory marketing is so common that it can be used in different areas of business. Through sensory marketing, a company can influence the purchasing perception of consumers and thus influence their choice in all areas of products and services. As it is used almost everywhere, the perceptions of consumers and customers are impressed without them noticing [9].

Visual marketing is based on the fact that sight provides the most used meaning in all marketing. It is this sense that is most influenced by the environment. The choice of formats, colors or materials of a particular product is important in terms of the layout of the point of sale, but it also plays an important role in the field of promotion, where they need to engage the consumer with these elements. A key factor in success is also the knowledge of consumer behavior of individual market segments. One of the main prerequisites for proper market segmentation is knowledge of generations of consumers. The issue of generations has become an integral part of modern marketing [14], [12].

Customers use their eyes to observe colors in their surroundings during shopping, thus reacting to them and subsequently being influenced by the colors. Selected colors are controlled by ad creators. Therefore colors play one of the most important roles in advertising. Thanks to colors, companies can communicate the emotions of their products to customers. Without any text, color can communicate attractiveness, vulnerability, youth, or freshness. If color is still often associated with a certain thought or feeling, it can become a certain symbol of a certain feeling or idea. Certain colors carry general messages, but other colors differ in ethnicity, region or socio-economic background. This is why advertising creators must pay attention to the cultural conditions when using color [6].

The next influential sense of the customer is hearing. Every store should pay attention to negative noise, which can be caused by too noisy refrigerators, beeping buzzards or buzzing light bulbs, which can literally drive away the customer. On the contrary, very great silence, so preferred by banks, can discourage some customers. They might not feel protected enough to talk about his financial affairs. Each store should choose a charming musical backdrop that suits both its overall concept and the address of the target group [3].

They also use music in the field of marketing to attract the attention of customers, even to specific products or to highlight the store and its focus. As with other senses, customers are able to associate stores with the different melodies they have heard [7].

One of the most important senses that also affects the emotional center of the brain is smell. This sense can evoke different reactions in customers, encourage old pleasant memories of their lives and many other things. Since odors are situated all around us, whether they are pleasant or not is not important, because they have a huge impact on consumer behavior anyway. The sense of smell itself has a very emotional effect on a person's daily life. This perception is able to affect his/her feelings and emotions. Different scents have the ability to affect many parts of a person's daily life. This fact is also used by aroma marketing. Its function is to create a charming atmosphere and impress the customer's mind. A well-chosen aroma can create pleasant feelings, and in the future the customer will associate these feelings with the company and the brand [7].

However, a very pleasant smell, like music, can evoke unpleasant memories. In addition, it is also very one-sided by what method a particular customer perceives a certain smell and whether it is positively or negatively affected. Fragrance is an effective means of attracting the attention of customers and consumers. It supports to complete the necessary mood in stores. The sense of smell is closely connected with the sense of taste. This fact is mainly used in the food sector. Stimulation of smell can arouse the appetite for a particular product and gradually make it necessary to quickly buy a particular product. The unique scent can also serve to better preserve the brand and strengthen the positive relationship with the customer. It is able to arouse the desired feelings, which the customer gradually connects with the brand and thus creates a charming association [3].

The use of tactile impulses for marketing purposes is not a very common thing, the results of scientific studies prove to us that it is an area with considerable potential for the future. Nowadays, we can come into contact with tactile advertising, for example, in printed materials with different surface structures [18].

In some purchasing circumstances, the effectiveness of the store environment may have a greater effect than the characteristics of the product or the customer's original purchasing decision. Thus, the environment can have a direct effect on the customer's behavior and the formation of his attitudes towards services or products [8].

Research methodology

In the research part, we evaluate the relationship between the assessment of selected attributes of sensory marketing and selected socio-demographic characteristics of customers based on a questionare.

The aim of the research was to identify and specify the differences and connections between the assessment of selected attributes of sensory marketing and selected socio-demographic characteristics of customers. Mutual gender differences and connections within the age of the respondents were characterized. The goal was realized through the questionnaire method. The results were processed in the SPSS statistical program.

Hypothesis 1: We assume that there are statistically significant differences in selected attributes of sensory marketing between men and women.

Hypothesis 2: We assume that there are statistically significant relationships in selected attributes of sensory marketing in terms of age.

In quantitative research, we used the method of collecting empirical data and mathematical-statistical methods to analyze this data. We collected empirical data using the online questionnaire method. The questions and statements were worded clearly, comprehensibly and without double negative, in order to avoid mistakes in filling them out.

The questionnaire consisted of the following selected attributes: visual marketing, auditory marketing, olfactory marketing and tactile marketing. Within the methodology, we investigated how selected attributes of sensory marketing affect individual socio-demographic indicators. The methodology contains 30 statements, which were assessed on a 5-point Likert scale with the following scale from 0 to 4: 0-Totally disagree; 1-Disagree a little; 2-Neutral opinion; 3-Agree a little; 4-Totally Agree

Attributes that the methodology contained:

1. Visual marketing - the customers are looking forward to the store because they know that they will feel good there. It can be said that in addition to shopping, customers also go to some stores because they can relax there, it is a pleasant "shutdown" from stress. These customers notice if the goods in the store are harmoniously arranged. Customers prefer a store where they can easily find their way around and like its appearance, even though they know that the store has higher prices. Customers of visual perception will notice if there is poor lighting or a strong color in the store.

2. Auditory Marketing - if pleasant music plays in the store, customers usually stay longer. Music in the store can improve the mood of customers. Conversely, if the customers do not

like the music that is being played, then they leave quickly. Customers will notice if there is silence in the store, without music. On the contrary, the noise in the store can make them nervous.

3. Olfactory marketing - a pleasant smell in the store can improve the mood of customers. If the smell is too strong or they don't like it, they will leave the store. An unpleasant odor can discourage customers from shopping. These customers will notice if there is no smell in the store that is related to the goods.

4. Tactile marketing - these customers like to try things and are willing to pay a higher price for the goods they can try in the store. They don't like shopping online because they can't try things directly. They will not makeup their mind about the final purchase until they hold the goods in their hands. They like to check and touch the items that are for sale and make a decision on the purchase during that time.

We verified the established hypotheses through descriptive statistics and statistical analysis in the statistical program SPSS, where appropriate mathematical and statistical methods were used.

The research sample consisted of 126 respondents. The average age of the respondents was 31.9 years (the standard deviation was 12.341 years). The range of years was from 14 to 74 years.

Results and interpretations

Verification of Hypothesis 1: We assume that there are statistically significant differences in selected attributes of sensory marketing between men and women.

The total number of respondents was 126, of which 69 (54.76%) were women and 57 (45.24%) were men.

Table 1 describes the selected attributes of sensory marketing between men and women.

Tab. 1: Gender differences of selected sensory marketing attributes

	Gender	Mean	St. Deviation	t	Sig (2-tailed)
Visual marketing	Man	2,0667	,64706	-3,737	**0,000**
	Woman	**2,5072**	,67264		
Auditory marketing	Man	2,1474	,73049	-1,237	0,219
	Woman	2,3043	,68222		
Olfactory marketing	Man	2,2386	,86556	-2,545	**0,012**
	Woman	**2,6116**	,75839		
Tactile marketing	Man	2,0368	,60049	-0,591	0,556
	Woman	2,1116	,78413		

(Source: own processing)

To compare the differences in selected attributes of sensory marketing between men and women, we used the mathematical-statistical method t-test. Within the gender differences, we recorded statistical significance for the attribute of visual marketing, respectively sight and for the attribute of olfactory marketing, resp. smell. Higher average values were measured in both cases in women. Women are more sensitive to the visual elements when shopping. If they feel

uncomfortable in the store, they leave, despite the favorable prices of the products. However, if they feel good in the stores, they forget about time and their purchase is larger. Women are more likely to notice if the goods in the store are harmoniously arranged and can easily find promotions and discounts according to colors. Women are more sensitive to olfactory elements when shopping. The pleasant smell in the store can improve their mood. If there is a pleasant smell in the store, they will stay in it longer. For the other attributes of sensory marketing, we did not observe statistical significance in the context of gender division.

Verification of Hypothesis 2: We assume that there are statistically significant differences in selected attributes of sensory marketing in terms of respondents' age.

No statistically significant relationship was observed between age and selected sensory marketing attributes using the Pearson correlation coefficient (Table 2).

Tab. 2: Relationships between age and selected attributes of sensory marketing

		Visual marketing	Auditory marketing	Olfactory marketing	Tactile marketing
Age	R	-,192	-,016	-,038	-,081
	P	,049	,855	,674	,368

* Correlation significant at the significance level 0.05

(Source: own processing)

As part of the study of age differences, statistical significance was recorded for the visual marketing attribute. The above correlation indicates the fact that the older the respondents, the more they focus on visual marketing when shopping. As we get older, respondents pay more attention to the colors that represent product promotions and discounts. In some stores, if they feel good in them, they go to rest, relax. They prefer goods that are harmoniously arranged in the store. If there is poor lighting in the store, they will notice it right away.

For the other attributes of sensory marketing, we did not observe statistical significance in terms of age differences.

The hypotheses can be considered confirmed because the research has shown that there are statistically significant differences in selected attributes of sensory marketing in terms of gender differences and at the same time there are statistically significant relationships in selected attributes of sensory marketing in terms of age.

Discussion and conclusion

Various surveys have found that the retail environment influences the behavior of buyers and sellers. Of course, this also affects sales. The authors [13] examined the influence of the environment (lighting and music), social stimuli (number and friendliness of sellers) on the mood and behavior of customers and their subsequent willingness to buy. They found that individuals respond to the environment with two opposing forms of behavior. It is about making contact (approaching) and avoiding (approach - avoidance behavior). Approaching presupposes a desire to stay, explore retail, and avoiding the opposite. Surveys have shown that individuals who view goods in their pleasant environment evaluate the product more positively than those to whom the products were presented in unpleasant conditions.

In the context of the topic of sensory marketing, we examined the existence of statistically significant differences in selected attributes of sensory marketing between men and women. Higher values were measured for women within the attributes of visual marketing and olfactory marketing. We found that women are more sensitive to visual elements in the store and feel uncomfortable if these elements do not correspond to their ideas, respectively needs.

Based on the results of the research, we can say that we agree with the findings of the author [11], who in one of his studies emphasized the significant effects of colors on men during shopping. For men, red is associated with savings and has a positive effect on them during shopping. For women, black was associated with saving. Another part of his research was price information where women showed a better memory for price information and deeper processing of information than men.

Various research has shown that colors influence our judgment, also in terms of product quality. A survey conducted by psychologist I. Cheskin showed that color can affect not only sales, but also the quality of the product in the eyes of customers. He tested housewives, whose task was to try and find out which of the three detergents on offer would wash clothes best. The color of the first package was blue, the second package was yellow, and the third package had yellow dots on a blue background. All three packages contained the same detergent. However, the results differed. The women claimed that the detergent with the yellow cover was very aggressive and could damage the clothes. The women assessed that the blue-coated detergent was not effective at all. The best washing powder was considered to be the one in the dotted package [4].

Based on primary information from research by [5], it is evident that women prefer attributes associated with the center's atmosphere, quality of service, but also attributes associated with cleanliness and open space. Women pay attention to the quality of the shopping itself. Men can especially appreciate the parking lot, lighting and a good layout of the center.

It is scientifically proven that information that is perceived by smell directly affects purchasing decisions. It is a tool with a wide range of uses that can stimulate, revitalize, induce a feeling of relaxation, balance, peace, awaken memories, feelings. Fragrances are used with the specific goal of increasing profits and turnover [1], [10]. Women are more sensitive to elements of olfactory marketing. The pleasant smell can keep women in the store for a longer time and improve their mood. The perception of smell is very different and there are a number of variations that traders have to consider. For example, men stay longer on shelves where there are spicy scents, while women are more sensitive to the scent of shampoo than men.

The scents create an image not only of the products themselves, but also of the employees. Many managers and traders pay great attention to the choice of perfumes, which they consider to be part of their personal expression and overall image [16].

Fragrances are an element of the image of every workspace. At present, it is almost common for businesses and institutions to have their own characteristic scents. Over time, business managers have become aware that fragrance in their premises is an important element that can contribute to the satisfaction of their clients and customers. In areas where many people move, it is advisable to use, in addition to ventilation, also scents that have a refreshing, stimulating and pleasant effect.

By examining statistically significant relationships in selected attributes of sensory marketing in terms of age, we found statistical significance in the attribute of visual marketing. The above correlation testifies to the fact that the older the respondents, the more they look for

promotions and discounts according to colors. With increasing age, respondents like to go to some stores to relax, feel good there and forget about time. These respondents will notice if there is poor lighting in the store that disrupts their shopping experience.

Author [15] dealt with the issue of age differences. For the older population, the possibility of refreshments in shopping malls has proved successful, and this generation also uses shopping malls to walk around and satisfy the need for social contacts.

To make stimulating emotions more effective, it is advisable to act on several senses at once. Of course, sight plays an important role, because the choice of product is mainly influenced by visual needs. Multisensory or cross-sensory marketing is gaining more and more prominence. Sound, smell and touch play an important role in it [19].

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CURRENT TRENDS IN HUMAN RESOURCES MANAGEMENT AS IMPORTANT IMPLICATIONS OF THE GLOBAL COVID-19 PANDEMIC

AKTUÁLNE TRENDY V OBLASTI RIADENIA ĽUDSKÝCH ZDROJOV AKO VÝZNAMNÉ IMPLIKÁCIE GLOBÁLNEJ PANDÉMIE COVID-19

Abstract (summary)

The paper deals with the issue of human resources management during the Covid-19 pandemic and provides a theoretical and analytical view of the most important trends in the field. At the theoretical level, the paper describes the process of human resource management, its basic practices and assesses the influence the global pandemic caused by Covid-19 has on the current business environment. At the same time, the paper points to the results of a global survey of "top 10" trends in human resource management at a time of the global pandemic. The paper also presents the results of research which was carried out on a sample of human resource managers working in companies operating in the Slovak Republic in the IT and communications sector, the services sector, trade and other areas of business. For research purposes, a research hypothesis was established. The aim of the hypothesis was to examine the existence of a statistically significant relationship between the industry in which the surveyed company operates and the degree of significance of current trends in human resources management as important implications of the global pandemic Covid-19. The hypothesis was verified by correlation analysis using the methods of inductive statistics. In the context of dramatic changes in connection with the Covid-19 pandemic, organizations not only in Slovakia but around the world must respond to change and adapt to new trends.

Key words

Human resources management, global covid-19 pandemic, implications, current trends.

JEL Classification

M12, M19, M21.

Introduction

In today's business environment, which is marked by the effects of the globalization process and affected by the current Covid-19 pandemic, human resource management is becoming a challenge for all organizations in a global context, regardless of the country in which they operate. During the Covid-19 pandemic, concerns about global supply chain vulnerabilities and financial resilience came to the fore, along with significant strategic concerns about human resources and talent. During this period of global stress and uncertainty, organizations (especially multinationals) should choose three critical competences in the field of cultural skills, which are: tolerance for ambiguity, resilience and curiosity [2]. Employees who work with clients virtually, salespeople or colleagues from different cultures will now need these competencies more than ever to work effectively. Companies can also use this time to better assess the strength of their cultural talents to understand who will be the most effective in

situations of growing uncertainty. It is clear that the management of human resources under the influence of the above has a direct impact on each employee. Today, human resources are more important to the success of a business than in the past. The current times bring along many challenges and trends, and these are also felt by companies operating in the Slovak Republic. Thus, Slovak companies must pay attention to these in order to survive.

Theoretical background

As we entered the new millennium, the impact of globalization became visible everywhere, as it plays a significant role in sustaining the economic expansion of the global economy. At present, the economy is affected by the impact of the Covid-19 pandemic, which caused almost three billion people around the world to work from their homes as a result of Covid-19 measures being implemented. In practice, this means that four out of five employees exchanged the corporate environment for a home office overnight. Over the past few months, leaders have had to mobilize and have been forced to make quick and bold decisions in an effort to mitigate the effects of these sudden circumstances. It was remarkable how quickly companies were able to connect people and technology and move to virtual world – something unimaginable before the pandemic. The human factor, much like the human resource management, became the key to success in such unfavourable market conditions. Author [10] sees human resource management as an integral part of the overall management of the organization, which together with other functional areas of management helps achieve the set goals and also contributes to objectives of the organization as a whole. Authors [4] describe two modern ways of managing human resources: the hard version emphasizes the use of employees in a formal and material way, in line with other resources used by the organization; on the other hand, the soft version of human resource management emphasizes the need to develop the potential and ingenuity of employees, which will lead to greater involvement in work and, of course, higher performance. The hard and soft version of human resource management presuppose a close integration of human resources management activities, policies and systems within the company's business strategy. Hard version prioritizes the use of human resources to achieve the organization's strategic goals, with human capital being the equivalent of other factors of production, while the soft version takes human resources into account not only as a cost factor but as a valuable asset and sees its employees as trustworthy and capable people [7]. Human resource management involves the assumption that performance of the organization can only be improved through human resources [7]. In order to effectively fulfill the basic tasks of human resource management, it is necessary to implement all its basic functions such as human resource planning, recruitment and selection of employees, the process of adaptation, training and development, performance appraisal, employee remuneration and others. Authors [13] state that the basic functions of human resource management are the development and training of employees, creation of training strategies, public relations, marketing in the field of human resource management, the concept of a learning organization and implementation of a learning culture. Human resource management must ensure that managers and their employees are properly managed. If an organization wants to remain competitive, it must clarify the role of human resource management [6].

At present, human resource management is affected by many factors, in particular Covid-19. Therefore, several implications can be drawn from that. The results of a worldwide survey conducted by DELOITTE [5] point to several facts. In the world ranking, one of the key trends for 2020 in the field of human resources management is the so-called wellbeing (overall physical mental and social well-being), as pointed out by 80% of companies surveyed. This was followed by employee remuneration (79%) and the third most important trend was knowledge management, the changing role of HR and ethics. The most significant difference

was found in the perception of the importance of a multi-generational workforce. At the global level, 74% of respondents consider it important. Global companies are neither ready to integrate artificial intelligence nor to introduce technology into their teams in general. The above study identifies significant trends in human resources, making it the largest global study in human resource management, talent management and related topics to date. The study is based on findings from a survey of almost 9,000 respondents from 119 countries [5].

Organizations currently tend to adapt to different strategies to ensure that employees are not negatively affected while contributing positively to the organization's performance. It is important that human resources departments know how to adapt to the turbulent environment and personnel procedures entailed by the crisis, ensure that such new conditions do not harm employees so they are able to continue to perform their work in the best possible way [12]. The current situation, which concerns the necessary interventions and measures to prevent the spread of the Covid-19 virus, has a significant impact on many areas of working life. There has been a significant shift towards work from home thanks to the introduction of virtual work teams, but also other changes. Current changes cannot be perceived only negatively. Research to which [1] points out suggests that working from home has a positive effect on an employee's personal development. According to [14] the decisive factor for success is the effectiveness of human resource management, team development and teamwork, which we can rank among the top 10 trends in the field during the global pandemic caused by Covid-19 according to the Deloitte survey [5]. From a global perspective, teamwork is a significant trend for 59% of respondents. Many researches in this area point to the fact that virtual teams face many challenges today as many rely on working online. And not all virtual teams are equal: challenges arise as team members work separately/virtually. Communication through electronic media seems to be a problem for virtual teams: the more team members communicate via electronic media, the less effective they are. This is because when communicating via electronic media, team members share less information with each other (depending on the electronic media used) than they would normally as they find it more difficult to interpret and understand the information they receive [9]. Surveys conducted in 2020 suggest that most businesses are negatively affected by the Covid-19 pandemic. In the context of dramatic changes connected with the Covid-19 pandemic, organizations around the world need to respond and adapt to changes and manage human resources responsibly [3]. All these changes require organizations to identify and implement new strategies for recruiting and developing and rewarding key employees.

Methodology

The aim of the paper was to find out which current trends in the field of human resources management, human resources managers consider to be important implications of the global Covid-19 pandemic depending on the sector of operation of the company. Respondents were given the opportunity to express, based on their views, the degree of significance for each of the global trends that have a significant impact on human resource management during the Covid-19 pandemic. The significance rate ranged from 1 to 5, where 1 represents a very significant implication of the global pandemic and 5 represents an insignificant implication of the global pandemic for human resources management. The research sample consisted of a total of 219 respondents who work as human resources managers in national and multinational companies that operate in the Slovak Republic. A questionnaire is used to obtain and collect data, as the most widely used way of obtaining relevant information. From the identification data, we focused on the year of the company's entry into the market, the industry in which the surveyed company operates and the total number of employees working in the company.

We can state that the questionnaire survey involved companies operating in the field of industry, IT and communications, in the field of energy, transport and storage, as well as in the trade and services sector. The most numerous sectors in which the surveyed companies operate are IT and communications, as well as trade and services with almost the same percentage. In the case of the IT and communication sector, 39% of companies responded to the questionnaire, in the case of trade and services it is 36% of companies. The third most numerous sector is industry with a percentage of 16%. Companies operating in the energy, transport and storage sector are almost equally represented in terms of the composition of the research sample by sector. We can state that they form the least numerous groups of companies that are represented in the research. The percentage for all these sectors is below 5%. We chose a random selection, which according to [8] is characterized by the fact that the units are selected directly from the unsorted basic set, so that each unit has the same opportunity to be selected. Inductive statistics are used to solve the problem and test scientific research hypotheses. For the purpose of the research, the hypothesis H1 was formulated and tested, which is as follows:

H1: We assume that there is a statistically significant relationship between the industry in which the surveyed company operates and the degree of significance of current trends in human resource management as significant implications for the global Covid-19 pandemic.

According to [8] the basic component of inductive statistics is statistical analysis, whose task is to know the regularity, context and developmental tendencies of mass phenomena. This will make judgments from part to whole, from special to general. Statistical induction as a process of generalizing judgments about the characteristics of populations based on information from random samples. It also includes testing statistical hypotheses [11]. This is a procedure in which, based on a random selection from the distribution of a random variable X, we decide whether or not to reject the given hypothesis at the selected level α (i.e. with the selected reliability 1 - α). Thus, in the event of rejection, we accept the opposite hypothesis. For the purpose of hypothesis testing, a nonparametric test was used, which are special tests that do not require the fulfillment of any or almost no assumptions about the nature of the distribution of the analysed random variables, namely the Chi-square test of good agreement. We can state that if the P-value is lower than the chosen level of significance (traditionally 5% = 0.05), the null hypothesis is rejected. If the P-value is equal to or higher than the selected level of significance, the null hypothesis cannot be rejected. This means that the difference between the frequencies found in the sample and the expected frequencies may be due to random selection, ie it is not statistically significant. In the case of correlation analysis, we emphasize the strength (intensity) of the relationship between quantities. Spearman's correlation coefficient was used in the correlation analysis.

Results and Discussion

We can state that at present it is very important in the process of human resources management to hire people who are more likely to create added value, workers who are able to work in an environment with strictly defined boundaries of tasks and authority who are able to adapt to new changes and current trends. A company may be successfully, achieve organizational excellence, meets planned goals, maintains and increases performance and competitiveness, only if it has a quality organization of human resources, especially key and high-performance employees. Businesses that want to have a place in the market, outperform their competitors and increase their revenues should strive to attract, develop and retain such employees. They should constantly respond to new changes, set priorities in the field and specify the implications that arise from the current situation and have a significant impact on the management of human resources as well as the company. One of the significant trends currently in the process of

human resource management is retraining or training, which is led by employees. Organizations entitle employees to conduct their own training according to their own needs and requirements. Employees take matters into their own hands when it comes to providing opportunities for their growth and development in education. During 2019, company PageUp recorded up to an 80% increase in the number of such employees. According to surveys from 2019, almost 60% of employees want to learn at their own pace and 94% of employees say they would stay in their organization longer if they invested in their career development. According to a survey conducted by Deloitte [5] training and retraining in times of pandemic crisis is a trend for 70% of the companies surveyed. More than 71% respondents consider knowledge management as a trend in the field of human resources management, employee remuneration (79%), HR analytics (71%), and the changing role of HR (75%), ethics (75%) multigenerational workforce (74%).

From the questionnaire survey, which we conducted in companies operating in the conditions of Slovak national and multinational companies, training and retraining is considered a very significant impact of the global Covid-19 pandemic for almost more than 52% of human resource managers. In the questionnaire survey, we examined the top 10 global trends identified by Deloitte in 2020 [5]. We can also include the above-mentioned trends:

- ✓ *Teamwork, creating virtual teams,*
- ✓ *Retraining and training of employees,*
- ✓ *Rewarding of employees,*
- ✓ *Knowledge management,*
- ✓ *Cooperation,*
- ✓ *The changing role of HR,*
- ✓ *Ethics,*
- ✓ *Multi-generational workforce,*
- ✓ *Wellbeing,*
- ✓ *HR analytics.*

In one important part of the online questionnaire, we asked respondents to what extent they considered the above trend in human resource management to be a significant impact of the global Covid-19 pandemic. As we mentioned, the respondents had the opportunity to express themselves on an interval scale where 1 represents a very significant implication of the global pandemic and 5 means an insignificant implication of the global Covid-19 pandemic for human resources management.

Based on average values, we can observe that the trend of teamwork and the creation of virtual teams are the most important implication of the global pandemic for the companies we surveyed. On the contrary, the least significant impact of the global cvoid-19 pandemic is considered by respondents to be the trend of a multi-generational workforce. In connection with the mapping of a statistically significant relationship between the industry in which the surveyed company operates and the degree of significance of current trends in human resources management as important implications of the global Covid-19 pandemic, null and alternative hypotheses were established, as follows:

H_0 (null hypothesis): $\theta=\theta 0$

H_0: We assume that there is not a statistically significant relationship between the industry in which the surveyed company operates and the degree of significance of current trends in human resource management as significant implications for the global Covid-19 pandemic.

H1 (alternative hypothesis): $\theta=\theta$

H_1: We assume that there is a statistically significant relationship between the industry in which the surveyed company operates and the degree of significance of current trends in human resource management as significant implications for the global Covid-19 pandemic.

The results regarding the hypothesis testing are included in the following Table 1 and Table 2. In the case of testing the relationships between the above variables, all tested relationships showed p <0.05, so we reject the null hypothesis. We can state that the difference between the frequencies found in the sample and the expected frequencies is too large to be the result of random sampling alone, so it is statistically significant.

Tab. 1: Results of testing H1: values of Chi-Square test

The degree of significance of current trends in human resource management*the industry	Values			
	N	%	Value	P-value
✓ *Teamwork, creating virtual teams*	219	100,00	34.625	0.000
✓ *Retraining and training of employees*	219	100,00	36.211	0.000
✓ *Rewarding of employees*	219	100,00	52.100	0.011
✓ *Knowledge management*	219	100,00	40.352	0.000
✓ *Cooperation*	219	100,00	40.531	0.021
✓ *The changing role of HR*	219	100,00	35.221	0.000
✓ *Ethics*	219	100,00	32.258	0.000
✓ *Multi-generational workforce*	219	100,00	40.122	0.002
✓ *Wellbeing*	219	100,00	38.211	0.000
✓ *HR analytics*	219	100,00	35.112	0.000

(Source: authors)

Tab. 2: Results of testing H1: values of correlation coefficients

The degree of significance of current trends in human resource management*the industry	Spearman Correlation	
	Value	P-Value
*Teamwork, creating virtual teams*the industry*	0.325	0.000
*Retraining and training of employees*the industry*	0.244	0.000
*Rewarding of employees*the industry*	0.112	0.000
*Knowledge management*the industry*	0.232	0.000
*Cooperation*the industry*	0.287	0.001
*The changing role of HR*the industry*	0.366	0.000
*Ethics*the industry*	0.244	0.000
*Multi-generational workforce*the industry*	0.325	0.005
*Wellbeing*the industry*	0.213	0.005
*HR analytics*the industry*	0.266	0.000

(Source: authors)

As mentioned above, the correlation analyses with the use of correlation coefficient was used. The Spearman coefficient takes values from the interval <-1, 1> and is interpreted as a selection correlation coefficient. The values close to 0 indicate a weaker dependence of the variables, the value closer to 1 or -1 indicates the closer dependence. The extreme value 1 indicates a complete match of two orders, the extreme value of - 1 corresponds to exactly opposite orders. Positive values mean that the variables tend to change in the same direction, the negative values tend to change in different directions. It can be stated, that in all tested relations, the p-values of correlation coefficients are <0.05. Based on the above values, it is possible to ***verify and confirm hypothesis H1,*** that there is a statistically significant relationship between the industry in which the surveyed company operates and the degree of significance of current trends in human resource management as significant implications for the global Covid-19 pandemic.

Conclusion

Current modern times also bring progress in the field of human resource management. To be successful, companies must incorporate new ways, methods, techniques, tools and technologies in human resource management into their management. At present, at a time influenced by the effects of the pandemic crisis, every single area of the companies is undergoing constant development and subject to change. Many trends in human resource management are coming to the fore, which are a very actual and discussed topic, especially at a time of a global pandemic that has affected the management of every company, regardless of industry. Every company or manager understands them differently. Organizations and businesses today, affected by the effects of the globalization process and marked by the current global Covid-19 pandemic, need to adapt quickly to technological innovation, ever-changing requirements and changes, whether in the domestic or foreign market. The current situation, which concerns the necessary interventions to prevent the spread of the Covid-19 virus, significantly affects many areas of working life. Employees must have a range of skills that will enable them to cope with new technologies and functions in organizations that are affected by the effects of the global pandemic. Technological development, the deployment of information and communication technologies and advancing rapid globalization are creating a business environment, and these changes are having an impact on the workforce, as well as on the methods by which human resources are managed. Finally we can conclude, that all changes and the introduction of new trends into the company must be constantly managed and accepted.

Záver

Moderná doba so sebou prináša aj napredovanie v oblasti riadenia ľudských zdrojov. Ak chce byť podnik úspešný musí začleniť do riadenia nové spôsoby, metódy, techniky, nástroje a technológie v riadení ľudských zdrojov. V súčasnosti v dobe, ktorá je poznačená dopadmi pandemickej krízy každá jedna oblasť v podniku prechádza neustálym vývojom a podlieha zmenám. Do popredia sa dostávajú mnohé trendy v riadení ľudských zdrojov, ktoré sú veľmi aktuálnou a diskutovanou témou, predovšetkým v čase globálnej pandémie, ktorá zasiahla riadenie každého podniku bez ohľadu na odvetvie pôsobenia. Každý podnik, či manažér ich chápe inak. Organizácie a podniky v súčasnej dobe, ktorá je ovplyvnená dopadmi procesu globalizácie a poznačená súčasnou celosvetovou pandémiou Covid-19, potrebujú rýchle sa prispôsobovať technologickým inováciam, neustále sa meniacim požiadavkám a zmenám, či už na domácom alebo zahraničnom trhu. Súčasná situácia, ktorá sa týka nevyhnutných zásahov na zabránenie šírenia vírusu Covid-19, významne ovplyvňuje mnoho oblasti pracovného života. Zamestnanci musia disponovať varietou zručností, ktoré im dovolia zvládať nové technológie a funkcie v organizáciách, ktoré sú poznačené dopadmi globálnej pandémie. Technologický rozvoj, nasadzovanie informačne komunikačných technológií a postupujúca razantná globalizácia vytvárajú podnikateľské prostredie, a tieto zmeny majú dopady na pracovné sily, aj na metódy, akými sú ľudské zdroje riadené. Všetky zmeny a zavádzanie nových trendov do podniku je nutné neustále riadiť a akceptovať.

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COTROLLING AS A TOOL FOR INCREASING BUSINESS PERFORMANCE – PERFORMANCE CONTROLLING

CONTROLLING AKO NÁSTROJ ZVYŠOVANIA VÝKONNOSTI PODNIKU – CONTROLLING VÝKONNOSTI

Abstract: *The aim of this paper was to point out the importance of performance controlling and its tools in increasing the performance of enterprises and keeping them on the market in a given business environment. The aim of the research was to point out the importance and benefits of the Data Envelopment Analysis (DEA) method for the performance controlling of enterprises. The DEA method has been applied as a tool to increase the performance of enterprises in several domestic and foreign studies. A sample of 292 heat management enterprises in Slovakia was used to meet the above objective. These are enterprises that have performance problems, as a result of which they are not competitive and might go bankrupt in a given business environment. It has been confirmed that the DEA is an important tool in performance controlling, as it provides performance-weak enterprises with target values of selected key performance indicators. The paper uses the DEA model in the field of performance controlling. As a result, DEA became an important tool in the issue of performance controlling.*

Keywords*: business, controlling, Data Envelopment Analysis, Economic Value Added, performance.*

Kľúčové slová*: podnik, controlling, obálková analýza dát, ekonomická pridaná hodnota, výkonnosť.*

JEL classification: C38, C53, C67, G32, L25

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Introduction

In a dynamic and ever-changing business environment, every business requires an effective management system. To ensure the success of the enterprise, the most effective management system proved to be controlling. This system plays an important role in managing and guiding the enterprise on the path to profit, as well as in preventing the enterprise's financial failure and even its possible bankruptcy.

The controlling system has been developing over a long period of time, and it is still improving. The idea of controlling originated at the time of the industrial revolution in the USA, when due to the concentration of capital and the increase of fixed costs, the function of "controller" was introduced. The task of the controller was to perform financial and economic supervision of the enterprise. Over time, controlling became an important part of business. Therefore, in 1931 the "Controller's Institute of America" was established (it was renamed into the "Financial Executive Institute" in 1962). The last official definition of controlling issued by this institute

in 1962 defines controlling as a set of tasks: planning, reporting on deviations from the plan, consulting for all planning sites, tax matters, reporting to state authorities, internal controls, audits and insurance matters, economic analysis, social and societal development. In the 1970s and 1980s, top management became more interested in the performance and productivity of all business departments, including accounting. In this regard, controllers were under the pressure to find new ways of managing their departments in order to increase performance. Many controllers have no longer been able to hold this position, as it was not enough to perform only accounting functions, but they had to focus on budgeting and finding ways to improve performance [1].

Recently, new directions of controlling and new applications of controlling tools have appeared in the content definition of corporate controlling. In the theory and practice of business management, business controlling now focuses on risks controlling, performance controlling, value-based controlling, controlling of processes, personal controlling and others. This new direction of controlling is given by a dynamic and variable environment, but also by the effort of business management to increase the performance and value of enterprises. Measuring and increasing the performance of enterprises is also a necessary prerequisite for ensuring business success, competitiveness and maintaining the enterprise's position in the market in the constantly changing conditions of the global market environment. The aim of the paper was to evaluate the performance of a selected sample of enterprises with the application of selected controlling methods and tools, to reveal key performance indicators and to propose measures to improve performance.

The paper deals with the issue of controlling and performance controlling. The theoretical part of the paper defines the concept of controlling, performance controlling, opinions on controlling of several foreign and domestic authors who have addressed the issue of controlling and are currently working on it. This chapter also describes the system of performance measurement tools. In the chapter Material and Methods, a sample of analyzed enterprises is described and selected controlling tools are defined. These tools were also used in fulfilling the goal of the research. Significant performance controlling tools used in the research include selected financial indicators, the Economic Value Added (EVA) indicator, as well as the DEA method. The chapter Results and Discussion is devoted to the assessment of the performance of the analyzed sample of enterprises in terms of the results of selected methods, as well as the design of a solution in increasing the performance of the analyzed sample of enterprises. The chapter Summary outlines the ideas for improving performance measurement and increasing performance, research limits and future direction of research in the field of performance improvement with the application of controlling tools.

Literature review

When defining the term controlling, we come across two important facts. The first is the fact that controlling is a practical rather than a theoretical discipline. Due to its nature, it was difficult to deal with controlling in the academic environment. It can even be stated that there was no set of academic knowledge on which scientists could build when defining controlling [2]. The second fact is the understanding of controlling, which is different in Anglo-Saxon countries and different in German-speaking countries.

There are several important definitions of controlling in the available literature, and this term has several meanings and different connotations [3]. According to Freiberg [4], controlling is understood as management, control and is considered a specific concept of corporate governance, based on a comprehensive information system, the organizational connection of the planning and control process. According to the author, controlling conceived in this way is

based on the application of controlling information systems, on systemic communication between organizational units and on a change in attitudes and ways of thinking. Controlling is the result of the complex function of economic management, coordination of planning, control and information security.

Mann and Mayer [5] define controlling as a process, which oversees the execution of a plan, analyzes deviations from the plan, creates operational plans and budgets. Controlling is a set of rules to achieve goals, serves to maintain the desired state and to manage profits.

"Controlling facilitates coordination in management, improves the management of the enterprise, its tools facilitate control in various areas of responsibility" [6, p. 110].

According to Vollmuth [7], controlling serves to maintain the desired state. It is a project that allows the plan to be compared with reality at regular intervals to determine whether management interventions are needed to achieve or maintain the desired state. The desired state in the enterprise is outlined in the business plan, the actual state is known from ongoing reporting. According to the author, the comparison of the planned state with the real one is the "heart" of controlling.

Eschenbach et al. [8] defined the term controlling as a set of rules, resp. a subsystem of the management system, which should help achieve the enterprise's objectives, prevent surprises and give an early signal to eliminate the danger.

Controlling is very often compared to oversight. However, it must be stated that controlling is a broader concept than control. It is a result-oriented management concept that transcends functional boundaries and coordinates planning, oversight and information flows [9, p. 5].

At present, it is possible to talk about the third level of controlling, which closes the circle of controlling aimed at supporting the management of the enterprise. We talk about comprehensive controlling of management through planning, oversight, evaluation and corrective information. Therefore, a well-functioning information system becomes an essential part of controlling [10, p. 48].

It follows from the above definitions of controlling that controlling is a management tool whose main function is to coordinate the planning, control and provision of the information base with the intention of improving business results in the future.

Slovak authors who have dealt with controlling in their works, as well as defined the term controlling, include: Foltínová and Kalafutová [11], Král et al [12], Kislingerová et al. [13], Gurčík [14], Baran [15], Mikovcová [16], Synek et al. [17], Horváthová and Gallo [18]. These authors pointed out the great importance of the information security function within the controlling application, as well as the need not to identify controlling with management. They pointed out that it is a management system that is focused on achieving goals. The result of the theorists' interest in controlling, as well as their interest in its implementation in practice, is the independent discipline of business economics - controlling.

In this paper, we focused on controlling, which is aimed at measuring and managing business performance. Laval [19] is one of the authors who deal with performance controlling and the determination of controlling key performance indicators. In his article, the author points out three categories of key performance indicators and emphasizes the need to apply controlling as an important tool in increasing performance. Vuko and Ojvan [20] show that controlling is a very important tool for increasing business performance. In their study, the authors stated that up to 74% of Croatian enterprises have an independent controlling department. They confirmed

a significant dependence between the existence of the controlling department and the profitability of the enterprise.

In relation to performance controlling, it is necessary to mention the system of performance measurement tools - Performance measurement systems (PMS). PMS research became an important research challenge for scientists and practitioners as early as the late 1980s, when Johnson and Kaplan [21] published their key book, Relevance Lost - The Rise and Fall of Management Accounting. In 1999, Neely found that more than 3,600 articles on performance measurement had been published between 1994 and 1996. Moreover, he coined the phrase "performance measurement revolution" [22].

In the initial period of performance measurement development, the most frequently applied approach to performance measurement was the traditional approach based on calculation and accounting systems. This approach was based on financial performance indicators [23, 24]. Within this system, the "ratio analysis" was the first to be applied, which is still the central tool of controlling. In the late 1980s and early 1990s, the scope of PMS research began to expand and led to the recognition of performance measurement as a multidimensional domain [25]. At that time, a large number of frameworks for PMS appeared. These frameworks have focused on non-financial indicators, external indicators and forward-looking indicators [23, 24, 26, 27, 28]. These authors pointed out that classical performance measures are static and fail to adapt to the changing effects of the external environment, are limited to collect and process data and, what can be considered the biggest negative, are not a commitment to implementation for top managers.

The DEA method was a step forward in measuring and improving business performance. The initial goal of this method was to eliminate and exclude subjectivity in the evaluation of the effectiveness of enterprises by measuring outputs in relation to inputs. Later, the application of this multicriteria benchmarking method proved to be beneficial in the field of measuring the financial health of enterprise, performance as well as the prediction of possible bankruptcy of the enterprise [29].

Recently, the attention in performance evaluation and measurement has focused on the application of such performance measurement methods, which contain not only financial indicators but also non-financial ones. These are measures that support the enterprise's strategy and allow performance to be measured for individual levels of management. Such methods include, for example, the Balanced Scorecard, EFQM Excellence Model, measurement techniques for organizational management - e.g. CMM (Capability Maturity Matrices), Performance Pyramid, EP2M (Effective Progress and Performance Measurement), process performance management by Sink and Tuttle [30], who argue that business performance is a complex relationship between seven performance criteria: efficiency, effectiveness, quality, productivity, quality of working life, innovation, profitability. These seven performance criteria are very similar to the BSC method of Kaplan and Norton [31]. Taylor and Taylor [32] examined the significance of performance factors in terms of increased performance. They pointed out the fact that technical factors have a much higher impact on performance than the so-called softer factors.

Modern management techniques and performance measurement also include methods: Total Quality Management, Six Sigma, Benchmarking, Kaizen, process reengineering and others. However, the Balanced Scorecard is the greatest achievement in the field of the performance measurement revolution as anticipated by Sink [33], Eccles [34] and Neely [35] In: [22] during the 1990s.

Most frameworks and performance models today focus on the structure of PMS rather than on the process of developing and updating new PMS [36]. Today, performance measurement and management practices are common in all industries and businesses, including the public sector. Despite the large amount of research in the field of PMS, there are gaps in this area. That is why the future research should target this field [28].

In Slovak enterprises, performance evaluation takes place in three basic ways [37]: evaluation by a set of indicators usually from five areas of evaluation of financial health and performance of enterprises, evaluation by a set of indicators arranged in pyramidal decompositions the top of which is a highly synthetic indicator and evaluation using one aggregate indicator, which is a synthesis of partial indicators and other statistical data into one unit, which is one of the prediction models. When measuring the enterprise's performance in Slovakia, there was a requirement to supplement the financial indicators with other more dynamic and promising ones, which are adapted to specific competitive conditions, i.e. focus on monitoring and comparing the implementation results characterizing performance with the planned level of performance, monitoring the direction of strategies in their implementation, identifying accompanying problems of fundamental importance and making the necessary changes and adjustments [38].

The development of modern indicators for evaluating the performance of enterprises in Slovakia but also in the Czech Republic was focused on the processing and design of such indicators, which would show the closest possible link to the value of shares, allow the use of as much information and accounting data, including indicators based on accounting data and risk calculation and take into account the extent of the fixed capital and, last but not least, would allow performance evaluation as well as valuation of enterprises [39].

The model, which is based on all the above findings, is shown in Figure 1. In addition to financial indicators, this model incorporates the indicator drivers, which are of strategic importance and create a dynamic scorecard of business performance. This model suggests that there must be a clear top-level criterion for measuring and managing business performance, and it is important that there is a system of appropriate measures. The manager must manage profitability and the risk associated with it as a whole. Not only financial indicators, but also non-financial indicators are needed, as well as the interrelationships between them. Based on the above facts, a modern dynamic controlling model of enterprise performance was designed.

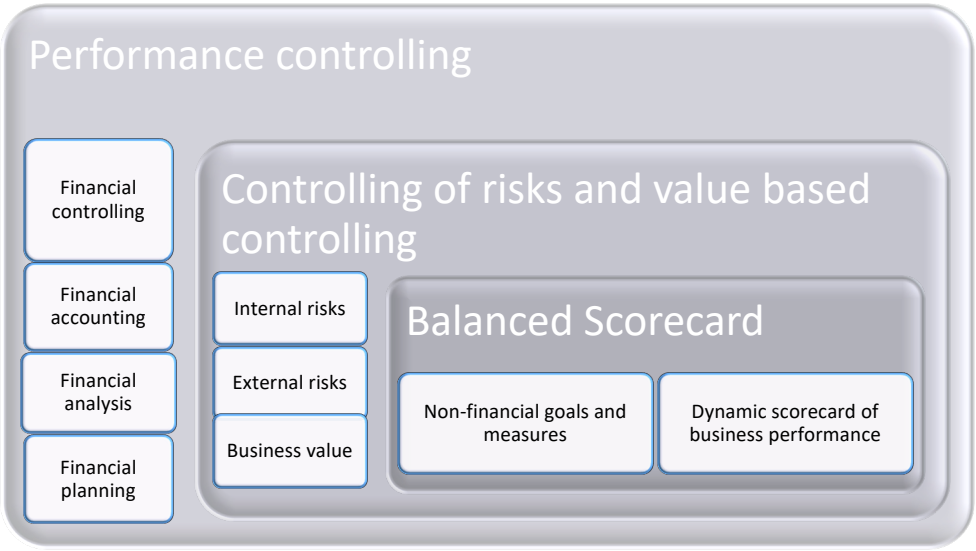

Fig. 1: Modern dynamic performance Scorecard.
Source: authors based on scientific literature

A dynamic system of measuring and increasing performance must be multi-criteria and must contain indicators from all functional areas of the enterprise, from the internal as well as from the external environment of the enterprise. The DEA method seems to be a very suitable tool for measuring and increasing the enterprise's performance. This method allows the measurement of performance with the application of multiple criteria, while offering target values of financial key performance indicators of the enterprise. This makes DEA a significant contribution to business performance. If the DEA results are supplemented by non-financial indicators, it is possible to create a dynamic scorecard of the enterprise.

Material and Methods

The input database of the empirical study was created from the data of 292 enterprises that do business in Slovakia in the field of heat supply. The financial statements for 2016, which were the source of data for the analysis, were provided by the Slovak analytical agency CRIF - Slovak Credit Bureau, s.r.o. [40]. According to the branch classification of economic activities SK NACE Rev. 2, the analyzed sample of enterprises falls under section D: "Electricity, gas, steam and air conditioning supply".

The overall character and structure of enterprises in the field of heat supply, as well as the method of heat and hot water supply, are determined by various factors, including climate and territorial division, historical development, demographic conditions and territorial division, housing, commercial and industrial construction, economic activity or the availability of fuel sources for heat production. Each larger city or municipality has a different structure and system of heat supply. Each specific system also consists of its own system of thermal equipment [41].

These facts are a prerequisite for the existence of external risk factors that affect the financial health and performance of the analyzed enterprises from the outside. For this reason, it is necessary to pay more attention to them in risk controlling and performance controlling.

The initial analysis of performance controlling was focused on the analysis of the financial situation and performance of a selected sample of enterprises. For this analysis, financial indicators were selected from all areas of evaluation of financial health and performance of the enterprise. The list of applied financial indicators is given in Table 1.

Tab. 1: Selected financial indicators.

Indicator	*Indicators` description*	*Method of calculation*
TL	Total liquidity	$short-term\ assets/short-term\ liabilities$
CR	Current ratio	$(current\ receivables+financial\ assets)/short-term\ liabilities$
ACP	Average collection period	$current\ receivables/sales\times 360$
IT	Inventory turnover	$inventory/sales\times 360$
CPP	Creditors payment period	$current\ liabilities/sales\times 360$
ROA	Return on assets	$EBIT/assets\times 100$
ROE	Return on equity	$EAT/equity\times 100$
ROS	Return on sales	$EAT/sales\times 100$
ROC	Return on costs	$EAT/costs\times 100$
ER	Equity ratio	$equity/assets\times 100$
TDTA	Total debt to total assets	$debt/assets\times 100$
EDR	Equity to debt ratio	$equity/debt$
DER	Debt to equity ratio	$debt/equity$
ICR	Interest coverage ratio	$EBIT/interest\ expense$
DSCR	Debt-service coverage ratio	$interest\ expense/EBIT\times 100$

Source: authors

As part of performance controlling, internal (corporate, non-systematic) and external (market, systematic) risks were also monitored, as these were necessary for calculating the performance of the analyzed sample of enterprises. These risks were identified in relation to the Capital assets pricing model (CAPM) and the Build-up model INFA (BU INFA) in the valuation of equity when calculating the EVA indicator.

Pavelková and Knápková [42] state that CAPM is one of the most frequently used models for determining the cost of equity, but it is used mainly in developed capital markets. This model divides risk into *systematic and unsystematic*, while in connection with the estimation of the expected return on equity, only market (systematic) risk is important (according to this model). Systematic capital market risk means the risk affecting all assets in this market. It includes unexpected changes in GDP, inflation, foreign trade and other factors. According to Petřík [43], the starting point of the CAPM model is the division of total risk into unsystematic risk and systematic risk. Horváthová and Mokrišová [44] state that this model only accepts external - systematic risks. An overview of the analyzed risks is given in Table 2.

Tab. 2: Business performance risks.

Risk	*Indicator`s description*	*Internal/External risk*
ERP	Equity Risk Premium	*External risk*
CRP	Country Risk Premium	*External risk*
β	Systematic risk	*External risk*
r_{SL}	Risk premium for lower stocks liquidity in the market – determined by the value of equity	*Internal risk*
r_{fin}	Risk premium for financial risk – determined by the indicator current ratio	*Internal risk*
$r_{business}$	Risk premium for business risk – determined by the indicator return on assets	*Internal risk*
r_{capstr}	Risk premium for capital structure risk – determined by the capital structure and the indicator interest coverage ratio	*Internal risk*

Source: authors

As part of the analysis of the performance of the analyzed sample of enterprises, it was necessary to calculate the EVA indicator.

Although the Entity method is considered to be the most accurate method of calculating the EVA indicator, in the conditions of Slovak legislation, the Equity method seems to be a more suitable because it does not require adjustments in accounting [44, 45, 46].

We can calculate EVA indicator according to EVA Equity formula (1) [46, 47]:

$$EVA = (ROE - r_e) \times E \quad (1)$$

where ROE is Return on Equity, r_e is Cost of Equity and E is Equity or EVA Entity formula (2) [48]:

$$EVA = (NOPAT - NOA) \times WACC \quad (2)$$

where NOPAT is Net Operating Profit after Tax, NOA is Net Operating Assets and WACC is Weighted Average Cost of Capital.

In addition to the calculation of financial indicators and the EVA indicator, the CCR DEA model was applied. An input-oriented CCR DEA model was chosen. Using the CCR DEA

model it is possible to calculate target values of selected performance indicators. Reaching these values makes the enterprise more efficient.

Dual input-oriented CCR DEA model can be written as follows (3):

$$\begin{aligned} &Min\ \theta_o - \varepsilon(\textstyle\sum_{i=1}^{m} s_i^- + \sum_{k=1}^{s} s_k^+) \\ &\textstyle\sum_{j=1}^{n} x_{ij}\lambda_j + s_i^- = \theta_o x_{io},\ i = 1, 2, ..., m, \\ &\textstyle\sum_{j=1}^{n} y_{kj}\lambda_j - s_k^+ = y_{ko},\ \ k = 1, 2, ..., s, \\ &\lambda_j \geq 0, s_i^- \geq 0, s_k^+ \geq 0. \end{aligned} \tag{3}$$

Slacks s_i^- and s_k^+ can be calculated according to formulas (4):

$$\begin{aligned} &s_i^- = \theta_o x_{io} - \textstyle\sum_{j=1}^{n} x_{ij}\lambda_j, \\ &s_k^+ = \textstyle\sum_{j=1}^{n} y_{kj}\lambda_j - y_{ko}. \end{aligned} \tag{4}$$

Slacks indicate the distance of decision making unit *(DMU_o)* from the efficiency frontier. s_i^- expresses input excess, s_k^+ expresses output shortfalls. In the case of the unit that is efficient in the CCR model, the value of objective function $\theta_o = 1$ and the values of slacks s_i^- and s_k^+ equal to zero.

Considering that s_k^+, $k = 1, 2, ..., r$ and s_i^-, $i = 1, 2, ..., m$ are additional variables under the model`s constraints and ε is the non-Archimedean infinitesimal value, this model can be written as follows (5):

$$\begin{aligned} &Min\ \theta_o \\ &\textstyle\sum_{j=1}^{n} x_{ij}\lambda_j \leq \theta_q x_{io},\ i = 1, 2,...,m, \\ &\textstyle\sum_{j=1}^{n} y_{kj}\lambda_j \geq y_{ko},\ k = 1, 2, ..., s, \\ &\lambda_j \geq 0,\ j = 1, 2, ..., n. \end{aligned} \tag{5}$$

The components of the vector $\boldsymbol{\lambda} = (\lambda_1, \lambda_2, ..., \lambda_n)$, $\boldsymbol{\lambda} = \geq 0$ are interpreted as weights (or coefficients of linear combination) assigned to the individual units. The aim in the model is to find a linear combination of inputs and outputs of all units so that the inputs and outputs of this combination are not worse (not higher in the case of inputs and not lower in the case of outputs) than the inputs and outputs of the evaluated unit DMU_o. As follows from the link to the primary model, the variable θ_o is an efficiency measure for DMU_o.

Target values of inputs and outputs can be calculated in two ways according to formulas (6, 7):

$$\begin{aligned} &x_{io}' = \textstyle\sum_{j=1}^{n} x_{ij}\lambda_j^*,\ i = 1, 2, ..., m, \\ &y_{ko}' = \textstyle\sum_{j=1}^{n} y_{kj}\lambda_j^*,\ \ k = 1, 2, ..., s. \end{aligned} \tag{6}$$

$$\begin{aligned} &x_{io}' = \theta_o^* x_{io} - s_i^{*-},\ i = 1, 2, ..., m, \\ &y_{ko}' = y_{ko} + s_k^{*+},\ \ k = 1, 2, ..., s. \end{aligned} \tag{7}$$

By reaching the target values, it is possible to increase the efficiency and performance of production units whose efficiency is low.

Results and Discussion

At the beginning of our research, we focused on the initial controlling analysis of enterprises. Descriptive statistics on selected financial indicators are given in Table 3. The selection of the analyzed sector was conditioned by the fact that in this sector a larger number of enterprises go bankrupt every year more frequently than in other sectors. We were interested in the financial health of these enterprises and their performance. The achieved values of selected financial indicators are confronted with the average values of financial indicators of the given sector. Table 3 also shows variances from mean values of the analyzed industry.

Tab. 3: Comparison of values of financial indicators with their mean values.

Indicators	*Comparison with industry*				
	Mean	*Median*	*Standard deviation*	*Mean value of the industry*	*Variance from mean values*
TL	1.417	0.811	2.459	0.98	0.169
CR	1.349	0.732	2.443	0.95	0.218
ACP	155.88	57.24	1.441	42.90	14.34
IT	27	3.6	0.355	0.04	3.56
CPP	710.64	225.72	5.957	298.03	72.31
ROA	4.5	4.4	0.089	2.3	2.1
ROE	15.4	12.6	1.401	7.79	4.81
ROS	-12	3.8	2.565	6.59	2.79
ROC	6.7	3.8	0.347	5.58	1.78
ER	0.160	0.145	0.333	0.21	0.056
TDTA	0.840	0.856	0.333	0.79	0.066
EDR	0.672	0.170	3.578	0.27	0.10
DER	1.48	5.88	0.333	3.7	2.18
ICR	2.530	1.851	6.075	2.70	0.849
DSCR	-0.750	0.54	22.021	0.37	0.17

Legend:

Negative development

Positive development

Source: authors

After analyzing the results, it was found that negative deviations arose in the case of 12 analyzed indicators while only 3 indicators could be evaluated positively, which represent the area of profitability of enterprises and the creditors payment period. Heat management enterprises show a liquidity problem. The median of total liquidity is 0.81, in the case of current ratio it is 0.73. The values of these liquidities show that these enterprises work with minimum stocks, as evidenced by the inventory turnover, the average value of which is 27 days.

These enterprises struggle with long creditors payment period, as a result of which they achieve a negative cash-to-cash. The median of creditors payment period is 226 days, which we can evaluate highly negatively, especially in relation to the suppliers of these enterprises. However, it is possible to see a positive development in relation to the average value of the industry. In assessing profitability, we focused on four profitability indicators, namely the ROA indicator, which averages 4.5%, with a median of 4.4%, so it can be assumed that half of the analyzed sample of enterprises reaches a ROA of about 4.4%. ROE averages 15.4%, which we rate highly positively. The median of the ROS and ROC indicators is equally 3.8%. The analyzed sample of enterprises shows a positive state in relation to the mean values of the ROA and ROE indicators.

The capital structure of these enterprises is 16%: 84%, in favor of debt, which may be the reason for lower stability of these enterprises. Compared to the average value, which is expressed by a ratio of 21%:79%, this is a slightly less favorable composition of capital in terms of its ownership.

The results of the performance analysis using the EVA Equity and EVA Entity indicators are shown in Figure 2. The analysis of the EVA indicator shows that 163 enterprises achieved a positive EVA Equity value. These businesses are efficient. When the EVA Entity indicator was applied, there were up to 217 enterprises that are not expected to go bankrupt and are efficient. The more favorable values of the EVA Entity, from the point of view of performance evaluation, are given by the fact that the evaluation includes both equity and debt, but also the profit and loss of the enterprise, which was obtained using both sources of financing.

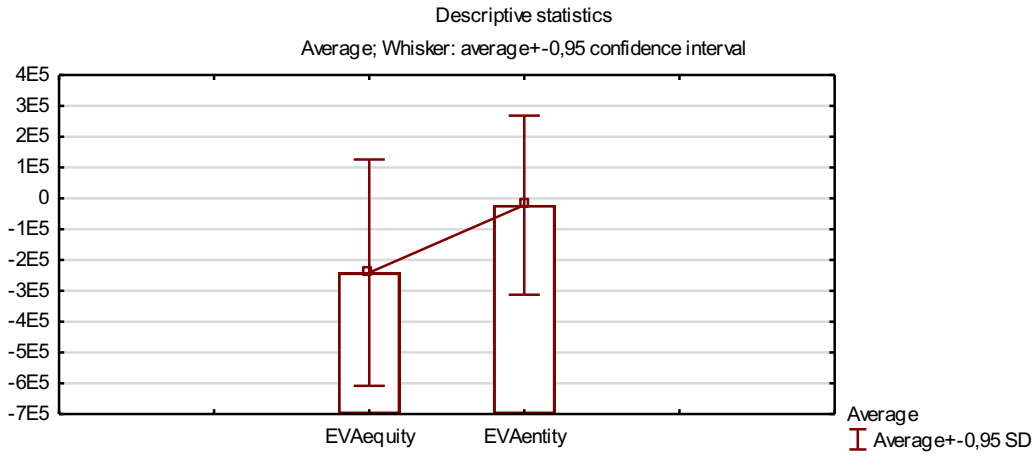

Fig. 2: Boxplot of the EVA indicator.
Source: authors, processed in Statistica

The evaluation of the financial position of the analyzed sample of enterprises in terms of three important indicators of financial health assessment (liquidity, profitability and stability - LPS) is shown in Figure 3.

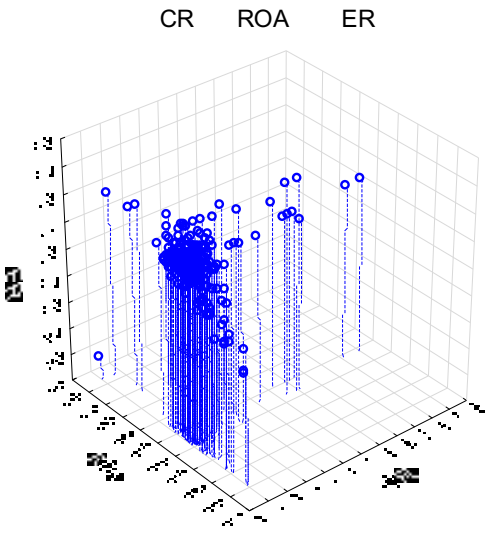

Fig. 3: Financial position of businesses – 3D view of *LPS.*
Source: authors, processed in Statistica

The enterprise's liquidity is expressed by the CR, which is the bearer of financial risk. Profitability is expressed by the ROA indicator, which is the bearer of business risk. The last indicator is the stability indicator of the enterprise, which is expressed by ER. It is clear from

Figure 3 that a cluster of enterprises was formed at the coordinates (1; 0.1; 0.1). These coordinates represent the position of enterprises in space, in terms of the main objectives of financial management.

The 3D view represents a 3D surface figure (Figure 4). This figure consists of the three most important indicators of corporate financial health, namely TL, ER and ROA.

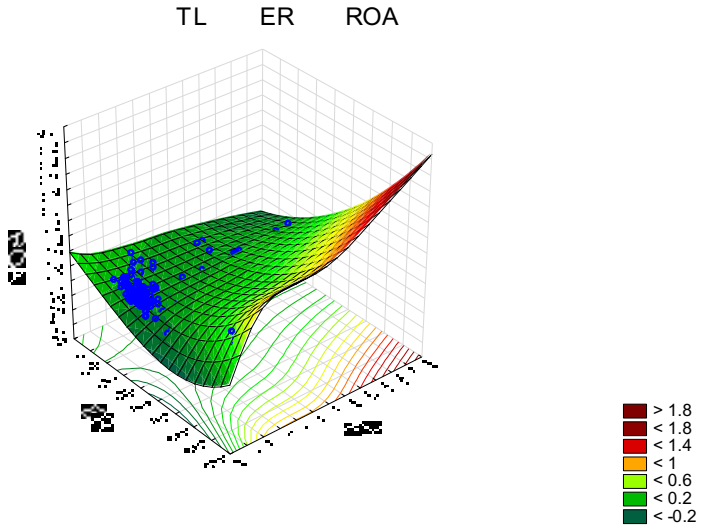

Fig. 4: Financial position of businesses – 3D Surface view of *LPS*.
Source: authors, processed in Statistica

The risks to which attention was paid in performance controlling were classified as external and internal risks. External risks are listed in Table 4. Risks were analyzed not only in the year of measuring businesses` performance, but also in their development over time.

Tab. 4: Development of external risks (%).

Year	*2015*	*2016*	*2017*	*2018*	*2019*
ERP	6.25	5.69	5.08	5.96	5.2
CRP	1.33	1.21	0.98	1.18	0.84
B	0.67	1.08	1.01	0.73	0.68

Source: authors

The analysis of external risks shows that their development fluctuates slightly, but does not show significant deviations in a given period of time. 2016 (the year of analysis of a selected sample of enterprises) was the least favorable year in the area of systematic risks, and also in this year, except for 2015, the highest value of country risk premium was achieved. External risks in 2019 reached favorable values. In the analysis of internal risks, it is necessary to point out the high financial risk (r_{fin}), due to the fact that enterprises do not reach the required value of current ratio. They also do not reach the required capital structure and the value of interest coverage. Therefore, they achieve high risk premium for capital structure risk (r_{capstr}) and risk premium for lower stocks liquidity in the market (r_{SL}). Due to the required ROA values, the analyzed sample of enterprises do not achieve high business risk (r_{podnik}).

Finally, the DEA analysis was performed within the performance controlling. The CCR DEA model was input-oriented as well as output-oriented. Since the results of the models were the same, only the results of one of the models are presented. Table 5 shows the enterprises that

achieve an efficiency equal to 1. Thus, in the case of these enterprises, it can be assumed that they are on the financial health frontier and belong to the most efficient enterprises.

Tab. 5: Businesses with the best performance.

Input-oriented model				
		CCR DEA		
Business No.	*DMU*	*Efficiency, performance*	*Development of returns to scale*	*Peer-units*
1	TP1	1.00000	constant	TP1
2	TP22	1.00000	constant	TP22
3	TP37	1.00000	constant	TP37
4	TP60	1.00000	constant	TP60
5	TP84	1.00000	constant	TP84
6	TP89	1.00000	constant	TP89
7	TP94	1.00000	constant	TP94
8	TP98	1.00000	constant	TP98
9	TP135	1.00000	constant	TP135
10	TP181	1.00000	constant	TP181
11	TP267	1.00000	constant	TP267
12	TP268	1.00000	constant	TP268
13	TP275	1.00000	constant	TP275
14	TP279	1.00000	constant	TP279
15	TP282	1.00000	constant	TP282
16	TP341	1.00000	constant	TP341

Legend: DMU – Decision Making Unit
Source: authors, processed in DEA Frontier, [49]

Table 6 shows the worst enterprises from the analyzed sample of enterprises. These businesses achieve the worst performance, they lie on inefficiency frontier.

Tab. 6: Businesses with the worst performance.

Input-oriented model			
		CCR DEA	
Business No.	*DMU*	*Inefficiency, worst performance*	*Development of returns to scale*
1	TP74	1.00000	constant
2	TP199	1.00000	constant
3	TP209	1.00000	constant
4	TP307	1.00000	constant
5	TP320	1.00000	constant
6	TP328	1.00000	constant

Legend: DMU – Decision Making Unit
Source: authors, processed in DEA Frontier, [49]

As the analyzed sample of enterprises has an unstable capital structure, it was necessary to calculate the target values of capital structure indicators (LTD/A – long-term debt/assets, STD/A – short-term debt/assets, c – current, t- target). A comparison of current and target values is shown in the following Figure 5.

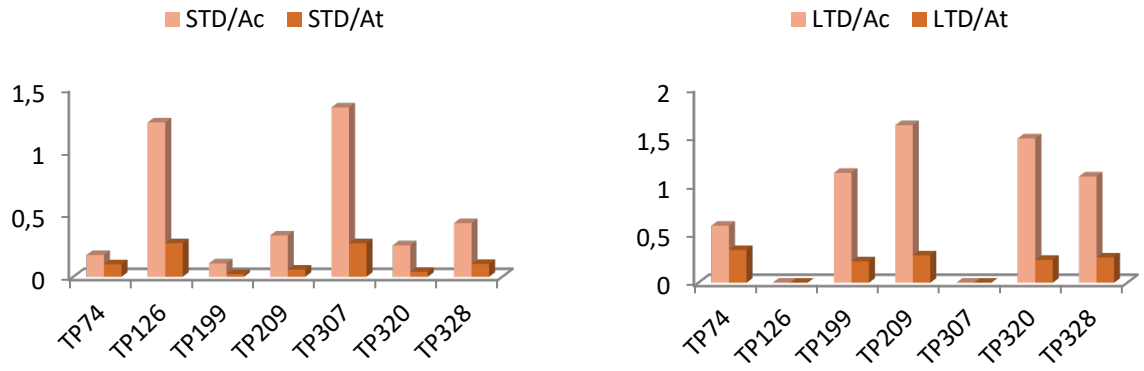

Fig. 5: Comparison of current and target values of selected CCR DEA model outputs for inefficient businesses.
Source: authors, processed in Statistica

Summary

The performance of an enterprise is a prerequisite for its success and competitiveness. Therefore, an increased attention needs to be paid to the analysis and performance measurement. To ensure this task, it is necessary to use appropriate tools that will provide managers with all the necessary information. In this regard, it is necessary to highlight performance controlling and its tools and methods. In order to determine the real financial condition and performance of the enterprise, it is necessary to apply adequate methods and tools. Our research used a wide range of tools, from the simplest to those most sophisticated. Such a tool is the EVA and DEA method. By calculating the EVA indicator, the analyzed sample of enterprises was divided into two groups, namely efficient and non-efficient. Subsequently, DEA not only ranked companies according to their performance, but also calculated the target values of key performance indicators, which are a prerequisite for business performance growth. This knowledge will be useful not only in theory but also in the practice of business performance management. It offers managers a great tool in their efforts to maintain the enterprise and ensure its growth. Performance controlling thus becomes an important practical system of performance management. Moreover, it also opens up new possibilities of future research.

Súhrn

Výkonnosť podniku je predpokladom jeho úspešnosti a konkurencieschopnosti. Analýze a meraniu výkonnosti, je preto potrebné venovať zvýšenú pozornosť. Pre zabezpečenie tejto úlohy je nevyhnutné využívať vhodné nástroje, ktoré poskytnú manažérom všetky potrebné informácie. V tomto smere je nevyhnutné vyzdvihnúť controlling výkonnosti a jeho nástroje a metódy. V záujme zistenia reálneho finančného stavu a výkonnosti podniku je potrebné aplikovať adekvátne metódy a nástroje. V našom výskume boli aplikované nástroje od tých najjednoduchších až po tie, ktoré sú vedecké a vysoko sofistikované. Takýmto nástrojom je metóda EVA a DEA. Výpočtom ukazovateľa EVA sa analyzovaná vzorka podnikov rozdelila do dvoch skupín, a to na výkonné a nevýkonné. Následným využitím DEA bolo identifikované nielen poradie podnikov v oblasti výkonnosti, ale aj cieľové hodnoty kľúčových indikátorov výkonnosti, ktoré sú predpokladom rastu výkonnosti podnikov. Toto poznanie je veľmi významným prínosom nielen v teórii, ale aj v praxi riadenia výkonnosti podnikov. Ponúka manažérom veľmi vhodnú pomôcku v ich zápase o udržanie podniku, prípadne jeho rast. Controlling výkonnosti sa tak stáva významným praktickým systémom riadenia výkonnosti, avšak vytvára množstvo príležitostí pre štúdium a skúmanie aj v oblasti teoretického výskumu, v oblasti jeho možných budúcich smerovaní.

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