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PREFACE

We are very pleased to present the publication of this new issue. Every year we publish articles on various areas of scientific research, the authors of which are well-known scientists: professors, doctors of sciences, and doctoral students who are taking their first steps in science.

Today, digitalization as a process of introducing digital technologies into all spheres of human life is one of the main trends in the development of the world economy and one of the most pressing topics of scientific discussions. Covid-19 has caused not only health problems, but also a serious economic and political crisis. At the same time, it has made it possible for scientists to unite their efforts to solve the problems that were caused by this crisis, because each crisis opens up new opportunities for humanity.

That is why most of the studies that are presented in this collection invite the reader to familiarize themselves with the current problems and solutions that are associated with the use of digital technologies. Considering the fact that solving problems alone is ineffective and costly, our authors joined their efforts not only within Latvia, but also looked for like-minded people outside the country. We can only cope with the crisis together; therefore, it is necessary to strengthen international scientific cooperation and exchange of information between countries.

This issue contains fourteen scientific papers covering a wide range of key issues in economics, communication, education, information technologies and law, representing a wide geographical distribution of research contexts. This volume contains the articles of authors from Lithuania, Russia, Finland, Belarus and Latvia. In total, 14 educational institutions are represented in this issue of the journal. In addition, the authors did not disregard the topics related to the solution of sustainable development issues at the macro and microeconomic levels.

Researchers from Turiba University **Aleksandr Popov** and **Zane Drinke** studied the point of view of the leading companies in the Baltic States operating in various industries on digital transformation, which are currently implementing various projects using digital technologies.

The paper by Latvian researchers **Daina Skuskovnika** and **Anita Zvingule** describes the theoretical principles and practical experience of planning communication with the society to change its behaviour towards reducing waste generation and facilitating its recycling.

Researchers from Latvia **Natalija Sotikova and Renate Cane** examined the factors shaping the experience of foreign students in exporting education. These results are important for higher educational institutions because they help to determine how to shape positive experiences for the development of higher education export.

The problem of developing the educational abilities of schoolchildren has always been one of the most urgent. The journal contains two articles reflecting the relevance of this issue. Researcher from Nigeria **Charles N. Ohanyelu** and coauthors from Latvia and Belarus, **Maria Urban, Daina Vasilevska and Alesia Abchynets** investigated the relationship between teacher motivation and student performance in mathematics.

Also, an article by researchers from Latvia **Arthurs Mons** and **Velga Vevere** is dedicated to the field of human resource management. The authors focused on the study of the role of group efforts in increasing employee motivation to improve the performance of the enterprise and how team efforts can stimulate innovation in the workplace.

The research results in the field of law were presented by researchers from Latvia and Lithuania**: Giedrius Nemeikšis, Karolis Kaklys and Marta Mackeviča**. Their attention was focused on issues such as the protection of personal data, the possibility of recognizing artificial intelligence as a separate legal entity and the specifics of its civil liability for damage caused by it; the practical and theoretical possibilities of initiating an impeachment case against local government politicians are considered.

IT researchers from Latvia and Russia **Patriks Morevs, Marina V. Khudzhina, Elman Dzhambetov and Sergei D. Karakozov** looked at a study showing that ADI method is faster, uses less RAM, and computes with finer meshes. This could be an advantage when performing fine computations.

Several articles in this collection are traditionally devoted to the field of entrepreneurship. Researchers and doctoral students from Latvia **Velga Vevere, Iveta Linina, Victoria Gudovskaja**, **Supun Samarasinghe and Nadeeshika Silva** from Sri Lanka**, Muhammad Zafran** from Pakistan**, Filip Lestan** from Russia and **Sajal Kabiraj** from Finland investigated the impact of innovation and digital technologies on business development and customer satisfaction.

On behalf of the editorial board and authors who presented the results of their research, we are pleased to present you the 12th issue of the journal Acta Prosperitatis. We sincerely hope that the information provided will be

useful to you, you will enjoy reading the journal and that it will give you new ideas, introduce you to new things and help discover new opportunities.

We should like to thank all the members of the Editorial board for their hard work. Many thanks are also due to the contributors to this issue for their forbearance and patience in the necessarily long process of preparing papers for publication.

Co-editor-in-Chief,
Daina Vasilevska

IMPLEMENTATION OF DIGITAL TECHNOLOGIES IN A CRISIS MANAGEMENT MODEL OF SMALL BUSINESSES DURING THE *COVID-19*

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Abstract

The Covid-19 crisis has had a significant impact on environmental changes that are prompting companies to look for new ways to grow their businesses and more widely apply digital technologies in the face of existing constraints. The aim of this study was to analyse how small businesses are coping with environmental changes due to the Covid-19 crisis by modifying the crisis management model through digitalization. To achieve this goal in our study, the author used data from several studies with qualitative analysis to study the data obtained during the interviews. Seven small businesses were selected using a theoretical sampling methodology in order to achieve certain statistical confirmation. Our analysis shows that small businesses are adopting varying degrees of digital transformation, which can be divided into several areas. The first group has a high level of digital maturity, it is able to meet the challenges of our time, it shows a high rate of transition to digital firms. The second group often suffers from liquidity problems, as a result of which it shows a low level of digital maturity, this group resorts to digitizing only the sales function. The third group has rather limited digital maturity, but it is supported by a high level of social capital. The last group listed is addressing emerging challenges by finding partners with superior

digital capabilities. The qualitative method allows us to conduct deep and detailed analysis.

Introduction

Changing of internal business processes as an adequate response to ongoing changes in the external environment becomes almost the only way to transform activities during periods of crisis. The peculiarity of the current crisis is how the ways of interaction with the consumers have changed significantly due to various quarantine measures, including various ways to reduce the number of cases of person-to-person contact.

The Covid-19 crisis has triggered huge environmental changes that are forcing companies to use modern digital technologies more widely and massively to retain old customers and attract new ones. Of course, firms strive to implement a new business model – digitalization, as soon as possible, because the slower they take it, the greater the gap between them and their customers (Winarsih, 2020: 1). Digital modifications are needed so that firms can work in the format that modern realities require from us (Tihonova, 2020: 125).

When the crisis hit, all companies faced new challenges. Entrepreneurs are trying to build business planning for the long term, however, as practice shows, in a crisis, planning can be built for a short period of time, since trends are constantly changing, which creates additional difficulties for companies. Long-term business plans can be tried and further exploited, but they will have much less relevance in modern conditions, so the new business planning model is becoming more and more relevant, it represents a new approach to building a business concept with a flexible strategy (Li, 2018: 4).

It is generally accepted that modern digital technologies allow firms to quickly transform their business models (Shaikh, 2020: 1).

Undoubtedly, the digitalization of business has opportunities that we could not even imagine just a few years ago. Artificial intelligence, marketplace, targeting, digital community and other modern concepts – all this is no longer a possible scenario, this is a reality with which we must make friends in order to ensure further development (Fletcher, 2020: 3).

Such transformations of the business model, which were carried out through the introduction of digital technologies, have been described in literature as one of the strategies that can be used to respond to radical changes in the business environment. New technologies should help firms create new business strategies (Lau, 2020: 500). That is why we see the use of digital technology as a suitable option for responding to the huge changes caused by the crisis from the Covid-19 pandemic.

Business digitalization should primarily help firms avoid bankruptcy, and secondly, it can create a sustainable competitive advantage for a certain business. Digitalization should take place continuously, constantly supporting the sales funnel, if this process is interrupted, it will not lead to success (Pelletier, 2019: 859).

The scientific literature often highlights the fact that it is much more difficult for fully-formed and large companies to transition to a new business model than small businesses. And despite the fact that several in our time, many large corporation companies were able to quickly and creatively adapt to modern crisis conditions using digital technologies, it should be borne in mind that they did not do without certain financial and personnel losses, that is, the transition to digital technology is undoubtedly a difficult task for any enterprise producing physical products, whose activities do not fall into the categories of vital industries (Wilson, 2016: 40).

We believe that this study, aimed at identifying new trends in changing business models and digitalizing small businesses as subjects, will significantly contribute to enriching knowledge in the field of crisis management of companies, as well as expanding the concept of business model and will contribute to public awareness in the fields of modern information technology and innovation. Firms that can transform their business models in record time will retain the loyalty of more customers and attract new stakeholders. This task seems to us to be of paramount importance in a pandemic crisis due to the significant changes that it entails. In the future, reluctance or the impossibility of introducing new technologies can increase the likelihood of a break with customers and a big break with competitors who have managed to adapt to modern realities.

The purpose of our study is to determine the importance and significance of the introduction of digital technologies in the crisis management of small businesses during the Covid-19.

The specified research goal sets us the following tasks:

1) to identify the main trending digital transformations that have become relevant since the beginning of the Covid-19 pandemic;
2) to determine the impact of digital transformation on the business environment;
3) to assess the possibility of a crisis situation in the activities of small enterprises due to transformations, considering the threats of the external environment;
4) to consider the impact of the introduction of digital technologies on the productivity of small businesses;
5) to outline the advantages and disadvantages of introducing digitalization in small businesses.

In addition, in our study, we will try to answer three research questions:
1) What challenges did small businesses face during the Covid-19 crisis?
2) What digital tools are most often used by companies to digitize their work?
3) What stages does a business go through to decide in favour of digitalization of the work process?

The theoretical basis of the new business planning model as a tool for crisis planning

In search of confirmation of our hypothesis that small businesses should establish a new business model with the introduction of digitalization into the work process, we turned to existing research in this area in order to find confirmation of our theory that new times require new approach from entrepreneurs to choosing a suitable business model. An analysis of the work of entrepreneurs in China is a good example of demonstrating the transition to implementation in record time. Scientists conducted a revealing survey to show how the business world in China was able to adapt to the new conditions of the crisis, how it managed to survive and increase its sales level. The study found that Chinese companies were forced to go through stages such as using new digital technologies, introducing new business models, identifying new customer needs, and rethinking teamwork in the company.

The main goal of the companies was diversification and digitalization of production. In some cases, entrepreneurs decided on more coordinated

decisions, namely, to replace existing business models that were losing their relevance during the onset of the crisis (Verhoef, 2021: 890). But none of the companies that participated in the study continued their work, relying only on the already existing operating procedures.

In addition, scientists adhere to the position that representatives of small businesses are able to demonstrate greater flexibility in conducting strategic manoeuvres than representatives of large companies. The peculiarity of small firms is that they can quickly make changes to the existing business model during a crisis (Bourletidis, 2014: 640). As for large firms, the establishment of a new business model can increase the organizational complexity of the work process, and therefore this feature should be considered (Leih, 2015: 3).

In the future, companies that have taken advantage of new digital opportunities faster than others will occupy leading positions. It is no secret that the advent of the digital era has long changed the life of all mankind, but with the onset of the crisis caused by the Covid-19 pandemic, digital technologies have become extremely important, they have enabled companies to develop in new directions as continuing working within the existing business model was simply not possible.

Analysing the findings made by scientists, we believe that new theories and practices should be introduced into the theory of crisis management, among them digitalization, digital modernization, and new business models and the introduction of digital technologies, should be considered. However, it should also be borne in mind that all of these practices also carry certain risks, such as: possible threats of cyberattacks, staff cuts and financial risks (Altufieva, 2020: 4). That is, entrepreneurs should consider that when introducing new digital opportunities, they may face information leakage, so we should think about the necessary data protection in advance. Also, the development of a new business model requires additional financial costs, which may not pay off for a long time. In addition, the digitalization of production often entails a forced reduction of jobs, since many human functions are replaced by technology. But in the context of the crisis, many entrepreneurs still decide to implement digital technologies, realizing the possible risks, since without digitalization the likelihood of bankruptcy and company closure increases several times.

Prerequisites for the implementation
of digital technologies in a crisis management model

After small businesses found itself in a crisis situation, namely, the ban on continuing to work as usual, entrepreneurs felt the need to move to a new business model. This transition can be carried out in several ways: by combining the existing business model and digital technologies or by completely updating the system with the introduction of innovations.

The main preconditions for the transition to digital technologies can be identified as destabilization in the economic environment, the uncertainty of the future sales model in the company, the complexity and renewability of the business environment, large changes in consumer behaviour and competition among small businesses in search of new methods of selling to customers. These prerequisites are now becoming the main triggers that oblige companies to resort to the transition to a "remote" way of selling and trading. Following the changes in consumer habits, the business environment cannot stand aside. In 2021, the main value of companies is innovation and technology that can help maintain the loyalty of old customers and attract the attention of new consumers. Digitalization of companies is focused entirely on clients, on their target market or audience (Priyono, 2020: 5). We believe that with the right introduction of digital technologies and sufficient capital, companies will see significant changes in the future, especially in terms of generating profit from consumers (Ulas, 2019: 669).

It is worth paying special attention to the fact that companies that were initially focused on online sales find it much easier to make the transition to a new business model (Priyono, 2020: 6). And companies that have been solely focused on offline sales that produce physical goods face much greater difficulties because their production has always been directed only to local sales. It is most difficult for such companies to adapt to the requirements of the current crisis; it is most difficult for them to increase their profits.

At the same time, companies producing goods from the list of essential necessities, which is designated in each country individually, usually including food, food additives, hygiene items, can continue to operate normally, although certain restrictions apply to them.

From this we can conclude that companies that do not sell online and do not produce essential goods need to show much more enthusiasm and creative skills in order to keep their customers and not alienate them during the crisis.

This is where the need for innovation and production modernization arises. These actions can help firms close the gap between customers and their products and services.

Transition to digital technology is a difficult task for small businesses, whose activities were not categorized as necessary, such as travel agencies, organization of various events, theatrical arts and other areas (Seetharaman, 2020: 2).

The need for rapid digitalization has become the most important challenge during the crisis due to large changes in consumer habits. At the same time, most researchers already now express confidence that current trends will continue in the future post-pandemic world (Fletcher, 2020: 3).

According to some scientists, small business entrepreneurs, introducing a new business model, solve several important tasks at once. Initially, they develop closer relationships with customers or resellers (Lukyanova, 2020: 4). They also increase the level of their own operational efficiency, thereby creating a greater competitive environment. In addition to this, they create for themselves the opportunity to explore new markets and unleash potential that they previously did not expect. It is obvious that all these tasks cannot be accomplished without adequate funding and competent IT specialists.

In our research, we focused on digital tools that are helping companies today to optimize their workflow and increase their income. For various kinds of tasks, appropriate technological solutions are required. Among the most common problems we can distinguish: limited working hours, difficulty in fulfilling a customer's order, reduced purchasing power of customers, lack of communication channels, long service times and disruption to the supply chain (Tihonova, 2020: 131). All these difficulties cannot be overcome without appropriate technical solutions. For the above three tasks, we identified possible ways to optimize work using special systems, they are shown in Table 1. We analysed various sources and combined in our table the most popular tools that were actively used by companies in 2020 to promote on the market.

Table 1

Digital tools that can be used to optimize company performance

Task description	Direction of the company's functional activities	Digital tools to optimize company performance
1 – to develop closer relationships with customers	Interaction with clients and consumers	CRM systems: SugarCRM, Pipedrive, Oracle CX Sales, Zoho CRM
	Direct communication with customers and consumers	Zoom, GoToMeeting, Skype, Meet
2 – to increase the level of company's operational efficiency	Asynchronous Communication	Slack, Twist, Workplace, Quip
	Project Management	Asana, Trello, Jira, Todoist
	Sharing information	Dropbox, Drive, Airtable
	Creative brainstorming	Mural, Miro, Graphy, InVision
	Privacy and security	LastPass, ThinScale, ExpressVPN
3 – to create an opportunity to explore new markets and segments	Data analysis	Google Analytics, Yandex. Metrica, Tag Assistant
	Product control	PLM, ALM, PDM systems
	Internet marketing	Video marketing, targeted advertising, e-mail marketing, contextual and display advertising, CMS systems, SEO, SMM
	International market expansion	Market finder

Source: developed by the author, considering statistical data.

In Table 1, we have collected the most relevant data for 2020 on the most used tools for doing business in the online space based on Forbes Researches in June 2020. As we can note, previously the main focus was on such expensive marketing tools as the development and promotion of an Internet site, market research using the Internet (competitors, products and consumers), the creation of special programs and SEO, and in 2020, as competition grew on due to the crisis, the focus of producers of goods and services has shifted to the sphere of social networks and "a new type" of marketing (Wielki, 2020: 2).

To avoid possible risks from the introduction of digital technologies, which we mentioned earlier in our study, many small entrepreneurs are developing a new business model together with the addition of crisis management to increase the stability of the company and guarantee organizational sustainability,

thereby creating a new model for the implementation of digital technologies in crisis management.

Research methods

The fundamental concepts presented in the works of experts of economic theory and publications of modern scientists on the problems of crisis management were used as a methodological basis for the study.

Our research was carried out using case study, theory analysis, mathematical data processing analysis and logical-constructive analysis with the priority of the systems approach, as well as using methods of statistical analysis, expert assessments and forecasting methods.

In our study, we used the design of seven case studies to provide an in-depth analysis of each company's performance, the challenges they faced, and the responses to the crisis. We analysed the workflow data provided by the objects under study, obtained over the past 6 months. We believe that these methods can be considered suitable for a full analysis of the crisis management situation in represented small businesses. We also used research methods of qualitative analysis, such as content and narrative analysis, while studying a new topic.

In addition to this, we developed a questionnaire for all respondents to complete. Thus, we were able to obtain the most complete answers for our research.

We used the non-probability sampling method to select the objects of our study (Öztas, 2014: 1). This method was chosen in order to obtain generalized answers for our work and perform analytical analysis after receiving them. We analysed companies based on the current economic situation, and cross-case analysis provided us with an opportunity to achieve a better generalization. This is considered a precondition for building a theory using the case study method.

Our research involved seven European small business representatives who operate in Latvia and partly in other European countries. The companies we interviewed operate in various industries and produce various goods and services, at the same time they have a different degree of development of digital technologies. We've been working with these companies for a year now, so the partnership we established with businesses a year ago allowed us to communicate during the second wave of isolation caused by the Covid-19 pandemic. We got familiar with the process of their work, which allowed us

to conduct research on the implementation of digital solutions and a new business model in their business. In our research, we do not mention the real names of companies in the interests of the personal rights of their owners and for our work the companies will be named according to the specifics of their production. General information about companies that we received from our respondents is presented in Table 2.

Table 2

Pivot table with respondent data

The main information about each case	Event company	Tourism company	IT company	Language courses company	Trade company	Fitness company	Design company
Product	Events, weddings, parties	Trips in Europe	Maintaining transactions	Language teaching	Trade with Asia	Trainings	Designer accessories
Employees	23	15	68	14	6	18	5
Target market	Local (Baltic)	Europe	Europe	Local (Baltic)	Europe	Local (Baltic)	Local (Baltic)
Duration of existence (years)	10	15	6	12	10	3	2
Tools used before the Covid-19 crisis	Company website, social media, email, WhatsApp	Company website, social network – Facebook, email	Company website, online trading platform, email, Telegram	Company website, social media, email, WhatsApp	Company website, online trading platform, online store, email, WhatsApp	Company website, social media – Instagram, online training platform, WhatsApp	Company website, social network - Instagram, email, WhatsApp
Tools used after the Covid-19 crisis	The same + Youtube + ideo marketing + targeted advertising	The same + Market finder + Youtube + contextual and display advertising	The same + targeted advertising + e-mail marketing + contextual and display advertising + Market finder + Google Analytics	The same + Youtube + online trading platform + Market finder + Zoom + targeted advertising + Google Analytics + SEO	The same + Google Analytics + SEO + CMS systems + Market finder + targeted advertising + e-mail marketing + contextual and display advertising + new CRM system	The same + online shop + Youtube + SEO + e-mail marketing + contextual and display advertising + Market finder	The same + online shop + SMM + Market finder + online training platform + joining a large marketplace
Represen-tative respondent	Production staff	Owner	Marketing staff	Supervisor	Marketing staff	Project manager	Owner
Has the crisis affected the company?	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Source: developed by the author.

In addition to analysing the results obtained from their questionnaire and interviews with company representatives, we also managed to personally get acquainted with some of the products that the companies produce. We received some feedback from clients that compared the company's work process before and after the crisis, so we were able to get additional

assessments of some companies and this gave us the opportunity to better understand the context of the study.

For the interview, we had a specific list of questions prepared, but during the conversation we had additional questions that gave us the most complete overview for our study. The duration of the interviews for each respondent was about 20 minutes, but in some cases, we needed more time.

Our first step was to summarize the main groups of difficulties and challenges that small businesses face. At the second stage, we grouped the data obtained at the first stage into the main prerequisites for the digitalization of the company. At the third stage, we asked respondents to rate the effectiveness of responding to the challenges of the new business model in their companies. They gave answers on a ten-point scale, where 10 points is a successful solution to overcome the challenge, and 1 point is a temporary lack of a solution to overcome the challenge.

Based on the answers received during the interviews and the analysis of the questionnaire, we divided 7 small enterprises into three groups depending on the methods of solving the problems they face, and their readiness in the transition to a new stage of digitalization of production. All data are presented in Table 3.

Table 3

Challenges faced by companies and ways of transformation

Challenges	IT company	Trade company	Language courses company	Fitness company	Design company	Tourism company	Event company
	Fast transition path		Slightly slowed down path			Slow transition path	
Fast decision making regarding the implementation of a new strategy	10	10	9	9	8	7	6
Positive reaction of the whole team to the digitalization of production	10	10	7	7	6	5	4
Understanding the urgency of digitalization	10	10	10	9	7	8	7
Staff willingness to continue working remotely	10	9	9	7	8	6	6
Personnel acceptance of all innovations	10	9	8	5	7	5	4
Correction of the sequence and algorithms of work	10	9	9	9	7	8	8
Rapid implementation of digital technologies	10	8	8	7	5	4	5
Changing the internal target of the company	8	9	6	9	6	7	8
Changing market segmentation	8	9	8	5	4	7	6
Introducing new processes or products	8	8	7	7	4	6	5
Reallocation of financing in the company	8	9	8	8	7	10	9

Revision of the functional tasks of employees	10	10	10	10	10	9	10
Observation of improvements in the economic situation in the company, considering the introduction of crisis management	10	9	9	8	7	5	7
Expansion of the sales market	8	8	6	9	8	1	2
Leveraging new digital analytics	10	10	8	9	3	1	1
Attracting customers through new social channels	9	7	9	9	6	5	6
Strengthening the necessary skills to work with new technologies	10	10	10	10	8	4	3
Points out of 170	159	154	140	137	111	98	97

Source: developed by the author.

From our results, shown in Table 3, we can conclude that the most successful implementation of digital technologies was carried out by such companies that work in the IT and Trade industries. They, more than all other representatives, rated their work as the most successful in the process of switching to a remote work format with the maximum implementation of digitalization of production. They most often set themselves a score of 10 points, as we can see from Table 3. They represent the so-called "Ready for the digital transformation" group. Thus, this allows us to say that the digital transformation strategy is most fully deployed in these companies. Firms in this group have a long history of digital adoption due to the specifics of their industries. Even before the onset of the crisis, they adhered to most of the online business model, but the offline model was also present. But the crisis triggered by the Covid-19 pandemic has been the impetus that has accelerated digital transformation.

As for the second group of companies, which includes a Linguistic centre, a Fitness company and a Design company, we can refer it to the second group – "Ready for digital transformation, but experiencing certain difficulties". The main difficulties they face are finding new markets and finding a new unique product that could attract new customers. The main task of these companies was to avoid immediate collapse by receiving at least some part of the previous income. All companies agreed that they should take special new measures to avoid collapse. For this reason, firms have successfully started investing in digital technology. At the moment, they cannot say with certainty whether digitalization of production will help them in the future, but there is no doubt that without it the companies would close down immediately. Companies pay a lot of attention to the digitalization of sales functions, since it is sales that generate revenue for the company.

In the last group of companies, to which we attributed a Travel company and a Company that organizes various events, there are significant difficulties with the transition to a new model of work due to the specifics of their industries, we called this group "Not ready for digital transformation". Travel restrictions around the world, as well as crowding restrictions, make it nearly impossible to organize events during a crisis. The same applies to the tourism industry, when travel around the world is limited and all companies involved in the organization of tours have to look for solutions locally in their countries. And for this, the company needs to change the entire system of its work, focus on finding interesting tourist places within the accessible limits of the country, attract new clients who would like to travel in modern conditions, seek financing for the company to organize new tours, and so on. And as we can see from our table, in times of crisis it is very difficult for these industries to make the transition from the old model to the new one, so their points are much lower than those of other companies.

Findings

In our research, we found that digital transformation cannot be done successfully in all industries at the same time. Moreover, the digitalization of small businesses that operate with leisure activities cannot be fully implemented due to the existing restrictions caused by the crisis from the Covid-19 pandemic.

We also found that in some companies, digital transformation does not have to be radical, as their business model was originally geared towards online business. This feature allows them to introduce transformations smoothly and gradually, testing this or that solution until the optimal variant is found.

All of our respondents agreed that without implementation of digital modification, it will be impossible to conduct business and continue to work with clients in the future. Digitalization requires a large number of costs for implementation into the system, but after that the company's work becomes the most profitable and flexible in the forced conditions of the crisis. It is also worth noting that there is no one-size-fits-all digital transformation model. Nowadays, a large number of working schemes have been developed with new tools for business development, which we also mentioned in our study. Companies should definitely find their way to digitalization of production, considering the economic situation in their industries. In this context, the choice of a crisis management strategy becomes a key point in

order to make the transition to a new type of online trading as painless as possible for the entire company.

Conclusions

The crisis caused by the Covid-19 pandemic has made significant changes in all areas of the economy, causing stagnation and recession in some of its segments, and growth in others. All sectors of the economy and services that were able to continue working during the Covid-19 period began to actively move into online business and develop Internet promotion channels, attract more advertising with an emphasis on CMS, SMM and SEO promotion.

Summing up the results of our research, we would like to note that:

1. We carried out our research in order to determine the current situation with the implementation of the digital model of work in various areas of social life. To do this, we interviewed representatives of seven small businesses that operate in various fields. So, we were able to establish that the transition to digitalization can occur along three different paths. The transition takes place depending on the company's readiness to innovate. It can also be influenced by such factors as the current level of digital literacy, the willingness of the team to go the other way during the crisis, earlier experience of using the introduction of digital technologies, and others.

2. Small businesses that have previously worked in both online and offline markets have more advantages in this case. Meanwhile, these companies should still look for new products and new customers in order to maintain the company's liquidity and be competitive with those companies that are beginning to actively change due to the current situation in the world.

3. Direct communication with customers through new tools is becoming increasingly important in times of crisis. Clients should not get lost or go to a potential competitor due to lack of technical capabilities. For this reason, the digitalization of sales functions is extremely important. Such digitalization can not only increase sales, but can also help improve the quality of communication with old customers and establish communication with new customers.

4. In today's unstable environment, a company that strives to always have a stable income should definitely work on a crisis management system that implies the development of digital literacy. Companies need to develop concepts for strategic digital transformation with a long-term

perspective. Here we should consider the fact that without basic knowledge it will not be possible to deploy a full-scale transformation of the existing business model from scratch, that is, all employees of the company should be familiar with the basics of digital literacy, without which it will be difficult to continue the development of the digital business model.

5. Our research has shown that the transformation path of each company is different. In the current situation, it is impossible to avoid mistakes, but only through testing we can find the right solution. The chosen path may not always be correct, but it can be dynamic and change in accordance with existing needs. When a company introduces some kind of trans-formation, after a while the result is visible, and if this result is unsatisfactory, the firm can adjust its planned path. Summarizing all of the above, we can say that the implementation of digital innovations is an ongoing process, it cannot be implemented once and for all. After all, the world is changing, which means that we must be dynamic along with the trends of the time.

6. The views of internet marketers on the functions of the site and its promotion channels have also changed. The main criteria for evaluating Internet marketing tools are costs, the duration of return on investment (the speed of the onset of the effect and the possibility of its persistence for a long time) and the target indicator (the ability to work on gaps in the process of communicating with customers).

As practical recommendations for small businesses, we can indicate that the use of modern tools for remote work with clients seems necessary to us in a crisis. Along with the transition to the digital space, the volume of the company's data is gradually increasing, so the company needs more tools to maintain its status in the market and attract customers. With an urgent transition to online work, it is difficult to simultaneously train all personnel in new functions in their work, therefore, it is necessary to constantly improve the qualifications of all employees of the company, since it is difficult to quickly transfer all management functions to unprepared people. One mistake can lead to another, since all business processes are usually interconnected with each other.

And the last thing we would like to take away from our study is the fact that at the moment no one can accurately predict when the crisis caused by the Covid-19 pandemic will end, so digital technologies should become our constant companions in the near future. Offline business trends are now

losing their relevance, which means that all resources should be directed as much as possible to the development of digital technologies. Ideally, a company should simultaneously develop two concepts of doing business – online and offline formats. It is to this trend that the new format of doing small business should strive in the future.

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PROBLEMATIC ASPECTS OF LITHUANIAN LEGAL REGULATION OF IMPEACHMENT PROCEDURE OF A MEMBER OF LOCAL MUNICIPAL COUNCIL

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Abstract

Although members and mayors of municipal councils are not included in the list of persons who may be subject of Impeachment proceedings under the Constitution, a peculiar variant of the institute of Impeachment is the procedure of premature loss of authority of a mayor or a member of the local municipal council, which is established in Article 25 (1) of the Law on Local Self-Government of the Republic of Lithuania. In a democratic system it is vitally important that every local politician who takes an oath takes full responsibility, regardless of whether he works in the majority or minority of the municipal council and/or to which political force he belongs. The problematic aspect is that it is very complicated to initiate the impeachment proceedings on a politician who belongs to the majority and has broken the oath, and there are almost no practical possibilities to complete it as such possibilities remain only theoretical and very poorly feasible. The main tasks of the research is to determine practical and theoretical possibilities to initiate Impeachment proceedings against politicians in the majority; to reveal the essential problematic aspects of legal regulation of Impeachment procedure of a member (or a mayor) of municipal council and to draw some solutions related to these questions analysed for Lithuanian legislator in order to improve national legal regulation. The research was carried out by employing logical, comparative, system analysis, monitoring, linguistic, empirical, synthesis and generalization methods.

Introduction

The relevance of the topic. Although members and mayors of municipal councils are not included in the list of persons (like: the President of the Republic; members of the Seimas; judges of the Constitutional, Supreme and Appeal Courts) who may be subject of impeachment proceedings under the Constitution, a peculiar variant of the institute of impeachment is the procedure of premature loss of authority of a mayor or a member of the local municipal council, which is established in Article 25 (1) of the Law on Local Self- Government of the Republic of Lithuania[1] (below in the text – Impeachment procedure). It should be noted that both the member of the municipal council and the mayor are subject to the same procedure for loss of mandate. This procedure is applied in respect of actions of local politicians in the performance of the duties of a member (or a mayor) of a municipal council, contrary to the Constitution and/or laws of the Republic of Lithuania. In a democratic system, it is vitally important that every local politician who takes an oath takes full responsibility, regardless of whether he works in the majority or minority of the municipal council and/or to which political force he belongs.

The problematic situation is that the procedure for premature termination of authority due to breach of the oath may be initiated by a group of at least 1/3 of the members of the municipal council, bearing in mind that even in 17 out of 60 Lithuanian municipalities one political party or political movement has an absolute majority[2]. The municipal council, after considering the conclusion submitted by the commission formed by the municipal council, must make a decision by the majority of votes or apply to the Supreme Administrative Court of Lithuania with a request for a conclusion – whether the municipal council member (mayor) has broken the oath or

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[1] Law on Local Self-Government of the Republic of Lithuania, Valstybės žinios, 1994, No. 55-1049

[2] See data available on the official website of the Central Electoral Commission: https://www.vrk.lt/2019-savivaldybiu-tarybu/rezultatai?srcUrl=/rinkimai/ 864/1/1506/rezultatai/lt/rezultataiTarNa riaiMeraiSavivaldybese.html

laws[3]. If the Supreme Administrative Court of Lithuania concludes that the member of the municipal council (or the mayor) of the municipality has not broken the oath and has duly exercised the powers established for him/her by the Constitution and other Lithuanian laws, the impeachment procedure for the member of the municipal council (or the mayor) must be terminated[4]. However, if the Supreme Administrative Court of Lithuania concludes that a member of the municipal council (or a mayor) has broken the oath and/or failed to comply with the requirements of Lithuanian law, in order to terminate his/her mandate, the local municipal council must make an additional decision, with no less than 3/5 votes of all local municipal council members. If such decision is not adopted by 3/5 of all the members of the municipal council, it is considered that the municipal council did not approve the loss of the powers of the municipal councillor or a mayor and regardless of the unfavourable conclusion of the Supreme Administrative Court of Lithuania – a member of the municipal council or a mayor may continue to exercise his/her powers[5]. Summa Summarum the problematic situation is that it is very complicated to initiate the impeachment proceedings for a politician who belongs to the majority and has broken the oath and there are minimum practical possibilities to complete it as such possibilities remain only theoretical and very poorly feasible.

Novelty of the topic: Although there are a number of scientific researches on individual elements of local self-government of the Republic of Lithuania, the problematic aspects of legal regulation of impeachment procedure of a member (or a mayor) of municipal council are yet to be studied.

Taking into account the research topic and the low level of investigation of the scientific subject, the main **sources** used in this research are Lithuanian legal acts and relevant court practice. In order to answer the questions of this research, firstly, the normative sources need to be analysed: Constitution of the Republic of Lithuania[6], the Law on Local Self-Government of the Republic of Lithuania, the Law on Administrative Proceedings of the Republic

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[3] Article 25-1(7) of the Law on Local Self-Government of the Republic of Lithuania, Valstybės žinios, 1994, No. 55-1049

[4] Article 25-1(9) of the Law on Local Self-Government of the Republic of Lithuania, Valstybės žinios, 1994, No. 55-1049

[5] Article 25-1(10) of the Law on Local Self-Government of the Republic of Lithuania, Valstybės žinios, 1994, No. 55-1049

[6] Constitution of the Republic of Lithuania, Valstybės žinios, 1992, No. 33-1014. Online access: https://www.lrs.lt/home/Konstitucija/Konstitucija.htm

of Lithuania[7] and also other legislative acts related to this research topic. Secondly, the analysis of the judicial practice must be carried out. It should be noted, that the Supreme Administrative Court of Lithuania was established on September 19, 2000 by Law No. VIII-1928, as the final instance administering justice in administrative cases and became operational on January 1, 2001. During this period, a total of eleven cases[8] concerning the submission of a court opinion (conclusion) were examined.

The purpose of this research: To investigate and analyse the problematic aspects of the legal regulation of the Impeachment procedure of a member (or a mayor) of municipal council.

The tasks of the research: 1) to determine practical and theoretical possibilities to initiate impeachment proceedings against politicians in the majority; 2) to reveal the essential problematic aspects of legal regulation of Impeachment procedure of a member (or a mayor) of municipal council; 3) to draw some solutions related to these questions analysed for Lithuanian legislator in order to improve national legal regulation.

The object of the research: Political, practical and legal factors influencing the Impeachment procedure of a member (or a mayor) of local municipal council.

The methods of the research: The research was carried out by employing logical, comparative, system analysis, linguistic, empirical, synthesis methods and analysis of legal documents and judicial practice. The generalization method was used to summarize the collected (analysed) research data and

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[7] Law on Administrative Proceedings of the Republic of Lithuania, Valstybės žinios, 1999, No. 13-308

[8] 17th of May (2016). Conclusion of the Supreme Administrative Court of Lithuania, in case No. I-15-822/2016; 17th of June (2016). Conclusion of the Supreme Administrative Court of Lithuania, in case No. I-17-438 / 2016; 07th of July (2016). Conclusion of the Supreme Administrative Court of Lithuania, in case No. I-19-143/2016; 16th of June (2017). Ruling of the Supreme Administrative Court of Lithuania, in case No. eI-16-442/2017; 28th of February, (2018) Conclusion of the Supreme Administrative Court of Lithuania, in case No. I-7-822/2018; 30th of May (2018). Conclusion of the Supreme Administrative Court of Lithuania, in case No. eI-15-556/2018; 12th of June (2018). Ruling of the Supreme Administrative Court of Lithuania, in case No. eI-21-525/2018; 13th of June (2018). Ruling of the Supreme Administrative Court of Lithuania, in case No. eI-20-1062/2; 13th of June (2018). Ruling of the Supreme Administrative Court of Lithuania, in case No. eI-19-438/2018; 25th of July (2018). Conclusion of the Supreme Administrative Court of Lithuania, in case No. eI-24-822/2018; 26th of November (2018). Conclusion of the Supreme Administrative Court of Lithuania, in case No. eI-29-415/2018

to formulate conclusions and suggestions. The monitoring method was also used – the author of the research was personally involved into two Impeachment proceedings as municipal council member.

Status of a member of the municipal council in the context of other elected politicians

The Lithuanian Constitutional Court has held that the Constitution provides for three types of National elections: the elections of the Seimas, the President of the Republic, and municipal councils[9]. The principles of the election of the members of the Seimas are consolidated in Paragraph 1 of Article 55 of the Lithuanian Constitution, and the legal relations in connection with the election of the President of the Republic and municipal council members are regulated, respectively, in Paragraph 2 of Article 78 and Paragraph 2 of Article 119 of the Constitution; under the Constitution – members of the Seimas, the President of the Republic, and municipal council members are elected by direct suffrage, however, the Impeachment possibility is not constitutionally enshrined only for the members of municipality. In the constitutional case of impeachment, the subjects against whom impeachment may be carried out are named by Article 74 of the Constitution of Lithuania – that is, the President of the Republic; Chairs and judges of the Constitutional, Supreme and Appeal Courts; also Members of the Parliament (Seimas).

A peculiar and very similar option of the institute of Impeachment is the procedure of premature loss of authority of a mayor or a member of the local municipal council[10], which is established in Article 25 (1) of the Law on Local Self-Government of the Republic of Lithuania. For both – the members of the Seimas and the President of the Republic as well as for members (or mayors) of municipal councils, the basis for initiating impeachment proceedings arises if a person grossly violates the given oath[11].

Paragraph 1 of Article 119 of the Constitution provides that the right to self-government is guaranteed to the administrative territorial units of the State,

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[9]   The Constitutional Court's decision of 11 July 1994 in case no 5/94

[10] Andrikiene, D. (2019). Objects and subjects of the powers of Constitutional court to give conclusions: Problem of legal regulation and the possibilities of their solution. ISBN 978-9986-704-62-1, the Law Institute of Lithuania, 42

[11] Bacevicius, V. (2008). Impeachment in the context of Constitutional responsibility: Problem aspects. ISSN 1392-6195, *Jurisprudence*, No. (9)11, 101

which are provided by law; this right is implemented through the respective municipal councils.

Interpreting, *inter alia*, the provisions of Paragraph 1 of Article 119 of the Constitution, the Constitutional Court has noted the following:

State governance and local self-government are two systems of public authority, which are consolidated in the Constitution; local self-government is self-regulation and self-action by the communities of the territorial administrative units of the State provided for by law, i.e. territorial communities that are composed of permanent residents of these units (citizens of the Republic of Lithuania and other permanent residents) in accordance with the competence defined by the Constitution and laws; such a local public authority system, operating on the grounds of self-action, is not directly subordinate to State authority institutions, is not considered equivalent to State governance, and is formed and functions on other constitutional grounds than State power.[12]

The right to self-government is implemented through democratic representation; municipal councils are institutions through which the right of respective communities to self-government is implemented; municipal council members are representatives of the respective territorial community.[13]

In this context, it should be noted, that among other things, the principles of the election of municipal council members are consolidated in Paragraph 2 of Article 119 of the Constitution; an investigation into the compliance of the impugned legal regulation, inter alia, with this paragraph is requested by the petitioner.

Under Paragraph 2 of Article 119 of the Constitution, members of municipal councils are elected for a four-year term, as provided for by law, from among the citizens of the Republic of Lithuania and other permanent residents of the respective administrative units, by the citizens of the Republic of Lithuania and other permanent residents of these administrative units, on the basis of universal, equal, and direct suffrage by secret ballot.

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[12] (*inter alia*, the Constitutional Court's rulings of 18 February 1998 and 30 May 2003, its decision of 11 February 2004 and ruling of 9 February 2007)

[13] (*inter alia*, the Constitutional Court's rulings of 30 May 2003 and 31 March 2010); they have the mandate of this territorial community (the Constitutional Court's ruling of 30 May 2003)

Interpreting, *inter alia*, the provisions of Paragraphs 1 and 2 of Article 119 of the Constitution, the Constitutional Court revealed, among other things, the following specific features in relation to the constitutional status of municipal council members[14]:

1) Under the Constitution, municipal council members may not be unequal in terms of their legal status;

2) Under the Constitution, municipal council members have no immunities granted such as those granted to the President of the Republic, the members of the Seimas, the members of the Government, and judges for performing functions assigned to them under the Constitution in order to implement state power, i.e. municipal council members have no inviolability of their person, and no special procedure applies to municipal council members for holding them criminally and/or administratively liable.

In this context, it should be noted that the Constitution, inter alia, Article 119, does not provide for any specific status of a municipal council member who holds the office of mayor.

It should be noted, that under the Constitution, inter alia, Paragraph 2 of Article 119, the status of elected municipal council members, as representatives of the respective territorial community, has certain specificities compared to the status of other persons who hold no mandate of any territorial community; however, municipal council members are not granted any immunities established for persons who perform certain functions while implementing state authority; inter alia, no special procedure applies to municipal council members for holding them criminally liable.

Overview of the national legal basis on special impeachment procedure of a member (or the mayor) of the municipal council

First of all, the legal status of a member of municipal council (or a mayor) is discussed in the context of premature loss of authority (impeachment) procedure. Article 22 (1) of the Law on Local Self-Government provides that – *the powers of a member of a newly elected municipal council shall begin and the previous term of office of a member of the local municipal council shall end on the day the new elected municipal council convenes for the first meeting*

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14   (*inter alia*, the Constitutional Court's rulings of 24 December 2002 and 30 May 2003)

and the members of council take the oath. This provision clarifies that the beginning of the authority of a council member (or a mayor) is linked to the oath of the local council member (or a mayor). When interpreting this legal norm, it must be concluded that the powers and oath of a council member cannot be independent institutes, and a council member (a mayor) has no choice to swear or not to swear, therefore it is clear that only when a council member (a mayor) swears, a council member (a mayor) acquires his/her powers, which he/she exercises through the rights and duties of a council member. The same is applicable for other elective politicians – the members of the Seimas and the President of the Republic of Lithuania.

Paragraph 2 of Article 22 of the Law on Local Self-Government enshrines the same text of the oath to a local council member and mayor – *I swear to respect and implement the Constitution and laws of the Republic of Lithuania, to conscientiously perform all the duties of a member of the municipal council and to refrain from actions that violate the rights and public interests of the residents*. Thus, a linguistic assessment of the text of the oath shows that a member of the council (a mayor) is granted not only rights but also duties. Article 23 of the Law on Local Self-Government lists the duties of a member of the council which must be observed. The non-observance of these duties may be related to the breach of an oath: 1) participate in the meetings of the municipal council; 2) be a member of one committee (except the Control Committee); 3) participate in the meetings of the committee of which he/she is a member; 4) in accordance with the procedure laid down in the Council Regulation, to inform the mayor and/or members of the council or other persons who are jointly involved in the preparation, consideration or decision-making of the existing conflict of interest, to declare resignation and, if the resignation has been accepted, not to participate in any further preparation, deliberation or decision making; 5) to communicate regularly with the voters and report to the voters at least once a year in accordance with the procedure established by the Council Regulation.

The procedure of deprivation of the power of a member (a mayor) of the municipal council (impeachment procedure), is one of the forms of public democratic control. This is the most critical self-protection measure of civil society against members of municipal councils who disregard the law and the Constitution. Members of the municipal council who have broken their oath by improperly exercising their powers to follow the law and act in the interests of the communities that elected them may be subject to impeachment proceedings, after which, council member (mayor) may be deprived of his

or her mandate. An oath, in any sense, obliges the sworn person to behave as the written in text of the oath. An oath, like a promise or commitment, presupposes a certain duty, and since they are given of free will, this forms a moral imperative to carry out an accepted duty.

In order for the public protection measures in question to be put into practice, it is essential that the legislation governing the implementation of impeachment proceedings be properly functioning. It is very important that all municipal council members (mayors) are equal before the law, regardless of whether they are in the political majority or minority of the municipal council.

When discussing the impeachment procedure of a municipal council member, it is important to note that at least 1/3 of the municipal council members have the right to submit to the municipal council the procedure for deprivation of mandate of the municipal council member or the mayor. Such a request to initiate the procedure for deprivation of the powers of a member of a municipal council or the mayor is possible when at least one of the following grounds exists:

    1)   he or she has broken his or her oath;
    2)   he does not exercise the powers established by law.

The submission to initiate the procedure for deprivation of the powers of a member of the municipal council or the mayor must be set out in writing and signed by all persons forming a group of at least 1/3 of the members of the municipal council. The submission must be submitted to the local municipal council no later than within one month from the day of the discovery of the breach of the oath or violation of the law. It should be noted that according to the established case law precedent, non-observance of the term precludes impeachment proceedings[15].

The application to initiate the procedure for deprivation of the powers of a member of the council (or a mayor) shall specify the concrete person; proposals to initiate the procedure on at least one of the grounds specified therein, arguments, evidence and sources substantiating these proposals. Upon receipt of the submission to initiate the procedure for deprivation of the powers of a member of the municipal council or the mayor, the municipal council at the next municipal council meeting, but not later than within one month from receipt of the submission, makes a decision to form a commission

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[15]   16th of June, (2017). Ruling of the Supreme Administrative Court of Lithuania, in case No. eI-16-442/2017

to investigate the submitted facts and set a term by which the commission must submit a conclusion. The Commission shall be composed of representatives of all the political groups in accordance with the principle of proportionality.

The local municipal council, after considering the conclusion submitted by the commission, makes one of the following decisions:

1) to apply to the Supreme Administrative Court of Lithuania with a request to submit a conclusion as to whether a member of the municipal council (or the mayor) has broken his oath and/or has not properly exercised the powers specified in the law (specified in the request);

2) there is no reason to apply the procedure of deprivation of the powers of a member of the municipal council or the mayor.

The municipal council, having decided to apply to the Supreme Administrative Court of Lithuania, submits the application to this court not later than within 6 months from the date of clarification of at least one of the grounds established in the law and appoints the municipal council member(s) to represent the municipal council in court. It should be noted that according to the established case law precedent, non-observance of the term precludes impeachment proceedings[16].

If the Supreme Administrative Court of Lithuania concludes that a member of the municipal council or the mayor has not broken the oath and/or has duly exercised the powers established for him/her by law, then the procedure for loss of powers of the municipal councillor or mayor shall be terminated.

Finally, if the Supreme Administrative Court of Lithuania concludes that a member of the municipal council or the mayor has broken the oath and/or failed to comply with the requirements of Lithuanian law, the local municipal council must to make an additional decision by not less than 3/5 votes of all local municipal council members in order to deprive the relevant member of the municipal council or the mayor of his or her mandate. If such a decision is not adopted by not less than 3/5 of all the members of the municipal council, it is considered that the municipal council did not approve the loss of the powers of the municipal councillor or mayor and regardless of the unfavourable conclusion of the Supreme Administrative Court of Lithuania – a member of the municipal council or the mayor may continue to exercise his or her powers.

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16 Ibid.

The special impeachment procedure of a member (or the mayor) of municipal council can be divided into five stages:
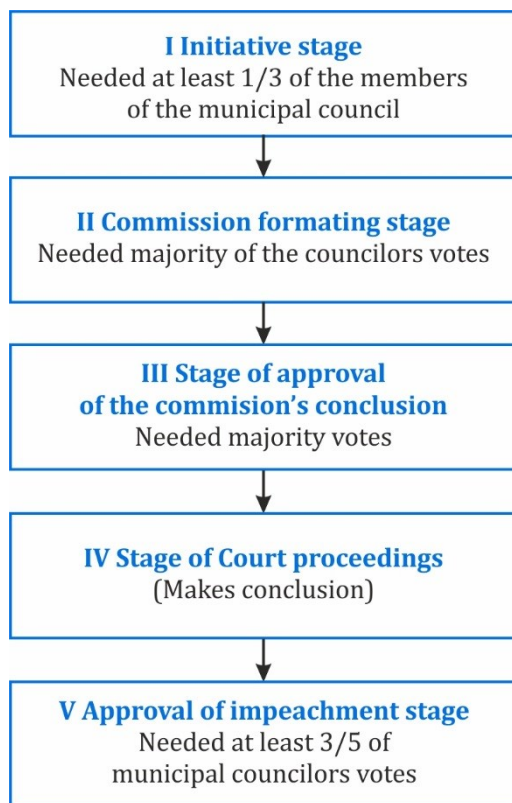
Figure 1. **Problematic Aspects (Discussion)**

First of all, it is important to note that the institute of deprivation of the mandate (impeachment) of a member of the Municipal Council (or the mayor) is not directly enshrined in the Constitution; therefore it does not fall within the jurisdiction of the Constitutional Court. Constitutional impeachment is a special procedure when the issue of the constitutional liability of the highest State officials specified in Article 74 of the Constitution is resolved. Elected State politicians and top officials can only be removed from office through impeachment proceedings. It is this definition of impeachment that prevails in the official doctrine of the Constitutional Court of the Republic of Lithuania. The purpose of impeachment proceedings is not only to remove the offending public official (politician) from office,

but to increase the responsibility of public officials towards society and thus contribute to ensuring the principle of separation of powers[17].

Although the impeachment is intended to prevent public officials from shirking responsibility, this institute has a number of loopholes. One of them is the separation (elimination) of members and the mayors of municipal councils from the doctrine of impeachment. In this way, members of the local municipal council (mayors) who broke the oath, avoid the real responsibilities and avoid being banned from running for the same post or other positions in which the oath must be taken.

We already have such situations in practice, for example: In spite the fact that a member of the Klaipeda Municipal Council broke the oath, he was re-elected to the same position in the municipal elections[18]. It is also interesting that – if a person resigns on his own initiative during the impeachment proceedings, the person does not suffer any negative consequences at all, because the impeachment proceedings (administrative law) are simply terminated. Comparing this practical situation with President Rolandas Paksas[19], who was removed from office by the way of impeachment proceedings (Constitutional), the differences are obvious – R. Paksas still has no opportunities to run for any elected office[20]. Similarly, due to the gross breaking of the oath, the Central Electoral Commission of Lithuania banned a member of the Seimas who broke the oath to participate in the elections to the Republic of Lithuania in 2020[21].

With regard to the procedure for the removal (impeachment) of a member of the municipal council (or the mayor), it is important to note that the process itself is very difficult to implement and does not ensure real prevention of breaking the oath. After analysing the stages of the procedure of removal (impeachment procedure) of a member of the municipal council (or the mayor), we see that without the final vote of 3/5 of the members of

[17] Rasiukevicius, O. (2017). The Following Impeachment: Concept, Advantages and Disadvantages. ISSN 2029-4239, *Law review*, No. 1(15), 62

[18] Media access: https://www.delfi.lt/news/daily/lithuania/rinkeju-sprendimas-klaipedoje-priesaika-sulauzes-titovas-grizta-i-miesto-taryba.d?id=80519465

[19] European Court of Human Rights: Case of Paksas v. Lithuania – Application No. 34932/04 (2011)

[20] Media access: https://www.15min.lt/max/naujiena/ivykiai/r-pakso-apkalta-ereliu-i-politikos-olimpa-kilusio-politiko-sparnus-pakirpo-1226-1311016

[21] https://www.delfi.lt/news/daily/lithuania/vrk-neregistravo-kandidates-i-seima-venckienes.d?id=85177959

the municipal council, it is impossible to remove the oath-breaking politician. Which presupposes an obvious political element and does not correspond to the purpose and essence of the institute of impeachment[22]. Moreover, in practice, we have cases where impeachment proceedings are brought against the minority (opposition) politicians of the council as a means of coping against criticism of the local government[23]. The procedure of removal (impeachment) of a member (or the mayor) of a local municipal council itself is also idle because the majority votes of the council are required to initiate and obtain a Conclusion of the Supreme Administrative Court, therefore, politicians working in opposition of the council do not have a real chance of even initiating impeachment proceedings against a majority politician who has broken the oath, even presuming that his oath would be clearly violated.

For example, in the United States of America (Seattle example), the council itself makes the decision to remove the mayor from office by impeachment[24], but the final decision is still up to the Court. In the United States of America, there are a number of cases where local politicians, who have been removed from the council by impeachment[25], are returned back to the previous positions by the Court. The final Court decision does not have to be approved by a vote of the council like in Lithuania. It is considered, that the procedure for the loss of the mandate of a member of a local municipal council (or the mayor) in Lithuania, is in conflict with the Constitution and violates the principle of separation of powers, when the vote of the local council is placed above the Conclusion submitted by the Supreme Administrative Court of Lithuania.

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[22] Sileikis, E. (2012). In Search for Conceptual Comprehension of the Institute of Impeachment. ISSN 1392-6195, Jurisprudence, No. 19(3), 960

[23] Media access: https://kauno.diena.lt/naujienos/lietuva/politika/druskininku-valdantieji-siekia-tarybos-pasalinti-penkis-opozicijos-atstovus-860645

[24] The removal of the Mayor by the City Council is governed by Article V, Section 10 of the Seattle City (USA) Charter, which reads: The Mayor may be removed from office after a hearing, for any wilful violation of duty, or for the commission of an offense involving moral turpitude, upon written notice from the City Council at least five days before the hearing. He or she shall have the right to be present, to the aid of counsel, to offer evidence and to be heard in his or her own behalf. Upon the affirmative vote of two-thirds of all the members of the City Council, acting as a court of impeachment, the office shall become vacant." Reference: https://library.municode.com/wa/seattle/codes/municipal_code?nodeId=THCHSE_ARTVEXDE_S10REMA

[25] The New York Times (2019). How Does It Feel to Be Impeached? These Mayors Can Tell You All About It. Online access: https://www.nytimes.com/2019/10/04/us/impeached-mayors.html

Conclusions and recommendations

1. The institute of deprivation of the mandate of a member of a municipal council or the mayor (impeachment institute) is not directly enshrined in the Lithuanian Constitution, therefore local politicians who have broken the oath do not face constitutional responsibility and subsequently have no negative consequences to run for elective positions again, which obviously negatively affects the prevention of breaking the oath.

2. The procedure of losing the mandate of a member of a local municipal council (or the mayor) in Lithuania is very poorly regulated legally; in some aspects it is even unconstitutional, when the decision of the local municipal council is placed higher than the Conclusion of the Supreme Administrative Court.

3. It is difficult and sometimes even impossible to initiate impeachment proceedings for a local politician who belongs to majority and has broken the oath. Practically it is very complicated to complete impeachment for majority politician and there are only theoretical possibilities.

4. In order to ensure equal responsibility of all local politicians for breaking the oath, it is necessary to create a special legal condition to minority of the local council for the initiation of impeachment proceedings against majority politicians. Also, the approval of the conclusion of the Supreme Administrative Court of Lithuania in the municipal council should be refused, because it is a manifestly excessive requirement, which reduces the power to enforce court decisions, exceeds the competence of the municipal council and finally contradicts the constitutional principle of separation of powers. Moreover, it creates the conditions for political influence to avoid responsibility for the gross breaking of an oath.

EMERGING TRENDS IN THE SPORTING GOODS INDUSTRY IN NORTH AMERICA AND EUROPE

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Abstract

Sporting goods industry is a multibillion industry including apparel, gear and equipment. Beyond that, it is currently under flux of change. Disruptive actions cause emergence of new trends on which stakeholder must stay keen. This study analyses consumers' economic, and technological trends within the sporting goods industry among different markets and stakeholders. Stakeholders such as businesses, organizations and consumers are shifting towards advanced sport techniques, hence the sporting goods industry faces tremendous challenges and changes. The empirical part of the research was conducted with quantitative research methodology utilizing descriptive and analytical approaches. Data was collected from credible secondary data sources such as international institutions, governments, and databases. Data analysis was elaborated with help of descriptive methods and statistical tests.

Introduction

In the past decade, research has significantly focused in particular separately on industrial trade, separately on sport, and separately on goods itself. Hence, authors integrated elements of goods, trade and emerging trends together with the sporting industry. Subsequently, the sporting goods industry is crucial in the world of sport for athletes as well as in the leisure time for practitioners in order to compete, perform and most importantly enjoy sport. It remains unclear what key challenges may arise for stakeholders within the sporting goods industry in the future.

Online consumers act, make decisions, and purchase sporting goods differently in comparison with store customers. Similarly, online consumers purchase with different approaches and manners when it comes to their gender. Online market place provides tremendous opportunities for sporting goods e-retailers to reach a variety of customers.

Digital technology is becoming part of our everyday life. Stakeholders involved within the sporting goods industry stay in need of explicit, and clear importance of digital technology understanding in the future development of sports and its goods and services.

Emerging trends may be caused by disruptive actions. For instance, it can be caused by natural disasters, man-made disasters or just by technological advancement. However, disruptive actions create desperate times, and desperate times requires desperate measures (Kabiraj & Lestan, 2020). With this in mind, governments, society, institutions and businesses needs to find desperate measures in order to respond to emerging trends. The aim of this research was to find various critical and key emerging trends in the sporting goods industry in North America and Europe.

The principal objective of this research paper was to conduct quantitative research, integrating both descriptive and analytical research approaches. The main purpose for that was to holistically observe secondary data in order to address key emerging trends from social, economic and technological perspectives within the sporting goods industry among different markets.

The fundamental question of this research stands as follows: "What are the key emerging trends within the sporting goods industry?"

Table 1

Explanation of notions used in this research paper

Notion	Explanation
ADM	"Apparent Domestic Market" (Calculation: Shipments + Imports – Exports)
Athleisure wear	Apparel that can be worn for sport and leisure time activities
E-retailer	Retailer aiming to execute customer sale of goods and services without any physical face-to-face interaction but entirely online
TOT	"Terms of Trade" represents the ratio between exports and imports prices

Theoretical framework

Consumer behaviour in the sporting goods industry

According to previous research, females tend to have weaker interconnection between intentions and desires. Consequently, e-retailers should stay keener on developing various marketing strategies in order to persuade females. It is important to note that retailers must decrease female's level of risk perception when females participate in the purchasing stage of sporting goods online (Chiu, Kim & Won, 2018).

Versatility of the apparel is relevant for women, according to McKinsey (2021), women tend to purchase athleisure wear which makes it convenient due to its versatility. Hereby, women prefer to seek athleisure wear because they do not have to change clothes for various instances. The trend of demand of athleisure wear is likely to be driven by women during the upcoming years.

Preference of online shopping of consumers in the United Kingdom grew annually since 2012. In 2019 approximately 60 % of consumers purchased sporting goods including accessories, equipment and gear online. On the contrary, in 2020 during unprecedented times of coronavirus, preference of online shopping dropped down to 55 %. (Sabanoglu, 2020). This could have been influenced by several aspects; however, it is important to note that online shopping on the whole during 2020 reached its record numbers. (Chang & Meyerhoefer, 2020). Hence, sporting goods companies operating in United Kingdom must be aware of the fact that more consumers shifted towards online shopping.

Qualities and incentives of consumers purchasing sporting goods in United States and Canada diverge. For Canadians the most significant aspect of purchasing sporting goods is comfort, and the quality of the product, followed

by price, which is the third aspect Canadians are conscious of. Additionally, the style of the product plays a key role in decision making of Canadians. Despite the fact that style is somewhat relevant for Canadians, less than 4 % of consumers perceive brand as vital (Bedford, 2020).

Opposed to consumers in Canada, consumers in United States are sensitive to comfort and good fit of the product. Beyond that, durability and high quality of the product is notable for consumers. A radical aspect that consumers in the United States are conscious of is the low price of the sporting goods. More than 40 % of consumers make decisions based upon the price (Statista Research Department, 2021).

Probably one of the most important factors from the customer behaviour perspective is the attitude towards sustainability. A previous apparel survey by McKinsey (2020), found out that 67 % of consumers consider sustainability as a significant aspect in purchase decision making.

Despite quality, sustainability, and the shift to online shopping, the relationship between brand image and brand trust among consumers plays a key role in purchase decision making.

 Deheshti, et al. (2016), observed behavioural tendencies of sporting goods customers. Findings of the study highlighted a significantly positive relation between brand trust and brand image. As a result of the observation, authors found out that high brand image evokes high brand trust towards the sporting good company. Additionally, weak performance of sports organizations or sports clubs leads to low self-esteem of customers, staff and athletes. This can also to a certain extent have an impact on the brand image and reputation of the sporting goods company and undermine the brand image and reputation of the sporting goods manufacturer.

Technological evolution in the sporting goods industry

Awareness of commerce managers of business application is necessitous. It is essential for business managers to understand that e-commerce in any industry can easily influence and negatively impact business development with lack of technological information and consumer behaviour (Zhou, 2015).

According to Zhou (2015), sporting goods organizations lack competencies related to the prospective value of digital technology. Therefore, sporting goods organizations should develop and incorporate technology into their business models in order to become independent from highly specialized

technology firms. The current state of culture on the online market place and e-commerce faces serious problems with the future evolvement of trade.

According to Chiu, et al. (2018), e-retailers within the sporting goods industry are generally unsuccessful in retaining customers. For this reason, e-retailers still lack integration of sustainable and long-lasting customer loyalty programmes in the digital space. In this context, there is still gap among e-retailers to enhance efficient integration of digital remarketing therewith closely linked with retargeting as well.

Eventually, the establishment of favourable online shopping environment, is crucial from e-retailers' perspective, whereas consumers will feel informed, secured and most importantly delighted (Chiu & Won, 2016). Nevertheless, highly and well-developed websites, platforms, and applications with qualitative information can stimulate positive emotions of consumers when purchasing and browsing sporting goods prime products (Chiu & Won, 2016).

Global market with sporting goods

This section describes and analyses the mix of the sporting goods industry. The main principle of this section is to provide in-depth understanding of the prime products of the sporting goods industry, and specify how global trade of sporting goods is handled within particular geographical blocks and markets. The main focus of international trade of sporting goods on the global scale can be divided among three general geographical blocks, particularly to Europe, NAFTA and Asia-Pacific.

Global trade of sporting goods has tendency of concentration on developed economies and emerging economies trade. As a matter of fact, NAFTA and European sporting goods trade is predominantly traded within the region or together. Roughly two thirds of NAFTA and European trade of sporting goods was with other European or NAFTA countries. Contrary to NAFTA and Europe, Asian total sporting goods trade with NAFTA and Europe has declined from 1974 to 1994, however internal trade within the Asian block has expanded and skyrocketed (Andreff, 2004).

Sporting goods industry is a multibillion industry. According to Statista Research Department (2021), global sports market value is estimated at 471 billion US dollars. United States is the leading country of the global sports market with 32.5 % share. Indeed, European Union's exports and imports of sporting goods in 2019 accounted for more than 23.5 billion euros (Eurostat, 2020). Last but not least, within the Asia-Pacific block,

sporting goods, in particular apparel market was predicted to generate roughly 63 billion US dollars (Bisht, n.a.).
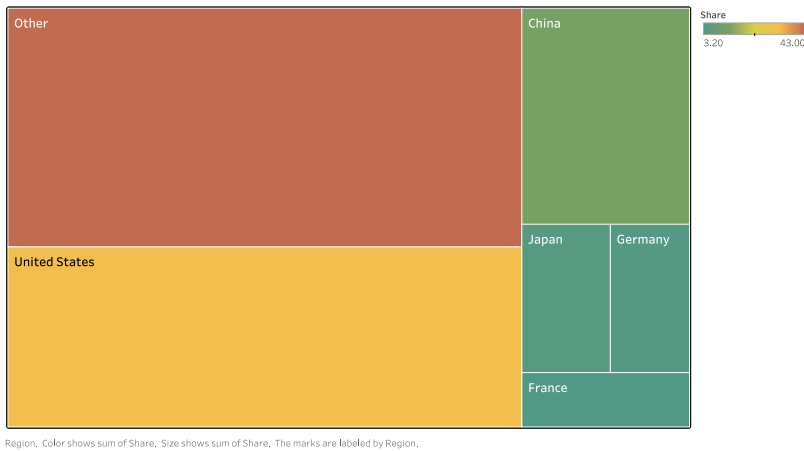
Figure 1. **Tree map chart above portrays % share of the sports market worldwide in 2018 by country** (Authors' own work, Data: Statista[26])

Prime products of sporting goods industry

Based upon qualitative analysis of numerous secondary data sources, the authors developed a diagram that illustrates prime products within the sporting goods industry. Prime products of the sporting goods industry which are traded on the global scale include equipment, gear and apparel which are necessary for the execution of indoor as well as outdoor sports.

First and foremost, apparel as one pillar of prime products can be sub-divided to clothing, accessories and footwear category. By clothing and footwear, it is clear what belongs to the apparel pillar, however, the authors considered accessories – goods such as caps, gloves etc as a part of apparel pillar.

Besides that, gear as the second pillar of prime products within the sporting goods industry consists of heart rate monitors, smart sport watches, earphones, headphones etc.

Last but not least, the third pillar of prime products is equipment which can be sub-divided in relation with season, type of sport and also leisure time, recreation. Respective items, and tools that can be used for recreation,

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[26] Statista Research Department (2021). *Sporting Goods Industry – Statistics & Facts.* Statista: https://www.statista.com/topics/961/sporting-goods/

leisure time which also belong to prime products of the sporting goods industry are for instance, leisure time goods such as bicycles, fishing and hunting equipment, boats.
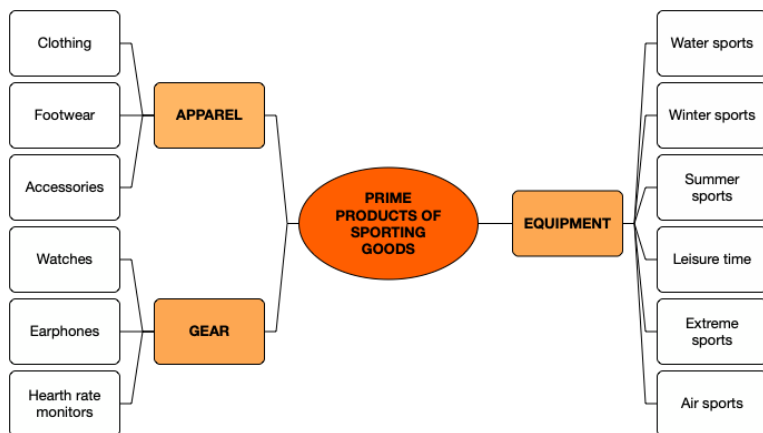
Figure 2. **Diagram above illustrates examples of prime products within the sporting goods industry by its usage** (Author's own work)

Europe – overview of international trade of sporting goods

The main driver of the European exports in sporting goods in 2018 was the export of sports footwear. In fact, export of sports footwear accounted roughly for 35 % of the total value of sporting goods exports traded by Europe in 2018. In fact sport footwear accounted for Luxembourg's 77.8 % share of total country export. Hence, together with Belgium (76.6 % share) both states lead sporting goods exports with sport footwear. (Eurostat, 2020).

Eventually, boats in addition to bicycles, and gymnastic – athletic articles were the only three categories accounting for more than 15 % share of the European's exports in 2018. In particular, Cyprus was the leading export country of boats and water sport equipment within Europe with 99.5 % share of total country's export, followed by Malta's 79.5 % share and Finland's 60.6 % share (Eurostat, 2020).

Evidently, boats, together with sporting footwear, gymnastic – athletic articles were the only three sporting goods product categories which increased in export share from 2013 to 2018.

In comparison with exports, the main driver of imports of the sporting goods in 2018 in Europe was sport footwear with share of almost 40 % of the total imports. Followed by water sport goods and boats which accounted for 22.3 % of the total imports of sporting goods.

Canada – overview of international trade of sporting goods

A close look at the export trend of sports footwear clearly shows how exports fluctuated over the past 8 years. One year the export increased, and a year later it decreased. In 2019, Canada exported sports footwear accounting for more than 2.5 million US dollars. In comparison with the year 2017, when export value was more than 1.8 million US dollars. Overall, Canada increased export volume of sports footwear roughly by 28 % (Trend Economy, 2021).

In contrast to sports apparel, exports of sports equipment in 2019 was certainly at a higher level. Total value of export of sport equipment for exercising accounted just over 41 million US dollars. Obviously, the trend of exercise equipment exports has grown rapidly since 2014, when the value of exports was less than 27 million US dollars. Altogether, the export value of sports exercise equipment from 2014 to 2019 increased considerably by more than 35 % (Bedford, 2020).

Imports of sports footwear dramatically outweigh exports. In fact, imports of sports footwear were steady over the past decade. In 2019 the value of imports of sports footwear equalled roughly to $ 35 mil. (Bedford, 2020).

In case of sporting exercise equipment, the scenario of imports in Canada similar to sports footwear remained stable. However, the volume of exercise equipment imports was rapidly growing larger. In 2019 total imports of sporting exercise equipment accounted approximatelly for $ 350 mil.

Domestic market share of sporting goods, in other words intra region sales are in economics calculated by exports subtracted from shipments and divided by ADM. In 2015, only 23.9 % of manufactured sporting goods remained within Canada. Recently, in 2019, evidence shows a remarkable increase in establishment of athletic manufacturing entities on the territory of Canada. Namely, in Ontario more than 100, in Quebec more than 75, and in British Columbia more than 40 manufactures established production of athletic goods (Government of Canada, 2017).

United States – sporting goods market overview

Revenues of sports equipment in the United States, maintained a slow but steady growth. In 2012, revenues from sports equipment accounted for more than 13 billion US dollars. The average annual growth from 2012 till 2019 reached approximately half billion US dollars each year. In 2019, revenues from sports equipment achieved a value higher than 16 billion US

dollars. Detailed distribution of revenues from sports equipment had significant difference in sports equipment by season. Namely, winter sports equipment outweighed summer sports equipment since 2012, and furthermore, projections are forecasted to stay the same until 2023, where revenues incoming from winter sports equipment will be greater than summer sports equipment (Statista Research Department, 2021).

The prime product, in particular athletic wear as well as swimwear highlight an interesting fact within the United States market. Major consumers of athletic wear and swimwear are women, and since 2012, sales of women atlethic apparel and swimwear accounted for more than half of the total sales. (Statista Research Department, 2021).

Retail trade of sporting goods in United States on the online scale rapidly grew over the past decade. In 2010, the total value of online sales of sporting goods was below 7.5 billion US dollars, whereas, 8 years later in 2018 the total value of online sales of sporting goods in the United States reached a level higher than 22 billion US dollars. It is without doubt that awareness of online shopping is growing since total online sales increased roughly by 15 billion US dollars just over a period of 8 years (Statista Research Department, 2021).

Methods

Empirical method

The authors of this research conducted quantitative research utilizing descriptive as well as analytical research approaches. Of all the possible research methods, the quantitative research method was the most suitable to analyse and quantify data from several valid and credible sources. As of the current state, the topic of sporting goods industry is not a highly developed subject in the field of science and research.

The quantitative research method significantly enabled the authors of this research to describe and analyse the emerging trends of the sporting goods industry in North America and Europe from the social, technological, and economic perspective.

Within the quantitative research method, descriptive and analytical research approach relies on the description of the status quo, in other words the current state of the particular affairs. Mainly in business and social sciences, the term Ex post facto research stands for the descriptive research

methodology. In the case of ex post facto research, researchers do not have any control over the variables within the research. The only control of researchers in the descriptive research methodology is to report the status quo or what has happened previously. To summarize, ex post facto research utilizes descriptive addressing of frequency or preference on a measurement scale (Kohtari, 2004).

Data collection and analysis

It is important to note that data analysis of this research was elaborated with analytical and descriptive research observation of secondary data. Secondary data were collected from international institutions and governmental databases. In addition to analytical and descriptive observation, authors conducted statistical tests of correlations and likelihood scenarios.

Results

Pairwise correlations between export volume and import volume in Europe in relation to the global share of sports market share characterize distribution and impact of international trade on the global market share. The data analysed clearly shows that there is almost no variance |.003| of export volume in correlation with the import of sporting goods in Europe. Unlike, the global sports market share, export volume of sporting goods in Europe has correlation variance of |.021| with the total global sports market share. In fact, the highest correlation variance was between import volume of sporting goods in Europe in relation to the global sports market share |.036| (see Table 2).

Table 2

Representation of posterior distribution characterization for pairwise correlations between export volume, import volume and sport markets share within the European Union

			Export volume	Share	Import volume
Export volume	Posterior	Mode		-.950	.959
		Mean		-.857	.927
		Variance		.021	.003
	95 % Credible Interval	Lower Bound		-.997	.830
		Upper Bound		-.561	.991
	N		10	5	10
Share	Posterior	Mode	-.950		-.924

		Mean	-.857		-.796
		Variance	.021		.036
	95 % Credible Interval	Lower Bound	-.997		-.995
		Upper Bound	-.561		-.408
		N		5	13	5
Import volume	Posterior	Mode	.959	-.924	
		Mean	.927	-.796	
		Variance	.003	.036	
	95 % Credible Interval	Lower Bound	.830	-.995	
		Upper Bound	.991	-.408	
		N	10	5	10

a. The analyses assume reference priors (c = 0), (Authors' own work)

Mean likelihood of export volume in Europe and global sports market share of sporting goods shows smooth correlation, and slight kurtosis in Posterior Distribution.

Figure 3. **Line charts above illustrate correlation likelihood scenarios between export volume of sporting goods in Europe and the global sport market share** (Authors' own work)

Mean likelihood of export and import volume in Europe sporting goods shows flat correlation, and sharp kurtosis in Posterior Distribution.
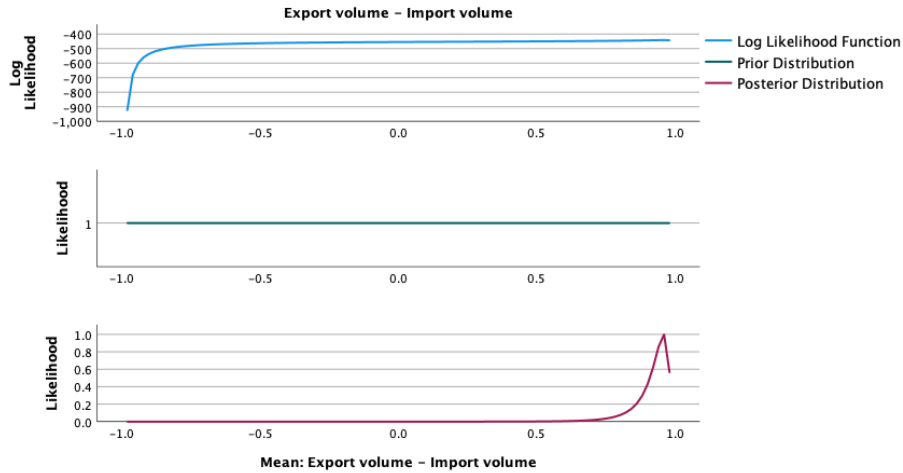
Figure 4. **Line charts above illustrate correlation likelihood scenarios between export and import volume of sporting goods in Europe** (Authors' own work)

Mean likelihood of import volume in Europe and global sports market share of sporting goods shows smooth correlation, and blunt kurtosis in Posterior Distribution.
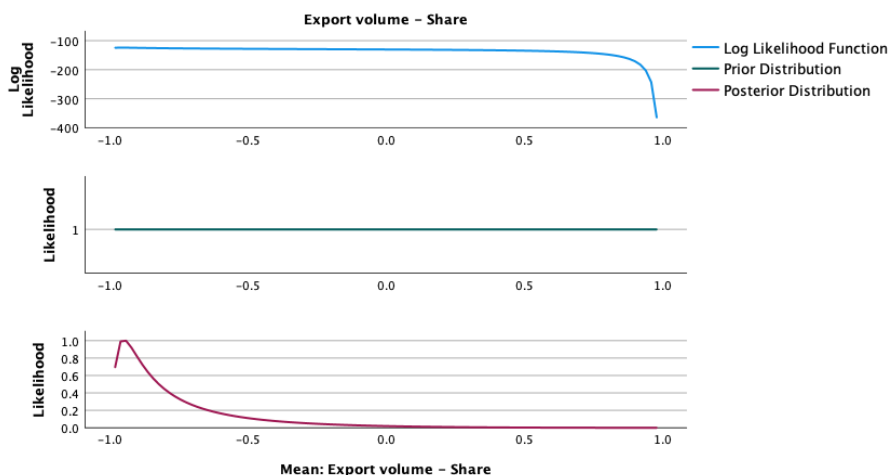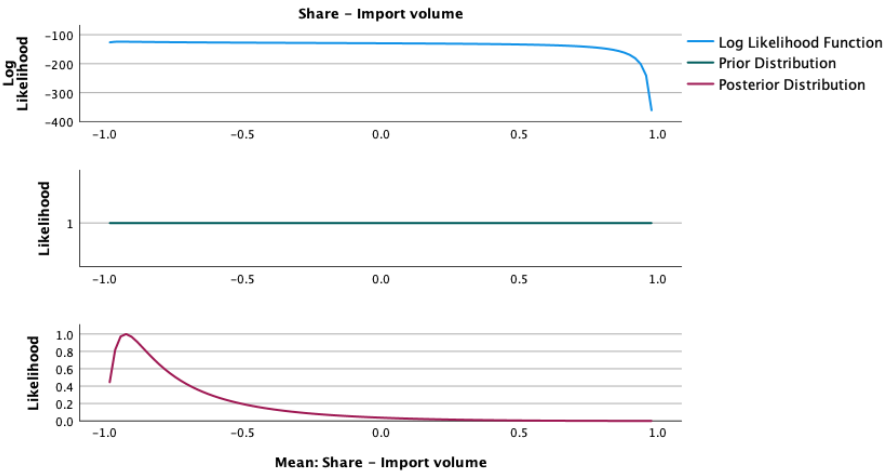

Figure 5. **Line charts above illustrate correlation likelihood scenarios between global sports market share and import volume of sporting goods in Europe** (Authors' own work)

Emerging consumer trends

Comparative analysis of customer behaviour of sporting goods consumers in North America addresses key differences in qualities and incentives in purchase decision making between the United States and Canada. The results of the comparative analysis among United States and Canada show divergence and alignment in significant incentives of sporting goods consumers as a reason for this circumstance.

For Canadian consumers, the most crucial incentive in purchase decision making is comfortability of the sport product, because more than 30 % of consumers in Canada perceive comfort as a significantly relevant aspect in purchase decision making. Secondly, the quality of the product is perceived by more than 25 % of consumers as relevant incentive in purchase decision making. Thirdly, it is price that is the relevant incentive in purchase decision making of Canadian consumers which interests roughly 22.5 % of consumers. The least relevant incentive of Canadian consumers in purchase decision making of sporting goods is the country of origin of the sporting goods because less than 2.5 % of consumers consider the origin of the product relevant in purchase decision making. Altogether, evidence shows that Canadian consumers of sporting goods prefer comfort and quality over price, whereas the origin of the product does not play any role in purchase decision making.

Opposed to Canada, sporting goods consumers in the United Stated diverge in terms of the most crucial incentives when it comes to making purchasing decisions. The reason why the United States diverge is due to low and slight difference of top three incentives in purchase decision making. According to evidence, the most crucial incentive of US consumers in purchase decision making of sporting goods is quality, accounting roughly for 24 %. Secondly, comfort is perceived by approximately of 23.5 % consumers crucial and relevant in purchase decision making. In the third place, it is price that is a relevant incentive for more than 22 % of consumers of sporting goods in the United States. Another divergence is that approximately 7.5 % of consumers in US perceive the country of origin of the product somewhat crucial. To summarize, evidence illustrates that US consumers of sporting goods are synchronously keen on quality, comfort and price, however, the origin of the sporting goods is to a certain extent relevant in the purchase decision making of US consumers.
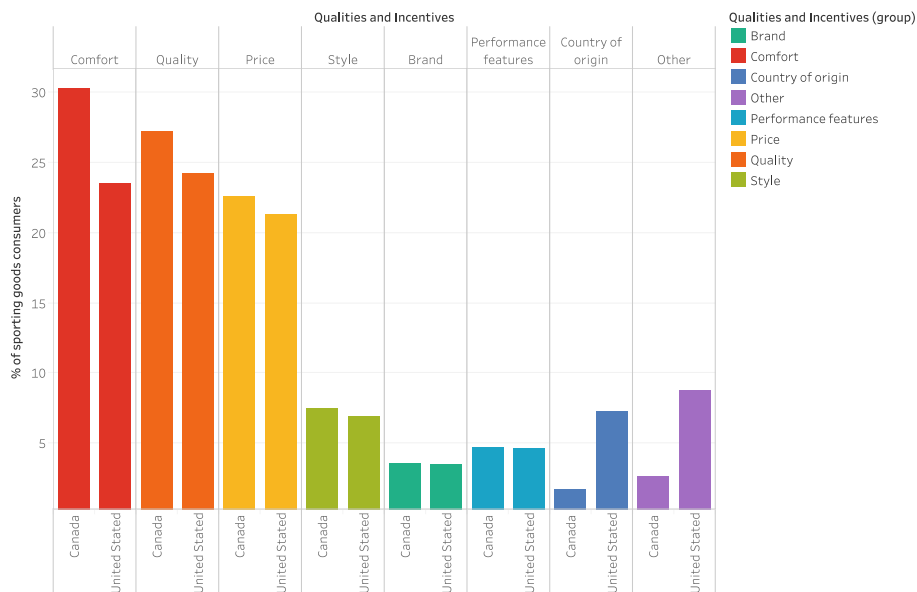
Figure 6. **Bar chart above illustrates qualities and incentives that influence purchase decision making of sporting goods consumers in USA and Canada** (Authors' own work, Data[27,28])

The main consumers of athletic apparel and swimwear in the United States are women. Perhaps, this fact would not be surprising when speaking about swimwear, however, taking into account that woman's athletic wear accounted for more than a half of total athletic apparel sales, the fact creates numerous hypothesis.

Data and evidence on sustainability actions from the consumers' perspective within the sporting goods industry in Europe show diverse outcomes in sustainability behaviour. Generally, private households in European countries spent money on repair and maintenance of sporting goods, however the evolution from 2010 to 2015 highlights controversial sustainability approaches by consumers in different European countries. The most dramatic shift in sustainability behaviour was in Malta, where annual expenditure on repair and maintenance of sporting goods increased by 13.5

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27   Bedford, E. (2020). *Sporting goods in Canada - statistics & facts.* Statista: https://www.statista.com/topics/2974/sporting-goods-in-canada/

28   Statista Research Department (2020). *Sporting Goods Industry – Statistics & Facts.* Statista: https://www.statista.com/topics/961/sporting-goods/

euros per year by private household. This is followed by a slight shift in Slovenia and Austria, where private household's expenditure on repair and maintenance of sporting goods went up by 3.5 euros. On the other hand, in some countries private household's expenditure on repair and maintenance decreased. For instance, the most extreme decline in expenditure on repair and maintenance of sporting goods was in Germany. German' private household expenditure decreased by 8.6 euros from 2010 to 2015. Altogether, the majority of European countries either increased or maintained expenditure on repair and maintenance of sporting goods. Therefore, European consumers are somewhat slowly shifting towards sustainable actions within the porting goods industry (see Figure 7).

Map based on Longitude (generated) and Latitude (generated). Color shows sum of Divergence in repair and maintanance expenditure (2010-2015). Details are shown for Country.
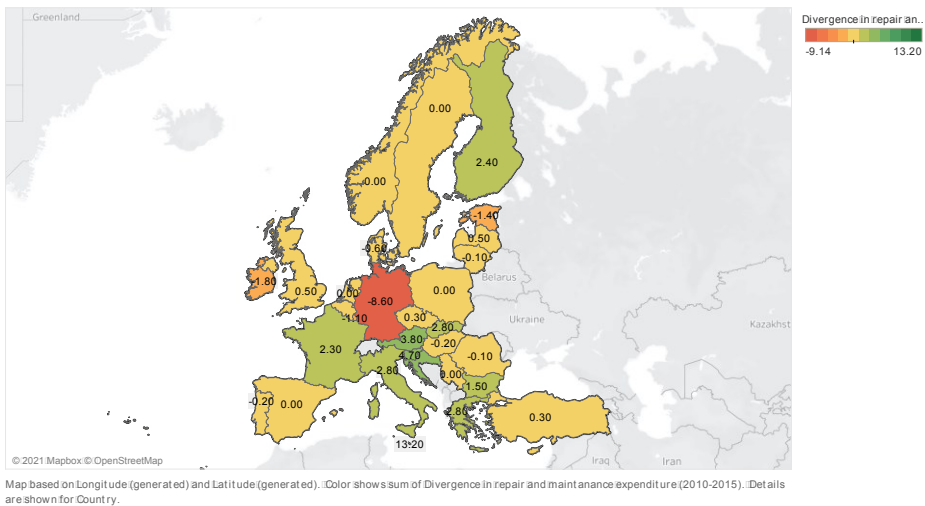
Figure 7. **Map above portrays European evolution of private household expenditure in euros on repair and maintenance of sporting goods from 2010 to 2015** (Authors' own work, Data[29])

Emerging economic trends

TOT ratio of sports footwear in 2019 in Canada was 7.24, and TOT ratio of exercise equipment in 2019 was 12.06. In other words, when country's TOT ratio is below 100, more capital of the particular country leaves the state

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29   European Commission (2021). Mean consumption expenditure of private households on sporting goods and services by COICOP consumption purpose. Eurostat: https://ec.europa.eu/eurostat/web/products-datasets/-/sprt_pcs_hbs

budget. Whereas, in case that TOT ratio is greater than 100, state budget accumulates money from its exports (Kopp, 2020).

Evidently, boats, sporting footwear, together with gymnastic and athletic articles were the only three sporting goods prime product categories which increased export share from 2013 to 2018 in Europe. Most extreme shift was particularly noted in sporting footwear, where, in 2018 more than 33 % of total sporting goods exports in Europe were driven by sporting footwear. On the other hand, the significant decline of exports was recorded in bicycles as equipment among prime products in sporting goods industry. Over the period of 5 years, the share of bicycles exports dropped by approximately 5 %. Another goods that recorded a slight decline in exports were snow-ski equipment and gear (see Figure 8).
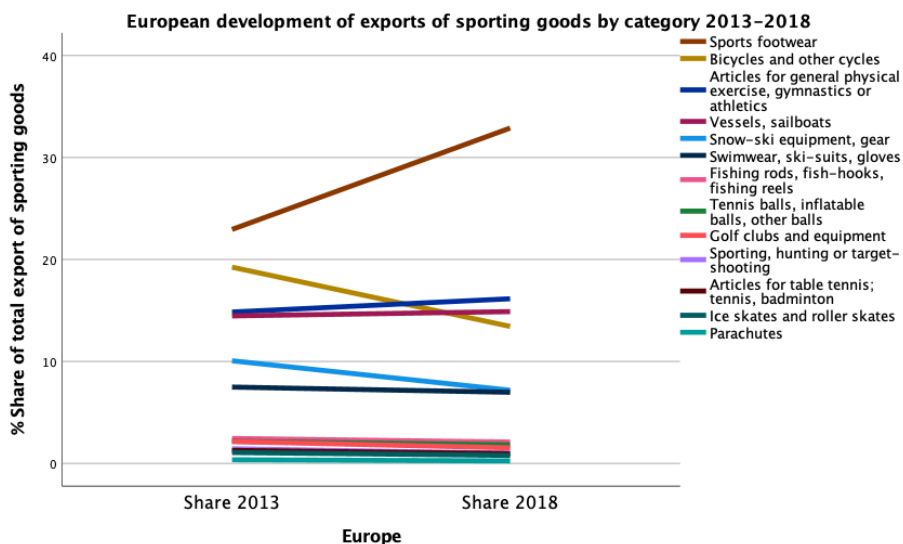
Figure 8. **Sequence chart above illustrates development of exports of sporting goods by category within Europe from 2013 to 2018**
(Authors' own work, Data[30])

In Europe's imports evolution of the sporting goods the scenario was pretty much similar to the one of exports of sporting goods. In 2018 Europe noticed tremendous decrease of imports of snow-ski equipment, gear, boats

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and bicycles. In 2013 snow-ski equipment and gear accounted for more than 10 % share of sporting goods imports of European union, nevertheless, in 2018 snow-ski equipment and gear prime product category accounted for less than 7 % of the total imports. It must be noted that there were prime product categories that increased and Europe imported sporting goods in greater volume than previous years. For instance, sporting footwear likewise to the scenario of exports. In 2013 imports of sporting footwear in Europe were just above 2 5 % of the total imports of sporting goods, eventually, in 2018 the share of imported sporting footwear reached a share higher than 35 % of the total imports of sporting goods.
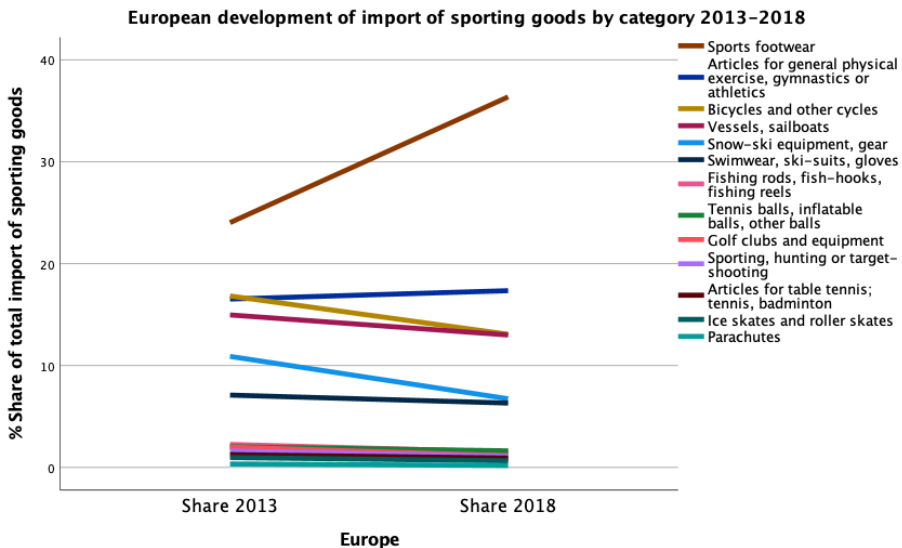
Figure 9. **Sequence chart above illustrates development of imports of sporting goods by category within Europe from 2013 to 2018**
(Authors' own work, Data[31])

Emerging technological trends

Evidence on the evolution of shopping approach clearly points out the importance of online shopping and e-commerce. Online shopping of sporting goods became extremely popular in the sporting goods industry especially in North America, in particular in the United States where the

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[31] Eurostat. (2020). *International trade in sporting goods*. Eurostat Statistics Explained: https://ec.europa.eu/eurostat/statistics-explained/index.php/International_trade_in_sporting_goods#International_trade_in_sporting_goods_between_2013_and_2018

online market of sporting goods industry grew roughly by 15 billion US dollars in 8 years. Previous research points out the importance of integration of e-commerce practices into the company's business models, however, managers still lack experience and knowledge of the digitalization of the business models in the sporting goods industry (Zhou, 2015).

Manufacturer sales in the sporting goods industry in Canada shows vulnerability in sales throughout the year. Particularly annual seasons have a significant impact on the development of producers' sales. Namely, for the last five years manufacturers recorded least sales of sporting goods in December and January. On the other hand, the most sales were recorded throughout months of July–September. Despite that, Canadian manufacturers of all kinds of sporting goods face the same issue in vulnerability of sales (Bedford, 2020).

Conclusions

Practical implications and recommendations

Sporting goods stakeholders, namely manufacturers, retailers and e-retailers should stay keen on the incentives and qualities of sporting goods consumers. Hence, it is important to understand incentives in the purchase decision making of consumers in North America. In brief, manufacturers, retailers and e-retailers need to pay attention towards quality and comfort of the sporting goods because the majority of consumers in North America do not consider price as the most relevant incentive in purchase decision making.

Customer behaviour of European sporting goods consumers is slowly but surely shifting towards sustainable practices. The majority of the private households in European countries increased expenditure towards repair and maintenance of sporting goods. Therefore, sporting goods industry must integrate more sustainable practices to meet customer satisfaction and long-lasting sporting goods.

Countries with TOT ratio below 100 should figure out a way to sustain economic growth while enriching sporting goods trade both domestically and internationally. In other words, if demand for prime products of the sporting goods increase, government should find solution how to fulfil the need firstly from the domestic capabilities and secondly shift towards imports from international partners. There is low variance correlation

among imports, exports of sporting goods and global sports market share, which is the key challenge for the countries to balance the state payments.

Sporting footwear tremendously increased in volumes of export and import in Europe. Therefore, future development of the Europe's fashion industry will be necessary to fulfil market needs and address market deficit in the sporting goods industry. Namely, fashion industry development because perception of athleisure wear of females creates dual usage of the sporting apparel, whereas, females tend to wear athleisure wear to practice sports related activities as well as just wearing athleisure due to comfortable feeling.

Finally, sporting goods industry faces digitalization as challenge due to fact that traditional shopping and online shopping are two different approaches. Therefore, companies involved in business-to-business and business-to-customer should find an appropriate way to get themselves into the digital space, however, once the company integrates e-commerce and online shopping into their business model, it is relevant and important to market the right market segment as a previous study shows that females have weaker interconnection between intentions and desires.

Statement of limitations and further research

Although, this research study found out numerous radical emerging trends in the sporting goods industry, it is important to state multiple limitations that has impact on the findings and results of the study. Firstly, the sample size of consumers from the United States and Canada differed in the total amount of respondents as well as the sample size was not sufficiently large. Because of that, it is important to note that final results of the comparative analysis are a subjective outcome. Secondly, the lack of reliable data and previous research impacted this research and its findings due to the lack of credible and valid data that could be observed and analysed.

Most importantly, novel data and information from North America and Europe were missing which influenced the empirical results and findings of this study. In general, this research provides holistic findings of the emerging trends in the sporting goods industry in North America and Europe from totally different perspectives such as social, economic and technological. Social perspective which closely observed emerging consumer trends in North America is not applicable to consumers in Europe due to lack of information and relevant data. Secondly, emerging economic trends, in particular international trade of Europe of the sporting goods industry are applicable just to the European market and its impact on the global sports

market share. Thirdly, emerging technological trends in the sporting goods industry are applicable namely in the United States as the data of this study focused just on the US market. Future research and studies should focus separately on each of the emerging trends perspective as well as separately on the geographical blocks. Finally, there is lack of classification of the sporting goods industry, therefore further research should consider justification of the sporting goods industry.

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DEVELOPMENT OF THE PERSONAL DATA PROTECTION FRAMEWORK – WILL THE PANDEMIC BRING NEW CHANGES?

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Abstract

The General Data Protection Regulation (hereinafter – the Regulation), which entered into force on 25 May 2018 and introduced a new legal framework for the protection of personal data in the European Union, also included a number of new rights, more precise definitions and improvements in the field of personal data protection. The three-year period has shown that the Regulation has successfully replaced Directive 95/46/EC of the European Parliament and of the Council on the protection of individuals with regard to the processing of personal data and on the free movement of such data, but the Covid-19 pandemic posed the question: does the Regulation sufficiently define and explain how controllers should deal with the processing of sensitive data, or in situations where employees of companies and institutions work remotely?

Data protection is a complex concept that can be analyzed from both a legal and a social point of view. Traditionally, data protection has been referred to as the protection of personal privacy in the context of processes involving the use of personal data. Prior to the implementation of the Regulation, the existing rules on the protection of personal data in the European Union were not sufficiently uniform and were implemented differently in each Member State. It contributed to the development and implementation of the Regulation, in the hope that it would modernize and promote a common data protection regime, while maintaining all the basic principles of data protection that have been followed so

far. Prior to the pandemic, the Regulation successfully achieved its original objectives, but has the pandemic necessitated a revision of the Regulation?

This article will analyze the development of the legal framework for the protection of personal data and analyze the compliance of the Regulation with the requirements arising from the effects of the pandemic.

Introduction

The updating of data protection laws is relatively recent – the first indications of legislation in this area appeared in the 1970s – ten years after the beginning of the spread of technology marked the first attempts to collect personal data in electronic format. Both public and non-governmental companies and institutions began to use technologies to collect and process personal data more efficiently, gradually assessing their economic value. It was only ten years later that the Council of Europe recognized that data collection and processing also required a legal frame-work that would enhance the protection of individuals' privacy (Glon, 2014). It is important that as the various aspects of society, the way we work, the way we learn, the data we submit to the controller, etc. change, the legal framework for data protection also changes quickly enough. Compared to the 70s of the 20th century the pace of technological develop-ment was growing rapidly that now in 2021, the European Union cannot devote another ten years to analyzing whether regulatory change is needed. The changes caused by a pandemic require much faster solutions.

There are currently more than 30 countries in the world (Bygrave, 2004) that have enacted data protection laws at the national or federal level, and the number continues to grow. All data protection legal instruments are based on two objectives: firstly, they contain a clear list of basic data protection principles, which is not always obvious, but should be included in the national data protection legislation. Secondly, they influence the emergence of various national and international data protection initiatives.

Given the rapid spread of information and communication technologies around the world, data protection is clearly a global concept. To ensure that fundamental human rights continue to be respected, data protection must

fulfill its global mission by preventing possible free flows of personal data and data protection conflicts (Kong, 2010).

Our society is becoming increasingly digital. The pace of technological development and the way personal data is processed affect individuals in different ways on a daily basis. Digital technologies have fundamentally changed the way the concept of privacy is perceived. A study by the US Pew Research Center found that 93 % of adults believe it is important to be able to control who receives information about them, while 90 % believe it is important to be able to control what information is collected about them (Greengard, 2018). The results of the study marked a similar picture in Europe and other parts of the world. While the US and several other countries have adopted an optimal approach to data processing, requiring the data subject only to instruct the company if he or she does not want his or her data to be processed or stored in certain ways, the EU has taken a more restrictive approach by substantially revising the legal framework, which protects a person's privacy and data.

Directive 95/46/EC of the European Parliament and of the Council

Before the Regulation, Directive 95/46/EC of the European Parliament and of the Council on the protection of individuals with regard to the processing of personal data and on the free movement of such data was in force in the European Union. The directive was adopted on 24 October 1995. The Directive defined two main objectives:

- under this Directive, Member States protect the fundamental rights and freedoms of natural persons, in particular their right to privacy with regard to the processing of personal data;
- member States shall not restrict or prohibit the free flow of personal data between Member States on the basis of the protection provided for in paragraph 1 (Directive 95/46/EC of the European Parliament and of the Council).

Article 2 of the Directive contained a number of definitions, such as personal data, data subject, processing of personal data, personal data file, controller, processor, third parties, recipient and consent of the data subject. A comparison of the Directive and the Regulation shows that the Regulation contains a much wider range of definitions, while retaining all the terms mentioned in the Directive. The Regulation also clarifies concepts such as

agent, principal place of business, supervisory authority, cross-border processing, substantial and reasoned opposition, etc.

The Directive was originally designed to regulate the processing of information in large databases. Along with other changes, the concepts of "data controller" and "data subject" as well as rules governing the processing of sensitive data and the transfer of personal data to countries outside the European Union were introduced. Although most EU Member States have succeeded in meeting the requirements of the Directive by introducing new legislation or amending existing legislation on data protection, many aspects of it have been interpreted in different ways. In several cases, the precise interpretation was based on the rulings of the Court of Justice of the European Union, for example on data protection on online platforms, regulation of transnational data flows and the concept of sensitive data (Wong, 2012).

The Directive applied to organizations or individuals located in one or more Member States of the European Union: though it is clear in the case of one country that its law is applicable, there may be misunderstandings in the case of two or more countries, especially if there are differences in the national law. If the online service provider is located in country A, but purchases items from a service provider located in country B, the law of country B applies. If the user's personal data were lost in such a case, national B law would in theory be applicable, but in practice it would be difficult to use it as a remedy if the user concerned had not first lodged a complaint against the controller. The user should also contact the data protection authority in his or her country to initiate legal proceedings against the data controller located in the other country (Wong, 2012). This example illustrates the difficulties that can arise if data protection regulations are not the same in all Member States. If one of the parties – the user or the service provider – were located in a country outside the European Union, the situation would be even more complicated in the case of the Directive.

General Data Protection Regulation

With the entry into force of the Regulation, a number of new rights entered into force for citizens of the European Union:

- the right to receive clear and comprehensible information about who processes their personal data, what data are processed and why they are processed (as set out in Articles 12–14 of the Regulation);

- the right to request access to one's personal data held by an organization (as defined in Article 15 of the Regulation);
- the right to require a provider to transfer personal data to another provider in the event of a transfer from one provider to another, or the right to data portability (as provided for in Article 20 of the Regulation);
- the right to be forgotten, or the right to request that personal data be deleted if individuals do not want them to be processed and if the company has no legitimate reason to keep them (as defined in Article 17 of the Regulation) (Regulation (EU) 2016 of the European Parliament and of the Council) / 679).

The Regulation also provides for a number of other innovations in the field of data processing, such as where companies need consent to the processing of personal data, they are obliged to seek such consent from the data subject and to clearly indicate how the personal data will be used. The consent of the data subject must contain an unambiguous indication of the wishes and must be given in the form of a clear affirmative action (as required by Articles 4 (11) and 7 of the Regulation). On the other hand, if personal data have been lost or stolen, and if this data breach could harm the data subject concerned, the data controller responsible for the breach is obliged to inform the data subject and the data protection supervisory authority without undue delay. Failure to do so may result in a fine (Articles 33 and 34 of the Regulation) (Regulation (EU) 2016/679 of the European Parliament and of the Council).

The Regulation clearly defines what personal data are and what their types are, and, unlike previous regulations, mentions two new types of data: genetic data (personal data relating to genetic traits inherited or acquired by a natural person and providing unique information on a person 's health and physiology) as well as biometric data (personal data after specific technical processing relating to a person' s physical, physiological or behavioral characteristics that allow for the unique identification of a person, such as facial images or fingerprints).

Compared to the previous regulatory framework, Data Regulation defines health data more precisely – they are personal data related to the physical or mental health of a natural person, including the provision of health care services, and which reflect information about his/her health condition.

The Regulation introduces a new concept instead of the previous concept of sensitive data – a specific category of personal data. These are genetic data,

biometric data, as well as data revealing race, ethnicity, political opinions, religious, philosophical beliefs, trade union membership, health data, data on a person's sexual life or sexual orientation. The processing of a specific category of personal data is prohibited, but there are certain exceptions where their processing is permitted. These exceptions are contained in the second paragraph of Article 9 of the Regulation. The processing of such data is permissible only if there is a legal basis for the processing, and the person processing the data must observe professional secrecy. An analysis of the Regulation's innovations in the field of data processing shows that the introduction of a special category of personal data and its specific processing conditions can reduce discrimination, while the new rights conferred on the data subject by the Regulation significantly increase control over their data, how well individuals will be informed of their rights and the cases in which they can be exercised. One of the clearest examples is the right to be forgotten, namely that in order to be enforced, two conditions must be met: if individuals do not want their data to be processed and if the company has no legitimate reason to keep it. Accordingly, it is not enough for a person to be reluctant to have their data processed.

It is worth noting that none of the chapters of the Regulation mentions the terms "privacy" and "private life", although these terms are related to data protection. Related and at the same time different. They pursue a common goal: to help ensure the rights and freedoms of individuals. Privacy, in its informative sense, is a situation where other persons do not have access to data relating to a specific person. It covers a wide range of rights and values. Data protection is also a set of legal provisions with a similar purpose – to protect the interests of the persons whose data are collected, stored and processed. The overarching goal is to ensure fairness in the data processing process (Dove, 2018). The concept of private life should also be included in the context of the regulation, because although data protection objectives go far beyond privacy protection, data protection is an essential tool to ensure our privacy.

Will the pandemic lead to a change in the Regulation?

Pandemics affect a number of data controllers, such as employers or educational institutions processing more and more specific categories of data, such as information on workers' health (Covid-19 test results), contact information, travel, etc. In addition, with the advent of teleworking, a large proportion of employees, including those with access to personal data, use

their personal computers and tablets instead of company equipment, which raises the issue of data security.

A number of companies and institutions who have spent more than a year working remotely have acknowledged that absolutely not all employees will return to face-to-face work, so the question is: how do companies plan or already provide an adequate level of data security when working from home?

The question also arises as to whether data subjects are currently sufficiently informed of their rights in the context of a specific category of data, recognizing that the processing of such data is only permissible if there is a legal basis for processing and that the data controller is bound by professional secrecy.

Conclusions

An analysis of the different views on the data protection legal framework, and in particular on the current Regulation, suggests that, despite the difficulties and additional obligations imposed by the Regulation on data controllers, a single legal framework for data processing across the EU was needed to facilitate the free flow of data, as well as cooperation between different sectoral organizations between Member States. Until March 2020, the Regulation also performed its function successfully.

Over the last year and a half, as the pandemic has changed our daily lives, public health and safety, which is also the legal basis for the processing of personal data, have clearly taken precedence over individuals' right to privacy and often lack the appropriate data security conditions.

Compared to the previous regulatory framework, the Data Regulation defines health data more precisely – they are personal data related to the physical or mental health of a natural person, including the provision of health care services, and which reflect information about his/her health condition. As a result of the pandemic, data controllers are being forced to process more and more health data.

The introduction of the concept of a special category of personal data and the special conditions under which it is processed were designed to help reduce discrimination, but the risks of discrimination based on health are increasing as a result of the pandemic. In order to avoid risks, it would be necessary to define more clearly who may process the health data of

individuals and under what conditions, as well as to review the sanctions applicable to improper processing or disclosure to third parties.

Considerable attention should also be paid to data subjects' awareness of their rights and the processing of health data. Of course, this aspect does not require a change in the text of the Regulation, but it would be worthwhile for the responsible authorities of each Member State of the European Union to carry out information campaigns to explain the specificities of health data.

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USING BEHAVIOURAL ECONOMICS TO IMPROVE WORKPLACE COLLABORATION BASED ON PREDETERMINED WORKERS' AND BUSINESS VALUES

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Abstract

We are living in a time where technology is evolving tremendously transforming the traditional way of working. Due to technological development, factors such as general globalization, challenges caused by the current pandemic outbreak, have forced us to perform multifaceted tasks in collaboration with other individuals. As it was reported in the Harvard Business Review (2016) based on research over the last two decades, managers and employees spend half as much time in collaboration. The same study concluded that suggestively the majority of the employee's workday is spent in communication with work peers. Besides work teams are becoming bigger, diverse, scattered in different locations, and more specialized than beforehand. Even though such teams with the prior mentioned characteristics can face daily challenges, they still can successfully overcome them and endeavor with collaboration. The aim of this paper is to evaluate which are the values that determine successful workplace collaboration. The paper will also investigate how group effort can increase employee satisfaction levels and their overall motivation. Furthermore, conclusions will be drawn on how the improvement of workplace collaboration can generate more value for businesses. The consequential outcome of this paper is knowledge gathered on

difficulties employees face daily and how team effort can stimulate innovations at the workplace. Furthermore, by applying this knowledge in organizational management, leaders can keep up good teamwork practices as employees undertake progressively more employment of inter-reliant nature.

Introduction

The improvement of collaboration, its performance, and development between individuals at the workplace has been a key issue ever since people started to work together to attain mutual goals. Collaboration at the workplace has been recognized as one of the factors which determine businesses' effectiveness. Several studies have concluded the importance of collaborations in different settings – from academia group development and policy making to healthcare and scientific research (Kraus, 1980; Kanste, et al., 2016; Beyerlein, et al., 2007). To support collaboration and gain the most benefit from it, professionals set more focus on creating new frameworks, tools and concepts to facilitate collaborative engagements.

Even though we commonly comprehend collaboration as 'working together' with other individuals, it consists of independently directed tasks and shared group work. To create collaborative work environments which generates effectiveness, firstly factors which motivate individuals to engage in collaborative activities at the workplace must be understood. Discovering the right factors allows creating a balanced environment that supports individuals based on their distinctive cognitive processes.

Over time we can experience that globalization is a big factor which adds pressure on companies, while also providing business opportunities. The collaborative working environment has changed over the decades; we need to approach it as a set that consists of physical, technological, social and organizational structures supporting individuals in their collaborative efforts at the workplace. The main purpose of this study is to discover factors which are influential in the workplace and indicate their importance. By knowing these factors and utilizing the knowledge accordingly, businesses by adjusting their strategy can gain great results. To do these internal adjustments behavioral economics with nudging theory can be used as an adequate tool.

Theoretical framework

Ever since globalization started to load us daily with more and more technological advancements, our work environment has changed tremendously impacting everything, starting from daily tasks such as delivering messages to collaboration in teams. It is a reasonable observation that most modern workplaces attempt to create a social and collaborative environment, with an aim to impact employees positively and improve business performance. This phenomenon has been widely deliberated in business management literature and has concluded the positive influence on overall business performance (Jones, et al., 2007; Sarkar, et al., 2001; Zaheer & Geoffrey, 2005). In academia also we can meet strong opinions which state that business success or failure depends on individual direct or indirect interactions with other individuals (Håkansson & Waluszewski, 2002; Wilkinson & Young 2002). Jones, et al. (2007) have highlighted the importance of comprehending how vital collaboration is at the workplace and how it impacts teamwork, because it is viewed by some researchers as the main driving force to improve businesses performance as whole.

The study conducted by Carr and Walton (2014) during recent years found that even a simple perception of working together on a task can improve performance. The research results concluded that participants who engaged in collaborations spent 64 % more time on the tasks than independent peers. However, the study reported that participants who act collaboratively have a higher engagement rate, were much more vigorous and the general performance was more effective. It is noteworthy to mention that the positive effects of peer collaboration continued for numerous weeks ahead. We can conclude from the research that being a part of a team working on a task and acting collaborative makes individuals more motivated when they face challenges.

Froebel and Marchington (2005) emphasize that team interactions improve knowledge, skills, and capabilities during any collaborative interfaces. The concept of the team was established millenniums ago and has been applied ever since, in any civilization's cradle we can profile teamwork and team efforts, that is the reason why it is a fundamental concept in any job-related and improvement process. Team collaboration is a particular organizational tool that can reveal many distinctive features in different type of organizations (Mulika, 2010). A report done by Conti and Kleiner (2003) conceded that individuals working in a team at the workplace gain much

higher satisfaction and feeling of accomplishment from completed tasks than performing the same tasks individually. In the current global labor market space, we experience that more and more businesses are starting to apply team-orientated strategies at the workplace due to the positive impact which nourishes the productivity of individuals. Additionally, the stress is put on the importance of understanding that by working together organizations goals can be achieved much easier and in a more efficient way.

Cohen (1999) in his paper shared the ideology that teams and collaboration are replacing individual efforts in an organization and have been considered as a 'new foundation' for efficient businesses. In the past few decades' collaboration has been considered as an important attribute of successful businesses. Consequently, higher education institutions include the essentials of collaboration in the study process, teach different strategies and approaches so the new professional after graduation has the right skillset and abilities to carry out teamwork in an everyday business environment. For a successful skillset individuals need to have a skillset that facilitates collaboration, such as – communication, listening, conflict and problem solving, and critical thinking. In the current labor market, we can see that these skills are expected from managers when an individual is applying for a position in a teamwork based organization.

Methods

The approach which has been applied in the current research to gather the reliable perception of individual values is the qualitative one. Data was gathered using a structured online questionnaire. The questionnaire consisted of two stages. In the first stage, respondents were asked to evaluate 11 pre-selected values with a focus on personal perception. Furthermore, in the second stage, respondents were asked to evaluate the same values but the stress was put on a business perspective. A 7 point Likert scale was used for the purpose of scaling and evaluation respondent answers. The research data was gathered during the period from 10th of January till 15th of February 2021. The survey yielded 117 valid questionnaires that were used to report the findings of the study. Respondents represented nineteen countries and were randomly selected and covered a wide range of industries and professions. The sample gender ratio was as follows – 41 % male and 59 % female respondents, all respondents were of the legal age. The scope of this investigation was to determine values that employees set at the workplace from a personal viewpoint. By discovering individual

personal values, organizations can develop a strategy that is focused on the key areas that motivate individuals the most to engage in the collaborative interactions at the workplace.

Results and discussion

Nowadays, in the current market environment, competitiveness between industries, pressure from consumers, technological advancement, and other important aspects position businesses in a place where it is crucial to put stress on team collaboration for success. For this study, the concept of collaboration is linked to the individuals' personal values that facilitate initiation of voluntary engagement within a team at the workplace. The authors for this study's purpose preselected eleven values which were presented to respondents to better understand factors that result in positive collaboration in the organization. The preselected value spectrum covered multiple dimensions, giving enhanced comprehension allowing us to draw ampler conclusions about motivational values.

The conclusions could be drawn by comparing values that individuals selected as personal values and the values which they evaluated from the organization's perspective based on the respondents' supposition. The findings revealed that there are some values that respondents evaluate equally high personally and from an organizational perspective. By determining the following values, areas can be allocated where improvements need to be made. The following figure reveals two common values with the highest rating as personal and business values (see Figure 1).

Figure 1. **Overlapping of personal and business values**

The survey participants from different countries, cultural backgrounds, and industries selected the top values 'making money' and 'efficiency' as their most important values personally and have aligned these values from a business perspective as well. We can debate that monetary values are important and provide an additional feeling of security. Income can be directly linked with well-being; it has been researched that individuals associate that higher-income creates higher life satisfaction due to the fact that monetary benefits can fulfil needs and improve life's quality (LaBarbera & Gurhan, 1997). Diener, et al. (1995) discuss that after fulfilling basic needs, money is linked with individuals' happiness.

The second highest-rated value for both segments was "efficiency". Individuals surely can perform without investing too many thoughts in efficiency, however, with growing demands, information load, options, absence of efficiency can cause a lot of issues. If individuals are inefficient with their time challenges would arise in reaching deadlines and completing the tasks which were assigned to them. On a larger level, being inefficient will have a devastating effect on personal and business wellbeing. Nonetheless, it is important to understand that every person is an individual and can complete tasks at different speeds and what matters the most is if they are doing the right things. It is a well-known fact that the more efficient a business is in its operations, the less resource waste there will be, which will be positively reflected in profits. Furthermore, profits benefit business holders, key shareholders, and therefore also the whole organization. It is the management team and leaders' duty to allocate responsibilities and identify and implement more efficient strategies, however, it will be always lower-level employees who will need to carry out the application and practices of the new strategies. Moreover, "mastery of skills" was also a highly ranked value both from the personal and business perspective. The research results illustrated a minor discrepancy between personal and business values. Overall "Mastery of Skill" was evaluated rather high above 5 on a 7-point scale. The personal value was 5.46 in comparison to 5.41 as the business value. We can clearly see that the difference is very small indicating its importance for both segments (see Figure 2).
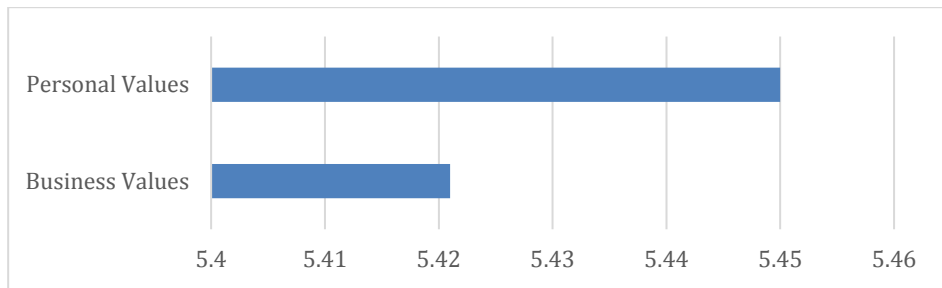
Figure 2. **Mastery of skills**

Employees who have some choice within mastering their own skills demonstrate higher levels of engagement. Higher engagement is linked to increased learning and retention that would result in mastery of skills (Christensen, et al., 2012). In process of mastering their skills, individuals are challenged and encouraged. As mastery of skills is an individually desired improvement, individuals can participate in activities and select personal objectives, and any progress made during these activities leads towards the goal. It is a great practice to utilize such an approach at the workplace especially in groups because it gives individuals opportunities to discuss what they would do differently and create a healthy knowledge sharing, learning environment.

Conclusions

There are factors that directly increase the degree of collaboration at the workplace between individuals. By learning these factors organization managers can develop strategies which put the stress on the right areas which motivates individuals to engage into more collaborative habits at the workplace. According to the study, we can clearly conclude that monetary rewards are gratifying and would increase individuals' engagement in collaborative activities if there are clear indications from the very beginning that at the end of the positive outcome there will be a reward.

No matter how efficient your current team is, there is always a way or two to make it even more productive. Managers from the very beginning need to be very clear and delegate responsibilities according to individuals' skillsets and abilities to utilize their talents. Learn about your team's strengths and weaknesses. The more you learn about each and every individual, the easier it is to align them to specific tasks, and team them up

in groups to accomplish the assigned goals efficiently. It is very important to give incentives for well accomplished tasks and introducing incentives in your organization, will increase the overall productivity of the employees.

By learning the personal importance of 'mastery of skills' it is vital to create opportunities to learn to ensure successful collaboration. Provide individuals with access to get new knowledge. It is crucial that management, at the very beginning, recognize the significance of 'mastery of skills'. Additionally, it is important to recognize employees' efforts invested in mastering skills. The organization can compound the effect of recognition by crediting individuals who demonstrate the ingenuity to master their skills. Applying such an approach will motivate other team members to engage in discussions which will lead to a healthy learning environment with will be based on team engagement and collaboration.

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ADI METHOD ADVANTAGES FOR NUMERICAL SOLUTION OF ELLIPTIC 2D DIFFERENTIAL EQUATIONS

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Abstract

Use of ADI has improved computation time of the Nodal type difference scheme for 2D elliptic partial differential equations. Cases for Helmholtz and absorption equation are considered.

Introduction

In this work a new nodal type method (a functional nodal method) is proposed for numerical solution of 2D Helmholtz equation based on decomposition is space. Here it is assumed that Helmholtz equations are elliptic equations namely Helmholtz and absorption equations, which differ from each other with a sign of the coefficient before the unknown function.

Nowadays it is very common to use computers, which are small enough to put into pockets. We are also used to the whole range of wonderful devices,

for example, in the field of medicine, which help us quickly diagnose health problems and cure them. Our world is full of fascinating devices and these form the basis for construction thereof. If we consider more deeply any of the modern technologies, we will come to the conclusion that the basis is formed by mathematical equations, which describe physical processes and therefore allow us making research and construct new devices on the basis thereof. Modern technologies are based on semiconductors and the processes occurring therein. The theory of semiconductors is a very rapidly developing subject and one of the subjects of study therein is an absorption equation, which describes the behaviour of electrons in crystals. Lots of different equations, which are essential for modern science can be reduced either to Helmholtz or the absorption equation. For instance, the physical processes describing acoustic phenomena can be described by Helmholtz type equations. Maxwell equations can be also reduced to Helmholtz equation in some cases. As to absorption equations, it is used in tomography research, as well as in semiconductor physics. According to the number of articles devoted to the numerical solution of Helmholtz type equations it is possible to conclude that the numerical solution of these equations is a question of interest. There are certain difficulties in the numerical solution of Helmholtz type equations due to its oscillatory nature. This article gives an overview of a so-called flux method, which allows constructing a difference scheme for Helmholtz type equations and which is competitive in respect to other existing methods.

Few words about the flux method

The basic idea of a flux method is to obtain the difference scheme for elliptic type differential equations by first obtaining the flux of the solution function at the borders of a space cell, and then setting the fluxes equal at the borders with adjacent cells in each of the directions. In the 2D case these directions are x and y. Fluxes are obtained by averaging the equation within one space cell. The equation is averaged within one space cell in order to decrease the dimension of the equation. Thus, by averaging, it is possible to obtain two 1D equations from one 2D equation.

The Helmholtz equation

Consider elliptic type differential equation:

$$G_x D_x \frac{\partial^2}{\partial x^2} U(x,y) + G_y D_y \frac{\partial^2}{\partial y^2} U(x,y) + P(x,y) * U(x,y) = 0$$

where G are Lame coefficients, D – diffusion coefficients and P(x,y) is a known function, which is always positive.

Now consider the domain Ω: $[a_x, a_y]$ x $[b_x, b_y]$. Suppose the Helmholtz equation has a solution within this domain and on the borders thereof, and the solution is expressed by the function U (x,y), which is supposed to be continuous. To numerically solve the equation (1) it is necessary to apply a mesh on the domain Ω. Consider even rectangle mesh to be applied on the domain, where h is step in space, equal in both directions. Now the domain is divided into cells. Consider the following actions with the equation (1) within a cell.

Construction of the difference scheme
for the Helmholtz equation

The construction of the difference scheme is based on the assumption that averaged fluxes in adjacent cells are continuous. It concerns the fluxes in both directions, that is x and y directions. In order to construct the difference scheme in each of the directions, it is necessary to obtain the averaged solution in the considered cell, that is Φij for the cell (i,j). Such averaged solution can be obtained in two analogue ways. Assume that Φij is obtained by one way, and Φji – by the other way. As it was said before, both averaged solutions should be equal and therefore, $\Phi ij = \Phi ji$. As it is known from the above, the Helmholtz equation is divided into two 1-D equations. For each of these two equations a difference scheme should be constructed. Consider construction of the difference scheme. The first step is:

Consider such 1-D equation:

$$(GD)_x \frac{d^2}{dx^2} u_j(x) + \sigma u_j(x) = (L)_y$$

where $\sigma \geq 0$, and L_y is all that remains after integration of the 2-D equation (1) in y direction, namely

$$(L)_y = \frac{(G_y)_{ij}}{h^2 \gamma} \{ J_{ij+1/2} - J_{ij-1/2} \}$$

where h is step in the x direction and γ is the ratio of the step in the y (j) direction in respect to the x (i) direction, namely h_j/h_i.

The general analytical solution of the equation above can be written in such form in respect to the point $x_{i-\frac{1}{2}}$:

$$\Phi_j(x) = \frac{L_y}{a} + c_1 Cos[\frac{\sqrt{a}(x - x_{i+\frac{1}{2}})}{\sqrt{D_x}\sqrt{G_x}}] + c_2 Sin[\frac{\sqrt{a}(x - x_{i+\frac{1}{2}})}{\sqrt{D_x}\sqrt{G_x}}]$$

where constants c_1 and c_2 are found by using the Dirichlet boundary conditions. Note that x changes within one cell, that is -h≤x≤0, where h is the step in x direction of the mesh M. The equation above can be written in more simplified form, that is

$$\Phi_j(x) = \frac{L_y}{a} + Cos[\frac{\sqrt{a}(x)}{\sqrt{D_x}\sqrt{G_x}}]C[1] + Sin[\frac{\sqrt{a}(x)}{\sqrt{D_x}\sqrt{G_x}}]C[2]$$

Notice that constants C[1] and C[2] are the following:

$$C[1] = -(\frac{L_y}{a} - \Phi_{i+\frac{1}{2},j})$$

$$C[2] = Csc[\frac{h\sqrt{a}}{\sqrt{D_x}\sqrt{G_x}}](\frac{L_y}{a} - \Phi_{i-\frac{1}{2},j}) - Cot[\frac{h\sqrt{a}}{\sqrt{D_x}\sqrt{G_x}}](\frac{L_y}{a} - \Phi_{i+\frac{1}{2},j})$$

Thus, the equation for $\Phi_j(x)$ takes the form:

$$\Phi_j(x) = \frac{L_y}{a} - Cos[\frac{\sqrt{a}(x)}{\sqrt{D_x}\sqrt{G_x}}](\frac{L_y}{a} - \Phi_{i+\frac{1}{2},j}) + Sin[\frac{\sqrt{a}(x)}{\sqrt{D_x}\sqrt{G_x}}](Csc[\frac{h\sqrt{a}}{\sqrt{D_x}\sqrt{G_x}}](\frac{L_y}{a}$$
$$- \Phi_{i-\frac{1}{2},j})$$
$$-Cot[\frac{h\sqrt{a}}{\sqrt{D_x}\sqrt{G_x}}](\frac{L_y}{a} - \Phi_{i+\frac{1}{2},j}))$$

Consider the expression for flux:

$$J_{i\pm\frac{1}{2},j} = -h * \gamma * \lim_{x \to x_0} D_x \frac{d}{dx}\Phi_j(x)$$

where γ is the ratio between the steps in x and y directions correspondingly, and x_0 is the value of x at the both borders of the cell.

The next step is to find fluxes at the borders of the considered cell. As at the points (i-1/2,j) and (i+1/2,j) the corrseponding values of the x coordinate or variable are -h and 0, the expressions for flux take such form:

$$J_{i-\frac{1}{2},j} = -h * \gamma * \lim_{x \to -h} D_x \frac{d}{dx} \Phi_j(x)$$
$$= \frac{h * \gamma * \sqrt{a} * \sqrt{D_x}}{\sqrt{G_x}} Csc[\frac{h\sqrt{a}}{\sqrt{D_x}\sqrt{G_x}}](\frac{L_y}{a} - Cos[\frac{h\sqrt{a}}{\sqrt{D_x}\sqrt{G_x}}](\frac{L_y}{a}$$
$$- \Phi_{i-\frac{1}{2},j}) - \Phi_{i+\frac{1}{2},j}),$$

$$J_{i+\frac{1}{2},j} = -h * \gamma * \lim_{x \to 0} D_x \frac{d}{dx} \Phi_j(x)$$
$$= \frac{h * \gamma * \sqrt{a} * \sqrt{D_x}}{\sqrt{G_x}} Csc[\frac{h\sqrt{a}}{\sqrt{D_x}\sqrt{G_x}}](-\frac{L_y}{a} + Cos[\frac{h\sqrt{a}}{\sqrt{D_x}\sqrt{G_x}}](\frac{L_y}{a}$$
$$- \Phi_{i+\frac{1}{2},j}) + \Phi_{i-\frac{1}{2},j}),$$

For further steps it will be necessary to know the sum of the fluxes and the difference of the fluxes, which are expressed in such form:

$$J_{i-\frac{1}{2},j} + J_{i+\frac{1}{2},j} = \frac{h * \gamma * \sqrt{a} * \sqrt{D_x}}{\sqrt{G_x}} Cot[\frac{h\sqrt{a}}{2\sqrt{D_x}\sqrt{G_x}}](\Phi_{i-\frac{1}{2},j} - \Phi_{i+\frac{1}{2},j}),$$

for the flux sum.

$$J_{i+\frac{1}{2},j} - J_{i-\frac{1}{2},j} = \frac{h * \gamma * \sqrt{a} * \sqrt{D_x}}{\sqrt{G_x}} Tan[\frac{h\sqrt{a}}{2\sqrt{D_x}\sqrt{G_x}}](-2\frac{L_y}{a} + \Phi_{i-\frac{1}{2},j} + \Phi_{i+\frac{1}{2},j}),$$

From the last expression it is possible to express L_y that will be needed later on. The expression takes the form:

$$L_y = -\frac{a * \sqrt{G_x}}{2\gamma h \sqrt{D_x}} Cot[\frac{h\sqrt{a}}{2\sqrt{D_x}\sqrt{G_x}}](J_{i+\frac{1}{2},j} - J_{i-\frac{1}{2},j}) + \frac{a}{2}(\Phi_{i-\frac{1}{2},j} + \Phi_{i+\frac{1}{2},j}),$$

Now, it is necessary to integrate the expression and to obtain the averaged solution Φji of the Helmholtz equation within one single cell. In order to find such averaged solution Φji it is necessary to integrate the expression in the x direction within one cell, namely in the interval between -h and 0.

Now, as Φji is obtained it is necessary to obtain Φij, which has to be equal to Φji. For this purpose, the 2D Helmholtz equation should be first integrated in x direction. Then, 1D equations will be obtained, which is very similar to the procedure above, namely:

$$G_y D_y \frac{d^2}{dy^2} \Phi_i(y) + a\Phi_i(y) = L_x$$

where $\sigma \geq 0$, and L_x is all that remains after integration of the 2-D equation in x direction, namely

$$(L)_x = \frac{(G_x)_{ij}}{h_i h_j} \left\{ J_{i+1/2j} - J_{i-1/2j} \right\}$$

The general analytical solution of the equation in this direction can be written in such form in respect to the point $y_{j-\frac{1}{2}}$:

$$\Phi_i(x) = \frac{L_x}{a} + c_3 Cos[\frac{\sqrt{a}(y - y_{j+\frac{1}{2}})}{\sqrt{D_y}\sqrt{G_y}}] + c_4 Sin[\frac{\sqrt{a}(y - y_{j+\frac{1}{2}})}{\sqrt{D_y}\sqrt{G_y}}]$$

where constants c_3 and c_4 are found by using the Dirichlet boundary conditions. Note that y changes within one cell, that is $-\gamma * h \leq x \leq 0$, where $\gamma * h$ is the step in y direction of the mesh M and γ is the ratio h_j/h_i, where h_j and h_i are steps of the mesh in y and x directions respectively. The equation can be written in more simplified form, that is

$$\Phi_i(y) = \frac{L_x}{a} + Cos[\frac{\sqrt{a}(y)}{\sqrt{D_y}\sqrt{G_y}}]C[3] + Sin[\frac{\sqrt{a}(y)}{\sqrt{D_y}\sqrt{G_y}}]C[4]$$

Notice that constants C[3] and C[4] are the following:

$$C[3] = -(\frac{L_x}{a} - \Phi_{i,j+\frac{1}{2}})$$

$$C[4] = Csc[\frac{\gamma h \sqrt{a}}{\sqrt{D_y}\sqrt{G_y}}](\frac{L_x}{a} - \Phi_{i,j-\frac{1}{2}}) - Cot[\frac{\gamma h \sqrt{a}}{\sqrt{D_y}\sqrt{G_y}}](\frac{L_x}{a} - \Phi_{i,j+\frac{1}{2}})$$

Thus, the equation for $\Phi_i(y)$ takes the form:

$$\Phi_i(y) = \frac{L_x}{a} - Cos\left[\frac{\sqrt{a}(y)}{\sqrt{D_y}\sqrt{G_y}}\right]\left(\frac{L_x}{a} - \Phi_{i,j+\frac{1}{2}}\right)$$

$$+ Sin[\frac{\sqrt{a}(y)}{\sqrt{D_y}\sqrt{G_y}}](Csc[\frac{\gamma h \sqrt{a}}{\sqrt{D_y}\sqrt{G_y}}](\frac{L_x}{a} - \Phi_{i,j-\frac{1}{2}}) - Cot[\frac{\gamma h \sqrt{a}}{\sqrt{D_y}\sqrt{G_y}}](\frac{L_x}{a} - \Phi_{i,j+\frac{1}{2}}))$$

Consider expression for flux:

$$J_{i,j\pm\frac{1}{2}} = -h * \lim_{y\to y_0} D_y \frac{d}{dy}\Phi_i(y),$$

where y_0 is the value of y at the both borders of the cell.

The next step is to find fluxes at the borders of the considered cell. As at the points (i,j-1/2) and (i,j+1/2) the corrseponding values of the y coordinate or variable are $-\gamma h$ and 0, the expressions for flux take such form:

$$J_{i,j-\frac{1}{2}} = -h * \lim_{y\to-\gamma h} D_y \frac{d}{dy}\Phi_i(y)$$
$$= \frac{h * \sqrt{a} * \sqrt{D_y}}{\sqrt{G_y}} Csc[\frac{\gamma h\sqrt{a}}{\sqrt{D_y}\sqrt{G_y}}](\frac{L_x}{a} - Cos[\frac{\gamma h\sqrt{a}}{\sqrt{D_y}\sqrt{G_y}}](\frac{L_x}{a} - \Phi_{i,j-\frac{1}{2}})$$
$$- \Phi_{i,j+\frac{1}{2}}),$$

$$J_{i,j+\frac{1}{2}} = -h * \lim_{y\to 0} D_y \frac{d}{dy}\Phi_i(y)$$
$$= \frac{h * \sqrt{a} * \sqrt{D_y}}{\sqrt{G_y}} Csc[\frac{\gamma h\sqrt{a}}{\sqrt{D_y}\sqrt{G_y}}](-\frac{L_x}{a} + Cos[\frac{\gamma h\sqrt{a}}{\sqrt{D_y}\sqrt{G_y}}](\frac{L_x}{a} - \Phi_{i,j+\frac{1}{2}})$$
$$+ \Phi_{i,j-\frac{1}{2}}).$$

For further steps it will also be necessary to know the sum of the fluxes and the difference of the fluxes as for the previous case, which are expressed in such form:

$$J_{i,j-\frac{1}{2}} + J_{i,j+\frac{1}{2}} = \frac{h * \sqrt{a} * \sqrt{D_y}}{\sqrt{G_y}} Cot[\frac{\gamma h\sqrt{a}}{2\sqrt{D_y}\sqrt{G_y}}](\Phi_{i,j-\frac{1}{2}} - \Phi_{i,j+\frac{1}{2}}),$$

for the flux sum. And the following expression is for the flux difference:

$$J_{i,j+\frac{1}{2}} - J_{i,j-\frac{1}{2}} = \frac{h * \sqrt{a} * \sqrt{D_y}}{\sqrt{G_y}} Tan[\frac{\gamma h\sqrt{a}}{2\sqrt{D_y}\sqrt{G_y}}](-2\frac{L_x}{a} + \Phi_{i,j-\frac{1}{2}} + \Phi_{i,j+\frac{1}{2}}),$$

From this expression it is possible to express L_x that will be needed later on. It takes this form:

$$L_x = -\frac{a * \sqrt{G_y}}{2h\sqrt{D_y}} Cot[\frac{\gamma h\sqrt{a}}{2\sqrt{D_y}\sqrt{G_y}}](J_{i,j+\frac{1}{2}} - J_{i,j-\frac{1}{2}}) + \frac{a}{2}(\Phi_{i,j-\frac{1}{2}} + \Phi_{i,j+\frac{1}{2}}),$$

Now, it is necessary to integrate the expression to obtain the averaged solution Φ_{ij} of the Helmholtz equation within one single cell. In order to find

such averaged solution Φ_{ij} it is necessary to integrate the expression in y direction within one cell, namely in the interval between $-\gamma h$ and 0.

Now as both of the averaged expressions Φ_{ij} and Φ_{ji} are found, and as it is known that both of them are equal, it is worth to set them equal. From this equality it is possible to express the fluxes. Then, knowing the fluxes, it will be possible to construct difference schemes for each of the directions. For example, in order to construct the difference scheme for x direction it is necessary to use only two of the fluxes.

Setting the expressions equal, it is obtained that $\Phi_{ij}=\Phi_{ji}$, namely:

$$
\begin{aligned}
\frac{L_y}{a} &+ \frac{\sqrt{D_x}*\sqrt{G_x}}{h*\sqrt{a}} Tan[\frac{h\sqrt{a}}{2\sqrt{D_x}\sqrt{G_x}}](-2\frac{L_y}{a} + \Phi_{i-\frac{1}{2},j} + \Phi_{i+\frac{1}{2},j}) - \Delta x \frac{d}{dx}\Phi_j(x)/_{x=-\frac{h}{2}} \\
&- \frac{\Delta x^2}{2}\frac{d^2}{dx^2}\Phi_j(x)/_{x=-\frac{h}{2}} \\
&= \frac{L_x}{a} + \frac{\sqrt{D_y}*\sqrt{G_y}}{\gamma h*\sqrt{a}} Tan[\frac{\gamma h\sqrt{a}}{2\sqrt{D_y}\sqrt{G_y}}](-2\frac{L_x}{a} + \Phi_{i,j-\frac{1}{2}} + \Phi_{i,j+\frac{1}{2}}) \\
&- \Delta y \frac{d}{dy}\Phi_i(y)/_{y=-\frac{\gamma h}{2}} - \frac{\Delta y^2}{2}\frac{d^2}{dy^2}\Phi_i(y)/_{y=-\frac{\gamma h}{2}}.
\end{aligned}
$$

Please, notice that here the additional terms, namely containing Δx and Δy are not included in the open form for simplicity. However, consider them to be present.

From this equality it is possible to obtain the flux differences in both directions. It depends on the way L_y and L_x are expressed. There are two ways possible.

Consider construction of the difference scheme for the x direction. The flux difference for this case looks like this:

$$
\begin{aligned}
J_{i+\frac{1}{2},j} - J_{i-\frac{1}{2},j} &= R*(\gamma h\sqrt{a}(2(\Delta y\frac{d}{dy}\Phi_i(y)/_{y=-\frac{\gamma h}{2}} + \frac{\Delta y^2}{2}\frac{d^2}{dy^2}\Phi_i(y)/_{y=-\frac{\gamma h}{2}} \\
&- \Delta x\frac{d}{dx}\Phi_j(x)/_{x=-\frac{h}{2}} - \frac{\Delta x^2}{2}\frac{d^2}{dx^2}\Phi_j(x)/_{x=-\frac{h}{2}}) + \Phi_{i-\frac{1}{2},j} + \Phi_{i+\frac{1}{2},j}) \\
&- 2\sqrt{D_y}\sqrt{G_y}Tan[\frac{\gamma h\sqrt{a}}{2\sqrt{D_y}\sqrt{G_y}}](\Phi_{i,j-\frac{1}{2}} + \Phi_{i,j+\frac{1}{2}})), \square whereR \\
&= \frac{\gamma hha\sqrt{D_x}}{\gamma hha\sqrt{G_x}Cot[\frac{h\sqrt{a}}{2\sqrt{D_x}\sqrt{G_x}}] - 4G_x\sqrt{D_x}\sqrt{D_y}\sqrt{G_y}Tan[\frac{\gamma h\sqrt{a}}{2\sqrt{D_y}\sqrt{G_y}}]}
\end{aligned}
$$

Now, knowing the difference of the fluxes as well as the sum of the fluxes, it is possible to find the expression for each flux.

At last, it is now possible to construct the difference scheme for the Helmholtz equation for the x direction. The difference scheme is constructed on the assumption that fluxes of the adjacent cells are equal. Consider two adjacent cells with the coordinates (i, j) and (i+1, j) respectively. In the first cell, namely (i, j), there are two fluxes at the borders. The fluxes in the next cell, namely (i+1, j) can be found by changing indexes of the by one in i directions. So, taking into account the assumption that at the border connecting two adjacent cells (i, j) and (i+1, j) the fluxes are equal it is natural to construct the difference scheme.

Now it is possible to construct the difference scheme for the x direction:

$$
\begin{aligned}
&-Q_{i+1j}\left\{F_{i+3/2j}+F_{i+1/2j}\right\}-Q_{ij}\left\{F_{i+1/2j}+F_{i-1/2j}\right\}+S_{i+1j}R_{i+1j}\left\{F_{i+3/2j}-F_{i+1/2j}\right\}-\\
&-S_{ij}R_{ij}\left\{F_{i+1/2j}-F_{i-1/2j}\right\}+\left(T_x\right)_{i+1j}\left\{F_{i+3/2j}+F_{i+1/2j}\right\}+\left(T_x\right)_{ij}\left\{F_{i+1/2j}+F_{i-1/2j}\right\}-\\
&-\left(T_y\right)_{i+1j}\left\{G_{i+1j+1/2}+G_{i+1j-1/2}\right\}-\left(T_y\right)_{ij}\left\{G_{ij+1/2}+G_{ij-1/2}\right\}=0.
\end{aligned}
$$

$$
Q_{ij}=\frac{1}{4}\left(\frac{1}{\beta_x}\frac{2(\cos\beta_x-1)}{\sin\beta_x}+1\right),\quad S_{ij}=\frac{1}{2}\frac{D_x h_j}{h_i}\beta_x\left(\frac{1+\cos\beta_x}{\sin\beta_x}\right),
$$

$$
\left(T_x\right)_{ij}=\frac{1}{2}\left(\frac{\cos\beta_x-1}{\beta_x\sin\beta_x}\right),\quad \left(T_y\right)_{ij}=\frac{1}{2}\left(\frac{\cos\beta_y-1}{\beta_y\sin\beta_y}\right),
$$

$$
R_{ij}=\frac{h_i}{h_j D_x}\frac{\sin\beta_x}{2\beta_x(\cos\beta_x-1)}-\frac{G_x}{h_i h_j\sigma}\frac{2(\cos\beta_y-1)}{\beta_y\sin\beta_y}
$$

$$
\beta_x=h_i\sqrt{\frac{\sigma}{G_x D_x}},\quad \beta_y=h_j\sqrt{\frac{\sigma}{G_y D_y}}.
$$
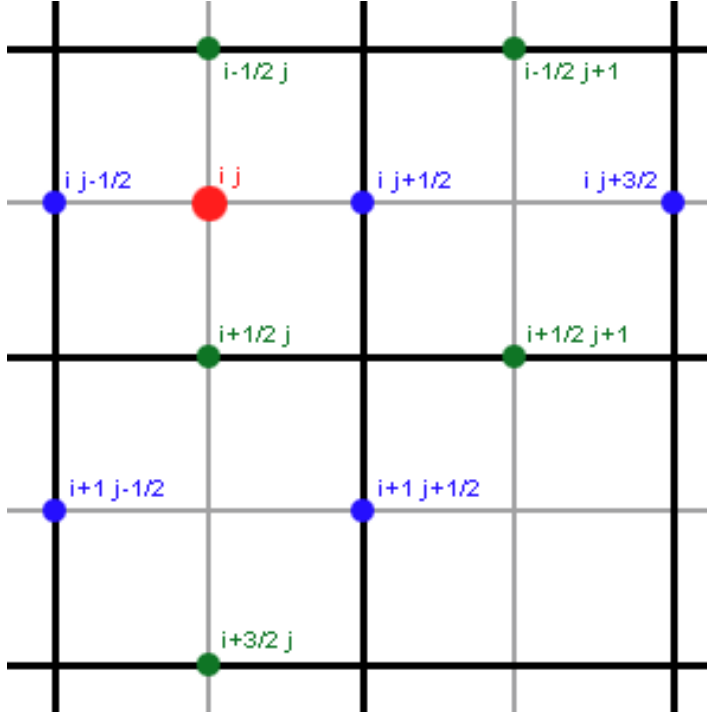
In the same manner, the difference scheme in y direction is obtained.

Iterative methods for solution of elliptic equations

To solve the considered equations on a larger mesh it is required to introduce more efficient methods in respect to the speed of computation and use of memory. The methods used before do not allow using larger meshes for computation. There is a limit for them due to RAM. Therefore, the application of an ADI type method was considered as a tool. By   using an ADI extension for the difference schemes of absorption equation it is possible to get such result as shown below.

Appliction of an adi type method
for the difference schemes

Difference Scheme in X direction

$$\left\{-Q_{i+1j} + S_{i+1j}R_{i+1j} + (T_x)_{i+1j}\right\}F_{i+3/2j}^{\,l+\frac{1}{2}}$$
$$+\left\{-Q_{i+1j} - Q_{ij} - S_{i+1j}R_{i+1j} - S_{ij}R_{ij} + (T_x)_{i+1j}\right\}F_{i+1/2j}^{\,l+\frac{1}{2}}$$
$$+\left\{-Q_{ij} + S_{ij}R_{ij} + (T_x)_{ij}\right\}F_{i-1/2j}^{\,l+\frac{1}{2}} =$$
$$= (T_y)_{i+1j}G_{i+1j+1/2}^{\,l} + (T_y)_{i+1j}G_{i+1j-1/2}^{\,l} - (T_y)_{ij}G_{ij+1/2}^{\,l} - (T_y)_{ij}G_{ij-1/2}^{\,l}$$

Difference Scheme in Y direction

$$\left\{-Q_{ij+1} + S_{ij+1}R_{ij+1} + (T_x)_{ij+1}\right\}G_{ij+3/2}^{\,l+1}$$
$$+\left\{-Q_{ij+1} - Q_{ij} - S_{ij+1}R_{ij+1} - S_{ij}R_{ij} + (T_x)_{ij+1}\right\}G_{ij+1/2}^{\,l+1}$$
$$+\left\{-Q_{ij} + S_{ij}R_{ij} + (T_x)_{ij}\right\}G_{ij-1/2}^{\,l+1} =$$
$$= (T_y)_{ij+1}F_{i+1/2j+1}^{\,l+\frac{1}{2}} + (T_y)_{ij+1}F_{i-1/2j+1}^{\,l+\frac{1}{2}} - (T_y)_{ij}F_{i+1/2j}^{\,l+\frac{1}{2}} - (T_y)_{ij}F_{i-1/2j}^{\,l+\frac{1}{2}}$$

Here two-layer iterations are used. The scheme is implicit. The Neumann convergence condition for solutions of the Helmholtz equation shows conditional convergence only for the simplest case, when n and m are 1. If taking other n and m, the Neumann convergence criterion becomes larger than 1.

The example of an eigenvalue and eigenfunction problem was used to test the parallel numerical computation algorithm.

It is shown that the elaborated numerical approach has the 2nd order of precision.

The ADI computations have good results in respect to the computation time and absolute error for sparse matrices in comparison to other.

In case of Absorption equation, the Neumann convergence criterion is less than 1.

The calculated absolute error and CPU time (t) in L2 norm

Grid size	ADI method, t (s)	Absolute error	LSCOV (including LU decomposition), t (s)
128x128	2	$2.64 * 10^{-5}$	10
256x256	15	$5.65 * 10^{-6}$	57
512x512	99	$1.34 * 10^{-6}$	254
1024x1024	667	$3.28 * 10^{-7}$	—
2048x2048	7350	$7.90 * 10^{-8}$	—

The computation time of the ADI type method was at least 2 times shorter in comparison to the computation time needed by solving the system of linear equations applying a well-known iteration method LSCOV.

In the case of using LSCOV for grids of size larger than 512x512 the results could not be computed. Therefore, the advantage of the ADI type method is the possibility to obtain results in the case of very large grids with the desired precision.

However, the application of the method requires some additional research to be applied for larger wave numbers.

Conclusions

It is shown that ADI method is faster and allows using less RAM and computation with finer meshes. This could be an advantage when performing fine computations.

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ARTIFICIAL INTELLIGENCE AS LEGAL ENTITY IN THE CIVIL LIABILITY CONTEXT

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Abstract

Entity issues of artificial intelligence is no longer a purely theoretical question, as technological progress and its practical application is an increasingly common phenomenon, while the artificial intelligence system's ability to learn and to make decisions autonomously determines its subjective nature and increasingly limited ability to consider it as just a complex tool. So, the purpose of the research is to analyse the legal basis and issues related with acceptance of the artificial intelligence as a separate legal entity and peculiarities of civil liability for damages caused by artificial intelligence. The analysis was based on three issues: a concept of artificial intelligence, its possibility to be recognized as a separate legal entity and peculiarities of civil liability for damages caused by it. The research was carried out by employing the logical, the teleological, the systematic analysis, the linguistic, the synthesising methods and the analysis of legal documents. The analysis shows that there is no single concept of artificial intelligence, but the identified specific elements of its definition would simplify its legal regulation as well as only a fully autonomous artificial intelligence has a potential to be recognized as a separate legal entity, so in this case there is an objective need to review the framework for civil liability for damages caused by artificial intelligence in order to establish at least joint and several civil liability of it with the natural person responsible for it.

Introduction

The subjectivity issues of artificial intelligence is no longer purely a theoretical question, as technological progress is accelerating every day and it is likely that it will soon be possible to see fully autonomous artificial intelligence when the need arises. Today, there are many IT inventions based on the operation of artificial intelligence systems, such as a self-driving car, some features of Facebook, digital assistants like Siri, robotic nurses and others. These and other inventions are known and used all over the world, and their possibilities are rapidly evolving. However, Google's self-driving car crashed in 11 car accidents after 1.7 million miles that caused damages (Moren, 2015), the language recognition program Siri may be the cause of the accident (Probasco, 2014), robot-nurse cannot guarantee that the patient will actually take the medications (Hamstra, 2018) as well as Facebook shut down the artificial intelligence system after bots created language humans couldn't understand (Griffin, 2017). These examples, on the one hand, demonstrate the ability of artificial intelligence systems to learn and to make decisions autonomously, which is an essential feature that determines its subjective side, and accordingly, by virtue of such ability, these systems cannot be treated as such as a tool or product. The natural question therefore arises as to whether a system of artificial intelligence can really be recognized as a separate legal entity and what rights and obligations would that status entail? On the other hand, the current situation with the widespread and real application of artificial intelligence raises moral, ethical issues in society as well as in in areas of law, where there are some discussions on responsibilities and significant issues of the artificial intelligence systems, which are able to make increasingly complex decisions on their own and other relevant questions like: who should be obliged to compensate for the damage caused by artificial intelligence systems, whether an artificial intelligence system is sufficiently autonomous and able to respond directly? Therefore, this article seeks to answer all these questions.

The object of the research is legal issues related with acceptance of artificial intelligence as a separate legal entity and peculiarities of civil liability for damages caused by artificial intelligence.

The purpose of the research is to analyse the legal basis and issues related with acceptance of artificial intelligence as a separate legal entity and peculiarities of civil liability for damages caused by artificial intelligence.

The tasks of the research:
1) to reveal the concept of artificial intelligence;
2) to analyse acceptance issues of artificial intelligence as a separate legal entity;
3) to identify the peculiarities of civil liability for damages caused by artificial intelligence.

The methods of the research: The research was carried out by employing the logical, the teleological, the systematic analysis, the linguistic, the synthesising methods and the analysis of legal documents.

Discussion

The concept of artificial intelligence

This idea was later developed by another scientist D. O. Hebb, whose theory about autonomous artificial intelligence is known and applied to this day. It is necessary to note that artificial intelligence began to be developed by more than one scientist during the same period, but computer scientist J. McCarthy is considered the "father" of artificial intelligence, who defined artificial intelligence as the science and engineering of creating intelligent machines (Huang, & Smith, 2016).

Currently, various definitions of artificial intelligence can be found, as it is the subject of many different studies, so each scientist bases his definition of artificial intelligence on different theories and acquired knowledge (Nilsson, 2010). This is the main reason why there is no single concept of artificial intelligence and it cannot exist objectively. Therefore, only the general definitions of artificial intelligence, which define its most important features, are relevant for the purposes of this research article. The most famous scientists in the field of artificial intelligence have described it as the general ability of an individual to act consciously, to think rationally and to fight his environment effectively (D. Wechsler) or as behaviour towards goal achievement (S. Sternberg and B. Salter) (Bartholomew, 2014).

However these definitions of artificial intelligence are too abstract, while one of its most accurate definitions, which reveals the operation principles of artificial intelligence, is provided by M. Negnevitsky (2005), who defines this phenomenon as the ability to understand, learn (quickly and from experience), solve problems, make decisions, perceive the world, i.e., a complex of different aspects of thinking. Meanwhile an interesting position is presented in common dictionaries, where artificial intelligence is defined

in the broadest way, i.e., according to Oxford Advanced Learner's Dictionary (2020), artificial intelligence is a branch of science dedicated to the creation of computers that mimic human intellectual behaviour, and according to Cambridge Advanced Learner's Dictionary (2013), it is a science about creating machines that take on certain human qualities, such as the ability to understand language, recognize photos, solve problems, and learn. It should be noted that various interpretations of the concept of artificial intelligence can be found in different scientific papers, i.e., S. J. Russel and P. Norvig (1995) have defined even eight concepts of artificial intelligence in their research, distinguishing them into two dimensions:

1) the definitions of artificial intelligence in the first dimension are related to thinking similar to human thinking, i.e., the efforts to make machines with minds literally, automation of activities related to human thinking such as decision making, problem solving, learning, as well as definitions related to rational thinking: the study of mental possibilities, using computational models or the science of computation, which provides the ability to perceive, justify, and act;

2) the definitions of artificial intelligence in the second dimension are related to human-like behaviours, i.e., the art of creating machines which perform functions that require human or scientific intelligence and its essence is that computers are capable of doing things that people are currently better at, as well as definitions related to rational functioning, i.e. computer intelligence is the science of creating intelligent characters and this is the interface with intelligent behaviour in artefacts. According to all these different definitions of artificial intelligence, it can be argued that this phenomenon can be perceived in a rational way as an expression of thinking and acting, and all these definitions show that scientists focus more on skills of artificial intelligence such as thinking, problem solving, learning, etc., that is, on those qualities which were previously exclusively assigned only to human.

Thus, after an analysis of currently existing concepts of artificial intelligence, it can be reasonably concluded that artificial intelligence and human intelligence are closely related things, because the operation of artificial intelligence is based on principles of human intelligence. Also, it should be mentioned that the main features of artificial intelligence according to its different concepts are the abilities to think, to comprehend, to solve problems, to learn and so on. The only difference between artificial intelligence and human intelligence is nature, because artificial intelligence is artificially created by man.

The recognition issues of artificial intelligence as a legal entity

Before the beginning of analysis of the specifics of civil liability for damage caused by artificial intelligence, it is necessary to analyse the possible legal entity status of such phenomenon, which has a direct influence on resolution of the primary question. Only by properly defining and resolving the status of artificial intelligence as a potential independent legal entity it will be possible to analyse the basis of civil liability for damage caused by artificial intelligence. The analysis of artificial intelligence as a separate legal entity will be largely based on the system of natural persons and legal person as much more abstract legal entity, which is widely accepted in many national legal systems, which explains why artificial intelligence with certain characteristics can obtain a separate legal entity status.

First of all, it is necessary to assess the ratio between artificial intelligence and the concept of "human being". According to V. Mizar (2009), a natural person is a human being who has or can acquire rights and obligations by himself or through his representative under the law or due to certain events (e.g. the death of testator etc.). This person may exercise the rights and perform the duties also by himself or through his legal representatives under the law, i.e. his parents, guardians etc. However, it should be noted that the natural person is only a legal category and it cannot be equated with the definition of human being, who is a "living, thinking social being" (Baranauskas, et al., 2007), in other words, a social and biological being. Meanwhile, a natural person is a holder of rights and obligations, a subject of civil legal relations (Mizaras, 2009). In defining the importance of a natural person in this context, it should be emphasized that a natural person is a holder of rights and obligations when he has concrete feature of a legal entity, i.e. the civil justice and capacity. In other words, a person who can acquire and hold civil rights and obligations.

Another person recognized in law is a legal person, the concept of which is a new phenomenon compared to the definition of a natural person, as there are different legal doctrine theories of nature and origin of the legal person throughout its history, i.e. from legal doctrine theories denying the existence of a legal person as a separate legal entity to legal doctrine theories recognizing them as a separate subject of civil law (Goetz, 2014). The first category of such theories is based on fiction theory, which was developed by F. C. von Savigny, who argued that the real and only subject of law can only be the human being (Nijman, 2004). He explained that such human mergers are possible and can even be recognized as independent legal

entities, but they are artificially created entities (legal fictions), because all decisions are made by natural persons and the legal person is only needed to achieve the purposes of natural persons.

Meanwhile, the second modern category of such legal doctrine theories, which recognizes a legal person as a separate independent legal entity is based on reality theory, i.e. the theory that a legal person is real, not fictional (Nijman, 2004). In this case, the legal person is not identified with a natural person or human being, but he is recognized as a specific entity in civil legal relations. For example, Article 2.33 of the Civil Code of the Republic of Lithuania defines a legal person as "an enterprise or an organisation which has its business name, which may in its name gain and enjoy rights and assume obligations as well as act as a defendant and as a plaintiff in courts". It should be noted that the most accurate definition of a legal person is based on its main features, i.e. primary features, which describe the legal person, and derivative features, which detail and supplement the first ones. The primary features of a legal person are considered to be organizational integrity, civil legality and capacity, the same legality and capacity in civil procedure, all of which are necessary for a group to be recognized as a legal person, i.e. as an independent civil law entity (Mikelenas, et al., 2002).

After the analysis of these two types of legal entities it can be said that they cannot and should not be equated fully with the concept of human being, as not every human can be recognized as a natural person and not every group of people is considered a legal person. In this case, it is necessary to assess whether the person has a legal personality, i.e., legitimacy and capacity. Therefore, according to the legal doctrine theory that a legal entity is not a human being, but a legal category, artificial intelligence can also be recognized as independent legal entity.

Meanwhile, returning to the object of this research – the analysis of legal status of artificial intelligence, the question was for the first time raised in 2003 at the International Conference of the Bar Association, which addressed issues related to the objective need and usefulness of acceptance of artificial intelligence as a separate legal entity in context of increasing autonomy given to them (Benjamin, 2004). Today, various systems are already being developed, where artificial intelligence manifests itself in particular autonomy and in many cases, it does not even require additional intervention of another person. Such feature of the artificial intelligence (as it is already mentioned during analysis of its definitions) is related to the inherited human qualities, i.e. the ability to think independently, to perceive, to learn, to solve problems, etc. For this reason, it can be concluded

that the artificial intelligence is capable of becoming a separate legal entity with a legal status based on the knowledge already available on granting different legal status to various persons, i.e. natural and legal persons.

It should be noted that when considering the issue of legal regulation of artificial intelligence, all attention should be paid to their autonomy, which is the most important criterion that forms the basis for assessing this subject as an independent legal entity. The most significant and comprehensive position on this issue has been set out by the European Parliament in its resolution of 16 February 2017 with recommendations to the Commission on Civil Law Rules on Robotics 2015/2103(INL), which states that today's robots can perform actions that only humans perform normally and exclusively, as well as the development of certain autonomous and cognitive qualities (such as the ability to learn and experience and make decisions almost independently) is increasingly turning them into entities that interact with the environment and can change it. In this case such autonomy of the artificial intelligence that is related to the ability to make and to implement decisions is relevant, regardless of its control and influence (Benjamin, 2004). Therefore, the subjectivity of artificial intelligence integrated in different robots or other devices may also differ, as such devices get different degrees of autonomy depending on their performing functions (Laukytė, 2012). Thus, it can be reasonably concluded that the higher degree of autonomy of certain robot, the more it can be considered as an independent legal entity and not simply a device (product) in the hands of another entity.

The above-mentioned European Parliament resolution is also particularly significant, because it contains a clear proposal to give a separate and specific legal entity to artificial intelligence and robots, i.e. the legal status of an "electronic person". Such status could be awarded only to autonomous robots and artificial intelligence that could understand performed actions, solve problems, think, learn and perform all other actions that can be performed by other existing legal entities, i.e. natural and legal persons. The criterion of an electronic person may be applied only for such structures that can operate completely independently, i.e. can make decisions and take other actions with third parties, without additional assistance of other persons. It can be argued that even the name of this legal status alone expresses the view that an "electronic person" does not and cannot be equated with a human being.

The legal regulation issues of artificial intelligence lies in various aspects, but one of the most important is the nature of artificial intelligence and the

disagreement over the general concept of artificial intelligence, as can be seen from the previous analysis. In legal terms, artificial intelligence is generally defined as the result of creative work activities that are, among other things, protected by intellectual property, as the software is considered as intellectual property and protected by copyright (Goldberg, Carson, 2017). It should also be noted that artificial intelligence in the form of software, as well as an artificial intelligence system incorporated into a physical device such as a robot –are all considered as products (Alhelt, 2017). Continuing the idea of giving the status of legal entity, it is necessary to mention two identified possibilities, i.e. to consider artificial intelligence as a trustee and to grant it with such status or to grant it with the status of a constitutional person. Thus, if artificial intelligence is granted the status of a trustee (i.e., an assignment to it to perform certain actions), it will have to have the appropriate skills and responsibilities (Krausova, 2017). At the same time, the statute of constitutional person (i.e., equating artificial intelligence with a human being) means the dependence on other concepts such as emotions, consciousness, and communication (Krausova, 2017). Such a status equates artificial intelligence with a human being with the qualities and abilities belonging to him and the idea currently put forward by the European Parliament to give the status of an "electronic person" to autonomous artificial intelligence is one of the most rational solutions due to the rapid development of technology.

In summary, it can be concluded that referring to legal doctrine theories of a legal person, artificial intelligence is an artificial legal fiction by analogy, therefore in this case there are no obstacles to accept the autonomous artificial intelligence as a new and separate legal entity, who could have rights and responsibilities and be able to take responsibility for its autonomous actions or decisions.

Peculiarities of civil liability
for damage caused by artificial intelligence

Civil liability for damage caused by artificial intelligence is wrongly considered to be a completely unregulated area, but the question inevitably arises as to whether the current regulation is sufficient or whether new and clearer rules should be adopted on this matter. These issues are the most uncertain, as for some technical reasons it is not possible to trace concrete actions of artificial intelligence or robots that could have caused the damage and could have been avoided, as highlighted in above-mentioned Resolution

of 16 February 2017 of European Parliament 2015/2103(INL). In this context, reference could be made to Article 12 of the United Nations Convention on the Use of Electronic Communications in International Agreements, which provides that "a contract formed by the interaction of an automated message system and a natural person, or by the interaction of automated message systems, shall not be denied validity or enforceability on the sole ground that no natural person reviewed or intervened in each of the individual actions carried out by the automated message systems or the resulting contract". In this respect, U. Pagallo (2013) emphasizes that the person (both natural person and legal person) with whose help the computer was programmed must ultimately respond to every message generated by the machine. The Explanatory Notes of this Convention also emphasizes that the Article 12 is to be understood as an enabling provision and must not be misinterpreted, i.e. an automated messaging system or a computer should not be considered as an entity, that has rights and obligations, while this provision should be understood as meaning that electronic communications, which are formed automatically by means of a messaging system or a computer without direct human being intervention, must be recognized as "originating" from the legal person on whose behalf the messaging system or computer operates. Thus, it can be reasonably concluded that the issue of the conclusion of automated transactions as well as the validity and execution of these transactions is currently regulated, but without conferring an exclusive legal status on artificial intelligence.

Unfortunately, as already mentioned, neither international law, nor European Union law currently recognizes artificial intelligence as a separate legal entity, but raising this issue is particularly important in the context of civil liability for damages between the artificial intelligence and its creator. First of all, it is known that the legal systems of many countries in the world, which originated in Roman law (the continental legal system), recognize these conditions of civil liability: the illegal actions, which can occur in active and passive forms, the damage, the causal link between the illegal actions and the damages, the person's fault (Ambrasienė et al, 2004). The basic principle of compensation in these legal systems is that the damage must be compensated by the person who has caused it or by the person responsible for the actions of the person who has caused the damage. As it was discussed before, if artificial intelligence were fully autonomous, then it would be responsible for its own actions, i.e. the autonomy of artificial intelligence means its ability to have legal rights and responsibilities, and according to legal doctrine, legal rights and responsibilities belong to legal entity ties –

natural person (human being) and legal person (artificial entity). Thus, if there is an objective need for artificial intelligence to be responsible for its own actions, then it must get a proper status of legal entity and also this means that the legislator must review the current legal regulation of civil liability in order to adopt a new legislation in accordance with legal doctrine analysis and above-mentioned Resolution of 16 February 2017 of European Parliament 2015/2103(INL). However, it should be noted that the legal framework that would regulate the functioning of cyberspace should eliminate classic legal regulation principles like formality, verticality, hierarchy, static nature and stability etc., which are ineffective, considering the fact, that artificial intelligence systems are based on such functioning principles like immateriality, uncertainty, constant development and change, that was highlighted in the previous analysis. Therefore, it can be concluded that legal acts in this area must be either general or an object of constant changes, considering that the aim of both these criteria is the same: effective application, despite changes in the field of information technology, so both criteria will be appropriate for future legislation governing the area in this question.

Under the existing legal framework, robots as well as artificial intelligence cannot be held liable for their actions that have caused damage to third parties. Such regulation is due to the fact that the actions of a robot as well as artificial intelligence can be traced back to a human being, such as a manufacturer, owner, user, operator etc., so the exact offender who caused the damage can be identified and accordingly the entity will have to be held liable (Hallevy, 2010). Accordingly, the damage caused by a robots or artificial intelligence is an object of product civil liability if the product manufacturer is responsible for malfunction, or if the damage was caused by the user of such product (Čerka, et al., 2015). When analysing the issue of civil liability, both types of it should be distinguished, i.e. contractual and tort civil liabilities. In modern society, the classical conclusion of transactions and selection of partners, as well as the negotiation of contract terms – becomes less actual form of contract law, so the traditional rules in this area is no longer effective. Thus, for this reason, it became necessary to create new rules in line with the current situation. While analysing the issue of tort civil liability, reference should be made to the Council Directive 85/374/EEC of 25 July 1985 on the approximation of the laws, regulations and administrative provisions of the Member States concerning liability for defective products, that only regulates compensation for damage caused by manufacturing defects in robots and only with condition that the party can

prove actual damage, product defect and causal relationship between damage and defects, so the strict liability or no-fault liability may not be enough for this purpose. In this case, the European Parliament's resolution of 16 February 2017 No 2015/2103(INL) considers the possibility of strict liability or risk management techniques. However, in the first case, the following 3 elements are required:

1) evidence that damage has occurred;
2) the causal link established between the harmful behaviour of the robot and the damages suffered by the injured party;
3) damages.

Meanwhile in the second case, under the risk management approach, the individual liability person is not the person who acted negligently, but the person who can, in certain circumstances, minimize the risk and deal with the negative consequences. Thus, it can be reasonably concluded that, in the current state of technology, the issue of liability regulation is a necessity and that several aspects need to be taken into account when adopting the relevant rules on liability, i.e. the capabilities of artificial intelligence and its level of autonomy, the final responsible person and the proportionality between the actions of the robot and natural person.

Thus, as the artificial intelligence does not yet have the separate status of a legal entity, it needs to be examined through the prism of a tool or product, i.e. in this case, it is necessary to mention the Article 12 of the United Nations Convention on the Use of Electronic Communications in International Agreements and to emphasize that the person on whose behalf the computer was programmed is responsible. Such interpretation of this article is linked to the general rule that the tool manager is liable for damage caused by the tool because the tool itself does not control its actions. This regulation defines artificial intelligence only as a kind of tool in the hands of concrete legal or natural persons, so damage caused by it can only be assessed in the context of strict civil liability. This means that the rules on strict civil liability cover the conduct of machinery and bind the entity on whose behalf it acts, whether the concrete conduct was planned or unexpected and even maybe self-inflicted (Krausova, 2017). In tort law the strict civil liability rules are understood similar to civil liability for animals, children, workers, or even extremely dangerous acts in many EU countries (Koziol & Schulze, 2008). So this kind of civil liability is a reasonable solution to existing actual issues of autonomous artificial intelligence. Therefore, with the development of artificial intelligence, there is a growing need to review the rules on strict civil liability and to include artificial

intelligence as one of the causes of damages and to determine who is liable for damages, i.e. manager, producer, teacher or even all of these persons jointly and severally.

Conclusions

1. The analysis of different concepts of artificial intelligence has shown that there is no uniform and universal definition of it, but it can be defined by certain elements, i.e. a complex technological system, ability to act independently as a human being, intellectual activity as thinking, learning and so on. However, the use of such definition would make it easier to identify artificial intelligence and to regulate it by law accordingly.

2. After the analysis of issues of defining artificial intelligence as a legal entity it can be concluded that, on the basis of theories, that define legal persons as a separate legal entity, only fully autonomous artificial intelligence has the potential to be recognised as a separate legal entity that is liable for its acts or decisions and only such artificial intelligence could form the basis for formation of a new "electronic person". Other kinds of artificial intelligence with limited autonomy should not be given such status of separate legal entity, but they could be considered as a special category tools and products.

3. The issues of civil liability for damage caused by artificial intelligence and their analysis have shown that until artificial intelligence gets a separate status of a legal entity, the damage caused by it must be equated with damage by a tool/product and the relevant legal regulation must be applied, i.e. the strict civil liability without fault. However, once artificial intelligence becomes an "electronic person", it is necessary to review the application of such civil liability in order to establish at least joint and several liability of artificial intelligence together with the natural person responsible for damage.

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AUGMENTATION OF STUDENTS' ACADEMIC PERFORMANCE IN MATHEMATICS THROUGH CLASSROOM MANAGEMENT PRACTICES IN NIGERIA

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Abstract

The academic performance of students in mathematics among public secondary schools in Nigeria has consistently been low over a period. There are many factors that may have contributed to this, however, the influence of classroom management practices on the academic performance have not been given much attention. Studies have shown that very little learning occurs in disorganized classrooms. This study therefore aims to explore how students' academic performance in mathematics could be augmented through classroom management practices. Three research questions were raised, the main question is, how does classroom management practices enhance academic performance among students of public secondary schools in Nigeria? A descriptive research design was adopted using a total sample size N=250. The research instrument was a paper-based questionnaire on a five-point Likert scale administered face to face to randomly selected mathematics teachers from among 5 states in Nigeria, Mean and standard deviation were used to analyze the data and possible conclusions were drawn. The result among others shows that disciplined and well-motivated classrooms have a significant impact on students' academic performance in mathematics.

Introduction

Mathematics according to Maliki, Ngban and Ibu (2009: 131) is described as a subject that "affects all aspects of human life at different degrees". The importance of mathematics towards the advancement of man cannot not be overemphasized as it provides an efficient means towards building mental discipline by enhancing logical and mental processes. It remains one of the major branches of science that contributes immensely to the advancement of science and technology in this modern time (Maliki, et al., 2009: 131). The need for mathematics in public secondary schools in Nigeria cannot not be overemphasized. According to Cockcroft (1996: 1), "It would be very difficult – perhaps impossible – to live a normal life in very many parts of the world in the twentieth century without making use of mathematics of some kind." Mathematics is much valued that countries which require new social change consider mathematics as a tool for such a change (Omenka & Otor, 2015: 36). To achieve the required result, the curriculum of the public secondary schools in Nigeria should be made to reflect mathematics as a core subject followed by classroom instructions which are derived from the affected curriculum and implemented by the teacher in the classroom.

Classroom management is the action taken by the teacher to create a warm and friendly atmosphere that supports and facilitates the teaching and learning process. It is the system of creating a favourable teaching and learning environment to foster instructions as well as regulating social behaviour of students (Omenka & Otor, 2015: 36). It is Omenka & Otor's, (2015: 36) view that teachers in the classroom are by nature of their profession, managers of classroom activities. Many states in Nigeria including the federal capital territory Abuja, presumes that the classroom teachers' job is holistically concerned with maintaining order, allocating resources, regulating the sequence of events and directing their own attention towards achieving educational goals as enshrined in the national policy of Education (Omenka & Otor, 2015: 36).

Academic performance is the ability of students to produce knowledge and skills that have been learnt in the classroom through writing or by oral communication. Academic performance is usually designated by grades or marks assigned by teachers or the examination board, e.g. the West African Examination council, based on predetermined standards. In most cases, the yardstick to measure the quality of education is largely centred on the academic outcome of the students. Because of the large classroom size in most public secondary schools in Nigeria, students' academic performance

in mathematics remains a puzzle. But the overall competency of the teacher in the management of the classroom could initiate some positive changes.

In recent times, the poor performance of secondary school students in mathematics have become a source of worry to educational researchers, policymakers, parents, and other stakeholders. Mathematics teachers play vital roles in students' outcome which therefore implies that whatever factor that is affecting teachers' performance is also affecting students' outcome. Despite the innovations created to aid teachers' improvement on class managerial skills, both new and experienced teachers continue to struggle in raising learners' grades in mathematics, mostly in public secondary schools in Nigeria. The poor achievement of learners in state and national examinations are clear indications that there are deficiencies with respect to classroom management practices within public secondary schools.

The underperformance of learners in mathematics which is one of the five core subjects and a prerequisite for admission into any Nigerian university has therefore led the researcher to ask whether classroom management practices could be the main reason for low performance. This is because only few studies have been done on this area of research. This study sought to address this problem by investigating how students' performance in mathematics could be augmented through classroom management practices.

Theoretical framework

The theoretical framework serves as a means of understanding and explaining the findings of the study, as it portrayed a clearer perspective of the dimensions of the variables in the figure. It showed the structural background of achieving improved academic performance through effective classroom management practices. This study adopts the Ginnot theory of classroom management, propounded by Haim Ginott (1971). Ginott's theory follows a constructivist approach to school discipline, and it has been one of the 10 most used theories in classroom management in recent time. Ginott's method believed that the teacher is a decisive element in the classroom, who can shape students depending on the teacher's behaviour (Taylor, 2004: 34–38). The theory emphasizes that teachers are to facilitate or moderate classes thus reducing teacher disruptions but encourage students' activeness in their engagement with class lessons. If students can flow and contribute actively, total discipline could be achieved because students are carried along as well as positively engaged. In a further

development, the teacher should not criticize the student's personality rather motivate them with empathetic comments.
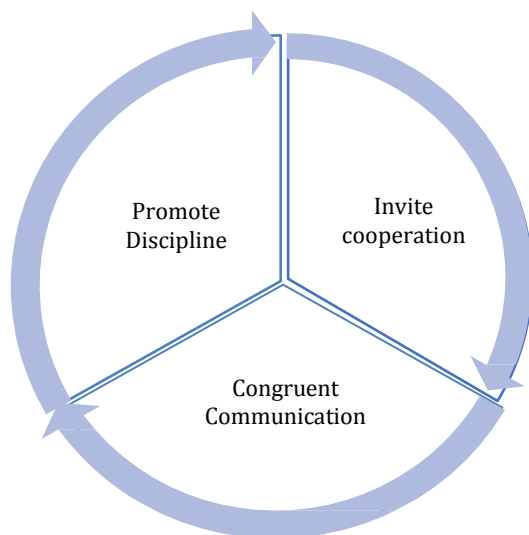
Figure 1. **The core elements of Ginott's Theory** (Ginnot, 1971)

In Figure 1, the Ginott's theory highlighted three core principles which helps to maintain a disciplined classroom. First is Congruent communication which indicates that the way in which the teacher communicates with the students increases students' self-esteem and decreases conflict. It involves talking to the students with respect and with careful selection of words especially when expressing anger. Ginott in his second principle believes that hostility is an outcome of dependency. Teachers should as such encourage independence and autonomy. Finally, praises should be appropriate, and this helps the student to draw conclusions about their value. Ginott's model advocates providing opportunities for children to become less dependent on educators and to become more responsible for what happens in the classroom (Charles, 2007: 27–28). This study is therefore in line with Ginott's theory since it revolves around teacher's behaviour and student's independence and autonomy.

Academic performance

Academic performance is the ability of students to demonstrate through writing or by oral communication that which has been learnt in the classroom. Academic performance is usually designated by grades or marks assigned by teachers or the examination board, e.g. the West African

Examination council, based on predetermined standards. In most cases, the measurement of quality of education is centred on the academic outcome of the students. The better the academic performance of the students, the more the system assumes that the quality of teaching is improving. Nigerians ultimately cherish students whose academic performance seems better compared to those that under-performed. According to Ali, et al., (2009: 82), academic success is one of the main factors considered by the employer while recruiting workers. Thus, students must try in their studies to obtain good grades to fulfil the employer's demand. They further summarized that Students' academic performance is measured by the Cumulative Grade Point Average (Ali, et al., 2009: 82). Universities and colleges are practically operating because of students, existence of educational institutes is not worth it without students (Mushtaq & Khan, 2012: 2).

It is assumed that the political, socio-economic development of nations has a direct relationship with students 'performance (Mushtaq & Khan, 2012: 2). The students' performance (academic achievement) is vital in producing the best quality students who will become great leaders of tomorrow and manpower force for the country, hence responsible for the country's economic and social development (Ali, et al., 2009: 82). Academic performance is important for an institution for the good outcomes that lead to promotion or to job performance in the future (Kuncel, et al., 2004: 151). Many studies agree that students' academic achievement is a 'net result' of their cognitive and non-cognitive attributes (Lee & Stankov, 2016: 551–552) as well as the socio-cultural context in which the learning process takes place (Liem & McInerney, 2018: 15–40).

Classroom management

The classroom in this dimension means a space where teaching and learning can take place without undue interference by outside distractions. It is a conducive place where learners converge under the guidance of a teacher to work towards specific predetermined class objectives. A conducive classroom is very important for learning because it provides a feeling of safety, without which students can develop anxiety and become uneasy in the classroom (Piaro, 2018: 942). According to Evertson and Weinstein (2006: 4) it also aims to improve the student's moral and social development.

However, for a classroom to achieve its set goals, it must be well organized. Chandra, (2015: 13) observed that classroom management practices

include aims establishing students' self- independence through a systemic process of instilling positive student achievement and behaviour. Thus, academic achievement, teacher, and student behaviour are connected to the concept of classroom management (Chandra, 2015: 13).

Classroom management is vast and multi-dimensional, moves across the conventional behaviour management pattern recommended to deal with students with disruptive behaviour (Chandra, 2015: 13). Class teachers should possess the efficacy that would help sustain the management of the classroom in most cases where young students are involved. The ability to have a total control of the class structure and put the students in a right frame of mind to concentrate while studying makes the difference. Students' learning process is altered if the management of the classroom is not properly handled by the teacher.

Classroom discipline

The term 'discipline' comes from a Latin word 'disciplina' which means "instruction and training". In the classroom scenario, discipline can be termed as an act of responding to misbehaving students to restore and maintain order, authority, and control (Hue & Li, 2008: 5). In their book, Hue and Li, (2008, p.5) observed that the teacher who in the process of maintaining tranquillity and orderliness in the class sees discipline as a form of training aimed at influencing students moral, behavioural and mental development which promotes self- discipline, self-management, and self-control.

High occurrence of disruptive classrooms has a huge impact on the effectiveness of teaching and learning, studies have shown that teachers facing such challenges failed to plan and design appropriate instructional tasks ahead (Froyen & Iverson, 1999: 128–129). Teachers in such positions neglect the normal usage of lesson plans; intermittent assessment and evaluation are affected while seat work is not monitored. All these tend to have some negative impact on students' concentration which eventually results in poor performance. However, good management and organizational skills could correct these errors. Although effective classroom practices breeds a variety of positive outcomes for students, according to a 2006 survey of pre- K through grade 12 teachers conducted by American Psychological Association (APA) as cited by (Kratochwill, et al., 2020: 1). In the final analysis, effective classroom practices should establish and sustain an orderly environment in the classroom, increase meaningful academic

learning and facilitate social and emotional development (Kratochwill, et al., 2020: 1).

Teacher motivation

Teacher motivation, or alternatively "motivation to teach" (Dörnyei & Ushioda, 2011: 167–167). It refers to the reasons that arise from an individuals' intrinsic will to teach and sustain teaching, and its intensity is indicated by the effort devoted to this process of teaching (Han & Yin, 2016: 1–18). However, some experts see teacher motivation from a broader perspective. According to Sinclair (2008: 37), it in terms of attraction, retention and concentration as something that determines 'what attracts individuals to teaching, how long they remain in their initial teacher education courses and subsequently the teaching profession, and the extent to which they engage with their courses and the teaching profession' (Sinclair, 2008: 37). Teacher motivation is what propels a teacher to do more.

In the matter of classroom management, a highly motivated teacher can display much more love and care for the students. The teacher does this by positively appreciating students' individual and collective efforts. Students who are well motivated by their teachers tend to perform better at mathematics and other subjects. It is inevitable for teacher motivation to have a close relationship with students (Han & Yin, 2016: 8).

Public secondary schools in Nigeria

Public secondary schools are schools funded by the state. The benefits of education have historically prompted governments to assume the primary role in managing and funding schools (OECD, 2012: 11). Students spend six years in secondary school, that is, 3 years of junior secondary school (JSS), and 3 years of senior secondary school (SSS). During these six years, students are mandated to study the core subjects which include mathematics.
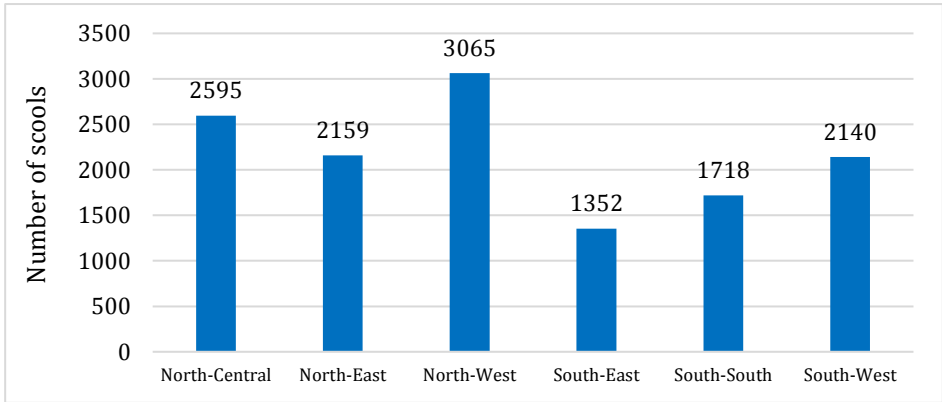
Figure 2. **The number of lower public secondary schools in Nigeria as of 2018 distributed among the six geo- political areas of Nigeria: Adapted from** (statisca, 2019)

Because of government commitment in funding public schools, many students are enrolled in public schools thereby making it relatively difficult for a teacher to manage one classroom alone. No wonder mass failure has become inevitable at public schools, students' performance in mathematics at examinations has remained considerably poor while Stuart (2000: 330–335) states that poor academic performance in mathematics is traceable to poor or ineffective teaching. In his study, Idowu (2018: 179) observed that the Sun News reported that Nigeria recorded its worst results in mathematics in the last three years. The Sun Newspaper's opinion with the headline (Outrage trails students' poor performance, 2014), as cited by Idowu, (2018: 179) reported that out of 1.6 million students that took the 2014 May/June West Africa Senior School Certificate Examination (WASSCE), only a little more than half a million (31.28 %) passed with the minimum requirement for admission into tertiary institutions (Idowu, 2018: 179).

Methods

Quantitative research method is applied. This method emphasizes objective measurements, the statistical, mathematical, or numerical analysis of data collected through polls, questionnaires, and surveys.

Research objective

The aim of the research is to achieve the following:

1) to investigate how students' academic performance in mathematics could be augmented through classroom management practices;
2) to explore if there is an association between classroom discipline and students' performance in mathematics.

Research questions

The following research questions will be answered by the study:
1) How does classroom management practices enhance academic performance in mathematics among students of public secondary schools in Nigeria?
2) How does classroom discipline influence students' academic performance in mathematics?
3) Does teacher motivation have an impact on students' performance in mathematics among students of public secondary schools in Nigeria?

Instruments

The instrument for data collection was the questionnaire, some items were selected from the OECD Teaching and Learning International Survey (TALIS), 2008. Some items too were adapted from Validation of a Classroom Management Questionnaire (VCMQ) for pre- and in- service Teachers (Diaz, et al., 2018: 282–285). Some items were further picked from (Piaro, 2018: 955), while the rest of the items were developed by the researcher. A pilot study and expert interview was conducted to ascertain their validity. The questionnaire comprised five sections which include demographics, motivation, discipline, academic performance, and classroom environment. Each section apart from the demographic section has 10 questions each, while the demographic has only 7 questions, thus a total of 47 questions. The answer section is based on a 5-Likert scale ranging from Strongly disagree to Strongly agreed (SD-SA).

Participants

Due to the complexity of the target population, the study applied only paper questionnaires administered face-to-face to randomly selected mathematics teachers from among the public secondary schools in Nigeria. The instructions were clearly explained to ensure confidentiality. The participants also gave their consent before participating.

Result

The purpose of this quantitative study was to explore the augmentation of students' academic performance in mathematics through classroom management practices. The mean and standard deviation of the test items were used to validate the findings.

Table 1

Demographics

Sex	Classification	Male	Female	Total
Age	20–30	64	36	100
	31–40	62	33	95
	41–50	33	13	46
	51–60+	07	02	09
Marital Status	Single	47	19	66
	Married	101	52	153
	Divorced	03	02	05
	Separated	05	04	09
	Widow/er	10	07	17
Years of Experience	0–5	61	33	94
	6–10	48	22	70
	11–15	27	17	44
	16–20	17	09	26
	21+	13	03	16
Qualification	OND/NCE	0	0	00
	BSC/MA/B.ED/HND	112	53	165
	MA/MSC/MED	54	31	85
	PHD	0	0	00
Employment Status	Full time	129	57	186
	Part time	27	19	46
	Contract (Probation)	10	08	18

Table 2

Mean value and standard deviation of responses
of teachers on classroom practices in mathematics

Research question 1. How does classroom management practices enhance academic performance in mathematics among students of public secondary schools?

Questionnaire Item	N	M	SD	Remark
During each lesson, I vary the size and composition of learning groups.	250	3.34	0.96	Accepted
I always start the lesson by recapping the previous lesson.	250	3.37	0.94	Accepted

The class seating arrangement should be gender-based so that appropriate class discipline could be achieved.	250	2.92	1.34	Accepted
I talk with a student after an emotional outburst to demonstrate I am personally interested in him/her.	250	3.31	0.93	Accepted
I use concept check questions to make sure instructions are understood (e.g. "what do you have to do first?", "do you have to work in pairs or in groups).	250	3.30	0.89	Accepted
I support the use of body language to make instructions understandable.	250	3.45	0.83	Accepted
It is always recommended that the teacher should demonstrate what students are expected to do (e.g. assigning a student to demonstrate the task).	250	3.44	0.84	Accepted
It is NOT always important to learn about the different types of students' personal and social needs (e.g. using 'getting to know each other activities).	250	3.19	1.07	Accepted
Classes are meant to end with a reflective activit about the lesson (e.g. written reflection, oral reflection)	250	3.12	1.09	Accepted
It is preferable to use simple and precise terms than ambiguous words while teaching.	250	3.41	0.88	Accepted
Grand Mean		**3.26**	**0.98**	**Accepted**

Scale of classroom practices (1–5); (1 – strongly disagree, 2 – Disagree, 3 – Undecided, 4 – Agree, 5 – Strongly agree). Standardized scores.

From the data (see Table 2), it is confirmed that classroom practices enhance students' academic performance. The cluster mean of 3.26 and standard deviation of 0.98 ranked above the required rank. The respondents believe that group size, recapping of previous lessons before the introduction of the new one, teachers' demonstration of what students are expected to do in class, ending classes on a reflective mode and using simple and precise terms are all necessarily for enhancement of students performance.

Table 3

Mean rating and standard deviation of responses of teachers on classroom discipline

Research Question 2. How does classroom discipline influence students' academic performance in mathematics?

Questionnaire Item	N	M	SD	Remark
Reprimand bad behaviour on the spot in a loud voice	250	3.54	0.81	Accepted
Send a student home for aggressive or destructive behaviour	250	2.39	1.77	Accepted
Send a student to Principal's Office for misbehaviour	250	2.99	1.94	Accepted
Inform parents about bad behaviour of their wards.	250	3.67	0.79	Accepted

Obeying the school rules and regulations significantly enhances students' relationships.	250	3.99	0.75	Accepted
Disciplined teachers could minimize disciplinary problems and control them for effective teaching and learning.	250	3.06	1.13	Accepted
Physical punishment should be introduced as a measure to control indiscipline in classrooms.	250	2.05	2.21	Accepted
Without classroom discipline it is doubtful for effective teaching and learning to take place.	250	3.55	0.80	Accepted
The use of proper language and the personality of the teacher can positively influence the behaviour of students.	250	3.54	0.81	Accepted
Appointment of a student in the classroom to take charge of noise makers creates an environment that is conducive for effective teaching and learning.	250	3.41	0.88	Accepted
Grand Mean		**3.20**	**1.19**	**Accepted**

Note. Scale of classroom discipline (1–5); (1 – strongly disagree, 2 – Disagree, 3 – Undecided, 4 – Agree, 5 – Strongly agree). Standardized scores.

The mean of 3.20 (see Table 3) indicates that well organized and coordinated classrooms enhance students' performance. The teacher's body language, appointment of students to take charge (class monitor) could as well foster classroom discipline. The cluster mean of 3.20 and standard deviation of 1.19 is an indication that the above assumption is supported. However, only a few percent of the respondents supported sending the students home for bad behaviour. This shows that the teachers are looked upon as character moulds and sending the child home might not solve the problem.

Table 4

Mean rating and standard deviation of responses of teachers on students' motivation in mathematics

Research Question 3: Does teacher motivation have an impact on students in mathematics among secondary students of public secondary schools in Nigeria?

Questionnaire Item	N	M	SD	Remark
A teacher that rewards students for good behaviour in the classroom enhances students' performance	250	4.00	0.51	Accepted
Clapping of hand for a student that performs well in the classroom will motivate others to do better.	250	3.49	0.83	Accepted
Rewarding students in the class with gift item motivates other students to make better attempts.	250	2.87	1.84	Accepted
Praise and recognition of students for brilliant performance encourages others for improved academic performance.	250	3.77	0.78	Accepted
Classroom motivation has greater influence on students' academic achievement.	250	4.01	0.65	Accepted

Teachers that motivate students in the class achieve more during the teaching and learning process.	250	3.56	0.82	Accepted
Motivated students are easy to control, organized, monitor and discipline in the classroom	250	4.05	0.61	Rejected
Over praising of students will sometimes make students to become arrogant and unnecessarily proud.	250	3.02	1.12	Accepted
In most cases, I respond to students' answers using verbal praising (e.g. "Brilliant!", "Great!", "Nice job!").	250	3.50	0.80	Accepted
Using abusive languages (e.g. 'you are stupid', "Fool") as a response to incorrect answers also make students to put more effort.	250	2.02	2.22	Accepted
Grand Mean		**3.43**	**1.02**	**Accepted**

Note. Scale of student motivation practices (1–5); (1 – strongly disagree, 2 – Disagree, 3 – Undecided, 4 – Agree, 5 – Strongly agree). Standardized scores.

The result shows that students' performance is enhanced when they are positively motivated. The use of reward systems, recognition, praises, positive feedback, and non-use of abusive language are all geared towards energizing the students towards the right direction. The cluster mean of 3.43 and a standard deviation of 1.02 (see Table 4) are above the required rank, therefore it is shown in table 4 that teacher's motivation will impact students' academic performance in mathematics.

Discussion

This study investigated how academic performance in mathematics among students in public secondary schools in Nigeria could be enhanced through classroom management practices. The main findings were that: (a) There is a positive relation between students' academic performance in mathematics and classroom practices; (b) That classroom discipline has an impact on students' academic performance in mathematics; (c) That teacher's motivation creates an enabling environment for improving students' academic performance in mathematics.

The activities that take place within and around the classroom in most cases centres around the kind of practices which the teacher put in place to facilitate teaching and learning. The teacher's attitude and approach in this dimension contributes to the outcome expected of the students. For the students to perform relatively well, the teacher should work within a level of management practices like motivation, discipline, and classroom environment. The above assertion complies with Piano's view, (2018: 958)

that teachers have been shown to have important influence on students' academic achievement, and they also play a crucial role in educational attainment. Teachers, who prepare and implement a quality lesson plan, manage students' behaviour, use effective teaching methods, communicate messages in a simple way and manage time efficiently and effectively will provide a conducive environment for learning (Piano, 2018: 958).

From the data (see Table 1), it could be revealed that 66 % of the teachers have a bachelor's degree while 34 % are master's degree holders, an indication that the teachers are well qualified with a reasonable teaching tact required of a public secondary school teacher. In a further development, the data (see Table 1) reveals that 62.4 % of the teachers already have acquired 6 years' experience and above in this subject area while 75 % of them are on full time bases which indicates consistency. Furthermore, as shown in table 1, over 72 % of the participants responded that motivation from the teacher greatly influenced students' performance. This result coincides with the assertion of Mallum and Haggai (2000) who concluded that with motivation the work of the teacher is made easier, that motivated students are much more interested to learn, able to undertake learning activities while attending lessons on a regular basis. Teachers' classroom management practices have a direct relationship with students' academic achievement (Gage, et al., 2018: 13–18). It is paramount to conclude that classroom motivation significantly influences students' academic achievement (Omenka, 2015: 40). However, Mathematics teachers should undertake periodic training, workshops, and teacher professional development (TPD) courses on classroom management techniques. More experienced mathematics teachers should be employed and empowered by the government. Mathematics teachers in public secondary schools should involve students in classroom activities. Students should be exposed to more mathematics quizzes and external mathematics competitions, as this would enable them to practice more often.

Further findings

1) It was found that effective classroom management practices significantly increase academic achievement of students and decrease behavioural problems (Korpershoek, et al., 2016).
2) Students and teacher's direct relationship in academic matters improves their general learning skills.
3) Mathematics teachers can reduce aggressive, violent, and unhealthy behaviours among students through classroom management practices (Wilson & Lipsey, 2007: 130–143).

Conclusions

The present study adds to the general discussion regarding relations between classroom management practices and students' academic performance. Results have revealed that there is a relation between the two variables. The result further shows that classroom discipline and teacher motivation influences student academic performance in mathematics. The study established that classroom rules, enhanced classroom environment, reinforcement strategies and reductive procedure are practices that strengthen effective classroom management (Little & Akin-little, 2008: 227–234). This study therefore concludes that effective classroom practices, motivation from teacher and classroom discipline are management practices that could enhance academic performance in mathematics among students in public secondary schools in Nigeria.

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READINESS FOR DIGITAL TRANSFORMATION – THE OUTLOOK OF TOP BALTIC COMPANIES

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Abstract

The aim of this study was to explore and assess the point of view on digital transformations of companies who are currently in the transformation program and running digital transformation projects. The study collects data from diverse top companies across Baltics region across various industries. Within the study the descriptive research method is in use. The statistical population of this study is an extended list of companies from the Coface study for Baltic top 50 ranking for 2019. The sampling for the study was based on purpose selective approach which includes 11 companies from the statistical population. The data collection was carried out by an online questionnaire and afterwards through interviews with the respondents to validate the data provided. The results of the research is the outlook created which includes a number of aspects to be considered for future research: (1) Currently, the competence level of transformation processes in flagship companies and respectively in rest of the companies in the market needs to be improved; (2) Business demand for knowledgeable digital transformation experts with comprehensive modern business processes management knowledge is relatively higher rather one with pure technical expertise in cutting cutting edge technologies; (3) To boost digital transformation toward the operational concept of Intelligent Enterprise, support and guidance from the global digital transformation advisory partners is highly recommended.

Introduction

How to drive business growth in a world of disruption? This question has been very regularly put at the heart of organizational change strategy for business success across the globe.

The research done by Forbes in 2016 (Forbes Insights, 2016) shows that 72 % of the company executives (CEO) state that the next 3–5 years are much more critical than the last 50 years of the businesses and industry they had been operating as such, because the business models are changing by the changes in environment, culture, people behaviour etc. So, the stated timeline is already here! But what does it mean to have organizational change oriented towards success?

Nowadays most of the organizational changes are led by digital transformation and the potential benefits that can be achieved from cutting edge technologies. Today in the case of businesses the use of cutting edge technology for commercial purposes or even the idea of innovation to realization and further commercialization, using modern open innovation platforms, like start-ups, business incubators etc., is significantly easier than let's say 10 years ago.

Most of the newer technologies and innovations are already viable and available on the market in a relatively short time after its invention, i.e. they are not laboratory prototypes but ready to use out-of-the-box, so the return on investment (ROI) and deployment time is very attractive. For example, already in 1930s the concept of the self-driving car appeared, however it wasn't technically possible to make it viable until the 21st century. In 2000 initial costs to get sensors into car to make it self-driving were above 50000 EUR, however now costs are approximate 200 EUR (Forbes, 2016). And there are a lot of such examples where the use of new technologies is very affordable.

Regular research and forecasts by Gartner on the speed and availability of innovative technologies called as Gartner Hype Cycle for Emerging Technologies (Gartner, 2019; 2020) shows the trend for the emerging technologies and some technologies that are in the spotlight due to the global challenges posed by Covid-19, like:

1) 3D printing to automate manufacturing processes and reduce the lead time within the Design to Operate process;
2) new generation of the Artificial Intelligence that would blindly work with a huge amount of data and learn in the process, e.g. will allow to decode the RNA and DNA, to suggest the optimal pharmaceutical active ingredients to fight with the viruses;
3) multiexperience that could enhance the senses of humans and give additional tools for employees to make their routine more optimal;
4) hyperautomation which allows to connect all (or part) of the actors in the value chain to speed up request processing times and shorten decision-making time.

Based on the data of Gartner studies (Gartner, 2019; 2020) it can be seen that technologies such as IoT (internet of things), Blockchain, AR/VR are no longer even on the list of innovative technologies, as these technologies have already become available worldwide and many companies are trying to use these technologies for streamlining daily business processes.

However, the use of the innovations and cutting edge technologies must be supported by established end-to-end traceable and stable business processes in organisations. And this is the very crucial part of the digital transformation journey.

Digitalization is making a big difference in business and society. The market is gradually being filled with digital products and services, creating the need to change traditional business models. (Belk, 2013; Prause, 2015; Petrenko et al., 2019). Today, companies are forced to adapt to changes in the global economy and innovative accessibility, whether it is a small or large company with a branch network. Otherwise, the competitor will win, the business partner will find another contractor that is more flexible and adapted to modern business technologies. (Panfilova, et al., 2020; Ziyadin, et al., 2020).

Several business studies show that the productivity of non-digital companies is approaching zero, so each of us needs to rethink the existing processes and take a step to increase productivity by recognizing that today's outdated technologies are no longer delivering the expected results. (The Conference Board, 2015). Environmental factors affect the economy. Changes in society affect business behaviour.

The research actuality is mentioned above, i.e. digital transformation today is the key for success, therefore it is necessary to get insights and assess the Top Baltic companies' readiness for the digital transformation

journey as they are those flagship companies in the market creating the digital agenda in their industries that other companies meant to follow.

Theoretical framework

For the theoretical framework of the study the author has used researches of world leading digital transformation advisory companies and leading transformation enablers on the current research field. As the business processes were assessed during the research, the author studies and refers to the research works on the digitalisation frameworks for business processes.

The current global crisis has impacted every part of every industry. The least impacted were businesses that had already completed the digital transformation of key areas of their business. Also, those that were able to implement new digital practices and processes quickly. For example, agile supply chains kept production lines running – often producing new and critical products like Personal Protective Equipment (PPE) for Covid-19 (respirators, masks, face shields, goggles, glows etc.).

Companies, who got through the basic digital transformation and have majority of the end-to-end business processes digitalized and under the full control, are getting to the next level of transformation, i.e. utilizing the benefits of cutting edge technology. Such companies are usually called Intelligent Enterprises. Intelligent enterprises apply advanced technologies and best practices within agile, integrated business processes that helps them to be more resilient, profitable, and sustainable, and become best-run businesses. (SAP, 2020)

Such companies are pulling and staying ahead in their industry and are consistently applying innovative cutting edge technologies and best practices within agile and integrated business processes. The use of the technologies to collect insights about the customer, partner, and employee sentiments to sense opportunities, risks, and trends is the way to develop the business. Infusing cutting edge technologies helps to understand not just what is happening right now in their business, but why any of the things are happening and what is the potential impact of reactive changes and predictive models. Such ability for the companies should be applicable for all the end-to-end business processes through the complete value chain. (SAP, 2021)

Running critical business processes enabling comprehensive planning, execution, and analytics encompass the digital transformation journey. Companies need to consider all aspects of the customer journey, from lead generation to payment, from recruiting to retirement, from product design through to operations, capturing all processes in manufacturing and the supply chain, that basically leads to the definition of the following 4 fundamental end-to-end business processes.

Lead to Cash (L2C). The lead-to-cash process flow is an end-to-end, integrated process flow starting from a customer's intent or interest to buy a product, to a company's realization of revenue based on product sales.

Literature on lead-to-cash process highlights the actuality of the digital transformation of the process and shows how digitalization can change lead-to-cash within the supply chain (Buttle, et al., 2006; Cuevas, 2018; Jüttner, et al., 2007; Kache & Seuring, 2017; Srai & Lorentz, 2019), and particularly how firms can harness technology and digitalization to improve efficiency and effectiveness (Cortez & Johnston, 2017; Syam & Sharma, 2018).

Digital enablers for the lead-to-cash process can change the dynamics and power relations between the selling and buying organizations (Hunter, et al., 2015; Lilien, 2016; Mariadoss, et al., 2014).

Recruit to Retire (R2R). The recruit-to-retire process flow is an end-to-end integrated process of planning, sourcing, and managing the total workforce, starting from the recruiting of a potential employee through the lifecycle of their career to their retirement.

Powerful technology capabilities are being put into people's hands, usable without highly specialized skills. It is not about a single tool or service, but the culmination of an array of technologies. Therefore 86 % of executives agree their organization must train its people to think like technologists – to use and customize technology solutions at the individual level, but without highly technical skills. (Accenture, 2021)

Nowadays every company challenge to make their employees a core part of their digital transformation effort. But to do so successfully, companies need to have a new way of recruit-to-retire process what will facilitate employee ability to support digital transformation. It's not just about giving people access to new tools; companies must actively teach their people to think like technologists. This doesn't mean turning everyone into an engineer, but rather enabling them to solve problems with technology.

Digital transformation of the recruit-to-retire process are practiced through three focal areas that might be briefly labelled as Digital Work, Digital Employees, Digital Employee Management. (Prakash, et al., 2019)

Source to Pay (S2P). The source-to-pay process flow is an end-to-end integrated process that starts with finding, negotiating with, and contracting the supplier of goods, and culminates in final payment for those goods.

Taking in consideration constantly increasing complexity in sourcing and overall source-to-pay process, the new way of managing and executing source-to-pay process and using digital platforms and tools have introduced how companies can source-to-pay for goods and services in an optimal way. That enables making informed decisions on the approach to use and ensuring that the chosen approach fits the context consequently increasing in relevance. Such informed decision-making requires a series of enablers (McKinsey, 2017; Schröder, et al., 2018). Relevant enablers include data infrastructure needed to analyse category and supplier structures, emerging technologies to be used to deliver improved purchasing performance, digital sourcing roles and capabilities etc.

The payback on a robust, automated end-to-end source-to-pay process could be high. Industry benchmarks suggest that most organizations waste 3 to 4 percent of their overall external spend on excessive transaction costs, inefficiency, and noncompliance.

The role of emerging technologies in source-to-pay automation is very high and has very solid and proven ROI. For example, the McKinsey Global Institute has found that across occupations, activities accounting for 46 percent of US workers' time could be automated using emerging technologies, like RPA and ML. (McKinsey, 2017)

Design to Operate (D2O). The design-to-operate process flow is an end-to-end integrated process that starts with the discovery of potential new product, designing it, planning demand and related components supply, manufacturing and delivering the product and finally ensuring optimal operations of the manufacturing equipment.

Digital manufacturing, and Virtual manufacturing serve as a new paradigm in the manufacturing environment to refine the manufacturing business, as technology capabilities expand and business conditions change (Kim & Lee, 2002). Traditional manufacturing processes designed for mass production of identical products is labour intensive and increases the development time and cost. On this backdrop, advanced manufacturing or digital manufacturing is becoming apparent.

Analytics. To support the fundamental processes constant improvements, one needs to define the key aspect for decision support systems that is Analytics that includes data collection, extract-transformation-load (ETL), storage, and reporting.

A strong analytics capability is key to digital transformation, as organizations that want to compete in the digital economy will have to invest in various resources including people, processes and technology of data and analytics (Carlsson, 2017). Such resources can be categorized into tangible, intangible, and human skills and they can lead to increased performance and create a competitive advantage for organizations. As big data have become a necessary resource in creating value, big data analytics capability is defined as the ability of a data actor to effectively deploy technology and talent to capture, store and analyse data, towards value creation, business change, and societal change (Gupta & George, 2016; Loebbecke & Picot, 2015). To achieve this a data-driven culture is required, which will allow decision-makers to base their decisions more on insight rather than instinct (McAfee & Brynjolfsson, 2012).

Database & technology. Moreover to be able to make all digital transfor-mations it is necessary to have appropriate database and technology platforms in use that will basically support deployment and execution of the fundamental business processes, perform analytics on all the data available and would technically allow use of cutting edge technologies within the platform.

Digital Transformation is about technologies that enable cross-functional value generation and shape the way of doing business massively, e.g. innovations such as Cyber- Physical Production Systems, the Internet of Things (Haller, et al., 2008), Cloud Computing (Gubbi, et al., 2013) etc. make up the underlying technologies of Digital Transformation in manufacturing. Digital Transformation presents a new way of linking and using digital technologies getting the business processes into the next efficiency level (Lucke, et al., 2008).

77 % of executives state that their technology architecture is becoming very critical or critical to the overall success of their organization. These rapid transformations and the sudden influx of new technologies have ignited an era of business – one where database and technology architecture matters. (Accenture, 2021).

Considering the above defined fundamental end-to-end business processes, supportive components and referring to the Gartner hype cycle, the aim of

the study is to make an outlook or in other words to assess top Baltic companies' perceptions and readiness for their digital transformation and to examine the following hypotheses:

1) overall perception of the company's internal competence level to support the transformation by their own is relatively low, which shows the Baltics market's low maturity level for overall awareness of every aspect of the digital transformation content. That leads to the requirement to engage with global digital transformation partners who have a proven track record of successful transformation programs and projects across the globe;

2) business demand for the internal competences to support the business transformation is relatively high, which leads to a potentially related challenge that the local labour market is not yet ready to support with resources for the company's full-scale digital transformation planning and execution;

3) demand for definite skills required for digital transformation is higher for business process management in a modern way rather than pure technical knowledge of cutting edge technologies, which shows that companies within the Baltics market are still building the base for an Intelligent enterprise rather than utilizing the benefits of cutting edge technology.

Research methods

The study collects data from diverse industries and companies across the Baltic region. The target audience for the research were companies:

1) with headquarters in any of the Baltic counties;
2) with operational revenue of > 100 M EUR in 2019;
3) who within last 3 years have signed contracts with any of the global digital transformation partners.

Respondents who filled the survey were the company's executives.

Within the study the descriptive research method is in use, basically expert surveys. The statistical population of this study is an extended list of companies from the Coface study for Baltic top 50 ranking for 2019 (Coface, 2019). The sampling method was based on the study author's personal connections with the respondents and for the study at this stage it was not possible to apply the Cochran's formula sample size determination logic due to various aspects, like publicly available information on the 3rd selection criteria listed above. The sample size was 11 companies.

An online questionnaire created by the author using Qualtrics system was used for data collection and the hyperlink to the questionnaire with description of the research aim was sent by the research author to the companies' executives. After receiving the results, selective interviews with the respondents were organized to validate the answers provided in the survey.

The online questionnaire has 6 sections, 3 sub-sections for each section, 152 subject related questions and 8 overall informational questions, in total 160 questions (variables).

Embedded Qualtrics system capabilities, like Stats iQ, Weighting, Predics iQ were used for data analysis (Qualtrics, 2021)

Findings

For better analytical perception, the survey results were processed and clustered into fundamental business processes and a summary of the overall average results was created to highlight the overall maturity situation.

During the research results analysing process, respondent answers were clustered into 3 main sections: competency level, business demand, and need for resources.

The meaning of the competency level section is the company's internal competence for a certain end-to-end business process or/and technical and functional area. The competence level represent self-assessment results for the average knowledge of the team who are directly

involved in the digital transformation process or who will be or should be involved. The assessment criteria were not strictly defined in terms of expert, intermediate or beginner competence, but based on the result validation discussions with the respondents, the following were defined:

1) beginner level is the very minimal theoretical knowledge on the process that is required to be able to ensure digital transformation of the particular process;
2) intermediate level is good theoretical knowledge however lack of the practical expertise in the particular area;
3) expert level is good theoretical knowledge and practical expertise and experience in the process digital transformation.

The overall results of the competence level assessment by the companies are represented in the chart below (see Figure 1).
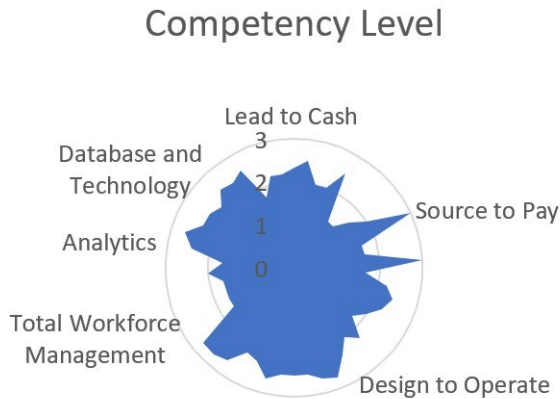
Competency Level

Legend: 1 – Beginner, 2 – Intermediate, 3 – Expert

Figure 1. **Overall results of the competency level**

From the perspective of the overall competency level, companies assessed themselves at the intermediate level, which means that companies starting digital transformation are ensuring talent management activities to have on board employees who can drive the transformation at least based on the theoretical basis that employees had learned in universities or by self-learning, or through additional courses.

Companies possess more stable theoretical knowledge on database and technology transformation topics, which shows that technical disciplines are more or less universal across the different industries and different line of businesses, so employees feel confident on such topics even if they change the employer and the industry and are hired specially to support the digital transformation program in the particular area. Moreover, the results show that theoretical knowledge provided by the learning institutions, including universities, are more towards applied science in IT than applied science in business process management.

Although companies marked themselves as very knowledgeable in some areas of the source-to-pay and design-to-operate, analysing these results a minor misalignment is observed between the understanding of meeting end-to-end process and siloed approach of business process management. This means that companies who are very experienced in one area of the end-to-end process will very doubtfully be able to manage the full digital transformation of the entire end-to-end business process and will have a limited possibility of receiving the full expected list of possible benefits.

However, to complement the companies' self-assessed maturity, it is necessary to look over the statement of the business demand.

Business demand represents the need for certain competence within the defined time frame – immediate needs, short/mid-term perspective (1–3 years) and long-term perspective (3+ years). Answering the questions on business demand, respondents took into consideration the real trans- formation program plan with defined milestones and deliverables, existing competence level to ensure and drive transformation, and existing capabilities to ensure the expected and planned transformation scope in the defined context.

The overall results of the business demand are represented in the chart below (see Figure 2).
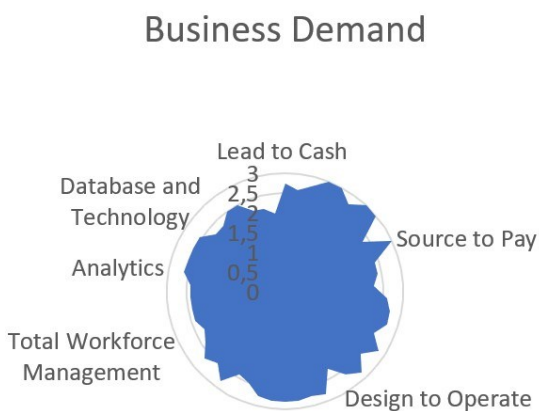
Business Demand

Legend: 1 – 3+ years, 2 – 1–3 years, 3 – Current needs

Figure 2. **Overall results for business demand**

Overall business demand results represent that despite the overall maturity level from the self-assessment, companies believe that they can start digital transformation by themselves and additional support will be needed only after year 2, after kick-off of the transformation program. As a priority, companies listed lead-to-cash and database & technology that more actual in the timeline perspective and these areas aim to be as a priority, moreover taking into account that database & technology competence within the companies were assessed higher than other areas, the potential conclusion can be that companies' perception and understanding of digital transformation is more IT driven than business driven.

To be able to analyse the amount of pending transformations within the research areas it is required to look over business demand together with the self-assessment on the amount of resources needed to ensure the transformation.

Need for resources represents the amount of the business demand defined by the FTE (full time employee, i.e. 1 FTE = 8hrs per day) equivalent. The scale of the resource demand is from the very minimal support (1-5FTE) to the average demand (5-10FTE) and high demand (>10FTE).

The overall results of the need for resources are represented in Figure 3 below.

Legend: 1 – 1–5 FTE, 2 – 5 – 10 FTE, 3 – > 10 FTE
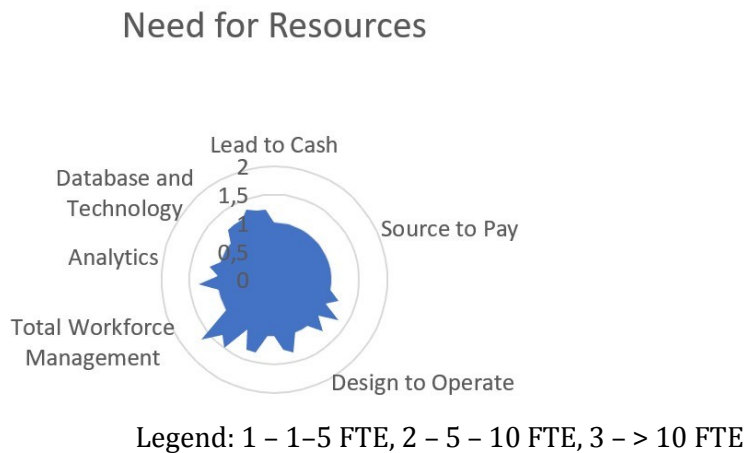
Figure 3. **Overall results for the need for resources**

The results of the need for resources shows a clear picture that the transformation could happen with minor support from the outside, i.e. companies are ready to grow their internal resources to be able to support all required digital transformation activities across all business areas.

If we look at the results from the overall correlation perspective, then Figure 4 below spotlights the database & technology area as more intuitively understandable by the companies as a component required for enabling digital transformation.
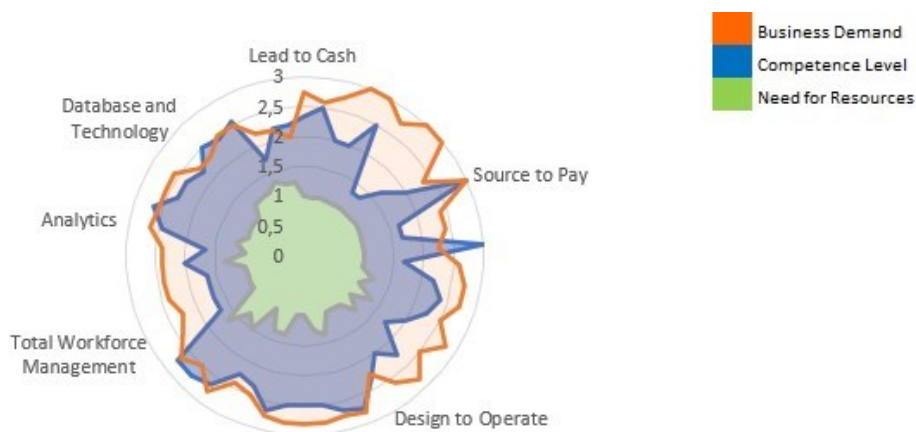
Figure 4. **Overall results comparison**

Figure 4 shows that source-to-pay area is very demanding to be transformed and competence level of the companies is relatively low, however the request for external resources to support the transformation is very low, which indicates that companies are dedicated to use internal resources and invest in talent management activities internally.

To be able to make more precise conclusions based on the research results, it is necessary to analyse each individual business process that is lead-to-cash, source-to-pay, design-to-operate, recruit-to-retire, analytics and database & technology. The description of the results can be found below.

Discussion and conclusions

The paper examined the Baltic companies' internal competence level, business demand and request for external support for digital transformation, and the paper argued that organizational readiness for change towards the new way of executing the business processes is a key to ensure continuing growth and competitiveness. Digital transformation success could be well served through an understanding of and facilitating the integrated end-to-end business process management and transformation approach. Modern business conditions force the idea of moving organizations to a digital transformation of activity for survival and optimization of key indicators in the context of the developing digital economy.

The review and conclusion on the formulated hypotheses are the following.

Hypothesis #1 on the author perception that companies' internal competence level is relatively low was not confirmed at least considering answers submitted from the respondents on the questions formulated on the companies' competence level, business demand and need for resources.

However, the author recommends further research on the topic of the internal competence level, because during the respondent answers validation process, the author faced lack of understanding from the respondents of the overall concept of digital transformation and depth of the topic, therefore respondents are not able to objectively assess their competence due to the fact that they do not know what they don't know (Forbes, 2018). Moreover, referencing the above mentioned the hypothesis partially can be taking as confirmed, because involvement of experienced digital transformation advisors to support the transformation program setup and execution can be well-grounded decision to achieve expected results and reduce program failure possibility.

Hypothesis #2 that the business demand for internal competences to support business transformation is relatively high is fully confirmed. However, the statement that the local labour market is not yet ready to support the company planning and execution of full- scale digital transformation needs to be further investigated where additional factors will be taken into account, like the investments companies make to take on board and train internal employees, agility of university programs to change to follow the digital economy trends, labour market competence level and competencies relevant for the digital transformation activities etc.

Hypothesis #3 that the demand for the certain skills for business process management is higher than the demand for pure technical knowledge of the cutting edge technologies is confirmed within the particular study. That shows that the companies in the Baltics are only in the way of setting up digital transformation programs and discovering the business values from the transformation putting less attention to the technological aspects of successful transformation.

The final conclusions of the study are the following:
1) Currently, competence level of the transformation processes of flagship companies and respectively the rest companies in the market needs to be improved but further research on the topic is highly recommended.
2) Business demand for knowledgeable digital transformation experts with comprehensive modern business processes management

knowledge is relatively higher rather than pure technical expertise on cutting edge technologies.

3) To boost digital transformation toward the operational concept of Intelligent Enterprise, support and guidance form global digital transformation advisory partners is highly recommended.

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IMPACTS OF INNOVATION AND SKILLS FOR THE DEVELOPMENT OF LATVIAN FOOD SMEs

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Abstract

The Latvian SMEs are under pressure due to highly competitive foreign-multinational- firms in the Latvian food market. The present paper consists of a pilot study which was aimed to reveal the factors influential for Latvian food SME development. This exploratory study was conducted on a deductive approach where the hypotheses were generated through literature, then those hypotheses can be either accepted or rejected by the survey data analysis. The authors have constructed an online mediated questionnaire based on scientific literature and expertise view. The survey was aimed at businesspeople & top-level managers of Latvian food SMEs in the Riga region. The most influential factors for Latvian food SMEs' development were identified as "innovation" and "skills" which have high positive impacts on Latvian food SMEs' development. In the future, the most contributing areas (variable indicators) of these influential factors can be further explored with a higher sample size which is beneficial to identify potential innovative strategies related to innovation and skills.

Introduction

In Europe, Small and medium enterprises represent most of the company population making SMEs the backbone of a country's economic growth. The European Commission defines SMEs as an enterprise having less than 250 employees, with an annual turnover of up to 50 million Euros or with a balance sheet total of no more than 43 million Euros (Commission Recommendation of 6 May 2003). This definition plays a major role in European (EU) funding program assessments aimed at SME promotion in the EU.

In 2018, 91.74 % of SMEs were micro-enterprises in Latvia. Latvian SMEs represent 71.1 % of the total value-added and 79.4 % of total employment under the non-financial business economy. These values are drastically above the European averages of 56.4 % and 66.6 %, respectively. But the average annual productivity of European SMEs is 44 600 euros per person, whereas in Latvia it is about 17 900 euros per person (SBA fact sheet, 2019).

Since 2008, Latvian policy has been setting a moderate impact on implementing Small Business Act (SBA) recommendations in many SBA areas, especially in entrepreneurship areas. According to the SBA fact sheet 2019, the Latvian government motivates SMEs towards higher productivity and higher competitiveness that have key challenges. The imbalance of the economy towards the value-added sector and the lack of policies that encourages innovation and digitalization are the key challenges. Knowledge is recognized as an important factor in Latvia's long-term development and, development is recognized as a strategic goal for economic growth and technological excellence by the National Development Plan of Latvia (National Plan, 2008; 2014). In an increasingly global competitive market, Latvian SMEs must take actions to apply new knowledge in both company and production processes and to engage with research capacity commercialization which would lead to gain investments not only as a competitive advantage but also opportunity to grow globally (Ministry, F., n.d.).

Among all the manufacturing sector and wholesale & retail trade sector are leading the way with the highest value-added contribution to the economy. The greatest contribution (25.2 % value-added rise in 2014–2018) is marked from the manufacturing sector by reducing production costs thanks to the convincingly increasing competitiveness of all sized Latvian companies. SMEs in high tech manufacturing and knowledge-intensive services (R&D – intensive) have contributed to the added value to the amount of 25.6 % and employment contribution of 22.8 % in overall Latvian

manufacturing and service sectors. But still, it is below the average EU band value and further measures need to be taken. For a further boost of the manufacturing sector, the Ministry of Economics launched a 377 million euro financial aid project in 2014–2020 to encourage the Latvian manufacturing SMEs' competitiveness locally and globally across the world (Ministry, F., n.d.).

Theoretical background

Small Business Act profile of Latvia

Latvia maintains a positive and above EU-average SBA profile concerning three areas (SBA fact sheet, 2019); the areas of 'entrepreneurship', 'responsive administration', and 'State aid & public procurement' are the highlights. Among the three, State aid & public procurement has shown significant growth and the establishment of EU structural fund programs has played a major role in this growth. Even though certain actions have been taken, "skills and innovation" has been the only SBA principal indicator that is below the EU average. The other SBA indicators (Second chance, access to finance, single market, environment, and internationalization) are in line with the EU average.

Since 2008, the implementation of SBA recommendations in the Latvian policy framework has been moderate. But incredibly significant policy implementations and areas of access have been provided for Latvian SMEs in 'finance' and 'skills & innovation' aspects. Especially after the establishment of the financial institution ALTUM in 2013, access to finance for SMEs has become better than ever. A large variety of financial tools and tax reforms were provided for the growth of the startups and exporters.

Skills and innovation have become the Latvian governments' most concerned and facilitated SBA principle during the past few years. However, it is necessary to understand how the innovation and skills thought have been developed over the past period to forecast the future innovative strategic development of each sector that contributes to the national economy.

The food industry in Europe

Food products are the backbone of life functions. Hence, the quality of food products affects the level of health of people & work performance and ultimately affects the level of well-being. However, it is also influenced by other various factors. In the EU, the food industry is the leading manufacturing

sector concerning the number of jobs created and value addition. The Netherlands (the largest food exporter in the world), France, Italy, and Spain are great examples of this (State of the Industry Report, 2019). The EU food industry is well recognized in the globe due to its trade with nations all over the world. In the past decade, food and drink export sectors have multiplied, achieving over EUR 90 billion and adding to a positive balance of almost EUR 30 billion (EU, 2017). The EU Legislation frameworks and food sector are well coherent towards a single market concept. However, some key challenges are present in internationalization. But still, the EU is focused on addressing these key challenges to increase global competitiveness through various concessions and talks with outer third countries for a single market.

Also, food sectors in the EU contribute to bioeconomy development which accelerates the progress towards circular and low carbon economy model in the EU. The value-added greener food chains, cost-effective, energy-efficient industrial processes, and protection of biodiversity are the main areas that are strengthened by these projects. (Bioeconomy EU, 2020)

The food industry in Latvia

During the past two decades, the food industry is one of the fastest evolving sectors in Latvia and the second-largest manufacturing sector in Latvia (LIAA, 2020). Recently, the Latvian food market has been engaged with foreign food companies and multinational firms (Such as; Nestle, Unilever, Fonterra & Cocacola) which have become a great threat to the local food producers (SBA Fact sheet, 2018; SBA Fact sheet, 2019). On contrary, Latvia's dependence on foreign- produced food may increase, safety and consumer health effects will be very difficult to control and influential. The appropriate question is whether the Latvian food companies would be able to maintain their competitiveness and continue their operations (& development) in line with ongoing market changes. To promote the successful operation and development of Latvian food industry companies, it would be necessary to study and analyze the factors that companies use for their competitiveness and also would be necessary to evaluate their compliance with the recent development trends of the industry and the competitive environment.

According to the Ministry of Economics of the Republic of Latvia industrial reports, "Innovation" plays an important role in ensuring the sustainability of a small business in a rapidly changing competitive environment. In the

current Latvian SME scenario, the lack of e-business tool knowledge among employers and employees has become an influential factor for Latvian food SMEs. Marija (Latvian Public Broadcasting, 2020) especially highlights that untapped digital potential is the key obstacle for Latvian growth. Therefore, successful digital innovative strategy application has become a crucial factor for the long run of the Latvian food SMEs. Latvia is currently in a phase of transitioning to a knowledge-based economy (Latvian Public Broadcasting, 2020). There is a huge argument among the stakeholders (scientists and politicians) about the importance of strategies for the growth of the Latvian economy, especially concerning economic efficiency and environmental purposefulness (Elksnītis, 2017).

Factors affecting SME development and performance

The development of SMEs can be measured in both financial and non-financial performance measures. Mostly, financial performance indicators are influenced by the cultural behavior of the market and resource capacity (Heilbrunn, et al.,, 2011). SMEs frequently evaluate their development and growth by turnover growth and employment growth (Leitner & Gudenberg, 2010).

According to Li, Huang, and Tsai (2010) return on investments, return on equity, return on sales, and net profit margin are identified as the measurements for financial performance whereas customer satisfaction, sales growth, employee's growth, market share, and share growth are identified as the measurements for non-financial performance.

A company's development and performance are based on its current market situation and the industry type or size of the firm is not considered. It is common that SMEs doubt their self-confidence due to low employee numbers, small resource capacity, and having a limited extent of product and processes. But SMEs need to perform competitively as large firms to make profits (Tucker, et al., 2021). The main factor that drives market competitiveness is innovation. Innovation can be classified into four categories: 1) product innovation, 2) process innovation, 3) marketing innovation, and 4) organizational innovation. (Subramaniam & Youndt, 2005; Wincent, et al., 2010).

Competitiveness in the chosen market and improved business performance is important to evaluate the market position of an SME. Higher the innovative rate, the higher the firm's performance. (Rijsdijk, et al., 2011; Wang & Lin, 2012). Failure to achieve this financial performance will result

in less development of SMEs. The same goes for the rest of the non-financial performance.

Skills can be identified as new peripheral knowledge or absorptive capacity. Skills would discover innovative concepts that can be applied to the present knowledge and abilities within the organizations. Skills can also play a role as an update or a replacement of older knowledge and capabilities into new knowledge and capabilities. The organizational structure of an SME is present within the knowledge, ideas, tools, and skills. The higher the strong competencies and capabilities, the higher the innovative results are. Therefore, higher competitiveness could be achieved with a higher innovative rate. Consequently, skills can be used to create innovative competitiveness where skills would eventually improve SME development (Daniel, et al., 2002; Flatten, et al., 2011; Zahra & George, 2002).

The present paper aims to study the factors influential for the development of Latvian food SMEs using the SBA profile of Latvia. Later, in the future the main study will focus on the views of small business leaders on the importance of innovative strategies in running a food business and discovering opportunities for small businesses' innovative strategies for the international competitive market. The most contributing areas (variable indicators) of these influential factors can be further explored with a higher sample size which is beneficial to identify potential innovative strategies related to innovation and skills.

Methods

The literature gaps in the food SME research fields are uncovered, and the main research question of the research is identified as:

RQ0: What are the feasible innovative strategies that can be used by companies for the development of food-based SMEs in Latvia?

Statistical hypotheses were raised based on the above literature findings to analyze the data. Thereby, to test the influence of innovation and skills on food SMEs development in the Latvian context. Product/process launch, marketing & in-house innovation, collaboration with other sectors, sale of new to market innovation, and sales of new to firm innovation are considered as the indicators for "innovation" variable (SBA fact sheet, 2019; Subramaniam & Youndt, 2005; Wincent, et al., 2010). Therefore, Hypothesis – 1 was formulated as;

H1: Innovation has a positive impact on food SMEs development

Online selling/purchase, turnover from e-commerce activities, hire/employ ICT specialists, in- company skills/training, digital tool usage, are considered as the indicators for the "skills" variable (Daniel, et al., 2002; Flatten, et al., 2011; SBA fact sheet, 2019; Wang & Lin, 2012). Hence the hypothesis – 2 can be formulated as;

H2: Skills have a positive impact on food SMEs development.

Cash flow, profitability, customer satisfaction, sales growth, and employee growth are considered as the measurements (or the indicator points) for "food SME development". (Ignas Sidika, 2012; Li, et l., 2010)

Expert interviews reflected a positive attitude towards the secondary data findings. Hence, the chosen indicators (for each factor) of the present study were further confirmed.

Research design

An exploratory study was conducted based on a deductive approach. Data collection was performed by exploring literature and via surveys. The respective background information was gathered by interviewing expert regarding their views (Academic experts, Businessmen, and top-level managers). The ontological orientation of the research is objectivism. Quantitative research strategy and cross-sectional time horizon were applied in this present work (Robson, 2002; Saunders, et al., 2009; Tashakkori & Teddlie 2003).

The data is analyzed using SPSS software for statistical techniques. The preliminary analysis or the Exploratory Data Analysis (EDA) is conducted, to find missing values, outliers, normality, and linearity of the data. Correlation analysis and regression analysis are also incorporated in this study to discover the relationship and influence between the variables and thereby assess the reality behind the hypotheses.

Sampling method

The potential survey participants were identified as businessmen and top-level managers of Latvian food SMEs. However, it is impossible to reach out to all of the businessmen and top-level managers in Latvia with a cross-sectional time horizon research. Hence, a company-wise categorizing approach was used to sort out the sample in a random way. Hence, the sample selection was achieved as multi-staged clustering.

- **Stage 1:** Availability of the registered SME food companies on the LIAA government website (as of 12/01/2021) was chosen as the sampling frame (LIAA, 2020). Two groups were formed, LIAA available registered food SMEs and LIAA unavailable registered food SMEs. RAND function in MS Excel was used to select one group randomly. LIAA group was nominated according to the ascending order of the RAND function value (expand selection option in Excel).
- **Stage 2:** LIAA available group was split into sub-areas (regions in Latvia). Each region was numbered with a unique number (0, 1, 2, … etc.). The selection of the region was done by using INDEX and RANDBETWEEN functions in MS Excel. Riga region was nominated (may be due to its large number of companies). 84 food SMEs are available in the Riga region.
- **Stage 3:** Simple random sampling was used to select the pilot test sample. 25 companies were randomly chosen from a total of 84 companies (The first 25 companies were selected after placing their respective RAND function values in ascending order using the "expand selection" option in Excel).

The potential survey participants were identified as a total of 62 businessmen and top-level managers in the above chosen 25 companies. Any kind of discrimination was avoided during the selection.

Survey tool

Primary data collection (quantitative) was conducted using an online mediated and structured questionnaire while considering the dependent variable as "Development of Latvian Food SMEs" and, the independent variables as "Innovation" and "Skills". The questionnaire was created using the Google-Form survey tool due to its ease of access to remote locations and due to its speed responsive rate. Section one of the questionnaire consists of seven questions regarding Basic/general questions; these data will be used to compare the sample profile with population data in the future study. Six innovation-related questions are aimed at in section two. The next part of the questionnaire focuses on the five skill-related indicators and, finally five "Development of Food SMEs" related questions. A total of twenty-three questions were developed accordingly. The level of agreement for each question was measured using the ten-point Likert scale to maintain the sensitivity with the SBA fact sheet 2019. The experts have provided a positive attitude towards the questionnaire structure in this pilot study.

According to the recommendations of the flat rules of thumb, the acceptable minimum sample size for this pilot study was determined as 30 (Machin, et al., 2018).

The questionnaire was sent to a total of 62 businessmen and top-level managers in the above chosen 25 companies via emails. In addition to that, the authors have also communicated with the chosen survey participants through meetings, contacts, and phone calls to raise the effectiveness of the responsive rate. In one month, only 30 people responded. 18 respondents were unreachable through secondary communication channels. 14 respondents refused to participate. Analysis of the present work is based on data gathered from these 30 respondents.

Respondents' profile

The respondents are representatives of the food companies in managerial positions (30 respondents). Any kind of discrimination (Gender inequality, Age limits, etc.) was avoided during the selection of respondents.

Table 1

Respondents' characteristics

Sample profile		Percentage (%)
Gender	Female	11.8
	Male	88.2
	Prefer not to say	-
Age	18–24	-
	25–34	23.5
	35–44	67.6
	45–54	8.8
	55–64	-
	65+	-
Company role	Owner/founder	-
	Entrepreneur (I manage and owns the company)	64.7
	Top-level manager	35.3
Education level	University	20.6
	College/advanced level or secondary level	79.4
	High school or ordinary level	-
	Primary	-
Sector type	Food	17.6
	Beverage	26.5
	Food & beverage	55.9
Product/service type	Based on products only	70.6
	Based on services only	-
	Product and service both	29.4

Reliability of the survey tool

The reliability test has a relationship with the Cronbach Alpha coefficient value which is typically used to identify whether the survey instrument tool is consistent with the scores across the instances of the testing procedure (Kerlinger, 1973). If the alpha value is higher than 0.7 for the survey tool, it indicates that the instrument can be used in an acceptable way to collect data (Sekaran and Bougie, 2010). If alpha is positive and higher than 0.7, it is considered as good support for internal consistency reliability (Morgan, 2011).

Table 2

Cronbach Alpha coefficient values of the study

Variable and the Code	# of indicators	Cronbach's Alpha value of Pilot study
Innovation (Inn)	6	0.898
Skills (Sk)	5	0.879
Development of Food SMEs (D)	5	0.872

All three variables have shown positive and above 0.7 results. Therefore, this survey tool has been used in an acceptable way to collect data.

Internal consistency in reliability test

The homogeneity of the data concerning the indicators in a survey instrument is measured by comparing the mean values of each indicator; where, if all the means show relatively the same value, it is said that the variable has attained internal consistency (Sekaran and Bougie, 2010). Since alpha values for each variable fulfilled the requirements, it is concluded that this study instrument has passed the internal consistency in the reliability test.

Validity of the survey tool

The validity of an instrument/survey tool implies the idea of whether the indicators in the instrument would measure what the researcher certainly wants to measure (Sekaran & Bougie, 2010). Table 3 implies the KMO, Bartlett's significance, extraction, and factor loading values for each variable and indicator, which were derived from the factor analysis in SPSS.

An explanatory factor analysis (in SPSS) was conducted in this study to measure the validity of the instrument. The KMO- Kaiser-Meyer-Olkin value varies from 0 to 1. If the factor analysis is statistically acceptable, the range value should be above 0.5 to indicate that the factor analysis is statistically acceptable (Morgan, 2011). The results show that all the KMO values are above 1.5 which signifies a statistically acceptable factor analysis has been carried out. Also, the significant value of Bartlett's test of sphericity should be lower than 0.05 to maintain the 95 % error margin (Morgan, 2011).

The extraction value indicates the proportion of explanation of each questions' contribution to the respective variable. Generally, the extraction value should be higher than 0.3 (30 %) to keep the indicator to measure the respective variable (Morgan, 2011). Factor loading indicates how to weigh each indicator to see how they contribute to the respective variable, or, how significant each question is in the respective variable. The factor loading should be higher than 0.5 to say that the indicator is significant in measuring the respective variable (Morgan, 2011). When considering the extraction and factor loading in the pilot test, only two indicators slightly deviate (Inn3 and D3). But it is not a considerable problem because these survey results were based on a smaller number of respondents, and the sensitivity of the responses to the related questions might be low. Nevertheless, these indicators were proven by previous scientific literature.

Table 3

Validity results

Variable	Indicators	KMO	Bartlett's Significance	Extraction	Factor Loading
Innovation	Inn1	0.808	0.000	0.537	0.733
	Inn2			0.560	0.748
	Inn3			0.299	0.547
	Inn4			0.891	0.944
	Inn5			0.902	0.950
	Inn6			0.794	0.891
Skills	Sk1	0.845	0.000	0.775	0.880
	Sk2			0.653	0.808
	Sk3			0.783	0.885
	Sk4			0.511	0.715
	Sk5			0.793	0.891
Development of Food SMEs	D1	0.813	0.000	0.884	0.940
	D2			0.657	0.811
	D3			0.238	0.487
	D4			0.822	0.907
	D5			0.775	0.880

According to Table 3 results and the discussion, it is considered that the values have met all the requirements. Therefore, the tool can be considered valid. Hence, this questionnaire was accepted scientifically.

Exploratory data analysis (EDA)

1. Checking for missing values: To avoid receiving missing data, the authors used the "required" option in the Google-Form questionnaire for all the questions. However, Table 4 from descriptive statistics also confirms that the data has no missing values.

Table 4

Missing value check in SPSS

Case Processing Summary						
	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Innovation	30	100.0	0	0.0	30	100.0
Skills	30	100.0	0	0.0	30	100.0
Development	30	100.0	0	0.0	30	100.0

2. Outliers and normality check: The exploration of descriptive statistics was performed to obtain outliers. The data which disperse beyond extreme values are called extreme outliers which are needed to be treated to obtain the normality of the data set. But the highlighted outliers obtained from the pilot data would not be identified as extreme outliers because those are considered legitimate outliers by the authors based on the below evidence.

   • The respective responses for the highlighted outliers in the survey data are reasonable and acceptable.
   • Even if the regression and correlation analysis is performed considering an outlier- treated data set, the analysis results will show significant deviations from the scientific literature findings.
   • Every data point is significant, if one is removed or changed, it will severely affect the mean value of the variables also to the intercept and slope (Influential points in regression) (Dhakal, 2017). Additionally, when the data set is performed with Cook's distance in SPSS analysis, it is observed that the points that are highlighted as outliers lie above Cook's distance. Hence, it can be concluded that these three outliers are highly influential data points that can affect the overall pattern of the data set if removed (Karadimitriou & Marshall, 2011).

(a)	(b)
(c)	Cook's distance (indicates by horizontal lines) for the N number of samples = 4/N = 4/30 = 0.133. Columns above the cook's distance value represent the outliers that are appointed by SPSS analysis. These outliers have a large cook's distance compared to the cook's distance value. Hence these are considered influential points. Source: (Karadimitriou & Marshall, 2011)
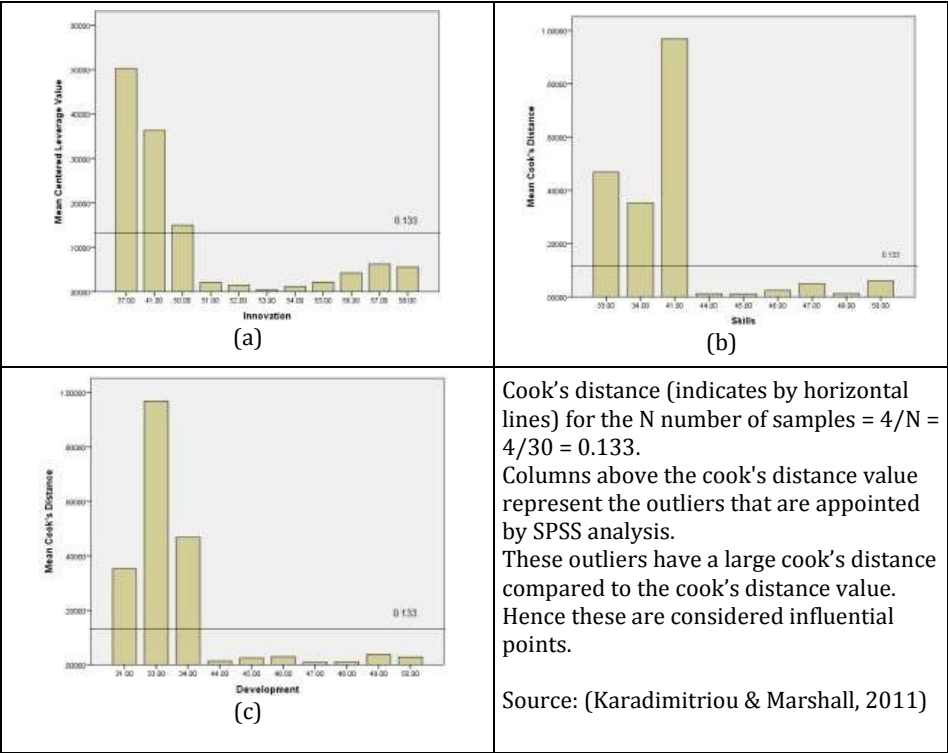
Figure 1. **Influential point identification of Innovation (a), Skills (b) & Development (c) according to Cook's distance theory**

Therefore, it was assumed that treating outliers in this scenario is incorrect (but, it can be assumed that these untreated outliers and small sample sizes would have affected the normality of the data set). Treating these outliers will significantly impact the coefficients of the model. Hence the analysis was continued without performing treatment to these outlier points.

3. Linearity check:
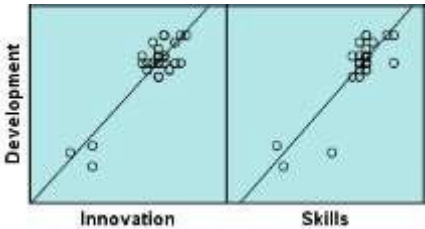
Figure 2. **Linearity graph in SPSS**

Linearity is measured between dependent and independent variables to identify whether there is a linear relationship between the respective variables. The row of this above graph indicates positive slopes which implies that each of the independent variables of this study has positive linear relationships with the dependent variable (Morgan, 2011). According to the data set, every high leverage & high influential data point is significant, if one is removed or changed, it will severely affect the mean value of the slope. Therefore, the above-identified outliers can again be identified as highly influential points according to the linearity graph that cannot be treated or removed.

Results and discussion

Univariate statistics analysis

According to the research objectives, a descriptive analysis was performed to identify the levels of the variables. Since the analyzed data are scaled, descriptive statistics can be applied for analysis. This study has compared the mean values obtained through descriptive statistics with the theoretical range (from the scale) to discover whether the levels of variables are higher than the theoretical mean value.

Table 5

SPSS results for descriptive statistics

Descriptive Statistics					
	N	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
Innovation	30	37.00	58.00	52.2000	4.70070
Skills	30	33.00	50.00	45.0000	3.55256
Development	30	31.00	50.00	45.4667	4.67372
Valid N (listwise)	30				

Table 6

SPSS mean value comparison with the theoretical mean value

Unob-served Variable	No of indicators in each variable and (Likert scale)	Theoretical range for the respective summated value		Mean of the theoretical range	"Mean" from descript-tive stats	Descriptive "mean" higher than the theoretical mean?
		Minimum possible value	**Maximum possible**			
Innovation	6 (Ten point)	6 × 1 = 6	6 × 10 = 60	(60+6)/2= 33	52.2000	Yes
Skills	5 (Ten point)	5 × 1 = 5	5 × 10 = 50	(50+5)/2= 27.5	45.0000	Yes
Development of Food SMEs	5 (Ten point)	5 × 1 = 5	5 × 10 = 50	(50+5)/2= 27.5	45.4667	Yes

Source: Survey data and SPSS

If mean of the theoretical range is lower than the mean of the descriptive stat, it is said that the variable is relatively higher than the theoretical average (Morgan, 2011). Hence, according to table 6, all the variable means are in the positive range.

Note: In SPSS, Innovation denotes the summation value of all "Innovation". Likewise, Skills denotes the summation of all "Skills" indicators and Development denotes summation of all "Development of food SMEs" indicators.

Bivariate correlation analysis

The correlation analysis is used to measure the relationship between two variables (Malhotra & Dash, 2011). In SPSS, the Pearson correlation coefficient measures the strength of the relationship between two variables. It has a range from +1 to -1. According to the research objectives, this study performed a bivariate correlation analysis to test the relationship between each variable and the dependent variable respectively (Figure 3).

Table 7

SPSS Results from correlation analysis

Correlations			
Development	**Innovation**	**Skills**	**Development**
Pearson Correlation	.889**	.866**	1
Sig. (2-tailed)	.000	.000	
N	30	30	30

Innovation and Development have a high positive correlation	Skills and Development have a high positive correlation
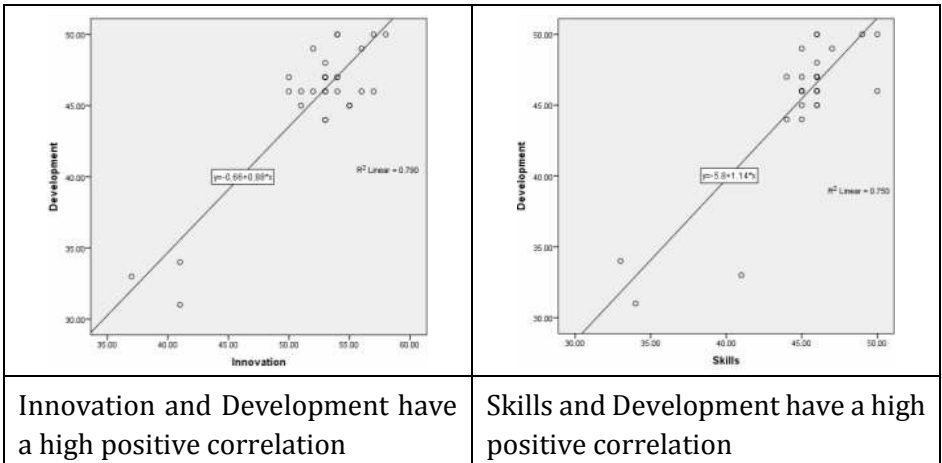
Source: (Hinkle, et al., 2003)

Figure 3. **Prioritizing the factors in correlation analysis according to Gilford's rule of thumb**

The Pearson correlation coefficient value of Innovation to Development is 0.889 and Skills to Development is 0.866. It demonstrates a high positive relationship between variables.

Regression analysis

The Correlation does not indicate the prediction of one variable from another, but the regression does (Morgan, 2011). Therefore, regression coefficients are only valid if the variables are analyzed altogether (Lynda.com, 2014). Hence this study incorporated the multiple regression model to test the influential (impactful) relationships in the hypotheses (Leech, et al., 2015).

Table 8

ANOVA table in SPSS multiple regression

ANOVA						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	555.466	2	277.733	96.138	.000b
	Residual	78.000	27	2.889		
	Total	633.467	29			

a. Dependent Variable: Development
b. Predictors: (Constant), Skills, Innovation

The ANOVA significance value is lower than 0.05 (0.000 < 0.05) which illustrates that the combination of the independent variables predicts the dependent variable. Hence, the regression model is considered statistically significant.

Table 9

Model summary in SPSS

Model Summary					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.936a	.877	.868	1.69968	1.81

a. Predictors: (Constant), Skills, Innovation
b. Dependent Variable: Development

R-value indicates the multiple correlation coefficient when the independent variables are computed altogether where the value was 0.936. R-square indicates the percentage of the dependent variable which can be explained by the independent variables. The R2 value for the present work is 0.877

which is a large value that represents a good fitting model. The adjusted R2 of this study shows a value of 0.868 which means; 86.8 % of the variance in the dependent variable is explained by the model (by dependent variables). The results have proven the findings from scientific articles. Also, this effect is large according to Cohen (1988). The Durbin-Watson value in the model summary table relates to the autocorrelation problem (the Durbin-Watson statistic should be between 1.5 and 2.5 which signifies that the sample is free from autocorrelation).

Hypotheses testing

The coefficient table is the final table that is discussed in the regression analysis, and it provides direct results for the hypotheses.

Table 10

Coefficient table for hypothesis testing in SPSS

Coefficients									
Model	**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**	**95.0 % Confidence Interval for B**		**Collinearity Statistics**	
	B	**Std. Error**	**Beta**			**Lower Bound**	**Upper Bound**	**Tolera nce**	**VIF**
1 (Constant)	-9.645	4.076		-2.367	.025	-18.007	-1.282		
Innovation	.543	.103	.546	5.274	.000	.332	.754	.426	2.349
Skills	.595	.136	.452	4.371	.000	.316	.874	.426	2.349

a. Dependent Variable: Development

The B value (under the unstandardized coefficient) indicates the slope in the original unit of each predictor. According to Table 10, the independent variables (Innovation and skills) significantly predict the dependent variable (Significance < 0.05). Hence, the regression equation for the model can be stated as follows (Equation 1), including the two significant variables.

Development = -9.645 + 0.543 (Innovation) + 0.595 (Skills) *(Equation 1)*

The coefficient table in the regression will be used for this hypothesis and it provides the direct results for the hypotheses according to this study. The unstandardized coefficients show that how much dependent variables vary concerning one variable when all the other variables are kept constant. Innovation shows a variance of 0.543 in the development of SME where Skills shows a variance of 0.595 in the development of SME. As per the rule of thumb, multicollinearity can be if the VIF and Tolerance do not meet the

criteria of VIF < 10 (or the tolerance > 0.1) (Hair, et al., 1995). Hence in this present case, no significant multicollinearity is present according to Dhakal (2018). Also, as per the results of regression analysis, all the variables show lower significance than 0.05. Therefore, the independent variables significantly predict the dependent variable.

Conclusions

The scientific literature and, public and governmental reports have concluded that innovation and skills are influential for SME development in Latvia. The pilot test was conducted between businesspeople and top-level managers to identify the level of influence of innovation and skills in food industries in Latvia. The survey tool has effectively performed in collecting data. The respondents in the sample have shown a good knowledge and experience about Latvian SMEs. Among the respondents, the majority were male but few females. Most of the respondents' educational level is college/advanced level, but some had university-level education. The reliability and validity values highlighted that the questionnaire is validated and scientifically proven. The preliminary data analysis has provided a base for the main analyses, and the univariate analysis explores the level of the constructs. The SPSS analysis has shown three potential outliers from the EDA. But, these three points were not identified as outliers, not only because they have larger cook's distance, but also because the corresponding responses in the survey for these points are legitimate. Parametric results showed consistent results with scientific literature findings. Hence it is assumed the normality of the pilot data set could have beenimpacted due to the small sample size.

The bivariate correlation analysis showed that each independent variable has a high positive relationship with the dependent variable. The results from the regression analysis showed that the hypotheses are significantly accepted. Hence the regression results have proven the findings from the scientific literature about the potential positive impact of "Innovation" and "Skills" on SMEs development in the Latvian Food market. The aim of this present research work is achieved. As the next step, the identification of potential innovative strategies related to innovation and skills for SME development is planned to be carried out in the future.

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STRATEGIC ASPECTS OF COMMUNICATION FOR CHANGING SOCIAL HABITS IN WASTE SORTING

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Abstract

The article analyses the theoretical principles and practical experience in planning communication with society to change its behaviour towards reduction of waste generation and promotion of its recycling.

Research objective: Analysis of a case study, examining the communication of a Latvian regional utility service provider with customers and making proposals for developing the company's communication strategy to change waste sorting habits of com-munity.

Within the framework of the research, waste management and communication experts were interviewed and the previous experience of SIA "Kuldīgas komunālie pakalpojumi" was analysed. Media content analysis (2017–2019), customer survey and focus group interviews were conducted.

The analysis of the results obtained revealed that SIA "Kuldīgas komunālie pakalpojumi" lacks a unified strategic approach in its communication with customers. The company's communication strategy for 2021–2023 was developed and a follow-up analysis is planned after its implementation.

The article concludes with recommendations for developing a business communication strategy to change waste sorting habits of society.

Introduction

How to increase the collection of recyclable waste, for it not to end up in landfills, is a topical question all over the world. With the increase of population, migration to cities, and economic development, change in packaging use tendencies, we observe the rise in the amount of waste – in EU in 2016 it was 483 kg per one citizen, in Latvia – 410 kg per one citizen (Latvijas Zaļais Punkts, 2019b). Optimal waste management reduces waste production, mitigates socio-environmental problems linked with waste, and boosts energy and useful material production.

According to the study by the European Commission, Bulgaria, Czech Republic, Greece, Estonia, Italy, Cyprus, Lithuania, Latvia, Malta, Poland, Romania and Slovakia are the member states with the most backward waste management (VARAM, 2013: 5). According to aims set by the European Union (EP and EC directive 2018/851) already by 2025, 55 % of waste from households and businesses shall be processed. Until 2030 the indicator of the objective shall increase to 60 %, but until 2035 – to 65 %.

The amount of waste sorted in Latvia is currently significantly different from the EU objective. In February 2019 Latvia was listed 24th out of 29 EU member states with as low as 25.2 % of the total waste recycled. In comparison – in Germany it amounts to 70 % (Valainis, 2019).

To increase the amount of sorted waste collected in Latvia, it is necessary to develop clear guidelines and action plans, by specifying equal requirements for everyone. Prudent investment and orderly infrastructure are necessary. Society education and awareness promotion activities should be conducted to convince the public using various communication methods. One of the solutions is the introduction of a deposit system to achieve the goals set forth by the EU. On February 1, 2022, a deposit system for beverage packaging will begin its operation (Depozītu sistēma, 2020).

Among the most common possible reasons why people in Latvia do not think about environment pollution (Aptauja, 2020) the following were emphasized – indifference towards property not belonging to oneself (51 %), unwillingness to pay for waste collection (46 %), and the "old mindset" – a belief that others (the authorities) should take care of everything, not me (40 %).

In total 22 % of the respondents admitted that they do not sort waste at all (Aptauja, 2020). According to a survey of Latvijas Zaļais punkts (Latvijas Zaļais punkts, 2019a), 60 % of Latvian citizens who do not sort waste, have expressed readiness to change their habits if sorting containers were available in the vicinity of their place of residence. However, apart from organizational, technological and management issues, public awareness on environmentally sound handling of resources and involvement in waste sorting remains a substantial focus.

The attention in this article is going to be drawn to targeted communication and its role in shaping the habits of society regarding waste sorting, based on the research of the experience of Kuldīga Public Utility Company (Kuldīgas komunālie pakalpojumi), on the analysis of KKP internal communication with clients, and habits of the clients in the field of waste sorting. At the end of the article, recommendations are provided which can be used in shaping the communication strategy of the company to facilitate change and improvement of public waste sorting habits.

Theoretical framework

The theory of planned behaviour (TBP, Ajzen, 1991; 2012) is commonly used for behaviour prediction and correction, including patterns related to changing habits in waste sorting (Setiawan, et al., 2020; Shen, et al., 2019; Abduh, et al., 2018; Russel, et al., 2017; Klöckner, 2013). According to TBT (see Figure 1), attitudes, subjective norms, and perceived behavioural control are related to appropriate sets of salient behavioural, normative, and control beliefs about the behaviour (Ajzen, 1991).

The intentions are predicted by attitude, subjective and social norms, and perceived behavioural control. Subjective norms are linked with perceived behaviour control, awareness of consequences, and characterization of responsibility, ecological worldview, and values of self- efficacy. Self-efficacy values, in turn, negatively affect subjective norms. Thus, the communication strategies (Setiawan, et al., 2020) designed to promote waste sorting must integrate social pressure with a sense of moral obligation.
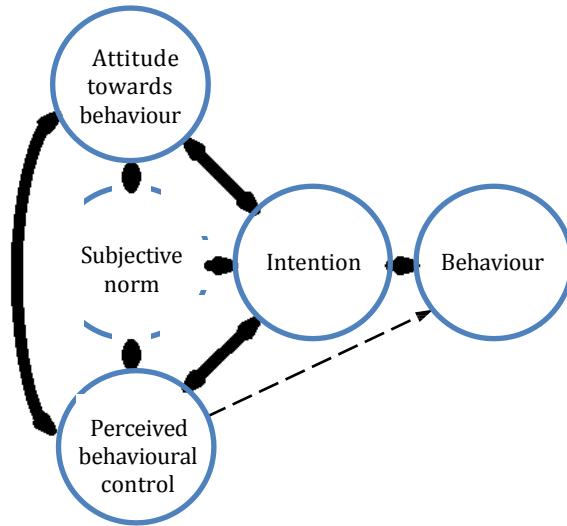
Figure 1. **The theory of planned behaviour** (TPB; Ajzen, 1991; 2012)

In a study (Russell, et al., 2017) it was found that participants, who had a greater sense of control and broader regulatory support to reduce waste had stronger intentions to engage in such behaviour.

It was found (Klöckner, 2013) that planning interventions to change individuals' behaviour should not only include attitude change campaigns, but also focus on reducing behaviour, strengthening social support, and increasing self-efficacy by providing specific information on how to proceed.

Personal moral duty, perceived behavioural control, and subjective norm have a positive effect on young people's intentions regarding waste sorting (Shen, et al., 2019), but attitudes and concerns regarding the environment do not show such effect.

Chinese researchers found (Wang, et al., 2020) that satisfaction with waste sorting is associated with indicators of engagement, enthusiasm, social interaction, and active participation. However, it should be noted that the importance of this commitment varies considerably from one region of the country to another, and there are also gender differences in these indicators. Differences in age, educational background, and monthly income of the demographics are also related to differences in population sorting behaviour. A study conducted in Denmark (Nainggolan, et al., 2019) shows diversity of household choices related to household waste sorting and household socio-demographic indicators. There are also differences in the distribution of self-reported time for waste sorting and treatment and use of recycling

facilities. It was found (Chen & Gao, 2020) that subsidies are an important factor influencing the waste sorting behaviour of municipal residents.

Interestingly (Chen, et al., 2020), young individuals and people with low monthly income were found to have higher awareness of sorting behaviour than others. Factors influencing waste sorting behaviour of college students (Hao, et al., 2020): convenience of waste sorting facilities, willingness to sort waste, knowledge of the related field, attitude towards waste sorting, peer pressure, and the existence of a reward and penalty system.

It was found in a study (Hao, et al., 2020) that although mandatory waste sorting measures have been introduced and college students have a basic knowledge of waste sorting, they have difficulty categorizing some secondary raw materials (glass, hazardous waste, light bulbs, etc.).

Research-based communication

To stimulate the introduction of new habits and ensure that new activity implementation is maintained, a set of different communication methods and activities should be used. When developing a waste management policy (Chen & Gao, 2020), it should be taken into consideration that the intensity of communication and learning among the municipal population influences their decisions on waste sorting.

The study (Czajkowski, et al., 2019) found that the communication of a descriptive social norm is positively related to the change of waste sorting behaviour of individuals. "One of the most effective ways to motivate people is through social impact. There are two categories of social impacts. The first concerns information. The second is related to pressure from others." (Thaler & Sunstein, 2009: 59).

When creating educational campaigns, work with different audiences should be different, because different habits are formed more clearly for a middle-aged person than for a primary school student (Dispenza, 2015). It is communication with young people under the age of 18 that is important for influencing the attitudes and behaviour of older generations towards waste management (Kozel, et al., 2019).

Group preference system (including family choice, organizational and social preference) plays a more significant regulatory role in waste sorting behaviour (Chen, et al., 2020). Similarly, in a study of changing the habits of people to promote cycling, the authors (Wunsch, et al., 2016) found that social dynamics (motivating others) strongly influenced participants, indicating

that emotional aspects (team spirit, fun) have greater potential than more rational factors such as health or the environment.

Upon evolvement of digitalization, the opportunities to use smartphone apps to drive change arise. It was found that smartphone apps can facilitate healthy habits (Zhao, et al., 2016). The authors (Hughes & Boothroyd, 2020) point out that creating positive new habits requires conscious effort, which can be created with various mobile applications and games on smartphones. A study of the attitudes and behaviour of the Czech population towards waste treatment found (Kozel, et al., 2019) that EKO-COM uses both online and offline communication tools and combines them to achieve the best outreach for all target groups.

To develop a strategic approach to changing people's behaviour, the UK Department for Environment, Food and Rural Affairs (DEFRA) has developed a model to help plan communication that involves changing public habits. The model was developed as part of the UK Sustainable Development Strategy (WRAP, 2013). This evidence-based strategy provides strong leadership in implementing sustainable behaviour change involving individuals, households, and communities.

According to the communication model developed by DEFRA (WRAP, 2013), four elements are necessary for change to take place in the behaviour of individuals: opportunity, involvement, encouragement, and example.

The opportunity makes waste sorting easier. People need help to make choices, so education, skills and quality information need to be provided. Involvement means giving effective signals, choosing the most appropriate methods to promote waste sorting. DEFRA points out that involvement is the involvement of people to take personal responsibility for what they do. Example – the company demonstrates in-house recycling, reuse, and waste prevention schemes. Employees' stories of how they sort, recycle and compost waste are published. Local businesses and communities show their commitment to sorting waste. In addition, ensuring a consistent policy is important (WRAP, 2013: 115–127).

The Berlin (Bund-Berlin, 2020) Communication Concept on Organic Waste Collection states that citizens need to be informed individually, specifically, actively, and purposefully. Furthermore, it is emphasized that information campaigns and public relations alone are not enough to ensure stable attitude towards waste sorting and to achieve behavioural change in the population. There is also no instructive warning signal with the index finger raised, instead real action algorithms must be provided via communication.

Based on the analysis of the research results, the Research objective was set out: Analysis of a case study, examining the communication of a Latvian regional utility service provider with customers and making proposals for developing the company's communication strategy to change waste sorting habits of the community.

Methods

To obtain broader insight into the problem, interviews with waste management specialists were conducted, focus group interviews were conducted with the most active clients on the existing problems and possible solutions.

To obtain an objective overview of publications of the last three years (2017–2019), a content analysis of publications on waste sorting issues in the municipal informative publication "Kuldīgas Novada Vēstis", and in the local newspaper "Kurzemnieks" was performed.

In February 2020, a survey of KKP customers was conducted with the help of 2603 electronic surveys. Answers were provided by 781 respondents.

Selection

As opportunities provided by KKP to sort waste for the citizens in the city and in the country are substantially different, it is important that the respondents represent opinions of the citizens from both the city (48,2 %), and the 13 parishes of Kuldīga municipality. The respondents mainly live in private houses (86 %), but 14 % in apartment buildings.

Most of the respondents (67 %) were women.

The questionnaire was mostly answered by the respondents with higher education (55.9 %), slightly less respondents with secondary education (40.9 %), but in the minority – with basic education (3.2 %).

25.3 % of respondents are aged 41–50, 24.6 % of respondents are in the age group 51–60, 23.2 % – aged 31–40, and 17.2 % – aged 61–70. The least represented group are the respondents – people aged 21–30 (6.5 %) and respondents older than 71 (2.9 %).

People aged 21–30 make up only 6.5 % of respondents. To find out the involvement of this part of the audience and their opinion about the recycling of waste, it is possible to conduct another survey targeted specifically to this target audience.

Results

Table 1 shows that in Kuldīga municipality only 11 % of all the waste collected in 2019 were submitted to recycling. As mentioned previously, directive 2018/851 of the European Parliament and European Commission provides the obligation to recycle up to 55 % of waste produced in households and companies.

Table 1

Amount of waste collected and sorted by KKP by years

Type of waste	2017	2018	2019
Sorted waste and submitted for recycling (tons)	380	310	655
Landfilled municipal and construction waste (tons)	5487	5346	5358
Total household, construction, and sorted waste (tons)	5861	5656	5867
Sorted waste and submitted for recycling from total (percentage)	6 %	5 %	11 %

In Kuldīga municipality, waste management is provided by the Kuldīga municipal utility company SIA "Kuldīgas komunālie pakalpojumi". There are 23,383 people living in Kuldīga region and there are a total of 67 waste sorting places. Thus, one sorting point has been established for an average of 349 people, which is twice as dense as required by the regulations of the Cabinet of Ministers of the Republic of Latvia.

Residents can also deliver sorted waste – plastic, paper, metal, glass – to the sorted waste reception area free of charge. For several years now KKP has been supplying 240-liter containers to private house residents in Kuldīga free of charge for the separation of recyclable waste from municipal waste. Since the second half of 2018, when the KKP provided customers with separate containers for separating glass in private homes, the volume of collected glass has increased. If in 2018, 90.87 tons of glass were collected, then in 2019 – 235.88 tons of glass were collected.

Binding regulations of Kuldīga Municipality Council No. 2011/23 stipulate that collection of a 240-liter municipal waste container costs 4.16 euros, but collection of sorted waste – 2.21 euros.

In Kuldīga municipality, a "Waste Sorting Instruction" has been developed, which was repeatedly delivered to all residents. In addition, information is regularly published in the Kuldīga Municipality newsletter "Kuldīgas Novada Vēstis" (hereinafter – KNV), on the municipal website www.kuldiga.lv and Facebook profile, in the local newspaper "Kurzemnieks", and on the KKP website www.kkp.lv, as well as its Facebook profile.

In April 2019, for the first time, an educational campaign "Let's put our efforts together, but waste separately" was organized, during which more than 1,200 children and young people from general education schools and kindergartens in Kuldīga region were educated about waste sorting in presence in the utility company.

The KKP was one of the first in Latvia to respond to the campaign of the World Wide Fund for Nature and the Nature Protection Board "Going in nature, what you bring, take it!" With the campaign launched in 2018, these institutions called on every organization that manages natural objects and organizes events in nature to place information signs instead of waste bins.

Waste sorting habits of Kuldīga residents

More than half of the KKP respondents (63.3 %) answered convincingly that they participate in waste sorting. On the positive side, 12 % of respondents who do not currently sort waste yet plan to do so.

Summarizing the views of the KKP clients on what hinders waste sorting, 3 groups of factors were distinguished (see Table 2): organizational factors, factors related to lack of information and communication, and factors related to habits.

Table 2

Factors influencing waste sorting mentioned by KKP customers

Organizational factors	Factors related to lack of information and communication	Factors related to habits
Insufficient frequency of glass container collection	Households lack information about the availability of containers, about the possibility to hand over electrical goods free of charge	Additional time is needed for sorting
Insufficient frequency of collection of municipal waste containers (especially dissatisfied residents of apartment buildings with sorted waste containers)	Lack of knowledge about proper waste sorting	Need to reorganize the environment to be able to store sorted waste
It is not possible to dispose sorted waste in parishes on the spot	There is a lack of knowledge about possible discounts that can be obtained if a household sorts waste	It is necessary to change one's andfamily members' habits

Necessity to pay full price for municipal waste container even if it is not fully filled during agreed period	Fake news or myths related to lack of knowledge	It is necessary to overcome the daily routine
	Opportunity to order collection of sorted waste container only by telephone	

Information on the organizational factors influencing waste sorting updated during the study (see Table 2) and the suggestions of the citizens on how to prevent them (see Table 3) was passed on to the responsible KKP specialists. One of the most important aspects hindering the sorting of waste is the problem indicated by 50.6 % of respondents in Kuldīga municipality (mostly residents of rural areas) that waste sorting containers are not available in their place of residence. The KKP plans to increase the amount of sorted waste, which will be communicated to the population.

From 2017 to 2019, KKP published a total of 57 newsletters (17 in 2017, 12 in 2018, 28 in 2019) related to recyclable waste.

KKP communication with the public is considered understandable by 71 % of respondents. Most of the residents have indicated that the information is sufficient and understandable, emphasizing that "whoever wants, understands". However, 24 % of clients have indicated that they have not gotten into details of this issue at all. Here it is necessary to find the most appropriate communication tools that would also address and motivate these people to draw their attention to waste sorting.

Those residents who noted that the information was insufficient and incomprehensible to them (5 %) indicate that: there is a need for constant reminder of information; there is generally no clarity about the sorting of the plastic packaging of the various foodstuffs; more detailed explanations are needed on which polyethylene products are suitable for sorting, etc.

Most of the population is aware of the possibility for the household to save financial resources by sorting waste, but 37 % of respondents do not know it yet. Communicating additional information on financial savings (or losses) to citizens can encourage them to become more involved in waste sorting.

In the future, when creating newsletter content, attention should be paid to the fact that only 17 % of the population know that batteries and accumulators, electrical appliances, light bulbs can also be disposed for free at KKP, Dārzniecības iela 9, Kuldīga.

Particular attention should be paid to the myths and fake news mentioned by KKP respondents regarding the lack of knowledge about what happens to waste after collection, the costs of washing glass containers before transfer, and the fact that waste sorting is useless, etc.

Table 3 summarizes the factors mentioned by respondents that could facilitate sorting. No factors related to habit change which could facilitate waste sorting, were mentioned by the respondents.

Table 3

Factors mentioned by KKP clients which could facilitate waste sorting

Organizational factors	**Factors related to information and communication**
Ensure the collection of separate waste from each household in the form of a campaign, for example once a year	Educational campaigns
To make bags of different colours and hand them out to the residents so that they can sort waste already in the apartment	Informing the public
Improvement of containers (difficult to throw waste through small openings, it needs to be further flattened, crushed)	
Even more containers need to be placed closer to households	
Deposit system	
The law shall stipulate mandatory waste sorting	
Increased tariffs for not sorting waste	

Several respondents indicated that they have a "Waste sorting instruction" at home that is easy to follow when sorting waste. As this is a communication tool that is easy to use and provides information in a clear way, it needs to be repeatedly sent in paper format.

Although almost half of the residents of Kuldīga municipality still do not sort waste, 71 % of respondents indicate that the information is sufficient, understandable, and accessible. Some of these respondents commented: "If there is a desire to sort waste, a great deal of information can be found. The problem is the desire or unwillingness to do so", "No need for additional information, everything is already clear", "I do not need additional information, everything is clear", "We are aware of the importance, there is no need to spend resources on information campaigns". The opinion of these respondents should be taken into consideration when compiling the newsletter, indicating separately which news are of a general nature and which are topical, new news, to which special attention should be paid.

The vast majority indicate that the most accessible information for them is on the Internet, including KKP website www.kkp.lv and Facebook profile. However, 24 % of respondents obtain information: together with a monthly invoice for waste sorting, from personal e-mails addressed to the customer, from posters outdoors, from information stickers on containers, from radio and television, from newspapers.

The reasons given by the population can help to improve the provision of the service by revising the frequency of container collection at publicly available sorted waste collection points and by finding an opportunity to order waste removal electronically. Explanatory information is needed on what determines the density of containers, which materials can be sorted, why it is not proposed to sort a more diverse range of waste, why containers with hatches are chosen instead of hinged lids, that glass containers do not have to be washed but simply emptied, that every resident has the right to dispose of the sorted waste at any publicly available collection point for sorted waste, including apartment residential buildings, and that the sorted waste collected by KKP is not taken to a landfill for disposal, but is handed over for recycling.

The analysis of the KKP previous communication with customers and customers' waste sorting habits showed that so far, the work has been done more in a campaign-like manner, no systematic media monitoring, content analysis, determination of the level of involvement has been performed. KKP communication strategy developed will optimize the existing communication, making it planned, targeted, and measurable.

Discussion

The KKP communication strategy for convincing the public of the importance of waste sorting has been developed for the next three years – from 2021 to 2023, based on the strategy structure proposed by O. Kazaka (Kazaka, 2019): description of the field; goals; tasks; description of the target audience; positioning; communication directions; communication plan; criteria for evaluating the effectiveness of communication.

KKP is a capital company of Kuldīga municipality, which, as a good gover-nance company, really cares that the residents of Kuldīga city and 13 parishes of the municipality live in a clean, tidy and well-managed environment. In addition, Kuldīga, with its unique old town in the ancient valley of the river Venta, which is a UNESCO World Heritage Site, has an unwritten obligation to take care of the environment. Being on the UNESCO

World Heritage List gives the place a quality mark. This would enable the city to attract additional resources in the fields of education, science, and culture, stimulate the preservation and protection of the historical centre of Kuldīga, attract tourists, promote high-quality development of the city and the well-being of the population. In addition, KKP, as a municipal capital company, has access to extensive and diverse information channels and resources for communication with the residents of the municipality to reach the public as much as possible to promote waste sorting.

The KKP vision is in line with the company's positioning – "Citizens' Partner No.1 in improving the environment and everyday life, and in service innovation". KKP's mission is to be a team of experts, always one step ahead of everyone, providing versatile and innovative services to every customer, but the vision is to be the number one partner of citizens in improving the environment and everyday life, and in service innovation. Company values: professional employees, quality services, attitude of masters, educated customers.

The aim of KKP's corporate communication is to persuade the public to sort waste so that citizens can sort waste voluntarily and happily, without throwing it all together for disposal in landfills.

The goal of the communication strategy is to transfer 20 % of the total amount of waste collected for recycling by the end of 2021, 30 % by 2022, and 40 % by 2023 by improving the availability of waste sorting infra-structure and carrying out planned public information and education.

The main segments of target audience: KKP clients who already participate in waste management; senior group pupils of the Kuldīga municipality pre-school education facility, who should develop interest for waste sorting already at an early age; Kuldīga municipality general education school students; various company teams, and seniors.

Several tasks have been set. As the greatest audience coverage is provided by mixing of communication types, it is necessary to use several communication channels. Information on waste sorting should be distributed: on the Internet (including KKP website www.kkp.lv and Facebook profile), together with a monthly invoice for waste removal, in personal e-mails, radio and television, newspapers, information stands, as well as lectures should be organized for on -site training. Make the most of social media, which enables two-way communication – the opportunity to have a dialogue with customers. In cooperation with the newspaper "Kurzemnieks" to regularly create thematic pages on waste sorting.

Communication direction. Promotion of waste sorting among potential and existing customers. It is planned to organize waste sorting trainings for all KKP employees and to involve those employees in organizing various educational events and campaigns. Attract well-known people who share their experience in waste sorting. Regularly publish opinion leaders who can influence the decisions of the target audience – educators, children and young people, doctors, environmentalists, animal friends, religious leaders, municipal leadership, athletes. Good examples need to be communicated of how people sort waste, such as people who collect paper and dispose it in paper waste collection campaigns, disposal of batteries in special containers in supermarkets, plastic bottles in a deposit system in Lithuania, and compost bio-waste in their backyard garden.

Organize educational events for schools, kindergartens, and business teams. Especially work with the younger generation, who are responsive to waste sorting and pass on the acquired knowledge to their families, relatives, and friends.

In order to evaluate the effectiveness of communication, it is planned to carry out various activities: customer survey (gives an opportunity to find out what is happening), focus group discussions (gives an opportunity to find out why it happens and how it can influence the current situation), analysis of publications (using qualitative and quantitative content analysis), evaluate the effectiveness of communication on social media on Facebook (level of coverage, size of the audience, tonality, content, level of involvement – "Like", commentary, sharing the publication or other activities related to the profile of the organization). Media monitoring, content analysis, and level of involvement will be measured every week. In turn, the overall picture of waste sorting habits and views on the importance of sorting is measured once a year or according to the need for a specific campaign/event.

Considering the set communication goals and target audience, tasks, positioning, and communication direction, a KKP communication plan for 2021–2023 has been developed to convince the public of the need for waste sorting. For each activity, the implementation time, theme, and content summary, target audience, communication channels/tools to be used, and feedback are defined. The communication action plan does not include various day-to-day tasks, such as preparing press releases, creating information schedules, and other types of illustrative materials. The persons responsible for the implementation of the action plan have been determined.

In developing KKP's communication strategy, great care was taken to make it flexible. It is important not only to implement the developed strategy, plan, duly implement the planned measures, involve appropriate people, use appropriate communication channels and tools for each target group, but also feel the situation in society, market, and the world. For example, due to the state of emergency declared in the country, the implementation of educational activities unfortunately had to be postponed, but during that time schools in the region were invited to submit works to a drawing competition on participant's family contribution in waste sorting.

The developed KKP communication strategy implementation will optimize the current communication, making it planned, targeted and measurable.

Conclusions

Studies (Hindawi, 2018; Adomavičiūtė, et al., 2012; etc.) mention the following as the main obstacles to waste recycling: 1) government plan and budget: insufficient government special regulation and a budget for municipal solid waste management, 2) insufficient education of households: households are unaware of the importance of recycling, 3) technology: lack of efficient recycling technologies, 4) management costs: high costs of manual waste classification. In Latvia, incomplete waste sorting infrastructure is mentioned as the main reason for not sorting waste, but the role of strategic and purposeful communication in this process is not questioned.

Solving the organizational problems identified during the research is largely hindered by the uncertainty about the national level policies. Only on January 22, 2021, the Cabinet of Ministers adopted the National Waste Management Plan for 2021–2028, which envisages expanding the system of separate waste collection, developing the institutional system of waste management, creating stronger waste management regions, and implementing the principles of circular economy to significantly increase waste recycling and reduce the amount of waste going to landfill . (Minister Plešs: the national waste management plan will ensure the development of the sector, 2021). The plan implies supporting the reform of municipal waste management regions proposed by the MEPRD and will move from 10 waste management regions to five waste management regions (Cabinet Order No. 45, 22.01.2021)

KKP communication strategy for 2021–2023, developed in the course of the study described above, will be reviewed based on the official information received regarding the National Waste Management Plan for 2021–2028.

Communication strategy of Kuldīga municipal utilities aimed at changing public habits in waste sorting is based on the conclusions made in the analysis of the situation, envisaging specific purposeful activities for each of the identified target audience segments. However, it should be noted that the KKP budget does not allow to develop special video sequences corresponding to the respective groups with the involvement of people popular not only in Kuldīga region, but throughout Latvia, who could address the respective target groups more effectively. Neither budget nor resources allow the development of mobile applications or games (for smartphones) specifically targeted at each of the target groups, the effectiveness of which has been demonstrated by recent studies (Zhao, et al., 2016; Kozel, et al., 2019; Hughes & Boothroyd, 2020; etc.). It is important that such activities are developed at the state level, based on the state-wide policy of waste management developed by the Ministry of Environmental Protection and Regional Development.

The developed KKP strategy implies conduction of a survey of the population on their waste management habits at least once a year. Based on the results of research (Chen & Gao, 2020; Wang, et al., 2020; Shen, et al., 2019; Abduh, et al., 2018; etc.), it is preferable to also include in a survey questions about the psychological criteria characterizing the respondents, which would allow for more purposeful segmentation of client groups, to develop more precise methods of communication with them, including purposeful training methods.

Special attention should be paid to the age group up to 18 years, because according to research results (Kozel, et al., 2019) it is this group that has a great influence on the attitudes and behaviour of older generations in the field of waste management.

The influence of social groups must be taken into account when developing a communication strategy for changing public habits in waste sorting. "If an individual cares about another's thoughts about himself (perhaps based on the misconception that others are paying attention to what he/she is doing), the individual could follow the crowd to avoid anger or to gain favour" (Thaler & Sunstein, 2009: 59). By purposefully creating an environment in which it is possible to gain positive emotions together, by performing socially desirable activities (waste sorting), it is possible to increase the motivation of individuals. Studies (Chen, et al., 2020; Wunsch, et al., 2016) show that emotional aspects (team spirit, fun) have more potential than more rational factors such as health or environmental considerations.

In conclusion, we would like to emphasize that waste sorting is a complex problem that must be addressed globally, across Europe, at the national level, regionally, and at the municipal and individual levels. It is important to solve not only communication and education issues, but also organizational problems. British communication specialists (WRAP, 2013: 7) also recommend considering the impact on the company's resources and capacity, to determine whether it will be sufficient for successful communication: will the company's employees be able to collect additional collected material, or will there be enough containers and vehicles to collect additional material, or the company's employees will be able to be polite and answer the questions asked by the residents, whether the customer service specialists will be ready to answer additional questions, or whether all the necessary information will be available on the website.

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FACTORS FORMING THE EXPERIENCE OF FOREIGN STUDENTS AND THEIR ROLE IN THE EXPORT OF HIGHER EDUCATION

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Abstract

There is intense competition in the modern education market, which forces higher educational institutions to choose a market-oriented strategy. As local student numbers shrink, universities are actively recruiting foreign students. Therefore, it is important to determine the factors shaping the experiences of international students while obtaining higher education abroad, and the impact of these factors on the development of higher education exports.

The aim of this study is to assess the factors forming the experience of international students in the export of education. Surveys, frequency analysis, calculations of central tendency measures, and correlational analysis were used as the research methods.

This study concludes that among the factors surveyed, students considered the following as the most important ones: opportunity to travel to different countries during the studies, price level in the country, safety level in the country, good opportunities for leisure and entertainment, and the friendliness of locals. The most important factors for higher educational institutions included quality of education, interesting student life, good relationships with local students and with other foreign students, good relationships with academic staff, and interactive lectures.

These results are important for higher educational institutions because they help to determine how to shape positive experiences for the development of higher education export.

Introduction

There is intense competition in today's education market. In conditions when the number of domestic students is decreasing, one of the methods of development is to actively attract foreign students. Internationalization trends in the higher education sector have been observed for 30 years. The export of higher education in Latvia has become an important sector of the national economy. Foreign students are students whose nationality is not Latvian; in 2019, including exchange students, 11 thousand foreign students studied in Latvian higher education institutions (Report on Latvian higher education in 2019). The number of foreign students has been on the rise since 2005. The percentage of foreign students among Latvian students has increased from 1 % in 2008/2009 up to 8 % in 2015/2016 (Auers, & Gubins).

The export of higher education provides significant financial benefits to the Latvian economy. Direct economic benefits provided by foreign students include tuition fees, housing expenses, other living expenses, as well as tourists coming to Latvia to visit the international students. Higher education also has a significant multiplier effect, as international students create and stimulate demand for housing, catering, entertainment, trade and tourism services (Auers, & Gubins). In order to attract foreign students to Latvian higher education institutions, it is necessary to find out which factors influence one's choice of education or a higher education institution.

The aim of the research is to study the factors forming the experience of international students in the export of education. Surveys, frequency analysis, and calculations of central tendency measures were used as the research methods. In the course of the research, the factors important for the marketing of student mobility destination experience were evaluated, the awareness of which will help higher education institutions to develop their marketing strategy for attracting foreign students. In recent years, in addition to traditional and online marketing, experiential marketing – in which students share their positive experience with others either online or

in direct communication, thus becoming marketing messengers and proving their loyalty to their higher education institution – has been recognized as an effective means of attracting students as well.

Experience and experience factors in higher education

Experience and experiential marketing have been studied in various fields, but there is not much research on the importance of experience/ experiential marketing in the field of higher education exports. In today's marketing, the range of communication tools is very wide, however, in experiential marketing, those tools that actively involve the consumer are more effective (Lenderman, 2006). Authors Havanova, Krivosheeva and Osokina note that one of the main experiential marketing tools is the organization of events, as it can help to create the desired consumer emotions (Хаванова и др., 2014). Chitty, et al. believes that many marketing tools can be used in experiential marketing, as long as they ensure a high degree of consumer engagement, with key sales incentives, sample distribution, mobile content, exclusive online content (Chitty, et al., 2012). Therefore, various non-standard solutions, such as mobile applications based on GPS technology, advertising on original media, as well as various promotions and events, can also become communication tools in experiential marketing.

In the future, it is important to look at the peculiarities of the experience and the factors that form it in the export of higher education. In identifying these factors, it is important to understand your target audience, i.e. international students, and based on this understanding, a specific experiential marketing strategy can be developed, the main goal of which is to create a positive impression of the country /university. The experience gained by consumers encourages them to articulate their wishes and needs more precisely. It helps to understand what the consumer's impression depends on, and which factors influence their experience.

Higher education institutions have a wide target audience and communication content, channels, etc. will vary depending on the target audience the educational institution wants to reach. The target audience of the university is divided into many groups. The consumer group includes both potential and current students, as well as non-student listeners, such as seminar attendees from the professional community. After graduating from the university, students become a new target group – graduates. In the external environment there are also such target groups as other educational institutions, employers, professional organizations, suppliers, mass media,

various state institutions, etc., while in the internal environment the university communicates with staff, both academic and non-academic. In summary, the target audience of higher education institutions is diverse, and therefore the communication of these education market participants should be developed according to which of these audiences they communicate with, and what message is transmitted. As already mentioned, the number of foreign students in Latvia is increasing. The export of education plays an important role in the national economy. Educational exports a re associated with a concept such as educational tourism, a type of cognitive tourism with the purpose of acquiring education (studies, professional development, specialization, acquisition of experience) (Glossary of Tourism and Hospitality Terms, 2008).
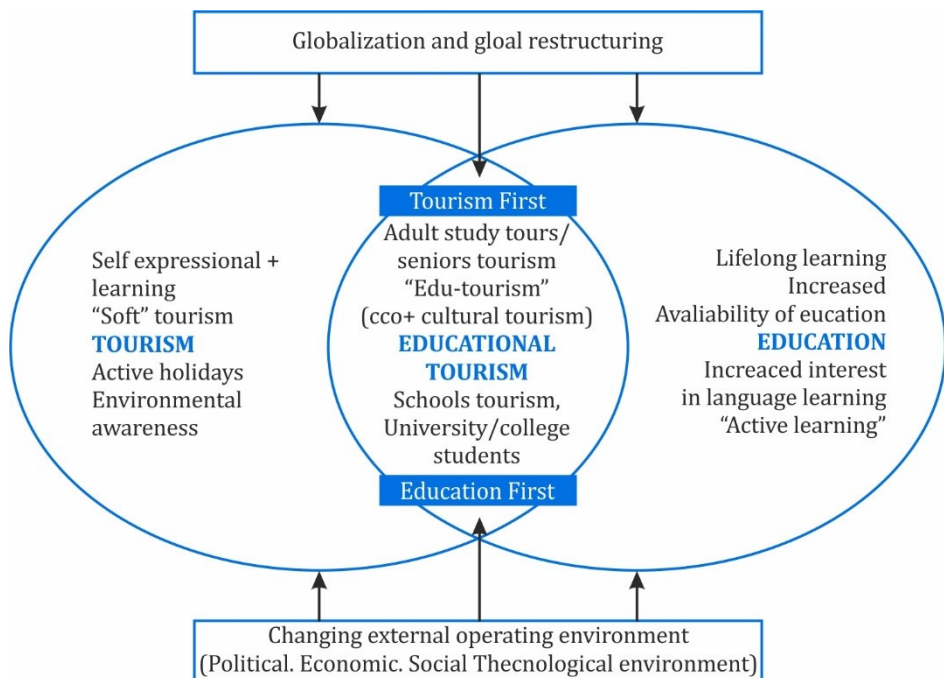

Figure 1. **The concept of educational tourism based on the market segmentation of education and tourism services**
(Ritchie, et al., 2003)

Ritchie, Cooper & Carr (2003) highlight two main segments in educational tourism: travel where tourism comes first, and travel for learning (Figure 1).

In the first segment, tourism comes first: recreation, entertainment, healing tourism and others, where education is a secondary element. In the second segment, education comes first, the main motive for the trip is education or training, and the tourism experience is secondary. Within the framework of this present research, the second segment is of greatest interest, as obtaining higher education in another country is primary, while the experience of tourism is also significant and influences the overall experience of university training and residence in the country.

The scientific literature provides information on current problems in the operation of higher education institutions, which is important in attracting and training foreign students. Attracting students, processing their applications and guiding enrolled students through the admissions process are extremely important activities. However, in order to optimize the student experience, from the admission process to the completion of studies, it is crucial to perceive students as partners (Kotler & Fox, 1995). Interpersonal relationships between students and universities/colleges are crucial in this process to ensure a better planning and implementation process (DeShields, et al., 2005). This is not always done in an optimal manner. Douglas, McClelland and Davies believe that the concept of the student as a consumer is not new. They implement a conceptual model of student satisfaction with their higher education experience by identifying the variables that determine students' perceptions of quality and the impact of these variables on student satisfaction and/or dissatisfaction with the overall student experience (Douglas, et al., 2008). This study also identifies the determining factors that will have the most pronounced positive or negative impact on future student loyalty. The aim is to try to maximize students' satisfaction with their experience while at university and to reduce dissatisfaction in order to retain students, as well as increase the educational institution's position in the rating lists, thus facilitating the student enrollment process. The results of this study suggest that responsiveness, communication, and accessibility are key areas for education leaders to focus on (Douglas, et al., 2008).

There are studies that cover the problems that students face when entering from abroad to start their studies. When students from different cultures are brought together in one social group in a foreign country with different cultural traditions, challenges arise. How students perceive and deal with these problems depends on their own culture, and they are often neglected. (Klomegah, 2006). According to several scholars, issues such as a change of climate and living conditions, academic demands, alienation and loneliness,

discrimination, stereotypes, financial problems, cultural differences, and language barriers have been identified in the literature (Lee & Rice, 2007).

Studies dedicated to exchange students have analyzed the factors that shape their experiences and the problems they face. Exchange students are not fully involved in the export of education, as they do not pay for their studies, but these students obtain higher education outside their permanent place of residence, so it is important to be aware of the factors that shape the experiences of these students as well.

According to research, the main factors for Erasmus+ students are the potential for a good entry in their CV, the opportunity to study internationally and receive a grant, the opportunity to reinvigorate their motivation upon return to their own country, self-confidence and independence, the opportunity to improve their language skills and knowledge of other cultures, the possibility of receiving credit points in one's own country by studying under the Erasmus program (Fombona Rodriguez & Sevillano, 2013; Olmos, 2010).

Guidry Lacina, studying the work of American universities in the field of educational tourism, identifies important factors that influence the experience of foreign students (Lacina, 2002):

Linguistic diversity. An exchange student's accent or the use of different expressions can interfere with the communication process when talking to an American. In order for exchange students to be well prepared for social interaction, they must be familiar with idioms and college slang, as well as proficient in academic English at the expert level.

Cultural differences. Cultural differences can also play an important role in the ability or inability of exchange students to form social relationships. The concept of friendship is often understood differently in different cultures.

Intercultural consultations. Crises can arise for an exchange student when confronted with a new culture and social environment (Sakurako, 2000). For example, exchange students may experience severe loneliness and culture shock, or physical symptoms such as headaches, insomnia, mental exhaustion, and many other symptoms caused by the stress of adapting to a new culture.

Creating a positive social experience. Universities have a variety of ways to encourage exchange students to develop a positive social experience. The first way a university can help a student is by providing mentors and advisers in an exchange program at the student center, who can help students deal

with everyday problems related to culture, social life, healthcare, money, and so on. The exchange center can also help organize public events; exchange students can meet other foreign students and also local students (Lacina, 2002)

Guidry Lacina concludes that if universities are to attract and retain exchange students, the focus must be on student needs and success. The university should not ignore the social environment, which is one of the most important aspects of the university experience. University administrators and professors need to be aware of the challenges that many exchange students face in adjusting to life in another country and how the administration and university faculty can help students feel more comfortable. University campuses wishing to retain their exchange students must also plan measures to promote social interaction between exchange students and local students. When universities recognize the importance of exchange students' social environments, both groups can gain something – enrollment rates will increase and exchange students will be satisfied (Lacina, 2002). The communication of exchange students with other people (their social life), which is an integral part of their experience, was studied. They often have difficulty adapting to the new environment. Some students experience loneliness, loss of social status if their social status in another country is not as important as in their home country (Lacina, 2002).

Ozoglu, Gur and Coskun studied the factors that influence the choice of international students to study in Turkey. The results of their research show that the most important factors are geographical proximity to the home countries, as well as similarities in culture, history, religion and ethnic environment between Turkey and the students' country of origin. In addition, their choice was influenced by factors such as the relative quality of education, access to education and living (financially), access to scholarships, and recommendations from friends and family (Özoğlu, et al., 2015). Authors Shanka, Quintal and Taylor found that the choice of destination was influenced by the students' country of origin and there was no single criterion that applied to everyone. Among the most important factors, the authors noted geographical proximity, security, quality of education, contacts in the country of destination (friends, acquaintances living or studying in this country), diversity of education (Shanka, et al., 2006). In summary, the choice of destination for foreign students depends on many different factors, including location, quality and diversity of education, contacts in the country, similarities with the home country in cultural, historical, religious and ethnic environment, accessibility, recommendations,

grants, scholarships, implications for future opportunities, a simple application process, etc.

Wilcox, Winn, and Fyvie-Gold studied the decision of freshmen to drop out due to concerns about students being retained in modern higher education policy (Wilcox, et al., 2005). One of the reasons why students want to drop out in the first year is the lack of preparation for university life, which is characterized by a number of factors – compatibility between the student, his or her course (curriculum) and the institution depends in part on adequate initial pre-registration information – however, the student experience, which develops from the moment studies begin, is much more important. At this stage, the learning, teaching and assessment strategies used, the quality of the relationship between the academic staff and the students, and the networking process play a key role in retaining students (Wilcox, et al., 2005). Such factors are also important in the field of education exports when foreign students come to study in another country.

In order to improve student retention at the very beginning of the curriculum, it is most important to focus on learning and teaching strategies, such as extended induction periods and the use of interactive and collaborative teaching methods to foster peer groups and staff-student relationships (Lowe & Cook, 2003; McInnis, 2001; Tinto, 2002; Yorke & Thomas, 2003). This is largely the case for foreign students when they come to study in a foreign country. The results of the study show that focusing on learning and teaching strategies, as well as the use of interactive and collaborative teaching methods, is the most widely used approach to maintaining student numbers. Research data suggest that the presence or absence of a social support network and supportive interactions are a key factor in determining whether a student will stay or leave (Wilcox, et al., 2005).

Another problem that is studied in scientific literature is related to the establishment of friendly relations among students. Researchers argue and demonstrate that building compatible friendships is essential for student retention and that student living conditions are a key element in this process. Such friends provide direct emotional support, which is equivalent to family relationships, as well as serve as a buffer in stressful situations. Friendship with classmates and relationships with teachers are important, but less so, as they provide primarily instrumental, informative, and assessment support (Wilcox, et al., 2005). Researcher Dean and his colleagues believe that academic and non-academic staff play an important role in higher education, as employees radically change their role as brand authors and

readers (Dean, et al., 2016). Namely, when they develop an understanding of the brand and interpret its meaning, they become meaning communicators through dialogue with students and other stakeholders. Employees can tailor their interactions with students according to students' needs, but they will communicate the importance of the brand according to their personal understanding.

In order to determine the factors forming the experience, it is important to find out how consumers (including foreign students) perceive the value of the experience. This perception is influenced by a number of different factors, and the same marketing communication tool may be perceived differently, but if the consumer perceives the value as high during the experience, various positive effects can occur, including greater satisfaction and higher loyalty to the university.

Methods

The basic data of the empirical research were obtained by organizing a survey of foreign students using a questionnaire. The questionnaire was initially developed in electronic form and distributed to universities with the support of international department heads or staff. However, taking into account the low response rate, it was decided to more actively motivate students to fill in the research questionnaire. Therefore, the questionnaire was also prepared in print and distributed with the support of university lecturers. In addition, the respondents themselves suggested other suitable students for the survey, whom they knew personally. Together, these measures significantly improved the response rate; a total of 674 valid questionnaires were received.

Techniques for improbable sampling – availability and snowballs – were used to select respondents. At the same time, the limitations of the study and validity of the results due to the chosen sampling frame should be acknowledged. Neither the availability nor the snowball samples are statistically representative of all foreign students in Latvia, therefore it cannot be stated that the opinions gathered in this study and the inferences drawn will apply to all foreign students. A statistically representative study would require the use of one of the possible types of samples – truly random, systematic, stratified or clustered sampling (Daniel, 2012). However, it is not possible to use them without knowing the size and location of the whole general population, as well as students' personal information and contact details to approach and invite them to participate

in the survey. According to modern standards, this information refers to sensitive, personally identifiable information of an individual, to which access is also restricted for research purposes.

Despite these sampling limitations, they are used and recognized in student opinion and attitude surveys on a variety of issues, including travel destinations. For example, a study (Quintal, et al., 2014) examined whether the destination brand image exists in Western Australia and whether local and international visitors have different perceptions of it.

The survey of foreign students took place in two stages: in November and December 2018 and in April and May 2019, requiring a total of four months.

Six higher education institutions were selected for the analysis based on their rating and the number of foreign students, as well as their location (Riga, the capital of Latvia). As a result, the University of Latvia, Riga Technical University, Turiba University, Riga Stradins University, RISEBA and the Baltic International Academy were selected.

The aim of the research is to study the factors forming the experience of international students in the export of education. In the course of the research, the factors important for the marketing of student mobility destination experience were evaluated. The questionnaire gave foreign students an opportunity to assess the importance of various factors in their choice of a country/university, and their subsequent satisfaction with these factors while studying in Latvia/a Latvian university. Surveys, frequency analysis, and calculations of central tendency measures were used as the research methods.

Results and discussion

In the course of the research, the authors of the work, based on the scientific literature reviewed and analyzed in the theoretical section and the research performed so far, have put forward several hypotheses. The proposed group of hypotheses examines which factors, according to the opinions of the foreign students, are important when choosing or evaluating a country or university. Hypotheses are denoted using the prefix H (for example, HV1 – Hypothesis 1 on factors that are important for students when choosing or evaluating a country and HA1 – Hypothesis 1 on factors that are important for students when choosing or evaluating a university).

In order to assess potential satisfaction factors and indicators for Latvia as a destination for education and the chosen higher education institution, it is first necessary to find out which factors foreign students attach the most importance to – which ones they think are more important and which ones are less important. This assessment is provided by two sets of questions: one on what was important for the student when choosing a country and the other on what was important for the student when choosing a higher education institution. Respondents' views on these questions were measured on a four-point scale (excluding 'difficult to say' and 'not interested in' answers, which cannot be usefully used in the analysis):

> 4 – very important;
> 3 – important rather than unimportant;
> 2 – unimportant rather than important;
> 1 – it doesn't matter at all.

For each question, it is possible to calculate the average ranking from the answers of all respondents, by calculating the sum of the rankings and then dividing it by the number of respondents. Due to the fact that the scale is ordinal and its values are discrete, for the sake of interpretability the criterion of factor importance is whether the average calculated rank of the factor is equal to 3 (important rather than insignificant) or more.

Table 1 below shows the importance of different factors when choosing a country.

Table 1

Importance of country selection factors (table created by the authors)

No	Factor (statement, question)	Middle rank	Number of respondents responded
1	**Possibility to travel to different countries during studies**	**3,35**	**661**
2	**Price level in the country**	**3,22**	**654**
3	**National security level**	**3,25**	**657**
4	Climate	2,36	637
5	Peculiarities of local cuisine	2,08	598
6	Different features from my home country	2,51	639
7	Architectural diversity	2,59	637
8	The existence of natural attractions (forests, parks)	2,72	652
9	Diverse and interesting culture	2,95	647
10	**Good recreation and entertainment options**	**3,03**	**653**
11	**Friendliness of local residents**	**3,10**	**634**

As can be seen from Table 1, in the first three places the opportunity to travel to different countries during studies (3.35), the level of security (3.25) and the affordable price level in the country (3.22) are important, which is an important factor taking into account the limited means of living for students. The friendly attitude of the locals (3.10) and leisure and entertainment opportunities (3.03) are also very important. In turn, the climate, architecture, differences from the country of origin, etc. factors in Table 1 are not so important from the students' point of view.

Next, in a similar way, it is necessary to look at which factors, according to foreign students, are the most important when choosing an educational institution.

Table 2

Importance of educational institution selection factors

(table created by the authors)

No	Factor (statement, question)	Middle rank	Number of respondents responded
1	**Quality of education**	**3,60**	**671**
2	**Interesting student life**	**3,32**	**666**
3	**Good relationship with local students**	**3,16**	**658**
4	**Good relationship with other international students**	**3,33**	**663**
5	**Good relationship with teachers**	**3,40**	**661**
6	Architecture of the university building	2,36	632
7	Interior design of the university building	2,46	631
8	**Lectures in interactive form**	**3,16**	**655**

Out of a total of eight factors for choosing an educational institution, six are important – the quality of education, good relations with teachers, good relations with other foreign students, interesting student life, good relations with local students, as well as the existence of interactive lectures. In turn, the architecture of the educational institution and the interior design are not of great importance.

According to research (Özoğlu, et al., 2015; Shanka, et al., 2006), three hypotheses are put forward, stating that the most important factors in choosing foreign destinations for foreign students are:
- Possibility to travel to different countries during studies (HV1);
- Price level in the country (HV2);
- National security level (HV3).

Based on the findings of the research (Wilcox, et al., 2005; McInnis, 2001; Tinto, 2002; Yorke & Thomas, 2003), it is hypothesized that the most important factors in assessing foreign students one of the Latvian higher education institutions as a place of receiving higher education services is:

- Perception of the quality of education (HA1);
- Good relations with academic staff or lecturers (HA2);
- Interesting student life (HA3);
- Use of interactive lectures (HA4).

It is now necessary to look at the descriptive statistics on how the aspects corresponding to the most important factors in Latvia/university were actually assessed. Namely, at the level of national factors, students' satisfaction with such dimensions as the possibility to travel to different countries during their studies, the level of security, the price level in the country, the attitude of the local population and leisure and entertainment opportunities should be analyzed. To measure satisfaction, arithmetic mean values (the higher the value, the higher the satisfaction) were used, as well as standard deviations, which characterize the diversity of opinions in each question.

When looking at these indicators, it should be taken into account that the issue of friendliness of local residents was formulated negatively (local residents in Latvia (Riga) are not friendly) in order to reduce the risks of agreeableness and inattentiveness during the survey. Thus, those who consider the locals friendly will have lower rankings in this matter.

Table 3

Satisfaction with the most important aspects of choosing a country
(table created by the authors)

No	Aspect, dimension	Middle rank	Standard-deviation	Number of respondents responded
1	Latvia has good travel opportunities to other countries during my studies	3,44	0,76	645
2	I am satisfied with the level of security in Latvia	3,08	0,92	650
3	I am satisfied with the price level in Latvia	3,26	0,83	643
4	Latvia (Riga) there are good leisure and entertainment options	3,07	0,88	638
5	Local residents in Latvia (Riga) are not friendly	2,46	1,08	624

From these answers it can be seen that the strengths of Latvia in the opinion of foreign students are convenient travel opportunities during their studies (3.44), as well as the price level, which is mostly assessed as satisfactory. In general, Latvia's security level (3.08) and opportunities for fun leisure

activities are also positively assessed. The score of 2.46 for the local population is close to the median of the satisfaction scale (the four-point scale from 1 to 4 median or midpoint is 2.5), which means that opinions differ significantly on this issue. Looking at the frequency distribution for this question, it can be concluded that 50.8 % of respondents fully or rather agree with this opinion, while almost as many or 49.2 % completely or rather do not agree. A relatively larger standard deviation (1.08) also indicates a greater diversity of views.

In a similar way, students' views on the quality aspects of selected educational institutions are considered – quality of education, good relations with teachers, good relations with other foreign students, interesting student life, good relations with local students, as well as the existence of interactive lectures.

Table 4

Satisfaction with the most important aspects of choosing an educational institution (table created by the authors)

No	Aspect, dimension	Middle rank	Standard-deviation	Number of respondents responded
1	I am satisfied with the quality of education	3,04	0,92	656
2	At the University is interesting student life	2,91	1,03	624
3	Relations with local students at the university are good	2,87	1,05	615
4	Relations with other international students are good	3,42	0,73	646
5	University has good relations with lecturers	3,30	0,78	645
6	I liked lectures in interactive form	3,29	0,89	594

It can be concluded from Table 4 that foreign students value relationships with other foreign students in a similar situation to them the highest (3.42), which noticeably contrasts with the evaluation of relationships with Latvian students (2.87). Relationships with lecturers (3.30) and lectures in an interactive form (3.29) are relatively valued. There are also relatively small standard deviations for these most positive aspects, which indicates a homogeneity of opinion. In general, students tend to agree that the quality of education is satisfactory (3.03); slightly lower, although the assessment of students' lives (2.91) is overall positive, which thus ranks penultimate before relations with local students.

Conclusions

As a result of the survey, this research has determined the factors that are most important for foreign students when choosing a destination country and university studies. Foreign students mention the possibility to travel to different countries during their studies, the price level in the country, the level of security in the country, good leisure and entertainment opportunities and the friendliness of the local population as the most important factors considered in the questionnaire. Thus, hypotheses HV1, HV2, and HV3, which were formulated based on findings from (Özoğlu, et al., 2015) and (Shanka, et al., 2006) studies, were confirmed. In addition, the authors have found that two other factors that were neglected in these studies are important for students when deciding on a country choice.

At the university level, the most important factors, according to the research results, are the quality of education, interesting student life, good relations with local students, good relations with other foreign students, good relations with lecturers, and interactive lectures. This is in line with the previously established notion of the quality of education, good relations with academic staff or lecturers, the importance of interesting student life and the use of interactive lectures (Wilcox, et al., 2005; McInnis, 2001; Tinto, 2002; Yorke & Thomas, 2003). Thus, hypotheses HA1, HA2, HA3, HA4 as factors for the choice of a university are also confirmed. Here, too, it can be concluded that the range of important factors is in fact even wider and, according to the results of the study, includes good relations with local as well as other foreign students. Awareness of the factors that make up this experience will help universities to develop their marketing strategy to attract foreign students. As mentioned above, nowadays an effective means of attracting students is experiential marketing, the main task of which is to ensure that the students share their, preferably, positive experience online or face-to-face communication with other potential stakeholders, thus becoming a university marketing message and also confirming their loyalty to the particular university. Based on the results of the research, universities can use these factors to create advertisements, organize events, create content on Internet sites. It is also important to take these factors into account when organizing the learning process, adapting their interaction with students to the needs of students, paying special attention to the organization of the social support network.

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VISUAL MODELS AS A MEANS OF TEACHING IN PRIMARY MATH'S EDUCATION: PROBLEMS OF TEACHER TRAINING

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Abstract

The modern teaching of mathematics relies heavily on the modeling method. At the same time, visual models are the most preferred means of teaching mathematics in primary school. Numerous scientific studies suggest methods for improving the practice of teaching mathematics using visual models. However, much less attention has been paid to the problem of preparing a primary school teacher for the use of visual models in mathematics lessons. The purpose of the study is to identify and describe the features of teachers' use of visual models in mathematics lessons, to identify the problems of preparing students for the use of visual teaching models and to propose one of the approaches to its improvement. To achieve the result, various methods were used: theoretical analysis of modern sources on the use of visual models in teaching mathematics; an observation method for identifying the features of the use of visual models by teachers in mathematics lessons, a case method for determining the attitude of future primary school teachers to the use of visual models. As a result of the research, the problems of preparing students for the use of

visual models in primary teaching of mathematics are highlighted. One of the main problems of this training is the discrepancy between the verbal-logical thinking of an adult and the visual-figurative thinking of a child. Therefore, when developing the ability to teach using visual models, it is important to start not with mastering the technical aspects of building models, but with understanding and accepting the value of educational modeling by students.

Introduction and theoretical framework

The problem of developing the educational abilities of schoolchildren has always been one of the most urgent. The more fully the potential capabilities of the student are realized, the more success the person can achieve in life. One of the effective technologies for enhancing learning is the method of visualizing educational information. In recent decades, global changes have taken place in the field of transmission of visual information: the volume of transmitted information has increased; new types of visual information have emerged, as well as methods of its transmission. Technological progress and the formation of a new visual culture make special demands on the activities of teachers. Visualization helps students organize and analyze information correctly, develops critical thinking, helps students integrate new knowledge, and allows them to link the information received into a holistic picture about a particular phenomenon or object. Diagrams, charts, pictures, memory cards, key notes, presentations, videos, mind maps, mental maps facilitate the assimilation of large amounts of information; it is easy to memorize and trace the relationship between blocks of information.

It should be noted that the leading type of information perception is visual, which presupposes both the development of traditionally visual and innovative means and techniques that make it possible to activate the work of vision in the learning process. It is known that a person receives up to 90 % of information through the visual channel of perception (Vasilevska, Rivza, 2016). In this regard, the role of visual models for the presentation of educational information increases, allowing one to overcome the difficulties associated with learning based on abstract logical thinking.

Visualization in education is a means of connecting abstract and concrete ideas; it allows the teacher to clarify the essence of educational tasks for students and represents the transfer of the studied theory using visual means (Shatri & Buza, 2017). At the same time, visualization is considered both as a teaching tool and as an independent object of research; the formation of visual literacy is recognized as one of the important goals of learning already in primary school (Alper, et al., 2017; Lee, et al., 2017).

The visualization of the studied concepts is considered in modern pedagogical discourse as a key factor in students' understanding of mathematical ideas (Yilmaz & Argun, 2018; Kuleshova, et al., 2019). The visualization of mathematical ideas in primary education is especially relevant due to the specifics of the thinking of younger students. According to Piaget's theory of the development of intelligence, the thinking of a child at the age of 7–12 is at the stage of development of specific operations. A feature of this stage is that thinking gradually becomes more logical, but still continues to be specific, dependent on the perception of the external properties of real objects. Modern research confirms the conclusions of J. Piaget about the specifics of thinking and speech of children of this age (Kurt, 2020).

However, not all visualization contributes to the understanding of students of mathematical theory, and in some cases, the use of specific educational material prevents the development of full-fledged mathematical represent-tations (McLellan, 1997). Therefore, in studies of the problem of visualization in mathematics education, the need for visual representations of the essential aspects of the studied concepts is emphasized. These essential aspects are often not visible to the child in the direct perception of real and mathematical objects. Such visual representations are *visual models*, and unlike "non-model" illustrations, they show students not external, but internal properties of objects (Urban, et al., 2017).

The effectiveness of using visual models in primary teaching of mathematics is substantiated in scientific research and confirmed in the practice of teachers (Lehrer & Schauble, 2017). Visual modeling provides a solid and conscious mastery of computational techniques (Bartolini Bussi & Mariotti, 2008), and helps primary school students find solutions to math and practical problems (Haylock & Cockburn, 2017).

Modern research of the problem of visual educational modeling is carried out in several directions. First, in the scientific publications the effectiveness of using interactive computer visualization in Primary Mathematics Education is justified. Visual computer models allow you to show the dynamics of real

or mathematical object changes. Modern high-tech computer tools are no longer playing the only role of a means of mathematical knowledge mastering, but becoming a platform for educational research and experimentation (Sergeev & Urban, 2012). Combined with the ability to instantly assess students` achievements and individualize their educational trajectories, they are becoming a part of *artificial intelligence* (AI) trends in education. Despite the experts` ambiguous attitude to the technologization of education, it should be accepted that AI-trends affect education at all the levels including Primary Education (Chassignol, et al., 2018). Second, in the scientific research the effectiveness of traditional didactic means that help to create visual models from real materials or depict them on the blackboard (shit of paper) are studied. Generalization and systematization of using traditional visual means in Mathematics teaching formed the basis of the world-famous "Bar Model Visualization Technique" in schools in Singapore (Osman, et al., 2018). Regular use of visual models, or bar modelling, is an important factor of Singapore students` leadership in PISA and TIMSS international assessments of educational achievement (PISA, 2018) (TIMSS, 2019).

Despite the proven effectiveness of using visual models in the practice of primary school teachers, a number of difficulties arise in their application. The aim of this research: to identify and describe the features of the use of visual models by primary school teachers in mathematics lessons, to identify the problems of preparing students for the use of visual teaching models and to propose one of the approaches to its improvement.

Methods

In the research, the following methods are used: *theoretical analysis* of modern sources on the use of visual models in Mathematics teaching and summary of its results; *the method of observation* to identify the features of visual models used in Mathematics lessons by primary teachers; *the case-study method* to determine the attitude of future primary teachers to the use of visual models; *the ranking method* to identify the priority problems of students` training to use visual modeling. The research has been based on the Faculty of Primary Education, the Belarusian State Pedagogical University named after Maxim Tank, in 2021.

Results and discussion

To study the practice of visual models used by primary school teachers the method of observation has been applied. The authors and students of the Faculty of Primary Education have observed 138 Math`s lessons and compiled detailed protocols of observing the progress of these lessons:

- lesson stages of Explanation (Presentation) and Consolidation (Practice);
- teacher and students` activities;
- types and situations of visual models usage by a teacher;
- students` activity while creating a visual model on their own or under the teacher`s guidance.

Visual models for text problems can be created with real objects (Figure 1, a,) or geometric shapes that replace real objects (Figure 1, b, c).

a   b   c

Figure 1. **Examples of visual models for problem solving
in primary school**

Visual models can be also used for studying numbers (Figure 2, a) and computational techniques (Figure 2, b).
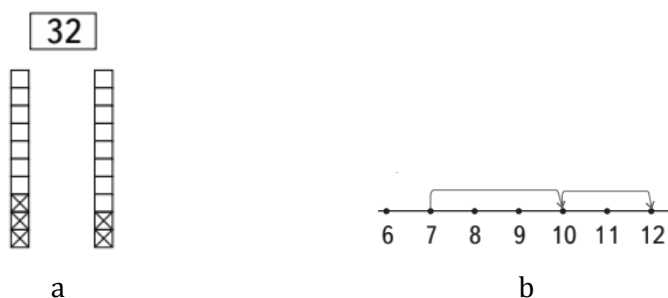

a   b

Figure 2. **Examples of visual models for numbers and
calculating in primary school**

The analysis of the observation protocols are in Table 1.

Table 1

The frequency of using visual models in Maths lessons

	Teachers	Students	Total Lessons
Explanation	66 (48 %)	15 (11 %)	138 (100 %)
Consolidation	40 (29 %)	32 (23 %)	138 (100 %)

The results obtained show that teachers used visual models in less than half of the cases when explaining new material (48 % of all fragments). Given the visual nature of children's thinking, this is clearly not enough for the formation of mathematical concepts. At the stage of consolidating the studied material, the proportion of situations where visual models were used turned out to be quite insignificant (29 % of all fragments). Taking into account the fact that at this stage of the lesson children often solve difficult problems for them, this result can be assessed as unsatisfactory.

However, the authors consider the situation with the independent construction of visual models by students to be especially critical. Only in 15 % of situations, schoolchildren built visual models together with the teacher at the stage of explaining the material – this means that they were mostly rather passive participants in the training. The situation with the construction of visual models for schoolchildren at the stage of material consolidation looks not much better (23 % of all fragments).

At the next stage of the study, the graduates of the Faculty of Elementary Education of the Belarusian State Pedagogical University were tested in order to identify possible reasons for the use of such rare visual models. First, the students were offered a diagnostic test, during which they had to create visual models for 10 word problems from mathematics textbooks for younger students. The results were evaluated on a 10-point scale according to the number of correctly created visual models. 126 students (74 %) out of 170 scored from six to ten points. The results confirm that most of the faculty graduates are able to create visual models at an acceptable level.

Further, the authors were interested in the opinion of students about the advisability of using visual models in mathematics lessons and the presence of motivation for their application in practice. For the research, the *case method* was applied, since the authors expected to receive with its help more detailed and accurate information about the motivation of respondents than when using the questionnaire method. The students were offered a mini-case, which described a specific educational situation. According to the plot of this situation, the teacher suggested that the children solve the

text problem on their own, but the children could not complete this task. Students were asked to help the teacher – formulate recommendations on how he should explain the way to solve the problem. The study involved 170 students who performed diagnostic control test.

During the results processing the given recommendations were divided into 2 groups. One group includes the recommendations on using verbal methods (discussion, teacher`s explanation); the other one includes the recommend-dations on using visual models (Table 2).

The results indicate that the majority of students (62 %) prefer to use verbal methods of explaining the way to solve the problem, and only 38 % recommend using visual models (illustrations, diagrams) to ensure that students understand the problem. The obtained data do not correspond to the results of the diagnostic control work, where the students demonstrated a good level of proficiency in the ability to build visual models.

Table 2

The results of the students' recommendations on the didactic case

	Number of specific recommendations	Total Recommendations
Discussion, teacher`s explanation	106 (62 %)	170 (100 %)
Visual models creating	64 (38 %)	170 (100 %)

Comparing the results of the diagnostic test of students and their answers to the case, the authors concluded that the reason for the rare use of visual models by teachers is related more to their values and beliefs than to the "technical" skills of visual modeling. Despite the proper methodical training for Mathematics teaching at the Faculty of Primary Education, students *choose teaching methods that are more relevant to adults` thinking (students` thinking), but not to children`s thinking.*

To overcome this problem, the process of methodological training of future primary school teachers should be adjusted. From the point of view of the authors of the article, it is important to enrich it with tasks that contribute to the formation of a belief in the need for visual modeling, an understanding of its value in the initial teaching of mathematics. One of the ways to improve the methodological training of students can be a workshop on the analysis of specific situations. To implement this idea, the authors plan to develop a series of case studies, the work on which will require students to make a decision on the choice of teaching tools, rather than demonstrating

methodological skills. Working with values and beliefs is a more complex pedagogical task than skill formation, but it is the value-based part of the methodological competence in visual modeling that can become a decisive factor influencing the use of work methods in primary education in mathematics that correspond to the nature of children's thinking.

Conclusions

Visual didactic modelling is an effective means of mathematical concepts development for primary school students, because it is relevant to children's` thinking of this age group. However, to apply it in school practice, it is important to train teachers who have visual modelling competence. In this problem research, the following results are obtained:

1) primary school teachers use visual models sporadically and unsystematically both at the stage of explanation (presentation) and the stage of consolidation (practice);
2) due to the lack of examples using visual models offered by a teacher, primary school students create a visual model in the lesson only in single cases;
3) the graduates of the Faculty of Primary Education showed a good level of visual models creating skills;
4) despite quite acceptable visual models creating skills, graduates of the Faculty of Primary Education continue to prefer verbal methods of explanation that are more relevant to adults` thinking and to ignore visual modelling that is relevant to specificity of children`s thinking;
5) to improve primary school teachers` methodical training, it`s suggested to implement a workshop with the case-study method using which will require students to decide regularly what didactic means relevant to children need to be chosen and not just ensure practice in visual model creation;
6) understanding and accepting the value of visual modelling by students is a base for methodical competence of visual modelling and can contribute to Primary Mathematics Education improvement.

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THE INFLUENCE OF RETAIL SERVICES AND SELLING BEHAVIORS ON CUSTOMER'S SATISFACTION, TRUST AND LOYALTY INTENTIONS IN RETAIL INDUSTRY OF PAKISTAN

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Abstract

This study examines the impact of retail services quality and selling behavior on customers' satisfaction, trust, and store loyalty in case of high involvement products such as consumer electronics/home appliances in the context of Pakistan. The data was collected from 377 customers who completed the survey online. Respondents were particularly asked if they had any experience of buying such items recently and keeping in mind the purchase experience, rate the scale items accordingly. Factor analysis and multiple regression analysis were used for model testing. The study results show that store service quality and selling orientation strategy both have a significant impact on customer satisfaction, trust and store loyalty intentions. The study also involves the mediation analysis, satisfaction-trust serving as mediator factor between two IVs (service quality and selling behaviors) and DV (store loyalty intentions). Results show that services quality and selling behaviour both have significant influence on store loyalty intentions. Further, satisfaction-trust mediates the relationship between variables. The indirect path is significant which proves that satisfaction-trust mediate the relationship between store attributes and consumer buying

behaviour. The study has significant implications for multiple retail channels that can incorporate retail service quality and selling behaviour strategy (relational selling & consultative selling) to differentiate the retail brand services. Retailers of high involvement products category heavily relying on the selling skills and behaviour of salesperson/employee, can benefit from the study to implement retail brand positioning strategy.

Introduction

Building customer-brand relationship is the key objective of services organizations and customer satisfaction plays a big role in building store loyalty. Upscale retailers and dealers of high involvement products are increasing the level of services quality and relying on salespersons to build customers relationships. Retailer's efforts to increase services quality and salespersons-customer relationships helps to build store loyalty (Beatty, et al., 1996). Service quality is positively related to satisfaction and loyalty (Jain & Agarwal, 2017). Service quality and Satisfaction are closely linked, which is the also the main concern of this study. Satisfaction refers to post purchase evaluation of customers purchase decision (Homburg and Giering (2001). In addition, the effects of salespersons' behavior on customer satisfaction and loyalty is the second main objective of this study. Previous literature also suggest that for big-ticket retail purchase, quality of interaction process have significant influence on customer satisfaction (Oliver & Swan, 1989b).

Building customer-employee relationships is the key element of marketing strategy in retail setting. Therefore, service providers prefer to develop customer relationships through salesperson (Gwinner, et al., 1998). Hence, salespersons' actions and behaviour during sale interaction affect consumer satisfaction and loyalty. (Goff, et al, 1997). Marketing literature identity antecedent of loyalty including perceived service quality (Ha & Janda, 2014), customer satisfaction (Han & Hyun, 2013) and brand trust (Fung, et al., 2013). Therefore, we investigate the effects of services quality and salespersons behaviour on loyalty through satisfaction and trust. Customer satisfaction and brand trust are the key elements in relational marketing (Morgan & Hunt, 1994). Therefore, this study examines relationships between

service quality, selling behaviour, satisfaction, trust and loyalty in high involvement purchase context of Pakistan. More specifically, this study examines the influence of services quality and salespersons behaviour on store loyalty intentions through mediating role of satisfaction and trust in big- ticket purchase context of Pakistan. The study has significant implications for multi-retail channels to implement retail service quality.

Literature review

Service quality and satisfaction

Service quality literature is dominated by number of scholars (e.g., Brady, et al., 2002; Cronin & Taylor, 1992; Parasuraman, et al., 1996). In retail setting, services quality and customer satisfaction has strong link (Cronin, et al., 2000), service quality drives customer satiation (Dabholkar, 1995). Previous literature holds that service quality influence behavioral intentions only through value and satisfaction (e.g., Anderson & Suvillain, 1993; Grewal & Brown, 1994; Roest & Pieters, 1997). In contrast, other are in the support of direct effects (e.g., Parasuraman, et al., 1996; Zeithaml, et al., 1996). Chen & Fu (2015) also proved the influence of service quality on store loyalty through satisfaction. Parasuraman, et al. (1988) first proposed the SERVQUAL framework that measures customers' expectations and perceptions of service encounters. The SERVQUAL framework includes five dimensions as tangibility, reliability, responsiveness, assurance and empathy dimension. Cronin and Taylor (1992) proposed the SERVPERF model, which outperformed the SERVQUAL because it measures customer perceptions of actual performance of a service provider.

Dabholkar and others (1996) criticized both the models for their failure to capture retail store environment and proposed the Retail Service Quality Scale that includes five dimensions as Physical aspects, Reliability, Personal interaction, Problem solving, and Policy. Given the cultural differences (Clark, 1990), and different outcomes of different dimensions of service quality (Zhou, 2004), service quality should be investigated in a local setting and industry wise. Customers in different cultures may give more or less importance to one particular dimension of service quality. For instances, consumers in Asian countries, give more importance to the intangible dimension of service than tangible aspects (Mattila, 1999). Therefore, it is important to investigate the services quality dimensions in the context of Pakistan.

Selling behaviour and loyalty

Relational marketing in retail setting largely depends on interpersonal relationships between customer and salesperson. Retailers implement relational programs through salespersons, which allows the retailers to develop close and strong relationships with customers. In case of high involvement purchase category such as consumer electronics and automobile, salespersons play a critical role in developing relationships. The sales interaction process can influence product related information and is considered as a direct route of persuasion (Petty, et al., 1983). Reynolds and Arnold (2000) comment that salesperson-customer relationships in upscale retail setting maintain their primary loyalty to the salesperson and have spillover effects on store loyalty outcome such as positive word of mouth, competitive resistance and share of purchases. Salesperson's actions and behaviour such as initial contacts, identifying customer's needs, providing information and offering the right solution help to build relationships. The salesperson's interpersonal communication increase customer trust (Orth, et al., 2013). Previous literature suggest that salesperson's behaviour determines the nature of relationships and behaviour can be classified as relational oriented or consultative task oriented (Crosby, et al., 1990; Morgan & Hunt, 1994, Liu & Leach, 2001).

Consultative task behaviors refers to the capability of salespersons to solve customer problems by offering viable solutions (Liu & Leach, 2001). Consultative orientation affects the consumer perceived competence and expertise of salespersons and the retail store. Consultative selling involves demonstrating intelligence and proactive communication by the salesperson to solve customer problems. Consultative selling behavior is applicable in practioner's literature (Butaney, 2007; Hicks, 2008). Consultative task behaviour reflects expertise and competence of salespersons during the interaction process. Understanding clients' needs is the main aspect of consultative orientation. (Futrell, 2004; Manning & Reece, 2004). It implies that the main idea of consultative task behaviour is to identity customer needs, present necessary facts, key information, and offer viable solutions in the given circumstances. Previous literature is indicative of the fact that consultative task behaviour influence buyer perception of salespersons' expertise and purchase intention or continuing relationship (Ingram, et al., 2010).

While, relational behavior refers to usually non-business-related interactions with objective to better understand each other at the personal level and

fostering relationships (Gremler & Gwinner, 2008). Relational selling is defined as "implementing behaviors that "cultivate the buyer–seller relationship and to see to its maintenance and growth" (Crosby, et al., 1990: 68). Relational selling involves consumer emotional response to a salesperson that is likely to affect consumer purchase satisfaction as well as future purchase intentions (Babin, et al., 1995). Relational selling also involves the aspect of customer orientation, adaptation, and team selling (Guenzi, et al., 2007). Relational selling behaviour have characteristics of increased cooperation and frequency of contact (Crosby, et al., 1990) and low-pressure selling tactics (Kennedy, et al., 2001). Relational behavior can also affect trustworthiness (Newell, et al., 2000). Relationships are based on trust and frequency of contact, build rapport or in other words strengthen connection. Interaction process allows both the parties to know each other at a personal level. Relationship traits such as openness, friendliness, information sharing, and cooperative behavior leads to long-term relationships (Crosby, et al., 1990). Interaction and cooperative behaviors leads to interpersonal relationships and buyer loyalty. The perception of cooperation influences trust and commitment in a relationship.

In conclusion, relationships are based on cooperation and trust. Frequency of contact and information sharing strengthen connections. Consultative task behavior is fact based and satisfies the customers' intellectual needs such as provision of product knowledge, problem solving and need assessment. Whereas, relational orientation involves emotions and feeling that foster relationships. The result of implementing relationship programs through salespersons resulted in primary loyalty to salespersons (Beatty, et al., 1996) and the basic reason is the element of interpersonal and relationships between customer and employee. On the other hand, literature also reveals that interpersonal relationship associated in a purchase situation will accrue customer feelings towards the store, that in turn serves as the basis for store loyalty (Macintosh & Lockshin, 1997; Oliver, 1997). The salesperson's actions and behaviors can influence customer satisfaction with the retailer. Most studies in retail environment focus on store attributes such as price, display, promotions, reputation, etc., but little is known about salespersons' behavior in retail setting of high ivolvement products in developing countries, such as Pakistan. Therefore, this research examines the selling behavior as an independent variable to determine customer satisfaction, trust and loyalty.

Retail satisfaction and loyalty

Customer satisfaction and loyalty have a close relationship (Fornell, et al., 1996, Bloomer & Schroder, 2002) and loyalty is the resultant outcome of customer satisfaction (Oliver, 1997; Cronin, et al., 2000). Szymanski and Heard (2001) argue that significant relationship exists between satisfaction and repeat purchase behaviour. In the retail environment, satisfaction is an important antecedent of store loyalty (Bitner, 1990). Customer satisfaction refers to the fullfiment of consumer consumption goal as experienced and described by consumers (Oliver, 2006). Satisfaction includes affective and emotional responses of the consumer to purchase consumption experience (Mano & Oliver, 1993). The definition focuses on customer's feelings in response to purchase experience. Customer satisfaction has received considerable attention in marketing literature (e.g., Swan & Oliver, 1989; Westbrook & Oliver, 1991; Fornell, et al., 1996; Athanassopoulus, 2000). Szymanski and Henard (2001) assert that satisfaction depends on consumers' expectations, disconfirmation level, actual performance, affect and equity.

Retail satisfaction can be defined as an "individual's emotional reaction to his or her evaluation of the experiences realized from patronizing that retailer (Macintosh & Lockshin, 1997). Martenson, Rita (2007), conducteda study in grocery retailing to measure customer satisfaction with store as a brand, store brand and manufacturer brand. It was found that customer satisfaction with the store, as a brand is high. Retailers must offer good retailing services to keep their customers satisfied. Customer expectations are the main elements to keep them satisfied. Customer satisfaction entails consumers' judgment of a service provider to provide a pleasurable level of consumption-related experience with reference to under or over fulfillment (Oliver, 1997). Customers' overall satisfaction with services, merchandise, price, atmosphere and salesperson can have a positive effect on store loyalty.

Brand trust and loyalty

Brand trust has a positive impact on consumer behavioral and attitudinal loyalty (Kharouf, et al., 2014). Brand trust reduces customers' costs of gathering and processing information, purchase risk, and increases perceived utility value (Erdem & Swait, 2004). Trust is defined it as "[..] a willingness to rely on an exchange partner in whom one has confidence". (Moorman, et al., 1992: 315). It highlights the psychological commitment or intention to enter in exchange relationships based upon confidence. Trust

is willingness to enter into mutual relationship with other party based on confidence (Morgan & Hunt, 1994; Chaudhuri & Holbrook, 2001; Erdem & Swait, 2004). Brand trust plays a fundamental role in building mutual relationship, which leads to customer satisfaction and loyalty (Ball, et al., 2004; Kenning, 2008). Lymperopoulos, et al. (2010) comment that trust in retailers directly influence consumer perceived benefits and indirectly purchase intentions. In the line with the existing literature, we use trust as a mediating variable of store loyalty.

Store loyalty

Store loyalty remains an important area of retail marketing and has received considerable attention of eminent researchers in the past (e.g, Dick & Basu, 1994, Boulding, et al., 1993; Oliver, 1997; Macintosh & Lockshin, 1997; Bloomer & Schroder, 2002). Loyalty can be defined in terms of attitude and intentions (Dick & Basu, 1994). Brand attitude refers to an emotional response or psychological commitment to a brand. The behavioral component of loyalty refers to repeat purchases and can be defined as "deeply held commitment to rebuy or repatronize a preferred product or service consistently in the future" (Oliver, 1997: 392). Cronin & Tylor (1992) focus on repeat purchase intention as a measure of store loyalty. While, Boulding, et al. (1993) focus on willingness to recommend. Similarly, researchers in the past have identified many advantages of loyalty such as spreading positive word of mouth (Zeithaml, et al., 1996), increase in purchase frequency (Berry & Parasuraman, 1991), and brand commitment and rejecting competitor offers (Dick & Basu, 1994).

Methodology

Conceptual model

The main feature of this study is to contribute in the form of a model that incorporates satisfaction and trust as mediator between IVs (retail services and selling behaviour) and store loyalty intentions as DV. The inclusion of satisfaction and trust as a mediator to achieve loyalty relies on Caldwell & Clapham (2003) mediating lens framework. This research examines the relationships between six different retail brand elements at a time to make the study more meaningful and contribute to retail brand strategy. These variables include services quality, relational selling behaviour, consultative

selling behaviour, satisfaction, trust and loyalty. The conceptual model involves trust-satisfaction as mediator between services quality, selling behaviour and loyalty.

The logical ground for the model structure is that services quality and selling behaviour leads to satisfaction-trust that in turn affects loyalty (see Figure 1).
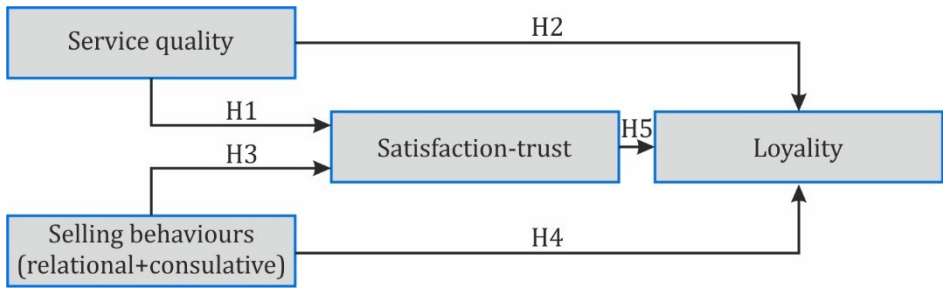

Figure 1. **Conceptual framework/model of the study**

Research hypotheses

    H1. Services quality positively influence customer's satisfaction and trust.
    H2. Services quality positively influence retail brand loyalty.
    H3. Selling behaviour (relational + consultative) positively reinforces customer satisfaction and trust.
    H4. Selling behaviour (relational + consultative) positively reinforces store loyalty.
    H5. Satisfaction-trust positively influence store loyalty.

The study-collected data from consumers aged between 23–49 year through a survey emailed to nationally representative sample size of 377. The data was collected from customers who some experience with particular in high involvement products such as home appliances, consumer electronics and automotive. Total 377 usable survey forms were retrieved out of 580-survey links sent comprising nearly 65 % response rate. The survey had 27 items, which were measured by Likert scale point difference from 1–7. The sample consisted of 295 males (78 per cent) and 82 females (22 per cent) with majority (92 per cent) between 23–39 years as shown in the Table 1.

Table 1

Sample characteristics

Sample characteristic	Frequency	Per cent
Gender		
Female	82	21.8
M ale	295	78.2
Age distribution		
23–29	256	67.9
30–39	90	23.9
Product category		
electronics	305	80.9
High tech	48	12.7
Fashion, luxury items	7	1.9
Automobile	17	4.5
Profession		
Skilled worker/officer	91	24.1
M angers/	53	14.1
Business person	61	16.2
Other professional	49	13.
University students	112	29.7

Results

EFA factor analysis was performed for data reduction. The KMO value was 0.951, which indicates sampling adequacy and it is well above 0.5, which is in marvelous range. The Bartlett test for Sphericity is significant (.000) which suggests that the correlation matrix is significantly different from an identity matrix. The correlation matrix shows a large number of correlation values above 0.30 that signal the suitability of factor analysis (see Table 2).

Table 2

KMO and Bartlett's Test

Kaiser-M eyer-Olkin M easure of Sampling Adequacy		.951
Bartlett's Test of Sphericity	Approx. Chi-Square	7450.409
	df	351
	Sig.	.000

Total 27 survey items resulted into four-factor solution model as illustrated in a scree plot in the following (see Figure 2).
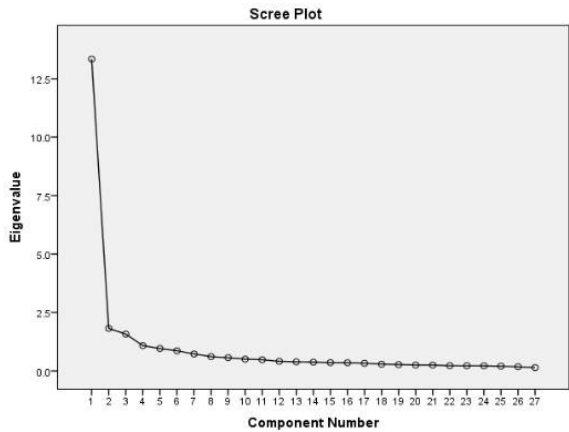
Figure 2. **Scree plot**

The total variance explained is 66 % in the model based on the eigenvalue value greater than 1 using varimax rotation and principle component analysis.

Factor 1 represents the latent variable "service quality" with total 11 manifest variables with overall mean score 5.25, which is moderately high. The range of mean score is between 4.82 and 5.50. Out of 11 items, only two items "serv7" and "serv8" had lowest mean score as 4.82 and 4.85 respectively. Latent variable service quality represent 49 %. 4 of total variance in the entire scale.

Factor 2 represents latent variable "satisfaction-trust" with total 6 manifest variable accounting 5.66 average mean score for variable. The mean score is high than "service quality" scale. The variable explains 6.7 % of the total variance in the total scale items.

Factor 3 represents latent variable "selling behaviour" with total six manifest items. The average mean score for the sub-scale is 5.02, which is moderate-high level. The total variance explained by the variable is 5.8 %.

Factor 4 represents latent variable "store loyalty" with total 4 manifest items. The average mean score for the variable is 5.19 and total variance explained is 4.01.

Cronbach's **α for** the scale was above .70 that meets the requirement of scale reliability. The overall scale reliability is .958.

Table 3

Factors loadings and scale reliability

	Factor	Factor loading	Variance Explained	Cronbach's α
Factor 1-S ervice Quality				
1	The services offered at this store are high level.	.585	49.4	.928
2	Employee at this store are very friendly and available for help all the time.	.686		
3	The employee at this store are very knowledgeable	.636		
4	Employees at this store treat customers courteously	.654		
5	Employees at this store give prompt service	.699		
6	This store takes a sincere interest in solving customer problems.	.719		
7	It is easy to return or exchange the item at this store	.706		
8	This retailer willingly handles returns/exchanges of items.	.713		
9	Employee at this store has adequate skills to deliver the right service	.711		
10	Employee at this store are expert in this field	.533		
11	Employee at this store works quickly and efficiently	.564		
Factor 2-S atisfaction-Trust				
12	I am satisfied with my decision to purchase the product at this store	.739	6.7	.919
13	I think, I made a wise decision to buy products at this store	.767		
14	When I finish shopping and come out of this store, I thought, I did the right thing	.742		
15	This store deals customers with honesty	.651		
16	This store has reputation for being good	.719		
17	I feel secure when I buy products from this retailer because I know it will never let me down.	.661		
Factor 3-S elling Behaviour				
18	The salesperson at this store tries to get to know the customers on a personal level.	.784	5.8	.862
19	The salesperson at this store exchanges views with customers on a variety of topics.	.815		
20	Customers really enjoy the services of salesperson at this store.	.639		
21	The salesperson at this store, presents the facts in way that highlights product benefits to me	.571		
22	The salesperson at this store acts like a consultant to me	.647		
23	The salesperson at this store gives sincere and honest advice to me.	.491		
Factor 4-S tore Loyalty				
24	I consider myself loyal to this store	.524	4.01	.879
25	This store would be my first choice in the future	.600		
26	I will not switch from this store.	.736		
27	I would recommend this store to my friends and others	.637		

Regression results and testing of research hypotheses

SPSS-AMOS was used for structural equation modeling. Regression results shows service quality and selling behaviour have positive significant relationship with store loyalty. The beta weight on path from first IV – "service quality" to DV – "store loyalty" is 0.41 which is strong. The beta weights on path from second IV – "selling behaviour" to store loyally is 0.34 as illustrated in Figure 2. The beta square or R-square is 0.47 (47 per cent) which is high.

Multiple regression results from SPSS output are the almost the same as AMOS.

$$F (2, 372) = 167, p<.001, R\ Square =.47$$

Liner Regression Equation

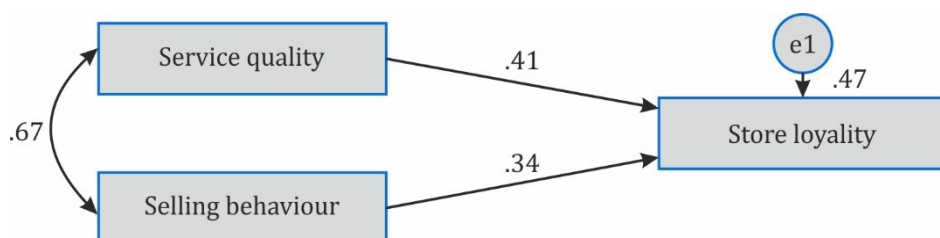| SL =	**β0 +**	**β1Service quality**	**+ β2Selling behaviour** + E
SL =	.765	.438	.379
	(.000)	(.000)	(.000)

Figure 3. **Multiple regression model**

Results are the evident that "service quality" and "selling behaviour" (relational and consultative) both have statistically significant effect on store loyalty, which provides support for the acceptance of research hypotheses as H2 and H5.

Mediation analysis

The first step to perform mediation analysis is check whether IVs have direct significant effect on outcome variable. We met the first condition as path beta weights are shown in the table 4.

Table 4

Direct effect regression weights

			Estimate	S.E.	C.R.	P	Label
store_loyalty	<---	service_quality	.483	.060	8.044	***	
store_loyalty	<---	selling_behavior	.379	.056	6.822	***	

According to Baron and Kenny (1986), the following conditions must be satisfied for the existence of mediation effect as:
1) independent to mediator effect should be significant;

2) mediator to dependent effects should be significant;
3) if both path are significant, it means mediation exist and mediator is mediating the relationship between independent and dependent variables;
4) if the independent to dependent effect (beta weights) reduces compared to direct effects beta weights, it is the case of partial mediation and if the path becomes insignificant, then it is the case of full mediation.

Mediation with AMOS

SPSS-AMOS version 23 was used for structural equation modeling. The model type is recursive with sample size 377. Observed endogenous variables includes "satisfaction-trust" and "store loyalty". While, observed exogenous variables includes "service quality" and "selling behaviour". Maximum-likelihood (ML) methods was used to estimate the parameters. The goodness-of-fit test measures were used as GFI, AGFI, NFI, CFI, and IFI (Byrne, 2001). While, the badness of fit test measure – root mean square error of approximation (RMSEA) was used to check the model fit (Browne and Cudek, 1993). The acceptable value for RMSEA estimate should be less than 0.05 and goodness of fits value closer to 1.0 are desirable but it depends on sample size. The model fit summary indicated GFI =1.0, AGFI = 0.93, NFI =0.94, CFI = 1.0 and RMSEA = 0.046. The values are indicative of model fitting.

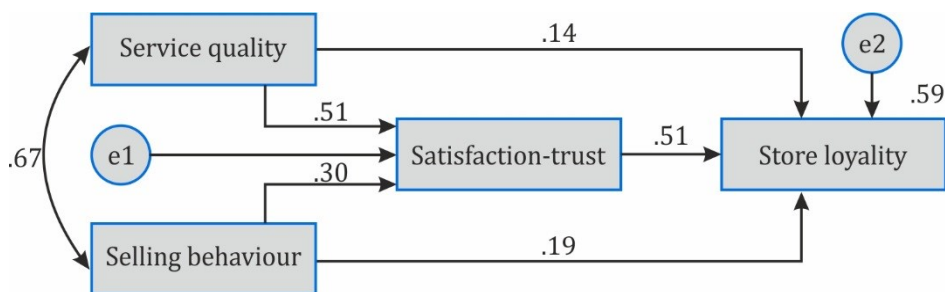*Figure 4.* **Mediation model**

By involving "satisfaction-trust" as a mediator in the model, R-square increased to 0.59 as shown in the Figure 4. To check the mediation effect, we calculate the amount of indirect effect from total effect and then check

this indirect value is significant or not? The total effect of two IVs and one mediator on DV (store loyalty) is .379 (see Table 5). Out of .379, the direct effect is .210 (see Table 6). By subtracting direct effects from total effect, the indirect effects is .169 as shown in the Table 7.

Table 5

Total effects

	Selling behavior	Service quality	Satis trust
Satis-trust	.275	.504	.000
Store loyalty	.379	.483	.617

Table 6

Direct effects

	Selling behavior	Service quality	Satis trust
Satis-trust	.275	.504	.000
Store loyalty	.210	.172	.617

Table 7

Indirect effect (unstandardized)

	Selling behavior	Service quality	Satis trust
Satis-trust	.000	.000	.000
Store loyalty	.169	.311	.000

The standardized indirect effect is .154, which is subject to statistical significant check, p-value. The bootstrap standard error output shows p-value significant. It means mediation effect does exist. Hence, indirect effect is significant and it clearly indicates mediation effects does take place in the model.i.e service quality and selling behaviour influence consumer loyalty intentions through satisfaction-trust.

Table 8

Standardized indirect effects (Two -tailed significance)

	Selling_behavior	Service_quality	Satis _trust
Satis-trust	...	...	...
Store loyalty	.001	.001	...

Checking the significance of each path tells us which type of mediation effects takes place. The estimates output shows that IV1 (services quality) effect on DV (store loyalty) becomes insignificant by involving mediation. This means, it is the case of full mediation. Hence, we can conclude that

service quality influence store loyalty only through satisfaction-trust. From theory perspective, service quality leads to customer satisfaction & trust, that in turn influence store loyalty intentions. ANOVA results provides support for the acceptance of research hypothesis H1and H6. Further, IV2 (selling behaviour) effect on store loyalty is significant (.000) which is the case of partial mediation. According to Baron and Kenny (1986) for full mediation to exist, IV- DV path should be insignificant. However, the beta weight reduces from 0.34 to 0.19 (see Figure 4) which suggests the existence of full mediation effects.

Discussion

Results are consistent with previous literature that customer satisfaction has positive direct effect on store loyalty (Fornell, et al., 1996) as well as positive indirect effect through satisfaction (Cronin, et al, 2000; Chen & Fu, 2015). By involving mediating factor, "satisfaction-trust" the direct effect of services quality on behavioral outcome becomes insignificant, that support that indirect effect. Therefore, it can be argued that services quality has positive indirect effects on behavioral outcome (store loyalty) through satisfaction-trust in high involvement purchase category in context of Pakistan, which is consistent with previous literature (Roset & Pieters, 1997; Cronin, et al., 2000; Chen and Fu, 2015, Jain & Agarwal, 2017). Further, empirical findings established a close relationship between satisfaction and loyalty (Anderson & Sullivan, 1993; Fornel, et al., 1996). Previous study on high involvement products such as appliances and automobiles also highlight the significance of satisfaction and conceive disconfirmation as major antecedents of satisfaction (Oliver, 1977). Previous literature proves evidence for mediating role of that trust and satisfaction on brand loyalty (Nikhashemi & Valaei, 2017). Hence, consistent with previous literature, the empirical findings of this study provides full evidence that services quality indirectly influence consumer behavioral outcomes only through satisfaction-trust.

Dick and Basu (1994) asserted that satisfaction is an antecedent of loyalty intentions and the variables mediates the relationship between affective construct (i.e. service quality) and behavioral constructs (e.g loyalty). Service quality dimensions used in the scale included responsiveness, problem solving and competence of employee. Thus, we can argue that both tangible (problem solving) and intangible (responsiveness and competence)

dimensions of service quality are important for consumer in Pakistan, especially when buying high involvement products such as consumer electronics and automobiles. Salespersons' behaviour (e.g relational and consultative orientation) has direct positive significant effects on behavioral loyalty intentions. The indirect effect through "satisfaction-trust" is not fully established because the direct path coefficient salesperson behavior- store loyalty remains significant as shown in the table 8. However, beta weight reduces from 0.34 to 0.19, which suggest the existence of full mediation effects according to Barren and Kenny. Thus, we can conclude that salesperson's behaviour in upscale retail setting have significant impact on consumers' behavioral outcome (store loyalty) through satisfaction-trust. These results are also consistent with previous literature (Reynolds & Arnold, 2000). Dabholkar (1996) posited that service quality effects through customer satisfaction are under particular situation and context, and thus this study uses particular product category, which offers special service encounters.

Based on the empirical findings and literature, it can be summarized that salesperson behaviour dimensions (e.g consultative orientation and relational orientation) help in understanding customers' needs, problem solving, offering viable solutions and building long-term relationships with customer that results into increase satisfaction, trust and store loyalty. Customer satisfaction and loyalty has strong link offering many advantages such as pay more and brand commitment (Lee, et al, 2011). Emotional reaction to salespersons behaviour effects customer satisfaction and purchase intentions (Babin, et al., 1995). Therefore, implementing services quality and salesperson's behavioral dimensions could foster relationships and store loyalty. Thus, retailers and dealers selling high involvement products should execute services quality with focus on responsiveness, interactions, problem solving and competence of salespersons in order to achieve higher level of customer satisfaction and trust that in turn will affect store loyalty.

Conclusions

Retail services quality has significant effects on consumer behavioral outcomes (e.g store loyalty) through mediating role of satisfaction-trust. Services quality dimensions including responsiveness, interaction, problem solving and expertise of salespersons are key dimension of services quality that positively affects consumer satisfaction and store loyalty. Salesperson's

behaviour dimensions (e.g relational and consultative orientation) have positive effects on customers' satisfaction, trust and loyalty intentions. Retailers relying on salespersons to sell the products should develop their skills, competence level and behavior aspect to increase customer satisfaction, trust and loyalty intentions. The study open doors to investigate the phenomena with more dimensions and across multi-channels retailers.

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KOPSAVILKUMS

DIGITĀLO TEHNOLOĢIJU IEVIEŠANA MAZO UZŅĒMUMU KRĪZES VADĪBAS MODELĪ *COVID-19* LAIKĀ

Victoria Gudovskaya, Iveta Liniņa

Covid-19 krīze ir būtiski iespaidojusi vides izmaiņas, kas uzņēmumiem liek meklēt jaunus veidus, kā attīstīt savu uzņēmējdarbību un plašāk pielietot digitālās tehnoloģijas pastāvošo ierobežojumu laikā. Šī pētījuma mērķis ir analizēt, kā mazie uzņēmumi tiek galā ar *Covid-19* krīzes radītajām vides izmaiņām, pārveidojot krīzes vadības modeli caur digitalizāciju. Lai sasniegtu šo mērķi, autori izmantoja datus no vairākiem pētījumiem, lai ar kvalitatīvo analīzi pētītu intervijās iegūtos datus. Tika izvēlēti septiņi mazie uzņēmumi, izmantojot teorētiskās izlases metodi, lai iegūtu noteiktu statistikas apstiprinājumu. Mūsu analīze parāda, ka mazie uzņēmumi digitālās pārmaiņas pieņem dažādos līmeņos un tos var iedalīt vairākās grupās. Pirmajai grupai piemīt augsts digitālā brieduma līmenis, tā spēj pieņemt mūsdienu izaicinājumus, un tā uzrāda augstu pārejas līmeni uz digitālajiem uzņēmumiem. Otrā grupa bieži cieš no likviditātes problēmām, kā rezultātā tā uzrāda zemu digitālā brieduma līmeni, šī grupa iztiek tikai ar pārdošanas funkcijas digitalizēšanu. Trešās grupas digitālais briedums ir diezgan ierobežots, bet tai sniedz atbalstu augsts sociālā kapitāla līmenis. Pēdējā uzskaitītā grupa ar jaunajiem izaicinājumiem tiek galā, atrodot partnerus ar augstākām digitālajām spējām. Ar kvalitatīvo metodi veikta padziļināta un detalizēta analīze.

VIETĒJĀS PAŠVALDĪBAS DOMES DEPUTĀTA IMPĪČMENTA PROCEDŪRAS PROBLEMĀTISKIE ASPEKTI LIETUVAS TIESISKAJĀ REGULĒJUMĀ

Karolis Kaklys

Lai gan pēc *Konstitūcijas* pašvaldību domju deputāti un mēri nav iekļauti starp personām, kurām var tikt piemērots impīčmenta process, priekšlaicīga vietējās pašvaldības domes mēra vai deputāta autoritātes zaudēšana ir specifisks impīčmenta institūcijas variants, kas ir noteikts Lietuvas Republikas

vietējo pašvaldību likuma 25(1). pantā. Demokrātiskā sistēmā ir ārkārtīgi svarīgi, lai katrs vietējais politiķis, kas dod zvērestu, uzņemtos pilnu atbildību, neraugoties uz to, vai šis politiķis strādā pašvaldības domes vairākumā vai mazākumā un/vai kuram politiskajam spēkam tas pieder. Problemātiski ir tas, ka, lai uzsāktu impīčmenta procesu politiķiem, kurš pieder vairākumam un ir lauzis zvērestu, ir ļoti sarežģīti un nepastāv gandrīz nekādas praktiskas iespējas to pabeigt, šīs iespējas ir tikai teorētiskas un ļoti vāji īstenojamas. Galvenais šī pētījuma mērķis ir noteikt praktiskas un teorētiskas iespējas impīčmenta procesa uzsākšanai pret politiķiem no vairākuma; atklāt galvenos problemātiskos aspektus pašvaldības domes deputāta (vai mēra) impīčmenta procesa tiesiskajā regulējumā un atrast risinājumus analizētajiem jautājumiem, kurus Lietuvas likumdevējs varētu izmantot nacionālā tiesiskā regulējuma uzlabošanai. Pētījums tika veikts, izmantojot loģiskās, salīdzinošās, sistēmu analīzes, monitorēšanas, lingvistiskās, empīriskās, sintēzes un vispārināšanas pētniecības metodes.

JAUNĀKĀS TENDENCES SPORTA PREČU RŪPNIECĪBĀ ZIEMEĻAMERIKĀ UN EIROPĀ

Filip Lestan, Sajal Kabiraj

Sporta preču rūpniecība ir multibiljonu industrija, kurā iekļauts apģērbs, piederumi un aprīkojums. Pašlaik tā ir pakļauta nemitīgām pārmaiņām. Ārkārtējas darbības izraisa jaunu tendenču parādīšanos, un ieinteresētajām pusēm tām jāpiegriež vērība. Šajā pētījumā analizētas patērētāju ekonomiskās un tehnoloģiskās tendences sporta preču nozarē dažādos tirgos un starp dažādām ieinteresētajām pusēm. Ieinteresētās puses – uzņēmumi, organizācijas un patērētāji – arvien vairāk izvēlas prog-resīvus sporta paņēmienus, līdz ar to sporta preču nozare saskaras ar lieliem izaicinājumiem un pārmaiņām. Pētījuma empīriskā daļa tika veikta ar kvantitatīvajām pētniecības metodēm, izmantojot aprakstošo un analītisko pieeju. Dati tika ievākti no tādiem uzticamiem sekundārajiem datu avotiem kā starptautiskās institūcijas, valdības un datu bāzes. Datu analīze tika veikta ar aprakstošo metožu un statistikas testu palīdzību.

PERSONAS DATU AIZSARDZĪBAS SISTĒMAS ATTĪSTĪBA – VAI PANDĒMIJA NES JAUNAS PĀRMAIŅAS?

Marta Mackeviča

Vispārīgā datu aizsardzības regula (turpmāk – Regula), kas stājās spēkā 2018. gada 25. maijā un ar kuru tika ieviests jauns tiesiskais regulējums personas datu aizsardzībai Eiropas Savienībā, satur arī jaunas tiesības, precīzākas definīcijas un uzlabojumus personas datu aizsardzības jomā. Šis trīs gadu periods ir parādījis, ka Regula ir veiksmīgi aizstājusi Eiropas Parlamenta un Padomes Direktīvu 95/94/EC par personu aizsardzību attiecībā uz personas datu apstrādi un šādu datu brīvu apriti, bet *Covid-19* pandēmijā datu pārziņu uzglabātie un apstrādātie dati rada jautājumu: vai Regula pietiekami definē un izskaidro, kā pārziņiem būtu jāveic sensitīvu datu apstrāde, arī situācijās, kad institūciju un uzņēmumu darbinieki strādā attālināti?

Datu aizsardzība ir sarežģīts koncepts, kuru var analizēt gan no tiesiskā, gan sociālā viedokļa. Tradicionāli par datu aizsardzību sauc personas privātuma aizsardzību personas datu izmantošanas procesu kontekstā. Pirms Regulas ieviešanas pastāvošie personas datu aizsardzības noteikumi Eiropas Savienībā nebija pietiekami vienveidīgi un tika ieviesti atšķirīgi katrā dalībvalstī. Šis apstāklis veicināja Regulas izveidi un ieviešanu cerībā, ka ar to tiktu modernizēts un veicināts vienots datu aizsardzības režīms, tajā pašā laikā saglabājot visus datu aizsardzības pamatprincipus, kuriem sekots līdz šim. Pirms pandēmijas Regula veiksmīgi sasniedza sākotnējos mērķus, bet vai pandēmija ir radījusi nepieciešamību Regulu pārskatīt?

Šajā rakstā analizēta personas datu aizsardzības tiesiskā regulējuma izveide un Regulas atbilstība pandēmijas seku radītajām prasībām.

UZVEDĪBAS EKONOMIKAS IZMANTOŠANA SADARBĪBAS UZLABOŠANAI DARBAVIETĀ, BALSTOTIES UZ IEPRIEKŠ NOTEIKTĀM DARBINIEKU UN UZŅĒMUMA VĒRTĪBĀM

Arturs Mons, Velga Vēvere

Mēs dzīvojam laikā, kad strauji attīstās tehnoloģijas, ārkārtīgi pārveidojot tradicionālo pieeju strādāšanai. Tehnoloģiskās attīstības dēļ tādi faktori kā vispārējā globalizācija un pašreizējās pandēmijas radītie izaicinājumi spiež mūs veikt daudzpusīgus uzdevumus, sadarbojoties ar citiem indivīdiem. Kā ziņots *Harvard Business Review* (2016), balstoties uz pēdējās divās desmitgadēs

veiktiem pētījumiem, vadītāji un darbinieki pavada divreiz mazāk laika sadarbojoties. Turpat secināts, ka lielākā darbinieka darba dienas daļa tiek pavadīta komunikācijā ar kolēģiem. Turklāt darba komandas kļūst lielākas, daudzveidīgākas, specifiskākas nekā agrāk un atrodas dažādās vietās. Lai gan šādas komandas ar iepriekš minētajām īpašībām var veiksmīgi tikt galā ar ikdienas izaicinājumiem, tās tik un tā var sastapties ar nepieciešamību savstarpēji sadarboties. Šī pētījuma mērķis ir izvērtēt, kuras vērtības nosaka veiksmīgu sadarbību darbavietā. Tiek izpētīts, kā grupas centieni var paaugstināt darbinieka apmierinātības līmeni un to vispārējo motivāciju. Tika veikti secinājumi, kā sadarbības uzlabošana darbavietā var radīt lielāku vērtību uzņēmumiem. Pētījuma rezultāts ir apkopotas zināšanas par to, ar kādām grūtībām ikdienā saskaras darbinieki un kā komandas centieni var stimulēt inovācijas darbavietā. Pielietojot šīs zināšanas organizāciju vadībā, vadītāji var uzturēt labu komandas darba praksi, dabiniekiem pakāpeniski pielāgojoties strādāšanas veidam, kurā tiem jābūt savstarpēji atkarīgiem vienam no otra.

ELIPTISKIE 2D DIFERENCIĀLVIENĀDOJUMI

Patriks Morevs, Marina V. Khudzhina,
Elman Dzhambetov, Sergei D. Karakozov

Ar ADI metodes izmantošanu ir uzlabots aprēķina laiks nodālā tipa diferenču shēmai 2D eliptiskajiem parciālajiem diferenciālvienādojumiem. Aplūkoti Helmholca un absorbcijas vienādojumu gadījumi.

MĀKSLĪGAIS INTELEKTS KĀ JURIDISKA PERSONA CIVILTIESISKĀS ATBILDĪBAS KONTEKSTĀ

Giedrius Nemeikšis

Tehnoloģiskajam progresam un tā praktiskajam pielietojumam kļūstot par aizvien biežāk izplatītu fenomenu, mākslīgā intelekta jēdziens vairs nav tikai tīri teorētisks jautājums, kamēr mākslīgā intelekta sistēmas spēja mācīties un patstāvīgi pieņemt lēmumus nosaka tā subjektīvo dabu un spēja to uztvert tikai kā komplicētu instrumentu kļūst aizvien ierobežotāka. Pētījuma mērķis ir analizēt tiesisko pamatu un problēmas saistībā ar mākslīgā intelekta kā atsevišķas juridiskas personas akceptēšanu, un īpatnības civiltiesiskajā atbildībā par mākslīgā intelekta nodarītu kaitējumu. Analīze tika balstīta trīs problēmās: mākslīgā intelekta konceptā, iespējamībā to

atzīt par atsevišķu juridisku personu un civiltiesiskās atbildības par tā nodarītu kaitējumu īpatnībās. Pētījums tika veikts, pielietojot loģisko, teleoloģisko, sistemātiskās analīzes, lingvistiskās, sintēzes un juridisko dokumentu analīzes metodes. Analīze parāda, ka nepastāv vienots mākslīga intelekta koncepts, taču noteikti definīcijas elementi varētu vienkāršot tā tiesisko regulējumu, kā arī tikai pilnīgi autonomam mākslīgajam intelektam ir potenciāls tikt atzītam par atsevišķu juridisku personu, līdz ar to šajā gadījumā ir objektīva nepieciešamība pārskatīt regulējumu civiltiesiskajai atbildībai par mākslīgā intelekta nodarītu kaitējumu, lai varētu ieviest kopīgu un atsevišķu civiltiesisko atbildību kopā ar atbildīgo dabisko personu.

SKOLĒNU AKADĒMISKĀ SNIEGUMA MATEMĀTIKĀ PAAUGSTINĀŠANA, IZMANTOJOT KLASES VADĪBAS PRAKSI NIGĒRIJĀ

Charles N. Ohanyelu

Skolēnu akadēmiskais sniegums matemātikā publiskajās vidusskolās Nigērijā līdz šim ir konsekventi bijis zems. Ir daudzi faktori, kas to varētu būt ietekmējuši, taču klases vadības paradumu ietekmei uz akadēmisko sniegumu līdz šim nav pievērsta liela uzmanība. Pētījumi rāda, ka slikti organizētās klasēs mācīšanās notiek pavisam maz. Šajā pētījumā mēģināts atklāt, kā skolēnu akadēmiskais sniegums matemātikā varētu tikt uzlabots ar klases vadības praksi. Ir uzdoti trīs pētījuma jautājumi, no kuriem galvenais ir: kā klases vadības prakse uzlabo skolēnu akadēmisko sniegumu Nigērijas publiskajās vidusskolās? Tika izmantots aprakstošs pētījuma dizains, izmantojot izlasi N=250. Pētījuma instruments ir aptauja papīra formā ar piecu punktu Likerta skalu, veikta klātienē ar nejauši izvēlētiem matemātikas skolotājiem no pieciem Nigērijas štatiem. Lai analizētu datus un veiktu iespējamos secinājumus, tika izmantota vidējā un standartnovirze. Rezultāti parāda, ka disciplinētām un labi motivētam klasēm ir nozīmīga ietekme uz skolēnu akadēmisko sniegumu matemātikā.

GATAVĪBA DIGITĀLAJAI TRANSFORMĀCIJAI – VADOŠO BALTIJAS UZŅĒMUMU PERSPEKTĪVA

Aleksandrs Popovs, Zane Driņķe

Pētījuma mērķis bija izpētīt un novērtēt skatījumu uz digitālo transformāciju uzņēmumos, kuri šobrīd atrodas transformācijas programmā un veic

digitālās transformācijas projektus. Pētījumā savākti dati no dažādiem vadošajiem uzņēmumiem dažādās nozarēs Baltijas reģionā. Pētījumā izmantota aprakstošā pētniecības metode. Šī pētījuma statistiskā populācija ir paplašināts saraksts ar uzņēmumiem no *Coface* pētījuma Baltijā top 50 izveidei 2019. gadā. Pētījuma izlase ir balstīta uz mērķi orientētā pieejā, un tajā iekļauti 11 uzņēmumi no statistiskās populācijas. Datu vākšana tika veikta ar tiešsaistes aptauju un vēlāk no intervijām ar respondentiem, lai apstiprinātu sniegtos datus. Pētījuma rezultāti ir radītā perspektīva, kas ietver vairākus aspektus, kurus jāņem vērā nākotnes pētījumos: (1) Šobrīd transformācijas procesu kompetences līmeni vadošajos uzņēmumos un attiecīgi pārējos uzņēmumos tirgū ir nepieciešams uzlabot; (2) Uzņēmējdarbības pieprasījums pēc zinošiem digitālās transformācijas ekspertiem ar visaptverošām zināšanām par moderno uzņēmējdarbības procesu vadību ir salīdzinoši augstāks nekā pēc tehniskas ekspertīzes par jaunākajām tehnoloģijām; (3) Lai virzītu digitālo transformāciju tuvāk inteliģenta uzņēmuma konceptam, atbalsts un vadība no globālajiem digitālās transformācijas konsultatīvajiem partneriem ir ļoti ieteicams.

INOVĀCIJU UN PRASMJU IETEKME UZ LATVIJAS MAZO UN VIDĒJO PĀRTIKAS UZŅĒMUMU ATTĪSTĪBU

Supun Samarasinghe, Nadeeshika Silva

Latvijas mazie un vidējie uzņēmumi (MVU) ir pakļauti augstas konkurences spiedienam no ārzemju un starptautiskajiem uzņēmumiem Latvijas pārtikas tirgū. Rakstā pamatā ir izmēģinājuma pētījums, kura mērķis bija atklāt ietekmējošos faktorus Latvijas pārtikas MVU attīstībā. Šajā pētījumā tika pielietota deduktīvā pieeja, kurā, balstoties uz literatūru, tika izvirzīta hipotēze, kura var vai nu tikt aptiprināta, vai noraidīta ar aptaujas datu analīzi. Autori izveidoja aptauju tiešsaistē, balstoties uz zinātnisko literatūru un ekspertu viedokļiem. Aptauja tika mērķēta uz uzņēmējiem un augstākā līmeņa vadītājiem Latvijas pārtikas MVU Rīgas reģionā. Visvairāk ietekmējošie faktori Latvijas pārtikas MVU attīstībā tika identificēti kā "inovācijas" un "prasmes", kam ir augsta pozitīva ietekme uz Latvijas pārtikas MVU attīstību. Turpmāk vislielāko pienesumu sniedzošie lielumi (mainīgie rādītāji) no šiem iespaidojošajiem faktoriem var tikt pētīti tālāk ar lielāku izlasi, lai identificētu potenciālās inovatīvās stratēģijas saistībā ar inovāciju un prasmēm.

KOMUNIKĀCIJAS STRATĒĢISKIE ASPEKTI ATKRITUMU ŠĶIROŠANAS SOCIĀLO PARADUMU MAINĪŠANĀ

Daina Škuškovnika, Anita Zvingule

Šajā rakstā analizēti teorētiskie principi un praktiskā pieredze, plānojot komunikāciju ar sabiedrību, lai mainītu tās uzvedību attiecībā uz atkritumu radīšanas samazināšanu un to pārstrādes veicināšanu.

Pētījuma mērķis: gadījuma pētījuma analīze, pārbaudot Latvijas reģionālā komunālo pakalpojumu nodrošinātāja komunikāciju ar patērētājiem un izsakot ieteikumus uzņēmuma komunikācijas stratēģijas attīstīšanai, lai izmainītu sabiedrības atkritumu šķirošanas paradumus.

Pētījuma ietvaros tika intervēti atkritumu vadības un komunikācijas eksperti un analizēta SIA "Kuldīgas komunālie pakalpojumi" iepriekšējā pieredze. Tika veikta mediju satura analīze (2017–2019), patērētāju aptauja un fokusa grupu intervijas.

Iegūto rezultātu analīze atklāja, ka SIA "Kuldīgas komunālie pakalpojumi" pietrūkst vienotas stratēģiskās pieejas tās komunikācijā ar patērētājiem. Tika izveidota uzņēmuma komunikācijas stratēģija 2021.–2023. gadam, un ir plānota atkārtota analīze pēc tās ieviešanas.

Raksta noslēgumā sniegti ieteikumi, kā izveidot uzņēmuma komunikācijas stratēģiju sabiedrības atkritumu šķirošanas paradumu mainīšanai.

ĀRZEMJU STUDENTU PIEREDZI VEIDOJOŠIE FAKTORI UN TO LOMA AUGSTĀKĀS IZGLĪTĪBAS EKSPORTĀ

Natālija Sotikova, Renāte Cāne

Modernajā izglītības tirgū pastāv intensīva konkurence, kas liek augstākās izglītības iestādēm izvēlēties uz tirgu orientētu stratēģiju. Sarūkot vietējo studentu skaitam, universitātes aktīvi aicina pieteikties ārzemju studentus. Tādēļ ir svarīgi noteikt faktorus, kas veido starptautisko studentu pieredzi, saņemot augstāko izglītību ārzemēs, un šo faktoru ietekmi uz augstākās izglītības eksporta attīstību.

Šī pētījuma mērķis ir noteikt faktorus, kas veido starptautisko studentu pieredzi izglītības eksportā. Kā pētniecības metodes tika izmantota aptauja, frekveces analīze, centrālās tendences aprēķini un korelācijas analīze.

Pētījumā secināts, ka no aptaujātajiem faktoriem studenti par vissvarīgākajiem uzskatīja sekojošos: iespēju ceļot uz dažādām valstīm studiju laikā, cenu

līmeni valstī, drošības līmeni valstī, labas atpūtas un izklaides iespējas un vietējo iedzīvotāju draudzīgumu. Kā vissvarīgākie faktori augstākās izglītības iestāžu izvēlē tika minēta izglītības kvalitāte, interesanta studentu dzīve, labas attiecības ar vietējiem studentiem un citiem ārzemju studentiem, labas attiecības ar akadēmisko personālu un interaktīvas lekcijas.

Šie rezultāti ir būtiski augstākās izglītības iestādēm, jo tie palīdz noteikt, kā veidot pozitīvu pieredzi augstākās izglītības eksporta attīstībai.

VIZUĀLIE MODEĻI KĀ MĀCĪBU LĪDZEKLIS SĀKUMSKOLĀ MATEMĀTIKAS APGUVEI: PASNIEDZĒJU APMĀCĪBAS PROBLĒMAS

Maria Urban, Daina Vasiļevska, Alesia Abchynets

Modernais matemātikas mācīšanas veids lielā mērā balstās uz modelēšanas metodi. Tajā pašā laikā vizuālie modeļi ir visvairāk izmantotais līdzeklis matemātikas mācīšanai pamatskolā. Daudzos zinātniskajos pētījumos ieteikts matemātikas mācīšanas prakses uzlabošanai kā metodi izmantot vizuālos modeļus. Tomēr daudz mazāka uzmanība tikusi pievērsta grūtībām, kas rodas, sagatavojot pamatskolas skolotājus vizuālo modeļu izmantošanai matemātikas stundās. Līdz ar to skolotāji vizuālos modeļus matemātikas stundās izmanto reti un ne vienmēr pareizi. Pētījuma mērķis ir noteikt un aprakstīt iezīmes vizuālo modeļu izmantošanā matemātikas stundās, noteikt problēmas, kas rodas, sagatavojot skolēnus vizuālo modeļu izmantošanai matemātikas stundās, un ierosināt pieeju, kā to uzlabot. Lai sasniegtu rezultātu, tika izmantotas dažādas metodes: moderno avotu par vizuālo modeļu izmantošanu matemātikas mācīšanā teorētiskā analīze; novērošanas metode iezīmju noteikšanai vizuālo modeļu izmantošanai matemātikas stundās; gadījuma metode, lai noteiktu pamatskolas skolotāju attieksmi pret vizuālo modeļu izmantošanu matemātikas stundās nākotnē. Pētījuma rezultātā tika izceltas problēmas skolēnu sagatavošanā vizuālo modeļu izmantošanai pamatskolas matemātikas apguvei. Viena no galvenajām problēmām apmācībā ir nesaskaņa starp pieaugušā verbāli-loģisko domāšanu un bērna vizuāli-figuratīvo domāšanu. Līdz ar to, attīstot prasmi mācīt, izmantojot vizuālos modeļus, ir svarīgi sākt nevis ar modeļu veidošanas tehnisko aspektu apguvi, bet gan ar izpratni un atziņu par izglītojošās modelēšanas nozīmi skolēnu apmācībā.

MAZUMTIRDZNIECĪBAS PAKALPOJUMU UN PĀRDOŠANAS UZVEDĪBAS IETEKME UZ KLIENTU APMIERINĀTĪBU, UZTICĪBU UN LOJALITĀTI PAKISTĀNAS MAZUMTIRDZNIECĪBAS NOZARĒ

Muhammad Zafran, Velga Vēvere

Šajā pētījumā aplūkota mazumtirdzniecības pakalpojumu kvalitātes un pārdošanas uzvedības ietekme uz klientu apmierinātību, uzticību un lojalitāti attiecībā uz tādiem augstas iesaistes produktiem kā plaša patēriņa elektronika/sadzīves tehnika Pakistānas kontekstā. Dati tika ievākti no 377 klientiem, kuri izpildīja tiešsaistes aptauju. Respondentiem tika vaicāts, vai tiem pēdējā laikā ir pieredze ar šādu preču iegādi, un uzdots attiecīgi novērtēt šīs preces, ņemot vērā iegādes pieredzi. Modeļa testēšanai tika izmantota faktoru analīze un daudzkārtējā regresijas analīze. Pētījuma rezultāti parāda, ka gan veikala pakalpojumu kvalitātei, gan pārdošanas orientācijas stratēģijai ir nozīmīga ietekme uz klientu apmierinātību, uzticību un lojalitāti. Pētījumā iekļauta arī mediācijas analīze, kurā apmierinātība un uzticība ir starpnieka faktors starp diviem neatkarīgiem mainīgajiem (pakalpojumu kvalitāte un pārdošanas uzvedība) un vienu atkarīgu mainīgo (veikala lojalitāte). Rezultāti parāda, ka pakalpojumu kvalitātei un pārdošanas uzvedībai ir būtiska ietekme uz veikala lojalitāti. Apmierinātība un uzticība mediē attiecības starp mainīgajiem. Netiešajā ceļā ir pierādīts, ka apmierinātība un uzticība ir starpnieks attiecībās starp veikala iezīmēm un klienta pirkšanas uzvedību. Pētījumā ir būtiski norādījumi, kā vairākos mazumtirdzniecības kanālos ieviest mazumtirdzniecības pakalpojumu kvalitāti un pārdošanas uzvedības stratēģiju (attiecību pārdošana un konsultatīvā pārdošana), lai diferencētu mazumtirdzniecības zīmola pakalpojumus. Mazumtirgotāji ar produktiem augstas iesaistes kategorijā, kas lielā mērā paļaujas uz pārdevēja/darbinieka pārdošanas prasmēm un uzvedību, var izmantot šo pētījumu mazumtirdzniecības zīmola pozicionēšanas stratēģijas īstenošanā.