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RISK ASSESSMENT FOR THE TRANSPORT OF CLASS 1 HAZARDOUS MATERIALS BY ROAD

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Introduction/background: The paper outlines the importance of risk analysis in ensuring the safety of road transport of explosives and ammunition. The growing number of accidents makes it necessary to take a closer look at the safety of the transport of hazardous materials. The article is devoted to the risk assessment for the transport of class 1 hazardous materials by road.

Aim of the paper: The aim of this article is to assess the risk of transporting Class 1 hazardous materials by road.

Materials and methods: The paper uses a literature study of risks in the transport of hazardous materials. The empirical research covered the assessment of risk factors in the transport of class 1 dangerous goods with Bow-Tie Tree diagram, PHA method and risk map.

Results and conclusions: The result of the research is the identification of key categories that generate the main hazards in the transport of class 1 hazardous materials. An analysis of the volume and structure of transported hazardous substances on the domestic market was carried out. The Bow-Tie tree method of cause-effect analysis was used to identify risk factors. The individual risk factors were assessed and the category with the highest risk level was singled out. The results of the analysis were presented in a risk map.

Keywords: Hazardous goods, risk analysis, transport of ADR materials.

1. Introduction

A specific type of transport that requires the involvement of specialised material resources and the application of strict procedures is the transport of hazardous materials (ADR). A hazardous material is defined as a substance that may pose a risk to human or animal health and life (Fertsch, 2006). The transport of this type of goods is characterised by the possibility of a wide variety of hazards. These include those that could potentially occur in the transport of any group of goods, as well as those arising from the specific hazard characteristics of the product. Their type and level also depends on the class of goods being transported (according

to the accepted ADR classification of hazardous materials). The most common branch of transport of hazardous materials is road transport. It should be stressed that this is the most popular mode of transport, but at the same time has the highest accident rate and congestion. These aspects, in the context of hazardous materials, are a definite contributory factor to the hazards involved in transport. This can also be seen in the statistics, which show an increasing number of accidents involving this type of transport.

Currently, the safety of hazardous materials transport is an interesting and analysed research area in the literature (Conca et al., 2016). In the field of road transport, this problem has been addressed by, among others: Fabiano (Fabiano et al., 2021), Fornalchyk (Fornalchyk et al., 2021), Yang (Yang et al., 2010), Janno and Koppel (Janno, Koppel, 2017). A key aim of the analyses undertaken in the literature is to reduce the risks of transport, which can pose a threat both to the goods themselves and, on a wider scale, also to people and the environment. This issue thus fits in with the idea of sustainable development, in which, in addition to the economic pillar, the environmental and social pillars have also gained in importance. A specific group of hazardous materials, generating many risks in transport, are products of an explosive nature, which represent Class 1 ADR materials. These loads are characterised by low transportability due to their sensitivity to high temperatures. They also pose a significant risk given the scale of damage and the number of casualties they can cause during an accident. With reference to this, an assessment of the risks present in the transport of ADR Class 1 explosive goods was adopted as the aim of the paper. In relation to the aim, the authors adopted two research questions:

1. What hazards can be identified as key in the transport of Class 1 hazardous, explosive materials?
2. Which category (technical, natural, human, other aspects) generates the main hazards in the transport of Class 1 hazardous, explosive materials?

This paper is organised as follows. In section 2 and 3, literature studies on the risks associated with the transport of hazardous materials are presented and an analysis of the national market for ADR transport is carried out. The next section of the paper (4) describes the research methodology concerning the risk assessment of the transport of Class 1 hazardous materials. The results obtained from the research, conducted according to the adopted methodology, are presented in section 5 of the paper. The whole paper was concluded with the final conclusions indicating the answer to the research questions posed.

2. Risks in the transport of hazardous materials

When organising the transport of hazardous materials, a key element is ensuring safety. The concept of security should be understood as a state during which both the individual unit and the organisation as a whole are protected against various types of hazards and the achievement of their main objectives can take place without disruption (Romanow, 2017). However, in order to be able to ensure the security of ADR transport, it is necessary at the outset to understand the risks present in the process. Risks exist in any type of business. A risk can be the failure to achieve an adequate financial result or a material loss due to an unforeseen event. This concept particularly applies to the transport of hazardous materials. Risk is defined as the degree of potential damage that could result from the occurrence of an event (Janasz, 2009). In this case, it is expressed as the magnitude of the probability of the event and the severity of the loss. Risk can also be defined as the loss or lost expected value (Haixing, Qiangian, 2020).

A central aspect in an organisation involved in the transport of dangerous goods is appropriate risk management. It is understood as an activity relating to the management and control of risks in an organisation (Sidorova, 2022). According to the principles of risk management, this process should be systematic and an integral part of the company's activities. It is also important to designate specific individuals responsible for the correct functioning of the process. It is also worth emphasising that risk management in the transport of dangerous substances is a system that is subject to change over time. It is important that the level of risk is constantly monitored and that new risks in transport are addressed on an ongoing basis (Wróblewski, 2015). The ISO 31000:2009 standard defines framework structures for risk management that are applicable to various industries, including ADR transport. According to the standard, risk management consists of three basic elements: principles, a framework structure and a process (Hopkin, 2017). The relationship between the different elements in risk management is shown in Figure 1.

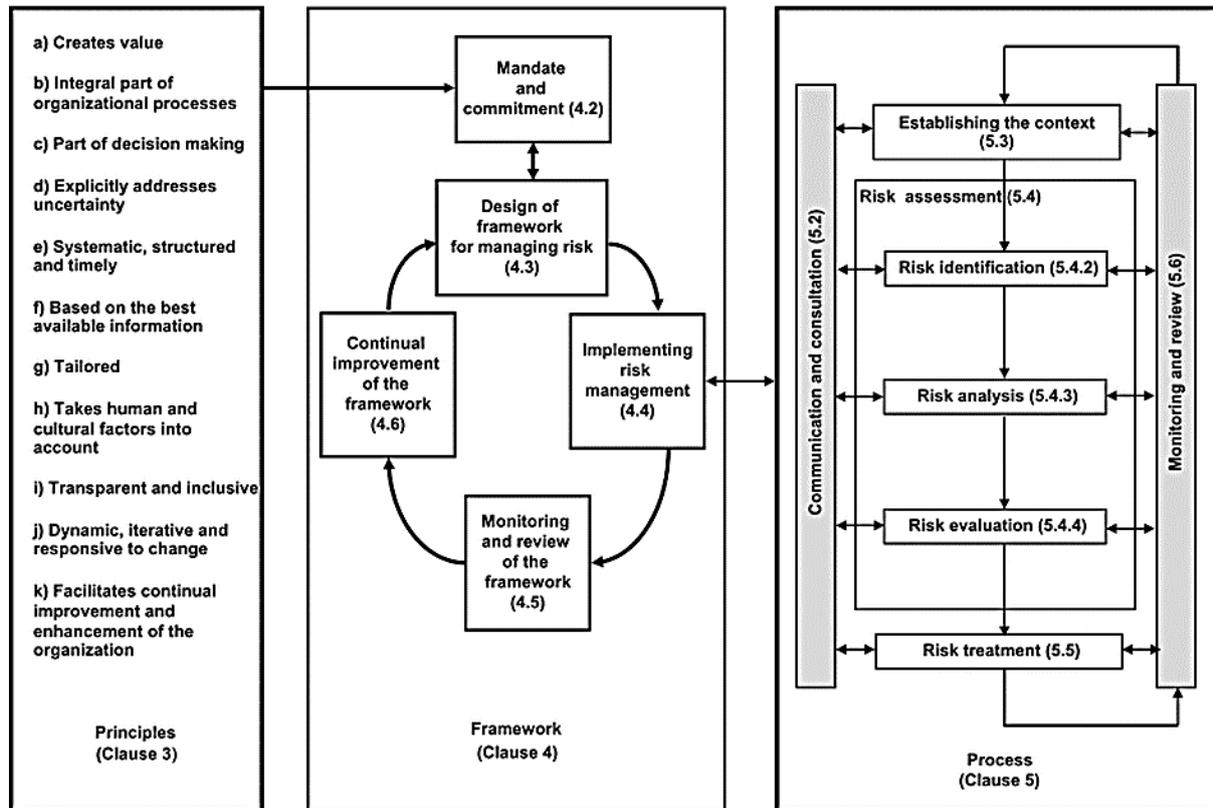


Figure 1. Relationships in risk management. Source: Wróblewski, D. (2015). *Zarządzanie ryzykiem*. Józefów: CNBOP-PIB.

The risk management process makes it possible to implement appropriate responses to the risk factors present in ADR transports, which make it possible to reduce the likelihood of an accident occurring or to reduce the severity of its consequences. Risk identification is the first step that is carried out during the risk assessment of a process. The main objective of risk identification is to identify areas where the carrier is at risk of suffering loss or causing an accident involving a dangerous substance. Risk identification most often illustrates the causes of the risk, the type of hazardous event and its effects and consequences (Voicu et al., 2018). Risk factors are the circumstances under which the risk of a hazardous event may or may not arise. In addition to considering natural and technical factors, special attention should also be paid to the increasing relevance of the human factor in ensuring the safety of the transport process (Chengwu et al., 2022). The main categories of methods for the identification of risk factors include: expert, heuristic, systematic and computer software-based methods (Korombel, 2007). Expert methods involve assembling a panel of experts and having them select and evaluate risk factors. Participants in this method can be specialists in the organisation of the transport of hazardous materials and ADR safety advisors. Heuristic methods, on the other hand, allow a large number of risk factors to be generated by people involved in the transport industry and stakeholders. The systemic category allows risk identification using holistic methods and error analysis. The last category is methods using IT tools to identify risk factors.

They allow the collection of information on the number of potentially hazardous events. The classification of risk identification methods is shown in Table 1.

Table 1.

Classification of risk identification methods

Expert	Heuristic	Systematic	Using computer programmes
- checklist method, - the Delphi method, - nominal group process method.	- the brainstorming method, - synthetic method, - public debate, - scenario building method.	- holistic method, - mystical register, - systemic error analysis.	- review of documentation, - information-gathering techniques, checklists, - diagrammatic techniques (Bow-Tie tree).

Source: Korombel, A. (2007). *Ryzyko w finansowaniu działalności inwestycyjnej*. Warsaw: Difin.

The next step in the risk management process for the transport of dangerous goods is to assess the risk of individual factors. The assessment of the identified factors can be made in terms of the magnitude of the probability and the scale of the effect of the hazard associated with the transport of hazardous materials. The magnitude of the effect depends on the number of casualties and injured persons, the amount of material damage and environmental damage (Curtis et al., 2012). The results of the risk analysis are presented on a risk map. It allows decisions to be made on the order in which risks should be dealt with. Particular priority should be given to risks in the red zone of the map, i.e. factors with the highest risk level. For these, immediate action should be taken to reduce the current level of risk. The risk map should be updated once mitigating actions have been taken and risk assessments of the ADR transport process should be carried out regularly to maintain a high level of safety (Wróblewski, 2015).

3. Transport of hazardous materials in Poland

The market for the transport of dangerous goods by road in the European Union has been characterised by stable growth and slight fluctuations over recent years. Poland ranks 5th in terms of the volume of hazardous materials transported compared to other EU Member States. A graph showing the volume of ADR transport in the EU in 2020 is presented in Figure 2.

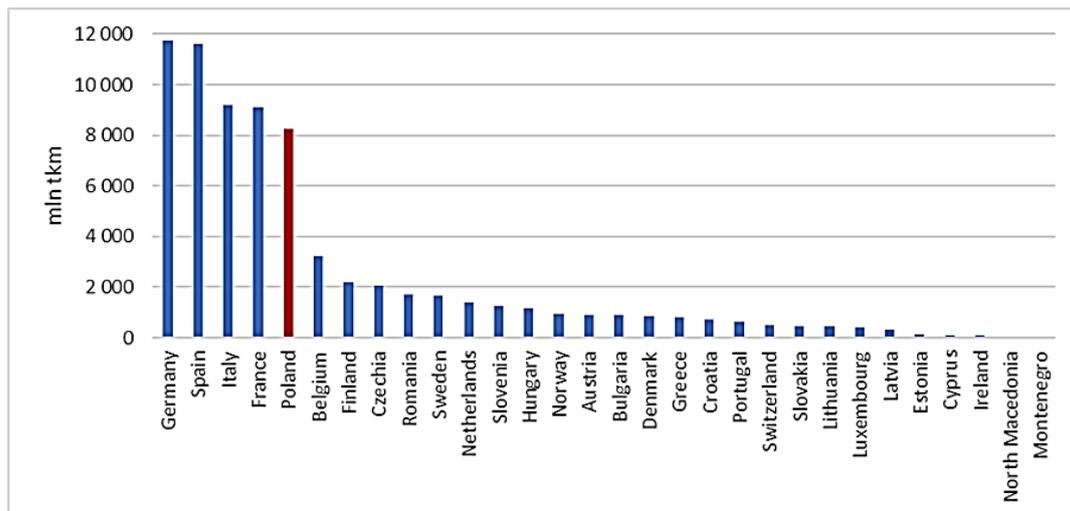


Figure 2. ADR transport in the EU in 2020 (million tonne-kilometres). Source: own study based on Eurostat data.

In 16 years, the volume of ADR cargo transported in Poland has more than doubled. The increase in transport volumes is closely linked to the country's economic development and increased demand for specialised transport services. Despite periodic decreases, further development of the hazardous cargo transport industry is expected. A graph of the volume of domestic transport of hazardous materials in million tonne-kilometres between 2004 and 2020 is shown in Figure 3.

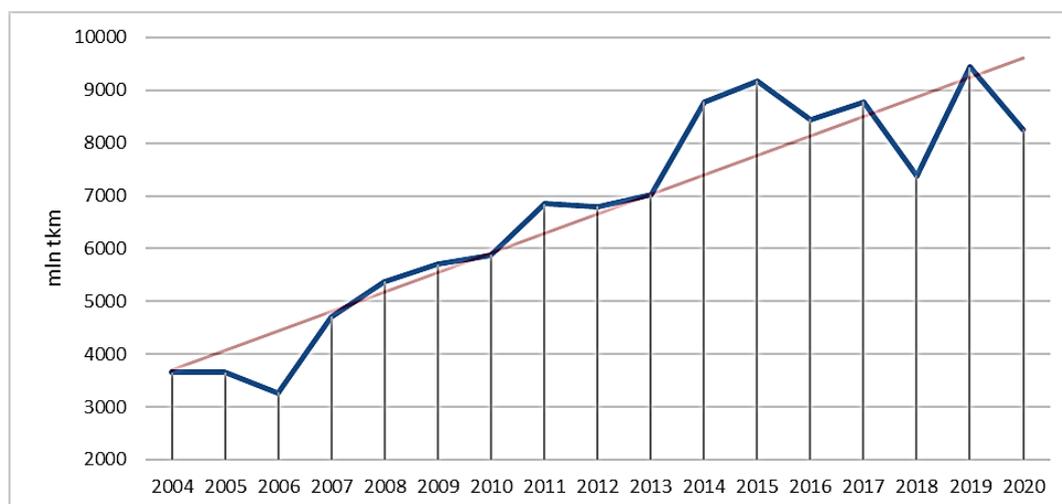


Figure 3. ADR transport in Poland between 2004 and 2020 (million tonne-kilometres) Source: own study based on Eurostat data.

As the volume of hazardous materials transported increases, so does the number of accidents involving ADR transport. Their number is shown in the range of 2010-2017 in Figure 4.

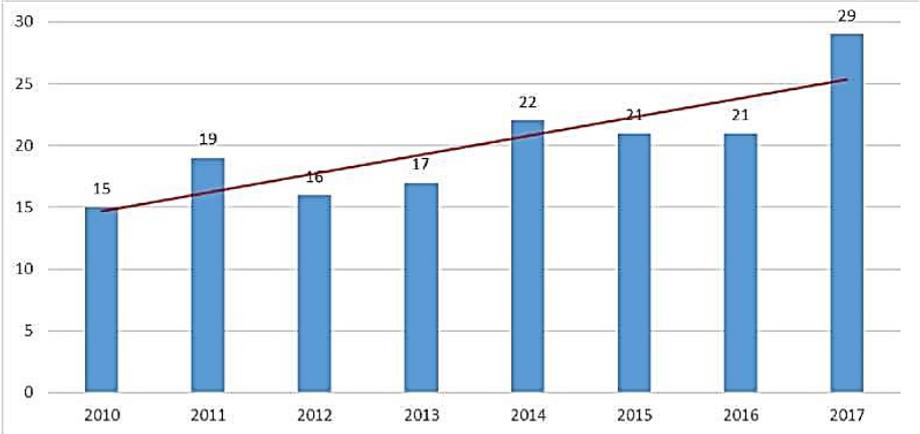


Figure 4. Number of accidents involving transport of hazardous materials in Poland between 2010 and 2017. Source: own study based on: Pajak M. (2019). Ograniczanie ryzyka zagrożeń w transporcie drogowym przez zastosowanie systemu monitorowania towarów niebezpiecznych. Poznań.

The increase in accidents involving hazardous materials is a serious problem in transport. They definitely pose a significant risk to the safety of the cargo itself, as well as to people and the environment. It is therefore important to identify and assess the risks of transporting hazardous materials and consequently to implement risk management procedures to minimise potential hazards.

4. Research methodology

With reference to the aim adopted and presented in the introduction of the paper and the research questions formulated, a methodology was adopted which consists of 3 main phases. It is presented in Figure 5.

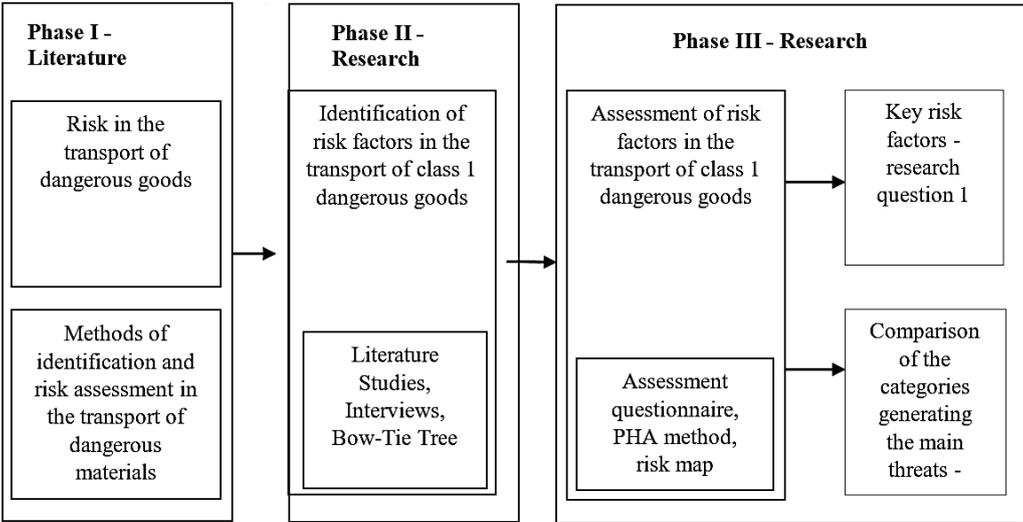


Figure 5. Test methodology. Source: own study.

As shown in Figure 5, the research conducted involved three main phases. In the first, literature studies were carried out. These were aimed at showing the risk of various hazards as factors adversely affecting transport safety. This is particularly important in view of the significant volume of hazardous materials transport work carried out in Poland in comparison with other European countries, as shown in point 3 of the paper, and because of the increase in the number of accidents involving these materials. In addition, the study identified methods used to identify and assess risks. They can also be applied in the area of hazardous materials transport. As part of the second phase of the research, the identification of potential risk factors in the transport of Class 1 hazardous materials was carried out. The risk factors can be divided according to different categories, but in the conducted research a division into four categories was adopted: 1) Natural factors, 2) Technical factors, 3) Human factors, and 4) Other factors. The identification of individual factors within these four categories was made as a result of literature analyses and interviews with experts in the field of hazardous materials transport. A group of 12 Polish experts was appointed for the research. They were representatives of the world of science and business practice in the field of transport of hazardous materials (with particular emphasis on class I ADR loads). The basic criterion for the selection of experts was their knowledge and experience within the research area in question. Scientific publications were considered in the case of experts representing science as well as the position held and seniority in the transport activity, in the case of experts representing business practice. The presentation of the identified factors was made using a Bow-Tie tree. This method consists of a visual representation of the cause-and-effect relationship of risks in the process (Voicu et al., 2018). In the third phase of the research conducted, the identified risk factors were assessed using the PHA method. For this purpose, a questionnaire was prepared, addressed to the above-mentioned group of experts. This research was conducted in March 2022. As part of the questionnaire, the experts assessed the identified risks in terms of two criteria: the probability of the risk occurring and the effect generated by the risk. A five-point scale was adopted, where: a score of 1 meant a very low probability of occurrence/a very low effect generated by the risk. The remaining scores (2, 3, 4, 5) showed an increasing trend up to a score of 5, which meant a very high probability of occurrence / a very high effect generated by the risk. Based on the results obtained, the identified risks were assessed. The final score was the product of the probability and the effect assigned to each risk separately. A risk map was used to show the individual risk levels. The results obtained for each risk individually and the juxtaposition of risks within each category allowed answers to the two research questions posed in the introduction.

5. Identification and risk assessment in the transport of ADR Class 1 dangerous goods – research results

When identifying the risks in the transport of ADR Class 1 dangerous goods, the risk factors were divided into four categories: natural, technical, human and other hazardous factors. A total of 20 main risk factors affecting transport safety were identified and assessed. A Bow-Tie tree diagram also shows the cause-and-effect relationships that exist between the risk factors and the consequences in the transport process. The identified factors affect the risk of an accident involving a vehicle transporting hazardous materials and the possibility of vehicle hijacking. The consequences of these events can be the explosion of a hazardous material and environmental contamination. The identification of risk factors in the road transport of explosives using the Bow-Tie tree method is shown in Figure 6.

The results of the conducted assessment of risk factors in the examined process are presented in Table 2. The level of probability and the level of losses are the averaged assessments assigned by the experts (on the basis of the applied assessment questionnaire). The magnitudes of the probability level and the loss level were assessed on a 5-degree scale. The final risk rating is the product of the probability level and the loss level.

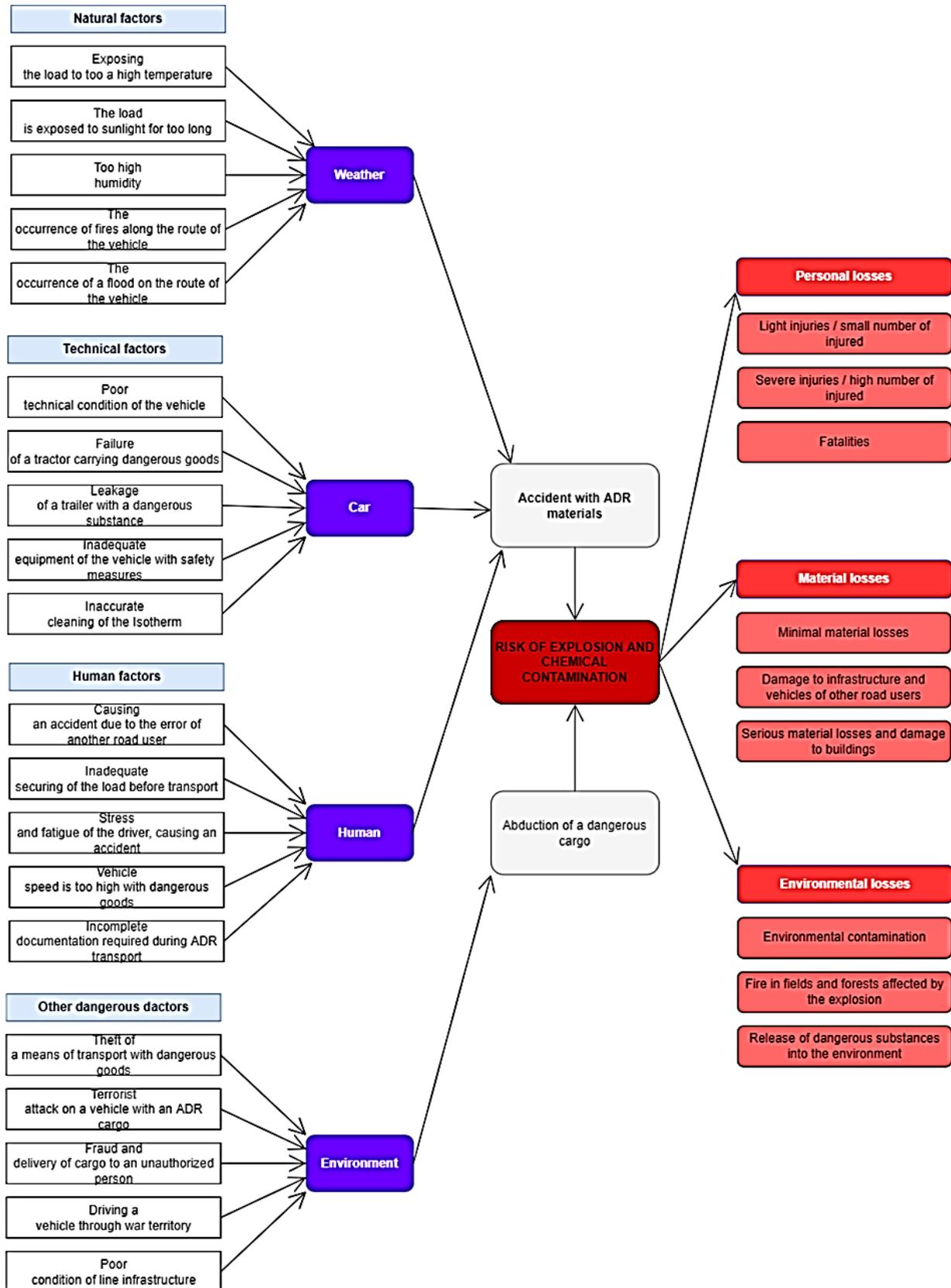


Figure 6. Identification of risk factors in the transport of ADR Class 1 materials using a Bow-Tie tree. Source: own study based on interviews with experts and Voicu et al., 2018.

Table 2.
ADR Class 1 transport process risk assessment

No.	Risk characteristics	Probability level (i)	Loss level (j)	Product (i * j)	Level of risk
Natural factors					
1.	Exposure of cargo to excessive heat	2	5	10	Medium
2.	Exposure of cargo to sunlight for too long	3	4	12	Medium
3.	Too high humidity	2	1	2	Very low
4.	Occurrence of fires along the vehicle route	4	3	12	Medium
5.	Occurrence of flooding along the vehicle route	1	1	1	Very low
Technical factors					
6.	Poor technical condition of the vehicle	1	4	4	Very low
7.	Breakdown of a tractor carrying hazardous materials	2	2	4	Very low
8.	Leaking semi-trailer with hazardous substance	1	3	3	Very low
9.	Inadequate safety equipment on the vehicle	3	3	9	Low
10.	Inaccurate cleaning of the Isotherm	2	2	4	Very low
Human factors					
11.	Causing an accident due to the fault of another road user	2	5	10	Medium
12.	Inadequate load securing prior to transport	4	4	16	High
13.	Stress and exhaustion of the driver, causing an accident	4	5	20	Very high
14.	Excessive speed of vehicle with hazardous material	2	3	6	Low
15.	Incomplete documentation required for ADR transport	3	3	9	Low
Other hazardous factors					
16.	Theft of a means of transport with a hazardous material	2	4	8	Low
17.	Terrorist attack on an ADR laden vehicle	2	5	10	Medium
18.	Fraud and the release of cargo to an unauthorised person	2	4	8	Low
19.	Passage of a vehicle through a territory subject to war	1	5	5	Low
20.	Poor condition of line infrastructure	3	2	6	Low

Source: own study.

The risk map for the transport process of ADR Class 1 materials is shown in Figure 7. According to the results, seven factors were considered to be of medium or high risk. The factor considered to be the most dangerous (critical) is driver error due to fatigue and stress. The transport of ADR Class 1 explosives often takes place over considerable distances. Despite regular breaks, the driver may feel fatigued, which reduces his/her ability to react to situations on the road and increases the risk of causing an accident. Inadequate securing of the load by the customer for the transport of Class 1 explosives is also an important factor that affects the level of risk. The risk factor relates to the loading units themselves in which the explosive is stored. There is a risk that containers designed to hold explosives and ammunition may be worn or damaged, which directly affects the level of transport security. Consideration should also be given to factors associated with exposure of explosives to excessive heat and sunlight. Cargoes are particularly vulnerable to these factors during handling. On the other hand, factors such as the effect of moisture on transported loads and the risk of flooding along the route pose little risk. Transporting hazardous materials in isotherms significantly minimises the likelihood of an explosion resulting from natural factors.

L O S S E S	5	19.	1.11. 17.		13.	
	4	6.	16.18	2.	12.	
	3	8.	14.	9.15.	4.	
	2		7.10	20.		
	1	5.	3.			
		1	2	3	4	5
		Probability level (i)				

Figure 7. Risk map for the transport of dangerous goods of ADR Class 1. Source: own study.

A comparison of the average risk level of the Class 1 hazardous materials transport process by category is shown in Figure 8.

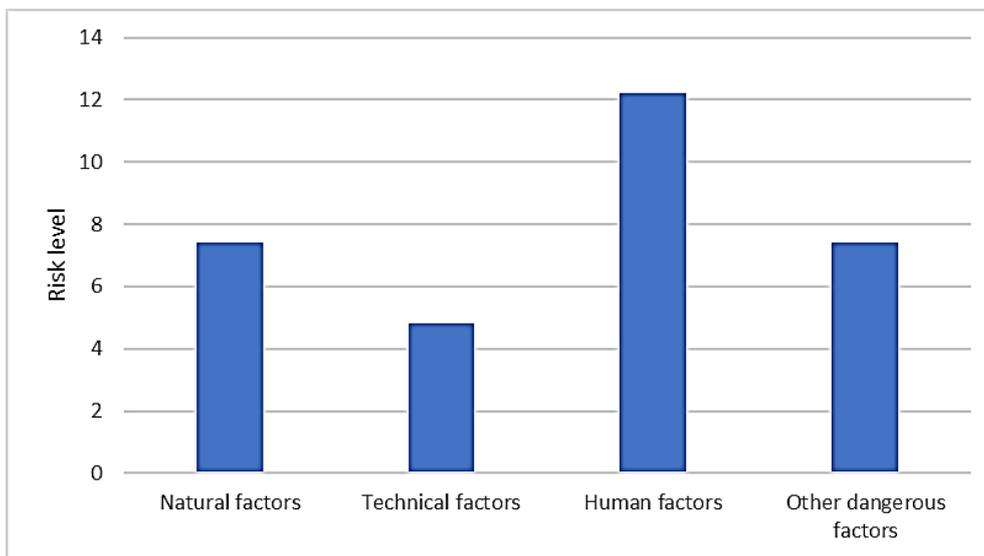


Figure 8. Comparison of the average risk level per category. Source: own study.

The average risk level for the transport of explosives was 7.95. The maximum achievable risk level was 25. This means that this transport has a relatively low risk level. The category with the lowest risk level with a score of 4.8 was technical factors. Due to the widespread use of modern technical solutions in the transport of explosive loads, high quality load securing measures and the stringent requirements for the approval of vehicles for the transport of loads in this class, this category had the lowest risk level. The natural factors category, with a score of 7.4, has a medium impact on the occurrence of risks for the transport of explosives. As the study showed, the risk factors associated with excessive outdoor temperatures and exposure to sunlight are the most significant influences in this category. The risk of fire along the route of travel is also an important factor. This factor is particularly possible due to the changing climate, droughts and the increased frequency of fires in Europe. In the case of

transporting explosive cargo, contact with fire can lead to an explosion. Other risk factors mainly related to criminal activities received an average score of 7.4, which means that they also strongly influence the process of transporting explosives. This is mainly due to the threat of hijacking of a vehicle transporting explosives, ammunition and weapons. Transports of this kind are often the target of a terrorist attack. Weapons transports can also be targeted by thieves and fraudsters. The human factors category received the highest average risk level of 12.2 points. Despite the highest standards and procedures in place, the key factor to ensure security is human. The safety of the transported cargo depends directly on the driver's skills, knowledge and experience.

6. Conclusions

The study made it possible to identify and assess the main risk factors in the road transport of ADR Class 1 explosives. Of the 20 factors analysed, one factor was identified as critical (with the highest risk level) - driver stress and exhaustion, causing an accident. A high risk level was identified for one factor - inadequate load securing prior to transport. In addition, five factors with a medium level of risk were identified. Thus, the first research question posed was answered. The risk analysis also made it possible to compare the four identified risk categories. This allowed the second research question posed to be answered. The human factor category received the highest mean risk score. As a result of stress and fatigue, the driver's ability to react quickly decreases and the risk of accidents and high levels of material and human loss increases. The safety level of the transport of hazardous materials depends directly on the skills, experience and knowledge of the driver. Thus, it must be recognised that the most important factor in ensuring the safety of the process under study is human. The identified and assessed risk factors will allow further research on risk evaluation in the transport of explosives and a comparison of the obtained results with the risks of other groups of hazardous materials.

The study has certain limitations including: 1) Small number of responses in the survey due to the limited number of experts in the field of transport of ADR Class 1. 2) The limitation of the research is not only the number of experts, but also the fact that only Polish representatives were the experts. It is not possible to relate the research results to other countries where experts could assess probability and effect differently. It may also generate the direction of further research, in which these results can be compared with the results of other countries, extending them to foreign experts. The selection of experts for research is a very important and even critical stage of research. 3) The risk of incorrectly assessing the level of loss or the probability of a risk factors due to different experiences of experts depending on the size of the company in which the expert works. 4) The survey might not cover all the hazards that may occur during the transport of ADR Class 1.

The implementation of the research will allow the companies involved in the transport of hazardous materials to focus on the key risk categories that cause a high level of the risk in the process, especially considering the human factor. Transport companies should pay particular attention to reducing the level of stress and driver exhaustion as a key risk factor in ADR transport. The research will allow for the development of numerous improvements that will increase the efficiency and safety of the process of transporting hazardous materials.

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PERSPECTIVES OF INCREASING THE QUALITY OF THE PUBLIC TRANSPORT SYSTEM - CASE STUDY ON THE EXAMPLE OF THE LUBIN DISTRICT

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Introduction/background: In the time of advancing urbanization and ever increasing intensity of the road traffic in urban areas, providing efficient mass transport is the responsibility of the local authorities. Effective management and organization of the public transport system is a complex task. A public transport system that is attractive and responds to the needs of the passengers can become one of the key factors influencing the quality of life in the city.

Aim of the paper: The main aim of the paper is to identify positive and negative aspects of the operation of Lubińskie Przewozy Pasażerskie (Lubin Passenger Transport) and to propose the potential improvements in this system.

Materials and methods: The paper was created on the basis of a literature review and the applicable legal acts. In order to determine strengths and weaknesses of the mass transport system, a Pareto-Lorenz diagram was used and the level of logistical customer service was calculated on the basis of passenger surveys. The article was created on the basis of the diploma thesis.

Results and conclusions: As the result of conducted research, it has been stated that the passenger transport services in the district of Lubin are provided on a satisfying level, however, the users report certain deficiencies in the functioning of the mass transport. Three main activities, which will result in a noticeable improvement in the quality of offered transport services, were suggested.

Keywords: mass transport, urban logistics, city, logistical customer service.

Introduction

In reality of the 21st century, the cities become a place to live for more and more people (UN DESA, 2014). Technological progress is driving the surge of people to the cities and, consecutively, results in traffic congestion in urban areas (Desroches, Taylor, 2018; Szymczak, Sienkiewicz-Małyjurek, 2011). Appropriate organization of urban area and management of

ever increasing number of people and vehicles creates a challenge for the experts from various fields, from city planners and architects to transport experts and logisticians.

Urban transport is an essential function of cities that allows their functioning and socio-economic development (Jonek-Kowalska, 2018; Liu et al., 2016). Demand for urban transport varies from city to city, but the issues and needs related to this process are similar. These include, first of all, delays, low quality of transport infrastructure, maladjustment to the needs of the inhabitants. Properly organized urban transport decreases traffic volume in the city centres, lowers the congestion level, and limits the emission of pollution to the environment (Chodyński, 2019; Sienkiewicz-Małyjurek, Szymczak, 2011; Elmqvist et al., 2019).

From an activity organization perspective, meeting the basic, collective needs of the community of people living in a given municipality, in accordance with the Act of 8 March 1990 on Municipal Self-Government, is a part of the municipality's own tasks. Municipality's own tasks include, among others: matters concerning spatial order, protection of environment, municipal roads, streets and squares, matters concerning sport and tourism, as well as those related to the local mass transport. This provision is complemented by the Act of 16 December 2010 on public mass transport, according to which the organizer of public transport is responsible for the entire process of managing this transport. In compliance with these regulations, the quality of public transport system is of a local nature, because it is determined by actions taken in municipalities, districts and voivodeships. However, considering increasing requirements of the customers in relation to the quality of provided services, a research problem arises: how to organize the public transport system, so that it meets passengers' expectations? This paper attempts to solve this research problem in the Lubin district. Its aim is to analyze the solutions used in the management of the public passenger transport system in the Lubin district, as well as to propose potential improvement actions in this system. The article was created on the basis of the diploma thesis.

Basics of urban transport functioning

The need for mobility and movement is an example of every human need. It is clear that urban area will become more attractive for settlement, if there is the possibility of comfortable and efficient travel within the area (Ejdys, 2014; Liu et al., 2016; Rasca, Saeed, 2022). It has to be remembered that cities are characterized by various density of buildings and the number of travellers using public transport, e.g. between the centre and the suburbs. Katarzyna Sosik claims that efficient and effective transport system conditions the attractiveness and competitiveness of the country, region, city. Due to a high population density and the character of spatial planning in the city, it is being noticed that the transport organization in urban areas becomes an important and difficult task (Sosik, 2020; Sienkiewicz-Małyjurek, 2010).

The transport system is part of the functional and spatial structure of the city and stimulates its development (Grondys et al., 2017; Żebrucki et al., 2020; Szulc et al., 2021). The concept of the transport system in the city consists of various subsystems, which show its quality from the point of view of all people using it (in this case, residents as well as visitors). Most often, it includes subsystems such as: linear infrastructure (all kinds of communication routes) and points infrastructure (parking lots, stops, stations), which together form the organizational and technical subsystem, as well as the regulatory and financial subsystem (Szołtysek, 2016; Szymczak, 2008; Tundys, 2008). Certain features are characteristic of the transport system. The main ones are: complexity and a significant number of interactions that take place within the system as well as between systems and the environment; probability related to the previous feature and the difficulty of predicting future relationships and phenomena, as well as situations taking place in the present time; the limited possibility of self-regulation and adaptation to new conditions (Brdulak et al., 2016; Tundys 2008).

In recent years, public transport is no longer just a means of enabling people to move around, but a factor influencing the ecological conditions in a city. Well-organized public transport reduces the risk of congestion and unnecessary expenses related to investments in road infrastructure. An efficient public transport system that meets the needs of residents creates at the same time good conditions for the social development of a given city, e.g. by closing the city centres to individual traffic. It is possible to revitalize the city centre and relieve the environment from the disastrous effects of road traffic (Szulc et al., 2021; Szymczak, 2008). Reducing congestion and the negative impact of the transport system on the environment are two concrete arguments for keeping public transport at the highest level.

In the subject literature, public transport is indicated as one of the subsystems of an entire logistic system created by the city (Szołtysek, 2016; Szymczak, 2008). An efficient public transport system is to primarily ensure an access to the transport services for the citizens when the need of travel appears. The components of public transport system are vehicles, carrier, public transport organizer (in literature the term of regulator also appears) and passengers (Szołtysek, 2007, 2016; Szymczak, 2008). Without any difficulties, the relations between the subjects of a system can also be defined. A carrier provides services for passengers, exploiting its vehicles and available infrastructure within the city, following the schedule provided by the organizer at the same time. Transport organizer is responsible for choosing a carrier according to the rules described in the Act of 16 December 2010 on public mass transport. If the contract is not fulfilled, it may be terminated. In a way, passengers influence the organizer's decisions. They can refuse to use lines that have been laid out in a way that does not meet their requirements or complain about decisions made by the organizer. Described relations are depicted by figure 1.

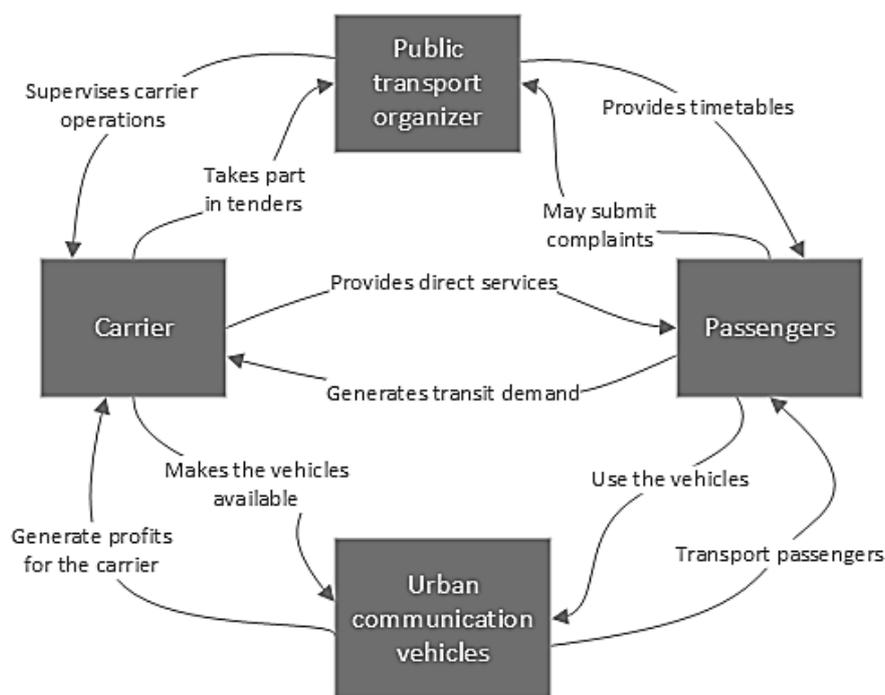


Figure 1. Scheme of relationships in urban transport system. Own work.

Public transport should be perceived as an organized system operating in an urban space, which main goals are efficient transport of the citizens to the final destination as well as prevention of transport congestion. Transport organizer has a regulatory function, its task is to manage the system. The transport system itself should be integrated and meet the requirements of its users.

Demand for public transport is also subject to fluctuations depending on the emergence of various external factors. They can be divided into positive ones, i.e. those that increase transport needs, and therefore the demand for them, and negative ones, i.e. those that reduce the need to use public transport. The following has a positive impact: the growing number of inhabitants of given areas, the growing number of older people and children, i.e. people who mostly do not have their cars, are of particular importance; changing income level; the location of new workplaces and public transport connection services or the development of the current transport network. For this reason, it is necessary to periodically verify the conditions for implementing the public transport system and the changing requirements and social preferences (Skowron and Cheba, 2019; Żebrucki et al., 2020).

Research methodology

The analyses conducted in presented paper are based on information obtained at the District Office in Lubin and from the transport operator, as well on the basis of a survey questionnaire conducted among the passengers using the service of Lubińskie Przewozy Pasażerskie.

Obtained information was used to characterize public transport offer and to analyze complaints of the passengers. These complaints were analyzed with the use of Pareto-Lorenz diagram and the ABC method (Detyna, 2011). The analyses became the basis for identification of necessary improvements.

The survey was conducted between September and November 2021 with the use of the CAWI (Computer-Assisted Web Interview) method. Respondents were asked to assign the weighting factors to 13 areas in assessing the quality of the public transport offer and to evaluate all of these areas from the perspective of the passenger of Lubińskie Przewozy Pasażerskie. These areas included: cleanliness of the buses, amenities for people with limited mobility, politeness of the drivers, neatness of the drivers' uniforms, safety of the travel, comfort of the travel and the driving style, ecological vehicles, timeliness of the bus routes, affordable ticket prices and ticket fares, timetable adapted to the needs of the passengers, accessibility of the bus stops, passenger information, integration of public transport with rail passenger transport. The evaluation questions used a five-point Likert scale, where number 1 meant dissatisfaction of the passenger and number 5 informed that the passenger perceives given aspect in a very good way. Distribution of the questionnaires took place through a variety of channels:

- via the Public Information Bulletin of the Lubin District Office,
- with the use of the social networking site Facebook; the questionnaire appeared on residents' groups: *Lubin – ogłoszenia – informacje* and *Polkowiczanie* :), as well as *Lubin – moja mała ojczyzna*,
- The students of secondary schools in Lubin were also asked to participate in the study.

A total of 100 completed questionnaires were received, however, 9 were rejected due to missing or incorrect answers. The answers given by 91 respondents were therefore taken into account.

Obtained results were analyzed with the use of CSI (Customer Satisfaction Index) and quality maps. CSI is a cross-sectional index measuring the core elements of logistical customer service. CSI was calculated on the basis of weighted average and relative weights. Such solution is advised in the literature concerning logistical customer service (Kauf, Tłuczak, 2018; Woźniak, Zimon, 2016; Detyna, 2011). A quality map, on the other hand, is a technique that enables clear, graphic presentation of the aspects of logistical customer service under study (Woźniak, Zimon, 2016). It allows to identify factors which should be improved immediately, those which improvement of should be considered next, factors on acceptable level and insignificant factors.

Weaknesses of Lubińskie Przewozy Pasażerskie

Lubińskie Przewozy Pasażerskie operate in five municipalities within two districts of the Lower Silesia Voivodship. Bus services connect 52 towns. The buses cover around 2,300,000 vehicle kilometres per year. The carrier's fleet consists of 55 vehicles, with an average age of 5 years.

In the light of the Act of 16 December 2010 on public mass transport, Lubińskie Przewozy Pasażerskie is a district passenger transport service, as it carries people within the framework of public mass transport, operated within the administrative limits of neighbouring districts which have concluded relevant agreement. The operator providing transport services, selected by means of a tender, is PKS Lubin S.A.

Since 1 June 2016, district transport service is provided de facto free of charge to all persons. Three main reasons for introducing free transport are: willingness to improve the quality of citizens' life, supporting the most disadvantaged residents and strengthening the public character of a mass transport. However, despite many initiatives aimed at satisfying the inhabitants of the district and encouraging them to use the transport services, the District Office in Lubin or the transport operator receive complaints. They have been analyzed and pictured with the use of Pareto-Lorenz diagram (tab. 1 and fig. 2).

Table 1.

Numbers of complaints of specific subject and their accumulated values

Subject of complaint	Number of recorded complaints	Percentage of complaints of a given subject	Accumulated number of complaints	Accumulated percentage of complaints of a given subject
Delays and failures of the transit	67	31,9%	67	31,9%
Failure to adapt the timetable to the passengers' needs	67	31,9%	134	63,8%
Inadequate behaviour of a driver	42	20,0%	176	83,8%
Failure to respect the obligation to cover mouth and nose in public transport	11	5,2%	187	89,0%
Non-correlation of bus timetables with passenger trains	9	4,3%	196	93,3%
Carriage of animals and bicycles in vehicles	7	3,3%	203	96,7%
Lack of assistance from the driver when boarding people with disabilities	7	3,3%	210	100%
Σ	210	100%	-	-

Source. Own work.

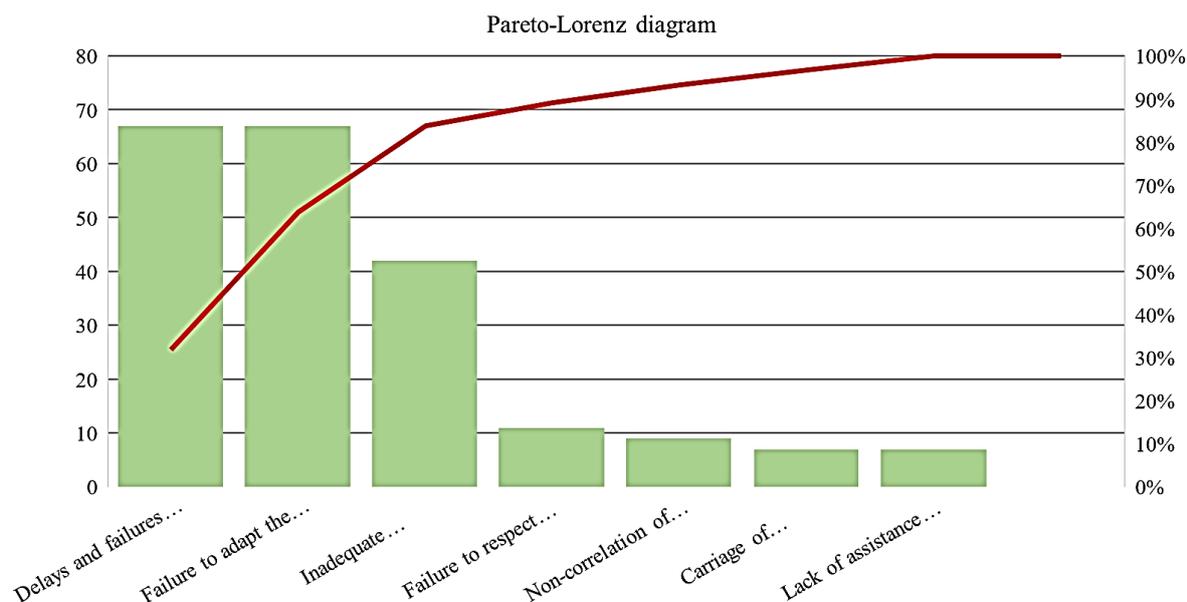


Figure 2. Pareto-Lorenz diagram for the system of Lubińskie Przewozy Pasażerskie. Own work.

The diagram shows that over 83% of passengers' complaints concern 42.9% of the individual complaint categories. Three reasons, i.e. delays and failure of the transit, failure to adapt the timetable to the passengers' needs and an inappropriate driver behaviour, should be included in group A, that is the aspects which the operator should pay special attention to in agreement with the carrier, in order to significantly improve the quality of the service provided.

Group B, that is a set of secondary causes of the complaints, includes: failure to respect the obligation to cover mouths and noses on public transport and to correlate bus timetables with passenger trains. These two categories together account for 9.5% of the recorded complaints.

Remaining two categories of complaints are the source of 6,6% of reported deficiencies and can be included in the group C, that is factors the elimination of which will not significantly improve the quality of transport service within Lubińskie Przewozy Pasażerskie.

Evaluation of the quality level of Lubińskie Przewozy Pasażerskie

For evaluation of the quality level of Lubińskie Przewozy Pasażerskie, the CSI - Customer Satisfaction Index method has been used (Zimon, Kruk, 2015; Skotnicka-Zasadzień, Wolniak, 2008; Tłuczak, Kauf, 2018). The analyses were based on conducted survey research. The first step in the analysis was to systematize collected data, which is shown in Table 2.

Table 2.

Results of the study among people using the buses of Lubińskie Przewozy Pasażerskie

Weighting factor					Results of the study									
1	2	3	4	5	Aspects of logistical customer service									
					Score									
1	2	3	4	5	1	2	3	4	5					
0	4	6	26	55	Cleanliness of the buses					0	9	27	39	16
2	7	13	17	52	Facilities for people with limited mobility					2	5	23	42	19
0	4	16	25	46	Politeness of the drivers					2	9	35	32	13
9	16	26	22	18	Neatness of the drivers' uniforms					1	1	17	39	33
0	1	8	16	66	Safety of travel					0	5	27	35	24
0	2	11	20	58	Travel comfort and the driving style of a driver					3	8	28	35	17
5	7	19	28	32	Ecological vehicles					2	7	18	32	32
2	4	4	5	76	Timeliness of the bus routes					4	18	26	28	15
3	3	4	18	63	Affordable ticket prices and ticket fare					0	2	5	8	76
4	5	5	18	59	Timetable adapted to the passengers' needs					16	19	22	23	11
1	2	7	26	55	Availability of the bus stops					3	12	19	39	18
1	3	5	24	58	Passenger information					1	4	24	40	22
2	4	20	15	50	Integration of public transport and railway passenger services					7	13	25	35	11

Source. Own work.

In the next step, an average weight and an average score for each of the aspects were determined. Weighted averages were used for this purpose and formulas (1) and (2) were used respectively:

$$w_{si} = \frac{\sum_{j=1}^j (n_{ij} \times w_{ij})}{\sum_{j=1}^j n_{ij}} \quad (1)$$

$$o_{si} = \frac{\sum_{j=1}^j (n_{ij} \times o_{ij})}{\sum_{j=1}^j n_{ij}} \quad (2)$$

where:

w_{si} – average weight of i -th aspect,

o_{si} – average score of i -th aspect,

n_{ij} – number of given answers j for i -th criterion,

w_{ij} – possible to indicate j -th weighting factor for i -th criterion,

o_{ij} – possible to indicate j -th score for i -th criterion.

Relative weighting factor for all aspects was then calculated in order to present real weighting factor of importance for each of the logistical customer service spheres studied. Formula (3) was used:

$$\mathbf{w}_{w_i} = \frac{\mathbf{w}_{s_i}}{\sum_{i=1}^i \mathbf{w}_{s_i}} \quad (3)$$

where:

w_{w_i} – relative weight for i -th aspect,

w_{s_i} – average weight of i -th aspect.

The following step was to calculate the CSI using formula (4):

$$\mathbf{CSI} = \sum_{i=1}^i (\mathbf{w}_{w_i} \times \mathbf{o}_{s_i}) \quad (4)$$

where:

CSI – CSI,

w_{w_i} – relative weight for i -th aspect,

o_{s_i} – average score of i -th aspect.

In order to depict the CSI in a percentage form, as to enable its easier interpretation, following formulas were used:

$$\mathbf{CSI}_{max} = \sum_{i=1}^i (\mathbf{w}_{w_i} \times \mathbf{o}_{max_i}) \quad (5)$$

where:

CSI_{max} – maximum CSI,

w_{w_i} – relative weight for i -th aspect,

o_{max_i} – maximum score of i -th aspect.

$$\mathbf{CSI}_{\%} = \frac{\sum_{i=1}^i (\mathbf{w}_{w_i} \times \mathbf{o}_{s_i})}{\sum_{i=1}^i (\mathbf{w}_{w_i} \times \mathbf{o}_{max_i})} \times 100\% = \frac{\mathbf{CSI}}{\mathbf{CSI}_{max}} \times 100\% \quad (6)$$

where:

$CSI_{\%}$ – percentage CSI,

CSI – CSI,

CSI_{max} – maximum CSI.

All calculations using the formulas (1) to (6) are presented in table 3.

Table 3.
Calculating CSI

Aspects of logistical customer service	Average weight of the aspect w_s	Relative weight w_w	Average score of the aspect o_s	$w_w \times o_s$	o_{max}	$w_w \times o_{max}$
Cleanliness of the buses	4.451	0.080	3.681	0.294	5.000	0.400
Facilities for people with limited mobility	4.209	0.076	3.780	0.286	5.000	0.378
Politeness of the drivers	4.242	0.076	3.495	0.266	5.000	0.381
Neatness of the drivers' uniforms	3.264	0.059	4.121	0.242	5.000	0.293
Safety of travel	4.615	0.083	3.857	0.320	5.000	0.415
Travel comfort and the driving style of a driver	4.473	0.080	3.604	0.290	5.000	0.402
Ecological vehicles	3.824	0.069	3.934	0.270	5.000	0.344
Timeliness of the bus routes	4.637	0.083	3.352	0.279	5.000	0.417
Affordable ticket prices and ticket fare	4.484	0.081	4.736	0.382	5.000	0.403
Timetable adapted to the passengers' needs	4.352	0.078	2.934	0.229	5.000	0.391
Availability of the bus stops	4.451	0.080	3.626	0.290	5.000	0.400
Passenger information	4.484	0.081	3.857	0.311	5.000	0.403
Integration of public transport and railway passenger services	4.176	0.075	3.330	0.250	5.000	0.375
Σ	55.659	1		3.709		5

Source. Own work.

As a result, the value CSI on level 3,709, CSI_{max} equal to 5,000 has been obtained. Logistical customer service index totalled 74%. Obtained result informs that there are certain disruptions which are the source of the passengers' dissatisfaction (Skotnicka-Zasadzień, Wolniak, 2008). They have been verified with the use of a quality map (fig. 3).

In the analyses, it has been assumed that a satisfying score is a result equal or higher than 80% of all possible points. Hence the map shows in red a score of 4 and a weighting factor of 4. These values determine specific areas of logistical customer service and indicate where improvements to the transport system should be sought in the first place.

From thirteen examined aspects of logistical customer service, ten of them requires improvements which should be implemented in the nearest future, as they were rated low by the passengers while being given high weighting factors. These aspects include: timetable adapted to the passengers' needs, integration of public transport and railway passenger services, timeliness of the bus routes, politeness of drivers, availability of the bus stops, travel comfort and the driving style of a driver, cleanliness of the buses, facilities for people with limited mobility, safety of travel, passenger information. Ticket prices and ticket fare, both in terms of score and weight, have been classified on a high level. This is due to the free provision of transport.

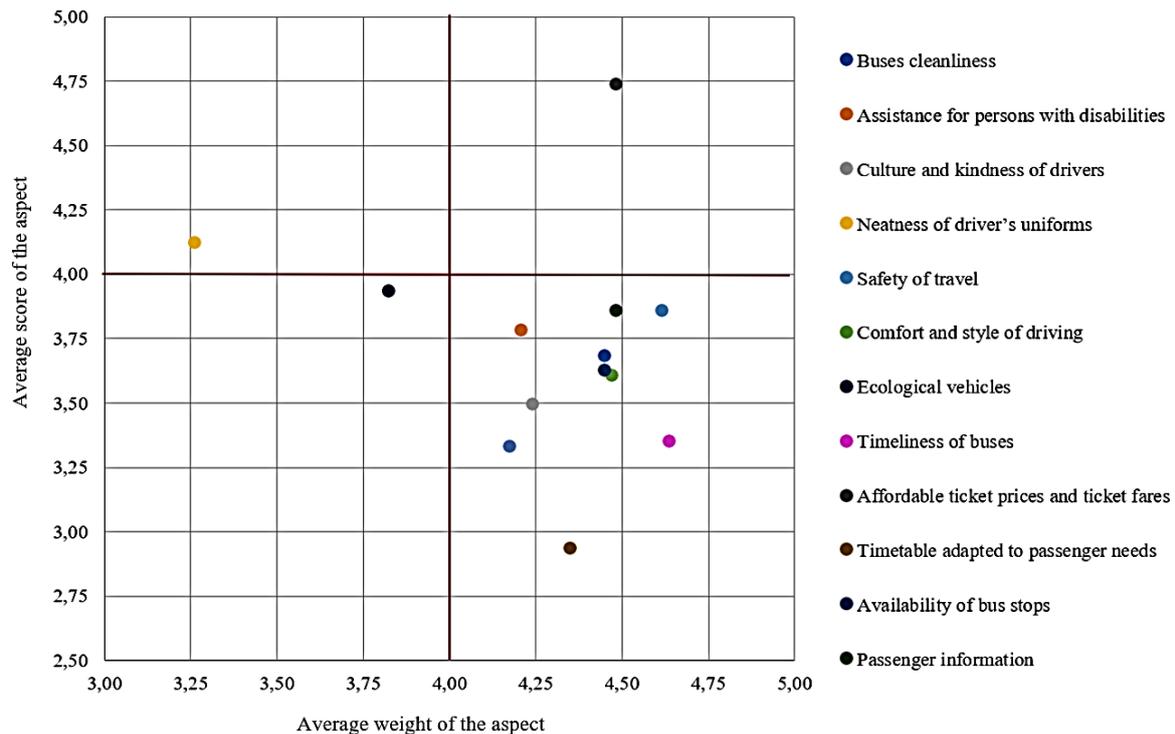


Figure 3. Quality map for the system of Lubińskie Przewozy Pasażerskie. Own work.

The environmentally friendly nature of vehicles is the area where improvements should be sought next. However, considering the fact that the carrier has just purchased vehicles fuelled by a CNG and that these have gradually begun to displace diesel buses, the result should not give cause for concern. The aspect of passenger satisfaction that receives the least attention and is therefore of little importance is the neatness of the drivers' uniforms.

Perspectives for improving the quality of the public transport system in Lubin district

Conducted research and analyses of obtained results allowed to identify areas which require improvements. Considering the importance of specific aspects determined when examining the level of logistical customer service, as well as possible effects of introduced changes, it is suggested to focus primarily on:

- deepening the integration of district transport with rail transport,
- adapting timetables to the needs of the passengers,
- diversification of the available vehicle fleet.

The progressive integration of bus and rail services should be considered as a key factor in proposing improvements. The reason behind this choice is the fact that the notion of integration of various transport systems appears in every conducted study, passengers while determining satisfaction evaluated this category with the second lowest score, whereas changes in this matter

can bring the results in the form of more efficient cooperation between carriers of various transport branches and improvement of provided services. Suggested solution should include both collective planning and connecting the passenger information.

Another identified area in which the improvement should be made is the adaptation of timetables to the needs expressed by the transport passengers. Both the analyses of complaints and the results of survey study indicate that the buses repeatedly leave the stops earlier than the passenger train arrives at Lubin station. The result is having to wait for the next transit and, in extreme cases, not being able to use bus services to suburban areas. For this purpose, it is proposed to create a passenger platform for Lubińskie Przewozy Pasażerskie. The platform would take the form of a website, a link to which would be placed on the website of the carrier *pks.lubin.pl* and on the website of the organizer *powiat-lubin.pl*. The platform could be used to submit, using pre-designed forms, not only objections to the introduced timetable, but also the proposals of opening new bus stops or bus lines, as well as complaints about provided services. Creation of a single website would make the process of collecting passengers' remarks more efficient and would allow to continuously improve various areas in the functioning of Lubińskie Przewozy Pasażerskie. In addition, such platform would enable direct impact of the citizens on the functioning of public transport which could ultimately contribute to increasing the popularity of public transport in the district.

The last proposal for improving the mass transport system in the Lubin district area is using diversified types of buses by PKS Lubin S.A. operator. Diversification means buying or leasing more mini (up to 10 metres in length) and mega (up to 18 metres in length) vehicles. Currently the lines are operated mostly by un-articulated 12-metre buses and, in a survey conducted, passengers complain about insufficient space in the vehicles. It has also been noticed that in case of suburban lines, the buses on less busy lines run virtually empty.

Before investing a big amount of money into new means of transport, it is worth to at least conduct test drives with the use of few previously hired vehicles. During the aforementioned test drives, the bus occupation should be measured. This examination would be aimed at indicating on which lines and especially at what time of the day bigger (or smaller) buses should be used.

Summary

Public transport is an extremely complex research problem in modern cities. At the same time, it is a critical issue due to the part it plays in the functioning of the cities. Considering the fact that the public transport offer should be adjusted to the needs of local communities, there is a need for case studies describing what is being done in individual municipalities and districts so that other cities can benefit from good practice in this area.

The research described in this paper addresses these needs. It identifies positive aspects of the offer of Lubińskie Przewozy Pasażerskie, including free public transport, its sustainability and neatness of the drivers which makes for the good image of the company. The most frequent complaints received by the District Office in Lubin concern delays and failure of transit, failure to adjust the timetable to the needs of passengers (32% of the total number of complaints). Passengers complain to a lesser extent about an inappropriate behaviour of the driver, as well as the failure to correlate the bus timetable with passenger trains. Calculated logistical customer service index CSI totalled 74% which indicates overall passenger satisfaction, however there is a need to improve certain aspects of the service of Lubińskie Przewozy Pasażerskie. Results of the research presented in this paper recommend to the public transport organizer in Lubin such improvements as: deepening the integration of district transport with rail transport, adjusting the timetable to passengers' needs and diversifying the available vehicle fleet. Suggested actions should contribute to the project services being provided at the level expected by passengers.

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ORGANISATION AND MANAGEMENT OF A COVID-19 VACCINATION CENTRE AS PART OF THE MANAGEMENT OF HEALTH FACILITY – A CASE STUDY

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Introduction/background: The impact of the pandemic on the management of medical facilities was, and still is, enormous - facilities had to change their thinking and approach to the treatment of patients, as not only did they have to treat patients, but also to protect them and medical staff from falling ill - as quickly as possible. One such measure was the organisation of vaccination centres.

Aim of the paper: The main aim of the paper is to show the impact of the COVID-19 pandemic on the management of treatment facilities and to present the process of organising a vaccination point as part of the management in a selected treatment facility.

Materials and methods: Analysis of legal acts, analysis of internal materials, interview.

Results and conclusions: Compliance with the minimum requirements always influences the level of public confidence in vaccination, and the responsibility for carrying out vaccinations, reporting the adverse event following immunization – AEFI), i.e. the broadly understood safety of vaccinations, etc. always remains with those carrying out the vaccinations. Unfortunately, organizational problems were not avoided at the initial stage of starting the vaccination campaign. The problem concerned the delegation from individual wards of a physician designated to qualify patients presenting themselves for vaccination. However, taking appropriate actions on the part of Hospital Management and signing civil-law agreements with personnel vaccinating at weekends removed the personnel problem in this respect.

Keywords: COVID-19 Pandemic, vaccination, management of a health facility, vaccination centre.

1. Introduction

In December 2019, a new pneumonia caused by a coronavirus emerged in China, specifically in the city of Wuhan. In February 2020, the International Committee on Taxonomy of Viruses classified this virus as SARS-CoV-2, adding it to the already existing coronavirus

family as the seventh member that can infect humans. Four viruses in this family are responsible for mild colds, while SARS-CoV (2003) and MERS-CoV (2012) were already responsible for previous severe outbreaks (Azu et al., 2021). The SARS-CoV-2 virus started to spread rapidly and caused a global pandemic in a short period of time. Infection with COVID-19 leads to respiratory problems and even death, and is particularly dangerous in people over 60 years of age and in people with chronic diseases such as diabetes and hypertension (Wen-Hsiang et al., 2020). The COVID-19 pandemic has irreversibly changed the operation and functioning of medical facilities. Among the many problems faced by medical facilities in dealing with the pandemic, another challenge faced them at the beginning of the year - the organisation of vaccination. More than 200 years have passed since the first vaccine was invented (1796 - the first smallpox vaccine (Balcerkiewicz, Jagodziński, 2021)), but it is still one of the best options for protection against pathogenic microorganisms. The development and dissemination of vaccines is one of the greatest achievements of modern medicine. Vaccines provide a natural immunity that is analogous to that obtained when exposed to a bacterium or virus. After the publication of the SARS-CoV-2 genome sequence, in January 2020, scientists all over the world started working to invent, as soon as possible, an effective preparation that could protect human populations from the virus (Hsin-I et al., 2020), since vaccination against COVID-19 reduces the risk associated with severe respiratory diseases. Vaccine efficacy ranges from 70% to even 90% depending on the type of vaccine (Abdou et al., 2021). Another important aspect is that vaccination helps to create herd immunity for people who cannot receive the vaccine for various medical reasons. The first vaccine was approved in December 2020. Meo et al. (2021), exactly one year after the outbreak of the pandemic, such rapid development of the vaccine was due to scientific research from around the world. From that point on, treatment facilities had to start preparing for the process of vaccinating huge numbers of people.

The impact of the pandemic on the management of medical facilities was and still is enormous, facilities had to change their thinking and approach to the treatment of patients, as not only did they need to treat patients, but also to protect patients and medical staff from becoming ill as soon as possible. This paper attempts to present the organisation of vaccination as part of the management of a medical facility.

2. Impact of the pandemic on the management of a health facility

The COVID-19 pandemic has completely changed the operation of health facilities. The rapid spread of the virus paralysed the healthcare system, not only in second-world countries but also in all developed countries. Within a short period of time, treatment facilities had to accommodate an ever-increasing number of sick patients. Even the best functioning healthcare systems could not cope with the growing number of patients requiring

hospitalisation. During the two years of the global pandemic, more than 5 million people died from exposure to the pathogen. The SARS-Co-2 virus does not spare anyone and leads to a severe condition that requires the patient to be present in hospital. The most dangerous effect of COVID-19 is severe pneumonia, which requires patients to be connected to ventilators, with the need for constant specialised care (Pedersen, Ya-Chi, 2020).

The pandemic had a negative impact on the management of medical institutions. Medical institutions were not prepared for such a large and sudden load on hospital wards, there was not enough space for most patients, and a frequent image broadcast by television stations was of patients being shown in hospital corridors. However, the most important problem was the lack of professional medical staff. Many studies on medical facilities confirm the existing relationship between the number and quality of medical staff and the health status of the population (Kowalska-Bobko et al., 2020). Before the outbreak of the pandemic, most health systems in the world faced shortages of medical professionals, mainly doctors and nurses, due to many factors including low salaries and inadequate human resources management. Without adequate medical care, patients were left on their own, and doctors were forced to select people with higher chances of survival in order to connect them to medical equipment. The least likely to survive according to mortality rates were the elderly, especially men (Kowalska-Bobko et al., 2020). The size of the outbreak exceeded the capacity to provide effective health care to all who required it. There was also a lack of educated management staff. Current regulations in Poland only require a candidate to have a university degree and the length of service specified by the entity. However, managing a medical facility is an extremely complex activity. A person applying for such a position should have a degree in healthcare management and work experience in the profession (Domagała, 2014).

Another important aspect is the fact that the SARS-Co-19 virus did not just affect ordinary citizens, but also medical staff, which caused even greater problems for the operation of hospitals. Doctors and nurses became infected from patients they had previously treated, so staff shortages were no longer just due to previous factors, but also because medical staff themselves needed to be hospitalised. Doctors whose day-to-day job was not to fight pathogenic microorganisms were being deployed to fight the pandemic; COVID-19 patients were being cared for by doctors such as orthopaedists, surgeons and dermatologists (Polly et al., 2021). There was also a shortage of staff in many facilities, due to the fact that staff were only required to work at one place of employment during the pandemic. Managers had to make many changes to the operation of medical facilities in order to fill staffing gaps and also to protect medical staff as much as possible from the disease. In many facilities, rotational work was introduced so that working doctors and nurses would not infect each other and could continue to help those in need. Also, most planned and non-urgent operations have been cancelled. The postponement of operations reduced unnecessary patient traffic in the hospital and ensured less spread of diseases between symptomatic and asymptomatic patients (Søreide et al., 2020), and between patients and staff.

In the fight against the virus, medical personnel use personal protective equipment and observe all the precautions that are necessary in the fight against this microorganism, since even the smallest contact can be dangerous to health (Brindle, Gawande, 2020). Medical facilities already lacked masks, overalls, gloves and other basic protective equipment at the beginning of the pandemic. The health system was not prepared for such a high demand, often if it was not for the help of citizens - collections of protective equipment, medical staff would have been left without basic equipment. The pandemic demonstrated a significant problem with the management of health system funding (Polly et al., 2021). The financial situation of medical facilities was also in a poor state before the pandemic, but the outbreak of the pandemic brought more attention to the issue (Kaczmarska-Krawczak, 2017; Sidor-Rządkowska, 2018). Medical facilities also had to find additional budget for increased disinfection of wards.

The pandemic influenced and accelerated the development of remote working and led to the development of remote medical care (online consultation). In order to protect as many employees of medical institutions as possible, all those whose presence was not necessary in the hospital were sent to work remotely. Most of the hospital administration staff were able to protect their health thanks to this procedure, it is difficult to draw conclusions at this point as to how this affected the operation of the hospital, but it is known that the remote medical care mode had a very negative impact on the health of patients. National legislation allowed medical consultations to be carried out by telephone, many patients, for lack of any other treatment option, used this form (Sohrabi et al., 2020). This has led to a lack of accurate diagnoses and prescribing of drugs without appropriate tests.

Other problems for medical facilities were the excess deaths, and the need for constant relocation of patients, due to lack of space in hospital wards, patients were moved from one hospital to another as hospitals refused to admit patients (Brindle, Gawande, 2020). Only vaccination could help restore medical facilities to their pre-pandemic state, the planning of which was a heavy undertaking for each medical facility.

3. Organisational arrangements for the vaccination centre

On 20 March 2020, by virtue of a Decree of the Minister of Health, an epidemic state was conducted in the territory of the Republic of Poland in connection with SARS-CoV-2 infections.

Due to the declared pandemic state in the country, the National Health Fund in December 2020 announced the recruitment for the National Vaccination Programme against the SARS-CoV-2 virus. Each facility declaring its willingness to participate in this Programme had until 11 December 2020 to electronically submit a declaration of adherence. Priority in participation in this programme was given to medical facilities which have Primary Health Care

(PHC) clinics in their organisational structure and which have a contract with the National Health Fund (NHF) to provide health care services in the field of primary health care. The examination of applications lasted until 17 December 2020, after which the NHF announced the list of facilities entitled to vaccinate against SARS-CoV-2. The condition for the NHF to obtain approval was the performance of vaccinations for at least 5 days a week by one vaccination team, and the ability to perform at least 180 vaccinations a week. A facility seeking to join the vaccination programme also had to have a travel team vaccinating patients who, due to their state of health, could not travel to the vaccination centre on their own.

The aforementioned vacancy **notice specified in detail: the composition of the vaccination team** (a doctor, nurse, midwife or a medical officer, school hygienist having at least 6 months' practice in the field of preventive vaccinations), **the organisational requirements** (in the premises where vaccinations are to be carried out, the following should be provided: examination room, vaccination room, waiting room/waiting area for persons before and after vaccination - whereby the examination room and the vaccination room should be separated by at least a screen, office equipment, computer equipment with internet access and printer, refrigerator/freezer, cabinet/table for sanitary and other medical supplies, table/tray for vaccine preparation, medical first aid kit, including shock kit, including IV fluid transfusion kits), blood pressure measuring device, stethoscope, thermometer, disinfectants, disinfectants for touch surfaces, recommended couch; it **is also necessary to provide**: at least one washbasin with a tap with hot and cold water and a dispenser with liquid soap/quick and easy possibility to wash hands with warm water with soap, dispensers with disinfectant, a container with single-use towels and a container for used towels, a toilet for staff and patients at/near the place of providing the service, containers for medical waste, securing medical waste and its collection and disposal by the vaccinator, and specified the **remuneration and the method of settlement of the vaccination fee**¹.

Vaccinations will be registered in the e-Health Centre (eHC) system and data on their implementation will be transmitted by eHC to the National Health Fund.

The vaccines had to be stored according to the manufacturer's recommendations concerning both transport and storage of immunological products, including vaccines, ensuring the temperature in the range of +2°C to +8°C as a condition of maintaining their durability and effectiveness (if the product requires other temperatures, then the conditions of storage according to the CHPL must be ensured). Vaccines were to be transported and stored in accordance with the cold chain, which means technical measures and organizational solutions aimed at maintaining and monitoring, in accordance with the manufacturer's recommendations,

¹ Cf.: Ordinance of the Minister of Health of December 10, 2020r amending the Ordinance on corona infection with Sars CoV-2 virus (Pos. 2212), Ordinance of the Minister of Health of April 9, 2021 on the qualification of persons conducting qualification tests and immunizations against SARS CoV-2 (Pos. 668) and Ordinance No. 187/2020/DSOZ of the President of the National Health Fund of November 25, 2020 on the principles of reporting and conditions of settlement of health care services related to the prevention, counteraction and eradication of COVID-19 (as amended).

the conditions of storage, transport and distribution of immunological products within the meaning of the Pharmaceutical Law, in order to preserve their durability and prevent a decrease in their effectiveness.

In turn, medical records on vaccination should be kept in such a way as to ensure the confidentiality of sensitive personal data (important in view of, among other things, the confirmation of the qualifying examination, possible consultation and additional examinations in order to qualify the determination of the existence of contraindications to vaccination or indications for a temporary postponement of vaccination, vaccination with the recording of the type and serial number of the vaccine, the reconstruction of information in the event of the occurrence of an adverse postvaccination reaction).

After the vaccination, the vaccinated person is issued with a certificate of the preventive vaccination.

4. Characteristics of the entity selected

The management of the medicinal establishment in question has not agreed to make its full name public. The selected treatment facility operates as an independent public health care institution located in one of Katowice's districts.

The mission of the Hospital is to strive to become a modern service enterprise with a humanitarian message. In implementing the adopted mission, it focuses on high quality of services provided, respect for patients' rights and continuous education of medical staff.

The following organisational units operate within the organisational structure of the establishment:

- reception room (which operates continuously and consists of a registration desk, doctors' offices, a treatment room and a patient observation room),
- wards (general surgery, internal medicine, anaesthesiology and intensive care, and a clinical ward of ophthalmology with a sub-ward of paediatric ophthalmology),
- outpatient clinics (primary care, gynaecology and obstetrics, general surgery, anaesthesiology, trauma and orthopaedics for adults and children, neurology, ophthalmology and night and holiday healthcare),
- offices (community nurse and community midwife),
- laboratories (EEG, EMG, ECG, X-ray, ultrasound, endoscopy, OTC, eye angiography, ophthalmic ultrasound, corneal diseases, electrophysiology of the organ of vision, selection of optical aids for the visually impaired, laser).

5. Description of projects carried out by the establishment for the organisation of the vaccination centre

The presented treatment facility fulfilled the above conditions, so after completing the appropriate application form available at <https://formularze.ezdrowie.gov.pl>, it received permission to implement vaccination against SARS-Cov-2 virus, becoming one of the nodal hospitals implementing this vaccination. The vaccination campaign started in January 2021.

By Internal Order No. 1/2021 of the Hospital Director, a Team was established to organise and ensure the proper course of COVID-19 vaccination, which also included the current vaccination algorithm.

The coordinator of the established team was mainly responsible for ordering vaccines from the Governmental Agency for Strategic Reserves (GASR), through the VDS (Vaccine Distribution System) application, creating external and internal schedules in order to be able to enroll persons from the population indicated for vaccination according to the schedule of the Ministry of Health, and reporting on the implementation of vaccinations to the NHF. The whole team worked in close cooperation in order to carry out the vaccinations properly, as initially the announcements of the Ministry of Health defined specific groups of entitled persons and also the age of particular population groups entitled to vaccinations. An important element was also the rational management of vaccines, so that no vaccines not used on a given day were used for vaccination. Current messages, both from the Ministry of Health and the National Health Fund, were immediately forwarded to the vaccination team. Initially, patients were also vaccinated as part of the outreach team, in accordance with *the Principles for the Organization of Vaccination against SARS-COV-2 Virus in the Patient's Home* posted in the *Ministry of Health Communication on 16 February 2021*. However, on 1 March 2021. The Silesian Governor, in accordance with the assumptions of the Silesian Provincial Branch of the NHF, announced a list of nodal hospitals implementing vaccinations at home, so it was possible to concentrate vaccinations only at the stationary vaccination centre, implementing vaccinations additionally on weekends, in order to make vaccinations available to the largest possible population group.

Due to epidemic restrictions, a vaccination coordinator was appointed at the vaccination centre, inviting individuals to the waiting room/waiting area and keeping an eye on the number of people present. Each person in the waiting room had to cover their mouth and nose with a mask and disinfect their hands before entering the waiting room. It was ensured that there was a distance of 1.5 m between people in the waiting room. The waiting room and vaccination room was aired every 1 h for at least 5 minutes, either directly or indirectly, and the vaccination station was disinfected on a daily basis after each patient.

In addition, a break was taken once an hour, during which elements frequently touched by clients were disinfected: doorknobs, handrails, chair backs, etc., and the waiting room floor. Each person presenting for vaccination filled out *an Adult COVID-19 Pre-Screening Interview*

Questionnaire in the waiting room and, if vaccinating a minor, a *Minor COVID-19 Pre-Screening Interview Questionnaire*.

6. Conclusions

Compliance with the minimum requirements always influences the level of public confidence in vaccination, and the responsibility for carrying out vaccinations, reporting AEFI, i.e. the broadly understood safety of vaccinations, etc. always remains with those carrying out the vaccinations. Unfortunately, organizational problems were not avoided at the initial stage of starting the vaccination campaign. The problem concerned the delegation from individual wards of a physician designated to qualify patients presenting themselves for vaccination. However, taking appropriate actions on the part of the Hospital Management (subsequent Internal Regulation No. 9/2021 of the Director and signing civil-law agreements with personnel vaccinating at weekends removed the personnel problem in this respect.

The main problem for the organization of the vaccination point was the lack of medical services – in particular of doctors. Organizing work schedules for the employed medical staff was a big organizational challenge. Additional duties were initially met with resistance by the staff, who were burdened with subsequent tasks. The solution to this problem was the development and implementation of an effective incentive system in the form of financial allowances.

At the present time, vaccination with a booster dose is still performed in the Hospital by persons who register in person or by telephone - in accordance with the guidelines contained in the *Communication No. 14 of the Minister of Health on vaccination against COVID-19 with a booster dose and an additional dose supplementing the basic scheme, dated 27 October 2021*.

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QUALITY OF CUSTOMER SERVICE IN PUBLIC ADMINISTRATION ON THE EXAMPLE OF HEALTH CARE COMPLEX IN ŚWIĘTOCHŁOWICE SP. Z O.O.

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Introduction/background: This article is based on a bachelor's thesis carried out by Karolina Mainka under the scientific supervision of the author (Administration part-time 1st degree: “Quality of customer service in public administration based on the example of Zespół Opieki Zdrowotnej w Świętochłowicach Sp. z o.o. – Health Care Complex in Świętochłowice Sp. z o.o.”). In the past years, there has been a noticeable increase in the importance of the term "quality" in various fields, as well as in the awareness of people in terms of a quality, which results in higher expectations regarding products and services. The notion of quality has accompanied us since ancient times. In everyday life, each person is surrounded by a large amount of products, such as cellphones, computers, clothes and others. Everyone also uses various services, such as hairdressing services, services provided by government offices or medical services. Each type of those services is related to the customer service provided to a greater or lesser degree of quality. The quality of products is somehow measurable, whereas the quality of service is hard to clearly define or measure. Therefore, we can only rely on positive or negative opinions of the customers.

Aim of the paper: The aim of the paper is to analyse the quality of patient service in chosen district hospital on the basis of four chapters – two of theoretical nature and two practical ones dedicated to methodology of own research and interpretation of obtained results.

Materials and methods: Literature analysis, analysis of source materials (internal), survey method - technique: indirect survey, tool: survey questionnaire.

Results and conclusions: Considerations presented in the paper show the importance of the customer service quality. The main task of the hospitals is to provide a high quality service in the field of a health care. The basis for the improvement of health services is the results of the evaluation of the quality of services provided by the hospital. One of the elements of assessing the quality of healthcare is patient satisfaction. An important factor which influences the success of a health care facility management is the level of patient satisfaction.

Customer satisfaction studies give the facility the opportunity to evaluate patients' opinions on offered services, and consecutively – bring the prospects of defining the weaknesses in the hospital covered by the study. Regular evaluation of customer satisfaction translates into an increase in the quality of provided medical services. An increase of the standards impacts the mental well-being of the patients. Understanding patients' expectations and meeting their requirements reflects in the quality of provided services.

Patient satisfaction with provided services has a strong influence on repeat use of the health facility, as well as on recommending it to another person. Interest and care provided by the personnel influences mental condition of the patients. Good mental condition during a hospital

stay results in faster recuperation. In evaluation of the hospital, each element is important. The quality does not only consist of the attitude of the staff, but also of the entire environment of the hospital, including adaptation of the building, proper signage, and maintenance of cleanliness. All these components form one whole, which is perceived and evaluated by the patient.

Keywords: quality, management in the health care, custom service.

1. Introduction

In the past years, there has been a noticeable increase in the importance of the term "quality" in various fields, as well as in the awareness of people in terms of a quality, which results in higher expectations regarding products and services. The notion of quality has accompanied us since ancient times. In everyday life, each person is surrounded by a large amount of products, such as cellphones, computers, clothes and others. Everyone also uses various services, such as hairdressing services, services provided by government offices or medical services. Each type of those services is related to the customer service provided to a greater or lesser degree of quality. The quality of products is somehow measurable, whereas the quality of service is hard to clearly define or measure. Therefore, we can only rely on positive or negative opinions of the customers.

The aim of the paper is to analyse the quality of patient service in a hospital. The paper consists of four chapters. First two chapters are theoretical. The third chapter is the methodology of own research. The final chapter is an interpretation of the results of own research.

In the first chapter, the notion of "quality" has been explained. The measurement of the quality of tangible things and their characteristics have been described, as well as the measurement of service quality. Moreover, the terms of "client" and "service" have been defined.

In the second chapter, the notion of "quality in health care" has been described. In a way, the patient is a customer using a medical service, which should be provided on the highest level. The hospital architecture, its impact on the quality and patient experience is then described. The attitude toward the patients and competence of medical personnel, including the nurses, have been discussed. Firstly, it was the nurses that have been evaluated, because patients come into contact with them first. This was followed by the topic of communication and the doctor-patient relationship. It has a big impact on the patient's well-being. There is also a reference to the patient's rights, compliance with which is important for the patients and has an influence on the perception of medical services, as well as the sense of safety.

The third chapter is the methodology of own research, in which the subject and the purpose of the study have been defined. The research problems and hypotheses are then presented, followed by a description of the research methods, techniques and tools.

The fourth and last chapter presents a detailed analysis of the research results. It formulates conclusions from the conducted research and reflects on the analysed solutions that could contribute to the improvement of the examined situation in Zespół Opieki Zdrowotnej w Świętochłowicach Sp. z o.o.

The final part of the paper consists of the most important conclusions and observations.

Discussed paper has been written in accordance with the current state of the law as of 30 September 2020.

The substantive preparation for the study was based on the literature on the subject, legal acts and source documents from the website of the studied facility.

2. Characteristics of the studied facility

Zespół Opieki Zdrowotnej w Świętochłowicach Sp. z o. o. is an independent municipal organisational unit with legal personality. The founding body of the Company is the Municipal Council in Świętochłowice. The Company's seat and area of operation is the city of Świętochłowice. The Independent Public Health Care Unit was transformed into a capital company under the name: Zespół Opieki Zdrowotnej w Świętochłowicach Spółka z ograniczoną odpowiedzialnością (Health Care Complex in Świętochłowice LTD.) by the act of transformation of 4 June 2012.

The Health Care Complex in Świętochłowice functions on the basis of:

- Act of 15 April 2011 on medical activity,
- the applicable Articles of institution,
- other provisions concerning independent public health care institutions and municipal organisational units,
- of the Act of 23 April 1964 – Civil Code.

Based on the Resolution of the City Council of 25th June 1997, the Health Care Complex became an Independent Public Health Care Institution. In order to secure the health needs of the city's residents, the Świętochłowice Municipality concluded a contract with the Independent Public Health Care Institution for the provision of comprehensive health care services. The establishment provides health services that serve to preserve, save, restore and improve health, as well as other medical activities resulting from the treatment process or separate provisions that regulate the principles of their performance and health promotion.

According to the Statutes of the entity characterised, the hospital provides health services in the field of:

- primary health care,
- outpatient specialised healthcare,
- inpatient specialised healthcare,

- a care and treatment facility,
- occupational medicine,
- sports medicine,
- diagnostic tests,
- outpatient emergency care,
- disease prevention and health promotion,
- long-term home care team – long-term nursing care,
- management of blood and blood products for the Hospital,
- services provided by the N. neonatology outreach team.

Currently, the following hospital wards operate in Zespół Opieki Zdrowotnej w Świętochłowicach Sp. z o.o.:

- Neurology Ward,
- Neonatology Ward,
- Paediatric Ward,
- Otolaryngology Ward,
- Rehabilitation Ward,
- Anaesthesiology Ward,
- Psychiatric Ward,
- Internal Medicine Ward,
- General and Short-Term Surgery Ward,
- Gynaecology and Obstetrics Ward,
- Alcohol Addiction Treatment Ward.

Health services are provided under a contract signed by the National Health Fund or under commercial services according to the price list established by Zespół Opieki Zdrowotnej w Świętochłowicach Sp. z o.o.

3. Methodology of the study

The subject of the study was to find out the satisfaction of patients in this hospital with particular reference to the nursing and medical care, the use of facilities for people with disabilities, the hospital admission and discharge process, and the overall stay in the facility.

In the study, the following main research problem has been posed: "Are patients of the Health Care Complex in Świętochłowice satisfied with the quality of provided services?", whereas specific problems are:

1. Is there a car park around the Health Care Complex in Świętochłowice?
2. Is the Health Care Complex in Świętochłowice adapted to the needs of people with disabilities?
3. Is the organisational structure of the Health Care Complex in Świętochłowice understandable for the patients?
4. Are the patients of the Health Care Complex in Świętochłowice satisfied with cleanliness of the rooms in the hospital?
5. Are the patients of the Health Care Complex in Świętochłowice satisfied with hospital's catering services?
6. Are the patients of the Health Care Complex in Świętochłowice satisfied with the hospital staff?
7. Did the patients of the Health Care Complex in Świętochłowice receive instructions on the course of further treatment at discharge?
8. Did the personnel respect the patient's rights while their stay at the Health Care Complex in Świętochłowice?

In order to perform the research correctly, the following hypotheses have been made:

Main hypothesis: The patients of the Health Care Complex in Świętochłowice are satisfied with the quality of provided services. Following auxiliary hypothesis were also adopted:

Hypothesis 1: The Health Care Complex in Świętochłowice has a clearly marked and accessible parking area.

Hypothesis 2: The Health Care Complex in Świętochłowice is adapted to the needs of people with disabilities.

Hypothesis 3: Organisational structure of the Health Care Complex in Świętochłowice is understandable to the patients.

Hypothesis 4: In the Health Care Complex in Świętochłowice the cleanliness is provided on a high level.

Hypothesis 5: In the Health Care Complex in Świętochłowice the catering services are provided on a high level.

Hypothesis 6: The patients of the Health Care Complex in Świętochłowice are satisfied with its staff.

Hypothesis 7: The patients of the Health Care Complex in Świętochłowice received instructions on the course of further treatment at discharge.

Hypothesis 8: The personnel of the Health Care Complex in Świętochłowice respects patient's rights.

The research has been conducted with the use of an authorial survey questionnaire. The questionnaire consisted of 60 closed-end questions with the Likert scale. The survey has been divided into eight parts. The first part concerned an open-access parking space (questions from 3 to 7), the second part concerned facilities for people with disabilities (questions from 8 to 17), the fourth part verified hospital admission process (questions from 18 to 21), the fifth

part concerned meals and diet (questions from 31 to 39), the sixth part verified politeness and interest in the patient, as well as general work of the medical personnel (questions from 40 to 51), the seventh part addressed the issue related to hospital discharge (questions from 52 to 53), and the last part concerned overall well-being during the hospital stay (questions from 54 to 60).

4. Course of the study

The main source of obtaining data on patient service quality was Zespół Opieki Zdrowotnej w Świętochłowicach Sp. z o.o. Prior to the study, the CEO of the Hospital was asked for approval to carry out the research. After obtaining the permission, the research was launched.

The study was conducted in April and May 2020, at the "Zespół Opieki Zdrowotnej w Świętochłowicach Sp. z o.o." Survey questionnaires were distributed by nurses. Participation in the study was entirely voluntary and anonymous.

50 patients took part in the study, including 27 women and 23 men. An average length of the respondents' hospital stay was as follows: less than 3 days – 3 people, between 3 and 6 days – 25 people, between 7 and 11 days – 7 people, 12 days and more – 15 people.

5. Verification of the research hypothesis

The aim of conducted research was to analyse the quality of patient service on the example of Zespół Opieki Zdrowotnej w Świętochłowicach Sp. z o. o. Primarily, the research was based on obtaining necessary data sourced from the patients staying at the aforementioned facility. The research was of a diagnostic nature.

Conducting of the study allowed to verify the hypotheses.

The percentage distribution of responses to the first auxiliary hypothesis is included in Table 1.

Table 1.

Distribution of answers to questions about the first auxiliary hypothesis

Number of question	Distribution of answers [%]				
	Definitely yes	Rather yes	I don't know	Rather no	Definitely no
3	Does the hospital have a parking?				
	56%	26%	18%	0%	0%
4	Is the parking free?				
	58%	14%	28%	0%	0%

Cont. table 1.

5	Is the parking correctly marked?				
	0%	14%	20%	0%	66%
6	Does the parking have a sufficient space?				
	0%	0%	26%	12%	62%
7	Are the parking spaces clearly marked?				
	0%	0%	32%	6%	62%

Source: own work.

Specific hypothesis 1, which reads: "The Health Care Complex in Świętochłowice has a clearly marked and accessible parking area" has been partly proven. Summing up the above results, it can be noticed that certain problems arise from the very arrival at the hospital. Small number of parking spaces or their poor designation results in decreased satisfaction of the patients.

The percentage distribution of responses to the second auxiliary hypothesis is included in Table 2.

Table 2.

Distribution of answers to questions about the second auxiliary hypothesis

Number of question	Distribution of answers [%]				
	Definitely yes	Rather yes	I don't know	Rather no	Definitely no
8	Is there a wheelchair ramp at the hospital?				
	70%	22%	8%	0%	0%
9	Are the doors opened automatically?				
	0%	0%	26%	16%	58%
10	Are there on-call wheelchairs available?				
	0%	42%	34%	12%	12%
11	Is there a lift at the hospital?				
	74%	12%	14%	0%	0%
12	Are the toilets adapted for the needs of people with disabilities?				
	50%	26%	24%	0%	0%
13	Is the hospital layout simple and functional for a blind person?				
	62%	10%	28%	0%	0%
14	Is there a uniform colour, pictogram, digital or lettering information?				
	0%	38%	30%	22%	10%
15	Do the passageways contain obstacles to mobility?				
	0%	48%	20%	32%	0%
16	Is an audible signalling used?				
	0%	0%	20%	14%	66%
17	Is there a sign language interpreter at the hospital?				
	0%	0%	72%	10%	18%

Source: own work.

Auxiliary hypothesis 2: "The Health Care Complex in Świętochłowice is adapted to the needs of people with disabilities" has also been partly proven. The respondents have unequivocally indicated that a major problem is doors that do not open automatically as well as obstacles in the passageways. According to the respondents, a big advantage are the toilets adjusted to the needs of people with disabilities as well as a simple layout of the hospital.

The percentage distribution of responses to the third auxiliary hypothesis is included in Table 3.

Table 3.*Distribution of answers to questions about the third auxiliary hypothesis*

Number of question	Distribution of answers [%]				
	Definitely yes	Rather yes	I don't know	Rather no	Definitely no
18	Was the waiting time at the emergency room short?				
	32%	44%	24%	0%	0%
19	Have you been informed about the hospital's statute?				
	70%	18%	0%	12%	0%
20	Were you given any diagnostic tests during your admission to the emergency room?				
	42%	14%	4%	10%	30%
21	Have you been informed of all admission and residence procedures?				
	48%	22%	30%	0%	0%

Source: own work.

Another auxiliary hypothesis assuming that "Organisational structure of the Health Care Complex in Świętochłowice is understandable to the patients" has been proven. The respondents were satisfied with short waiting time at the emergency room. They were also pleased with information given by the personnel.

The percentage distribution of responses to the fourth auxiliary hypothesis is included in Table 4.

Table 4.*Distribution of answers to questions about the fourth auxiliary hypothesis*

Number of question	Distribution of answers [%]				
	Definitely yes	Rather yes	I don't know	Rather no	Definitely no
22	Have you been informed about the layout of specific rooms in the ward (toilets, doctor's room, nurses' room etc.)?				
	42%	24%	6%	28%	0%
23	Have you been informed about the visiting hours?				
	50%	36%	10%	4%	0%
24	Were the rooms clean?				
	46%	46%	8%	0%	0%
25	Were the rooms air-conditioned?				
	0%	0%	8%	8%	84%
26	Were the rooms aired properly?				
	32%	24%	6%	18%	20%
27	Was the room equipment satisfying?				
	28%	28%	6%	24%	14%
28	Was the bedding clean?				
	64%	34%	2%	0%	0%
29	Is there a room in the ward designated for visitors?				
	0%	0%	24%	8%	68%
30	Were the toilets and showers clean?				
	32%	48%	20%	0%	0%

Source: own work.

Another fourth auxiliary hypothesis assuming that "in the Health Care Complex in Świętochłowice, the cleanliness is provided on a high level" has also been proven. The cleanliness of the hospital was perceived positively. Most of the respondents claims that the personnel takes good care of the rooms and airs them regularly.

The percentage distribution of responses to the fifth auxiliary hypothesis is included in Table 5.

Table 5.*Distribution of answers to questions about the fifth auxiliary hypothesis*

Number of question	Distribution of answers [%]				
	Definitely yes	Rather yes	I don't know	Rather no	Definitely no
31	Were the meals provided in the hospital?				
	88%	8%	4%	0%	0%
32	Was the quality of meals satisfying?				
	42%	38%	6%	14%	0%
33	Was the temperature of meals adequate?				
	28%	36%	12%	24%	0%
34	Were the meals distributed regularly?				
	58%	36%	6%	0%	0%
35	Is there a social room in the ward?				
	40%	40%	20%	0%	0%
36	Is there a fridge in the social room?				
	24%	12%	64%	0%	0%
37	Is there a kettle in the social room?				
	30%	6%	64%	0%	0%
38	Is there a kiosk at the hospital?				
	62%	20%	18%	0%	0%
39	Are there vending machines with coffee, tea, water etc. at the hospital?				
	60%	14%	26%	0%	0%

Source: own work.

The fifth auxiliary hypothesis ("In the Health Care Complex in Świętochłowice, the catering services are provided on a high level") has been proven. The quality of meals in the hospital received high scores. The meals were distributed regularly. The respondents had also an access to the kiosk and vending machines.

The percentage distribution of responses to the sixth auxiliary hypothesis is included in Table 6.

Table 6.*Distribution of answers to questions about the sixth auxiliary hypothesis*

Number of question	Distribution of answers [%]				
	Definitely yes	Rather yes	I don't know	Rather no	Definitely no
40	Has the hospital ensured your right to dignity and intimacy?				
	38%	50%	12%	0%	0%
41	Were the doctors polite and showed interest?				
	44%	42%	4%	10%	0%
42	Were the nurses polite and showed interest?				
	58%	34%	8%	0%	0%
43	Has the attending doctor kept you informed about the course of the disease?				
	34%	20%	6%	20%	20%
44	Have the nurses kept you informed about the course of the disease?				
	26%	22%	6%	34%	12%
45	Do the nurses come in when asked for?				
	58%	34%	8%	0%	0%
46	Was the attending doctor experienced?				
	44%	20%	26%	10%	0%
47	Were the nurses experienced?				
	52%	16%	32%	0%	0%
48	Did the medical staff provide information on how and what kind of treatments were planned?				
	38%	22%	10%	30%	0%

Cont. table 6.

49	Was the doctor available during the day?				
	36%	24%	6%	34%	0%
50	Was the doctor available in the evening and at night?				
	32%	20%	8%	24%	16%
51	Did the nurse assist with nursing activities?				
	50%	28%	6%	16%	0%

Source: own work.

Another auxiliary hypothesis assuming that "The patients of the Health Care Complex in Świętochłowice are satisfied with its staff" has been partly proven. The patients positively evaluated behaviour of the staff. Most of them expressed satisfaction with their right to dignity being respected, as well as with politeness and help of the nurses. In terms of information on the course of the disease, the results have not been so satisfying. The patients were very pleased with the amount of experience of doctors and nurses.

The percentage distribution of responses to the seventh auxiliary hypothesis is included in Table 7.

Table 7.

Distribution of answers to questions about the seventh auxiliary hypothesis

Number of question	Distribution of answers [%]				
	Definitely yes	Rather yes	I don't know	Rather no	Definitely no
52	Was the waiting time for discharge long?				
	0%	0%	44%	30%	26%
53	Did you receive guidance on how to proceed after leaving hospital?				
	68%	22%	10%	0%	0%

Source: own work.

Specific hypothesis 7 reading: "The patients of the Health Care Complex in Świętochłowice received instructions on the course of further treatment at discharge" has been proven. In terms of guidance on how to proceed after leaving the hospital, almost all of the respondents expressed satisfaction.

The percentage distribution of responses to the eighth auxiliary hypothesis is included in Table 8.

Table 8.

Distribution of answers to questions about the eighth auxiliary hypothesis

Number of question	Distribution of answers [%]				
	Definitely yes	Rather yes	I don't know	Rather no	Definitely no
54	Were the diagnoses accurate?				
	62%	26%	12%	0%	0%
55	Were the treatment methods accurate?				
	28%	32%	40%	0%	0%
56	Were the patient's rights respected?				
	30%	30%	40%	0%	0%
57	Did you feel safe during the stay at the hospital?				
	40%	36%	24%	0%	0%
58	Were the visiting hours appropriate?				
	50%	32%	0%	18%	0%

Cont. table 8.

59	Was the family allowed to participate in the nursing activities?				
	34%	36%	0%	30%	0%
60	Would you recommend the hospital to your family, friends?				
	30%	22%	24%	8%	16%

Source: own work.

Last eighth auxiliary hypothesis assuming that "The personnel of the Health Care Complex in Świętochłowice respects patient's rights" has also been proven. The patients felt safe, diagnoses were correct, and the patient's rights were respected.

The research conducted in the Health Care Complex in Świętochłowice concerned the quality of the customer service. Considering the distribution of responses to the auxiliary hypotheses discussed in detail, as well as their verification, the validity of the main hypothesis can therefore be confirmed: "The patients of the Health Care Complex in Świętochłowice are satisfied with the quality of provided services" Overall quality of the hospital care has been evaluated on a high level. Most of the respondents were satisfied with the service, experience of doctors and nurses, and the quality of food, as well as with an overall stay at the hospital. Also, a larger part of the respondents felt safe at the ward, which has a great impact on the treatment process, as patients who feel well cared for and safe recover more quickly.

6. Conclusions and recommendations

The subject of this paper was the quality of customer service in public administration on the example of the Health Care Complex in Świętochłowice. The research was conducted among the patients of the hospital. The aim of the study was to analyse the quality of patient service in the hospital.

Considerations presented in the paper show the importance of the customer service quality. The main task of the hospitals is to provide a high quality service in the field of a health care. The basis for the improvement of health services is the results of the evaluation of the quality of services provided by the hospital. One of the elements of assessing the quality of healthcare is patient satisfaction. An important factor which influences the success of a health care facility management is the level of patient satisfaction.

Customer satisfaction studies give the facility the opportunity to evaluate patients' opinions on offered services, and consecutively - bring the prospects of defining the weaknesses in the hospital covered by the study. Regular evaluation of customer satisfaction translates into an increase in the quality of provided medical services. An increase of the standards impacts the mental well-being of the patients. Understanding patients' expectations and meeting their requirements reflects in the quality of provided services.

Patient satisfaction with provided services has a strong influence on repeat use of the health facility, as well as on recommending it to another person. Interest and care provided by the personnel influences mental condition of the patients. Good mental condition during a hospital stay results in faster recuperation. In evaluation of the hospital, each element is important. The quality does not only consists of the attitude of the staff, but also of the entire environment of the hospital, including adaptation of the building, proper signage, and maintenance of cleanliness. All these components form one whole, which is perceived and evaluated by the patient.

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MANAGEMENT OF INNOVATION PROJECTS IN THE SUPPLY CHAINS OF AUTOMOTIVE CONCERNS

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Introduction/background: The automotive sector is one of the most important industries for many industrialized countries. More than 20,000 parts per vehicle are sourced from suppliers from all over the world. Innovation projects in the automotive sector are the most complex and increasingly implemented in an open innovation model, i.e. with the participation of designers from multiple companies (R&D organizations, OEM, component suppliers, raw material suppliers). R&D projects driven by technology developments such as autonomous driving, electrification, in-car connectivity and multimodality are leading to a transformation of the industry (the largest since the invention of the car in 1885). The application of ITC (including the use of Industry 4.0 solutions like blockchain) means a new level of management of R&D projects carried out in an open model and control of the value creation chain throughout the product life cycle.

Aim of the paper: The aim of the article was to introduce the concepts of inter-organizational innovation project management, project risk management, project management using ITC.

Materials and methods: The research method used was: a systematic literature review.

Results and conclusions: The article sought to confirm the thesis that automotive corporations are the forerunners of new solutions in the management of inter-organizational innovation projects.

Keywords: project management, R&D project, open innovation model.

1. Introduction

For many industrialized countries, the automotive sector is one of the most important industries. 2019, 92.6 m vehicles (passenger and commercial) were produced worldwide, while in 2020 it was 77.9 m - nearly 16 per cent less. China is the largest producing country with 29 m, followed by the US with 11.2 m, Japan with 9.7 m and Germany with 5.6 m vehicles. World passenger car production from 2009 to 2020 (in million units) is shown in Figure 1.

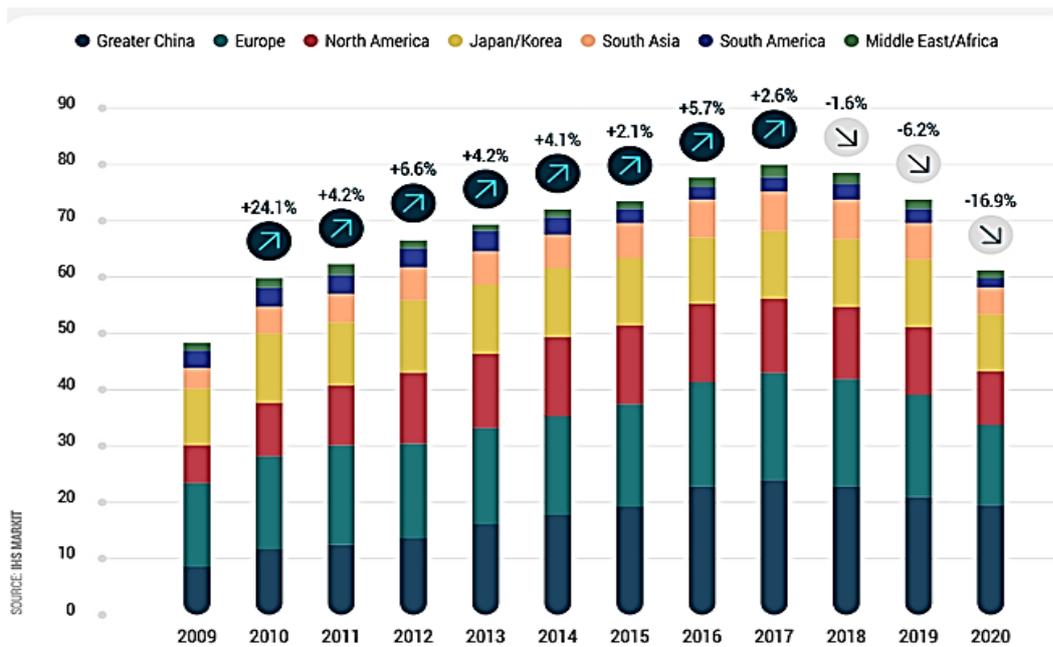


Figure 1. World passenger car production 2009-2020 (in million units).

Adapted from: AutoŚwiat, <https://www.auto-swiat.pl/wiadomosci/aktualnosci/duze-spadki-produkcji-samochodow-rowniez-w-polsce/9bpln89>.

The automotive industry's supply chains are among the most complex in the world, as each vehicle contains more than 20,000 parts, which typically come from thousands of suppliers around the world. Suppliers are a key driver of innovation and account for 60-70% of the value-added cost of producing a new car (Scannell, Vickery, Droge, 2000).

The automotive sector is in the midst of the greatest transformation since the invention of the automobile in 1885. The Fourth Industrial Revolution/Industry 4.0, signifies a new level of organization and control of the entire value creation chain in the product life cycle. This cycle is oriented towards increasingly individualized customer requirements and extends from product conception, through ordering, development and production, delivery of the product to the end user, accompanying services during the use of the car and recycling activities. (Bitkom, VDMA, ZVEI, 2015; Sendler, 2017).

The most important characteristic of the transformation of the sector is the network collaboration of all actors involved in value creation. This collaboration is increasingly taking place in an open model in which stakeholders have access to processes, innovation, production, logistics. Collaboration is enabled by the widespread digitization of innovation projects and processes. Within the inter-organizational environment, digitization is changing business and operating models and transforming supply chains. Collaboration and communication on digital platforms, results in improved effectiveness of R&D project management, reliability, agility and efficiency of innovation, production and logistics processes (Pfohl, Yahsi, Kuznaz, 2015).

As a recent study by Marion and Fixon (2021) has shown, there has been a significant increase in the uptake and use of project management tools, especially cloud-based ones, over the past ten years, and project teams and managers will benefit from their adoption. Marion and Fixon identified several trends in project communication.

The automotive industry is at the forefront of the fourth industrial revolution and coined the term 'Industry 4.0'. It set up a working group to clarify the requirements for a successful launch into the fourth industrial era and to develop industry recommendations for innovation design. The 'Platform Industry 4.0', an ideal thematic collaboration, was established. This platform was gradually expanded to include more actors from: companies, associations, unions, science and politics in order to align all stakeholders ("Platform Industry 4.0 - Platform Industry 4.0", 2018).

1. Management of inter-organizational innovation projects

Innovative projects are characterized by a high degree of uncertainty. An innovation project may be a failed project, or it may not be realized due to previously unforeseen technical reasons occurring at the time of its realization. With innovative projects, project activities are divided into stages to eliminate the risks.

Project management is a set of activities carried out in order to achieve the set main and intermediate objectives in a finite time. It includes, but is not limited to, the initiation, planning (including scheduling, budgeting), execution and control of the tasks needed to achieve the project objectives.

Innovation (or R&D) project management is defined as a set of logically structured activities that are not fully defined and sometimes only outlined. The refinement of the objective takes place during the course of the work in progress.

Researchers agree that an organization's innovation performance can be improved by implementing the Open Innovation (OI) concept in R&D projects and managing inter-organizational innovation projects.

Companies using the open innovation model have two very different growth objectives, i.e.: they are developing an existing business and/or a completely new business. Two types of product development challenges therefore arise, also referred to as two strategies for innovation projects, namely leveraging existing solutions and developing breakthrough solutions (Ericson, Kastensson, 2011). When developing an existing business, the company focuses on optimization and incremental development (makes incremental changes). When opening new projects, it then draws on its existing technology, experience from previous projects, including those in the IO model. Lack of design experience in a given topic means a greater need to open up to external competence and design experience, a more

intensive search among potential collaborators. They require external technology and internal champions who can interact with external staff from many different functional departments (Wheelwright, Clark, 1992). An important function is that of a project manager, i.e. a person who not only enthusiastically supports the innovation project but is also personally committed to it (Cooper, 1979; Rothwell, 1992; Souitaris, 2002). Managers of innovation projects should be provided with management and funding support at the outset of the initiative, as well as support for the uptake of external solutions. Chesbrough's research has shown that R&D projects cannot be ad hoc. The course of the project must be clearly defined (described practices, systems, roles, responsibilities, risks, uncertainties). Design practices can be reduced to the four areas of recommendations shown in the table (Table 1).

Table 1.

Success factors for a project emerging from an open innovation model

<p>1. Strategies and objectives</p> <ul style="list-style-type: none"> - Communicate from top to bottom, encourage IO practices - Focus efforts and set growth targets alignment with business <ul style="list-style-type: none"> - Link R&D and Purchasing cell strategies and Purchasing (also create new channels of communication within and between organizations) - Communicate innovative project initiatives to suppliers (project description, concept drawing, status, assess supplier commitment, plan activities) 	<p>2 Integration and management</p> <ul style="list-style-type: none"> - Describe company ownership and those responsible for success - Do not create separate management systems - modify existing systems (unless a new business model is needed)
<p>3. Sources of innovation</p> <ul style="list-style-type: none"> - Create deep networks in relevant areas - Innovate where R&D can add value and deliver wins - Obtain market exclusivity or purchase core technology directly 	<p>4. Structure and organization of work</p> <ul style="list-style-type: none"> - Tailor structures and incentives to work in an open environment - Communicate link to OI, make successes public - Present project ideas to engineers, presenting them to high level managers reduces their chance of success (operational leverage)

Source: own compilation based on: Chesbrough H., Crowther A.K. (2006), Beyond high tech: early adopters of open innovation in other industries, *R&D Management* 36, 3, Center for Open Innovation, Haas School of Business, UC Berkeley, CA, USA, Analysis Group, Menlo Park, CA, USA, p. 233.

Karbownik (2017) outlines how to proceed if a company decides to outsource R&D activities and indicates how to control the implementation of large projects. He indicates how to assess project maturity in the areas of methods and tools and project knowledge management.

Researchers suggest a structured approach to the 'make development or buy' decision, taken jointly by R&D engineers and purchasing staff (Le Dain et al., 2010). The decision to outsource design activities is multidimensional. The basic criteria for the 'make development or buy' analysis are cost and quality aspects (time, quality of solution, life cycle length, added values for incremental projects). Quinn (1992) advocated outsourcing for increased flexibility and shorter product development cycles, especially where new technologies are developing rapidly or are very complex. The more modular the final product, the easier the decision to purchase parts is, as there is less coordination of supplier work during the design development

stage (Balwin, Clark, 1998). In addition, Veloso and Fixson (2001) argued that modularization is a key factor in increasing the responsibility of suppliers at different stages of a project in the automotive sector. Indeed, in a modular design strategy, component decomposability and interface compatibility greatly facilitate concurrent engineering with suppliers. However, analyzing product design activities requires special attention at the design preparation stage. According to Elfring and Baven (1994), automotive corporations should outsource component design to their suppliers preceding this decision with a "make development or buy" analysis.

Scholars argue that 'early allocation of roles and responsibilities with suppliers before they are contracted' contributes to improved project performance i.e.: reduced development time and costs and improved product quality (Birou, Fawcett, 1994; Primo, Amundson, 2002). Others have pointed out that 'make development or buy' analysis has long-term benefits for future projects, achieved by reducing supplier risks (Petersen et al., 2005). In subsequent joint projects, co-operators form privileged relationships and make full use of their technologies (Wynstra et al., 2001; Emden et al., 2006; Koufteros et al., 2007). Van Echtelti et al. (2008) analyzed supplier relationship management and formulated the concept of the so-called double loop of integration with suppliers at two levels of project management: strategic and operational. The study concluded that the success of collaborative projects depends on the ability to seamlessly capture short- and long-term benefits. When preparing for a 'make development or buy' analysis, it is important to rethink which organization and to what extent will be responsible for the project and its subsequent stages.

The different categories of suppliers involved in an R&D project have been defined by (Wynstra, Pierick, 2000; Lakemond et al., 2006). Asanuma (1989) was the first to divide suppliers by looking at R&D projects carried out in the Japanese automotive industry. He found that not all suppliers had the same responsibility for a project. So he distinguished categories of suppliers. His division was based on an assessment of responsibility in the project. Many authors have continued this division (Handfield et al., 1999) by calling suppliers: "no involvement"; "white box" (informal supplier), "grey box" (joint working/formalized integration), "black box" (the project is run by the supplier according to the buyer's specifications). Another breakdown of suppliers prepared by Calvi and Le Dain (2004) was based on the so-called 'Supplier Involvement Matrix'. This supplier portfolio model identifies five configurations of supplier involvement in project collaboration. The division was made along two dimensions: the level of supplier autonomy and the risk of developing the outsourced object.

The supplier's level of autonomy takes five levels: from zero (no autonomy) to four (the supplier has ownership rights to the object, and is responsible for any changes made to the object made during the project). The autonomy granted to the supplier in the development of the outsourcing object was determined according to the five-level scale suggested by Monczek et al. (2000). At the fourth level are suppliers with the highest autonomy,

who, on the basis of the contract specifications, are responsible for global design (concept, feasibility studies, supply chain design, organization), detailed design, testing and creation of manufacturing and assembly processes, subsystem complex, continuous engineering. The supplier owns the intellectual property rights. At the third level of autonomy, the supplier, guided by the specification, takes full responsibility for the production concept and is then responsible for continuous engineering. It owns the intellectual property rights to part of the designed object. The second level of autonomy means that the supplier has full or partial responsibility for the detailed design, testing and configuration of production and assembly processes. The customer retains the intellectual property rights to the component and pays commissions on the supplier's design. The first level of autonomy is where the supplier is responsible for developing the manufacturing processes based on drawings provided by the customer. The supplier provides feedback on the customer's design, including suggesting improvements for cost reduction or quality improvement. At level zero, the supplier is responsible for the preparation of the production process, providing input into the customer's product design by sharing information about its equipment and production process capabilities.

Subsequent studies have turned their attention to risk. Wynstra and Pierick (2000) noted that the measurement of risk in design outsourcing requires further subdivisions of risk: internal risk, external risk, commercial risk and technical risk. To identify development risks, Calvi and Le Dain (2004) suggested six types of risk (one more was added later) that express the possible impact on the product under development. The risks extracted are: system connectivity, novelty, internal complexity, product differentiation, timeline, cost burden. Each risk is calculated based on the answers obtained from the survey question. The resulting risk score takes on a value (from 1 - very weak to 5 - very strong). The risks are defined as follows:

- System Link/System Link - refers to the interdependence between the outsourced object and other objects. The stronger the interdependence, the stronger the impact of the object on the technical performance of the final product.
- Novelty - novelty risk refers to the use of a new technology (from the customer's point of view) or the use of a known technology in a new application.
- Intrinsic complexity - refers to the number of distinct technologies or components used in the outsourced object/to the difficulty of determining the performance required by the product/to the difficulty of measuring performance, feasibility, execution of the production process.
- Product differentiation - refers to the contribution of the outsourced item to the functionality of the new product compared to previous solutions.
- Timeline - refers to the position of the outsourced item on the critical path of the development project.

- Cost burden - refers to the impact of the outsourced item on the cost of the final product.
- Project chain complexity - refers to the number of levels in the supply chain that need to be involved to complete the project order.

For each risk identified and assessed, a set of actions is prepared to mitigate the occurrence of the risk and a set of actions to respond to the occurrence of cost or quality problems associated with the project.

To divide suppliers according to autonomy and risk criteria, Calvi and Le Dain (2004) introduced five configurations of supplier involvement in a joint R&D project. Figure 2 shows this division of suppliers.

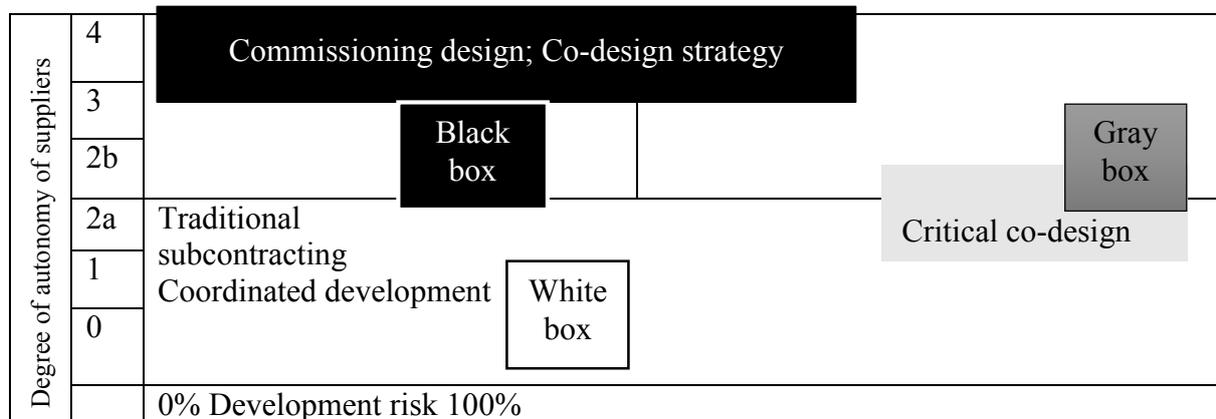


Figure 2. Matrix of supplier involvement in an R&D project.

Adapted from: Calvi R., Le Dain M.A. (2004), *Le partage de l'activite' de conception entre un client et ses fournisseurs: quels modes de coordination adopter? Collaborative development between client and supplier: How to choose the suitable coordination process?* Sous la direction de Thomas Froehlicher et Björn Walliser In *La métamorphose des organisations—Design organisationnel: créer, innover, relier*, L'Harmattan, pp. 79-93; Calvi R., le Dain M.A., Fendt T., Herrmann C.J. (2010), *Supplier selection for strategic supplier development*, CERAG, Cahier de recherche no 2010-11 E4. <https://halshs.archives-ouvertes.fr/halshs-00534830/document>.

When the level of supplier autonomy is low, one speaks of a 'white box' model. The level of risk here can be either low or high but outsourced items are mainly simple parts that can still be designed internally. However, with higher risk, customer-led coordination is necessary. The aim of such coordination is to effectively integrate activities: product design and process design. When the supplier's autonomy is a high 'black box', low and high design risk are also identified. Low risk and high autonomy means that the customer 'delegates development'. High autonomy and high risk means 'strategic co-design'. In both cases, the supplier takes full responsibility for the design and development of the outsourced item. However, in strategic co-design, a high level of risk requires frequent communication to explain changes throughout the project. Grey box means high risk but limited autonomy for both parties, as in this case neither the customer nor the supplier initially has the knowledge or ability to completely design the product in-house. The higher the risk, the more the customer cares about managing the collaboration between its own project team and the

supplier, but the decision to buy the project is a foregone conclusion. The matrix approach to 'make development or buy' analysis described above, also allows prioritization of supplier involvement in development projects. This approach is applied in four steps (Clark, Fujimoto, 1991):

1. Identify the degree of responsibility. This involves determining both the responsibility for the project that the project team expects the supplier to take, as well as assessing the various suppliers in terms of the responsibility they can take on.
2. Determining the level of risk. This requires answering questions on seven risks on a five-point scale. The risk assessment can also be done in percentages.
3. Assigning the supplier a position on the 'Supplier Involvement' matrix. Determining the position facilitates a 'make development or buy' decision and an appropriate relationship with the supplier. If 'buy' is selected, the order of own and supplier activities is determined.
4. The position of all suppliers (considered) is analyzed and may still change as a result of the project chain complexity analysis.

If the project chain is complex, the management of all the links becomes crucial to the success of the project. Aggeri and Segrestin (2000) introduce two criteria for assessing the complexity of a project chain:

- the number of entities/cells considered critical by the client and suggested by the first-tier supplier,
- the time required by the first-tier supplier to solve a problem occurring in its design chain; this time determines the framework of the design chain (the number of next-tier suppliers).

The complexity of the chain affects the cost of coordinating the design in that chain (Novak, Eppinger, 2001). The supplier involvement matrix should be completed with all first-tier organizations involved in the project. For each organization, the autonomy is defined and the risk of running the project is assessed.

A risk analysis in a systemic way by the client is necessary before signing contracts with suppliers (it can also prompt a 'make development' decision). A decomposition of this analysis must be made available to future suppliers, in order to encourage them to make efforts to mitigate risks before starting the project. The client should define the possible responses of the supplier to the risks involved. Acceptance of the expected responses facilitates the supplier selection process. If the project team uses stage gates in the innovation development process, the assessment of the supplier's competencies and resources and the responses on project risk levelling close the supplier sourcing stage and allow to move to the final selection of suppliers.

The signing of the contract starts the project work. In the first instance, work is programmed for first-tier suppliers. When defining the design chain, decisions are made on the roles and responsibilities that will be handled by the suppliers in the project and the timing

of entry into the project. The timing of supplier involvement is important. Researchers believe that it is useful to involve suppliers early in the project (even those whose tasks come later), then they will be more strongly involved. A dedicated project platform and communication channel is launched for each project. The project manager always defines milestones and an external purchasing account at the first stage, in which he provides a first estimate of the purchasing costs. Until the end of the project, he or she is responsible for the results and cost monitoring. The researchers proposed a number of plans to respond to the occurrence of risks also during design.

At each stage of project development, 'relational' problems arise. The project manager attempts to solve them. In order to solve these problems quickly, it is useful to prepare employees for the roles of 'good cop and bad cop'. A purchasing employee can be a bad policeman (Brattström, Richtnér, 2013), and an R&D employee a good one. Research findings indicate that the success of the first stages of innovation projects depends on the earlier favourable attitude of the purchasing staff, who facilitated conversations, integrated, demonstrated the ability to manage alliances (Kale et al., 2001). Once a project is launched, their attitude towards the supplier may change. (Phillips et al, 2006) refer to this change in attitude as 'strategic gamesmanship'. It is a brief change of role for the purposes of one project, linked to the need to solve problems. The trade-off between the different objectives of designers is achieved differently from one company to another. There are cultural differences. Japanese suppliers focus more on quality and customer satisfaction, while Western companies tend to emphasise the productivity dimension first. Also, compared to Japan, in the West, improvements are more short-term oriented (Stainer, 1997).

For each project, a person is appointed to 'accompany the suppliers for administrative requests', a support task can be fulfilled by the IT system (stores and groups contracts, supports procedures for obtaining subsidies related to the innovation project, etc.).

The R&D and purchasing cells participate in each monthly Innovation Committee. They have validation and veto rights at each stage of the project involving external partners (supplier or research consortium).

Typically, project risks are managed as follows: possible causes of risk are identified, the probability of their occurrence is determined. The calculated risks are analyzed by the IO project team. A risk response plan is prepared. And the risks that occur are subject to monitoring and control.

The term uncertainty is prominent in the literature. Although the terms, risk and uncertainty appear mostly as synonyms, some researchers give them different meanings and use them in different contexts. The meaning of risk is closer to cause and consequence and has to do with the associated probability of occurrence and available information. Uncertainty, is discussed in the context of lack of knowledge in decision-making. Perminova et al. (2008) define uncertainty as the difference between the total knowledge required to perform a task and the existing knowledge. Many innovation projects are accompanied by

uncertainty. In their research on uncertainty management in projects, Meyer, Loch and Pich, (2002) noted that risk management is oriented towards identifying and controlling change and predictable uncertainties. However, for innovative projects or in projects embedded in dynamic environments, there are large uncertainties and traditional risk management methods are insufficient. R&D projects need to focus on reliability, flexibility, and learning. Goffin and Mitchell (2005) confirm that dealing with risk and uncertainty is at the heart of managing innovations arising in IOs. In the most cited articles on risk management in R&D projects, the authors distinguish between uncertainty and risk management and focus on soft skills (Sharma, Gupta, 2012), which are supposed to help implement flexible management (Dingsoyr et al., 2012). Huchzermeier and Loch (2001) list the values of flexible management in research and development (R&D) projects. The authors focus on time uncertainty.

Regarding the flow of information in new product development projects, Eppinger speaks out. Eppinger (2001) believes that the processes of acquiring a new solution including joint R&D projects should be analyzed more in terms of information flow than the execution of activities by handover.

Wang and Lin (2009) dealt with project delays and reviewed the probability of risks associated with repetitive activities in a new product development project. Zwikael and Globerson (2006) described critical success factors considering successful and unsuccessful projects. The risk of technology incompatibility was addressed by Green et al. (1995), who presented a study of radical technological innovation that addressed the risk of incompatibility between project partners' technologies. Lewis et al (2002) found that there has been an increase in the diversity of management styles, and that this affects the performance of project teams. Uncertainty was described as a lack of knowledge and shared management style. Clegg et al. (2002) presented the concept of equal power in inter-organizational projects as a liberal form of governance. According to the authors, such governance can support quality management in projects, the concept of alliance, knowledge sharing and reducing transaction costs.

As suggested by Lechler et al (2012), even technical specifications and simple design activities are subject to unpredictable uncertainty, and the number of such uncertainties is steadily increasing (Hanisch, 2012). Losses of added value by co-operators have been analyzed. In creating project risk scenarios, it is worth considering the loss of value: ecological, economic market, social. The ecological risks of the project were dealt with by (Grabher, 2004), the social risks (dissolution of the cooperation network, weakening of stakeholder commitment, unfavourable organizational culture for the project) were dealt with by Crawford et al. (2006). The analysis of individual behavior (excessive expectations, involvement of intuition and emotions in judgements, biases and power conflicts, loss of trust and unwillingness to learn) was dealt with by Gladwell, (2006). The loss of market and economic values (associated with prolonged design time) was dealt with by Söderlund et al. (2009), considering these values as critical. Thamhain (2013) believed that there are key

issues in all links of the project team and their environment that need to be looked at in order to analyse the risks to project management.

The researchers believe that the integration of unknown and identified risks requires a risk management strategy based on the soft skills of themselves and their suppliers. Soft skills for dealing with the uncertainties of R&D projects include: flexibility (Huchzermeier, Loch, 2001), knowledge management (Hall, Andriani, 2003), ability to form alliances (Clegg et al., 2002), ability to improvise (Leybourne, 2006) and resilience to stress (Thomas, Mengel, 2008).

2. The role of ICT in the management of collaborative innovation projects

The use of project risk management practices is still low in organizations (Zwikael, Sadeh, 2007). Fortunately, ITC tools are emerging that effectively deal with the described project risks.

ICT tasks for R&D projects were attempted by Aloni et al. (2017). They prepared a conceptual design of an integrated ICT platform to support the open innovation model. It includes a conceptualization of the main functions, a preliminary design, a proposal for an overall system architecture and a data model.

ITC creates access to information; creates direct access to suppliers, customers and other companies; creates a network between actors/organizations involved in innovation development. Interactive technologies are key to creating a collaborative design environment in industry. They enable designers, engineers, managers and customers to collaborate on the development of a new product or process, regardless of their geographical location. ICT supports collaboration in both virtual and physical spaces. A hybrid virtual-real environment is the optimal infrastructure for creative group work. Collaboration can be established in the early and late phases of the innovation process and subsequently the innovation project (Lindermann et al., 2009).

There are many tools available to support group work. The most important of these is a software package for creating a collaborative workplace via the web, developed by Fraunhofer. The package called Basic Support for Group Work (BSCW) enables: document attachment, event reporting and group management. Project stakeholders only need to have a standard web browser. Using the solutions developed by BSCW, many large organizations have developed their own co-design systems.

The systematic collection of knowledge in databases and its codification enables knowledge to be shared between employees/organizations in a structured way. Knowledge management using ICT is the process of capturing, disseminating and effectively using knowledge (Koenig, 2012). ICT is now central to all innovation processes and projects.

In innovation design in open models, the function of ICT boils down to integrating external and internal knowledge, in design development, virtual prototypes, templates of different design versions, automatic generation of technical documentation. The above are enabled by CAD/CAM systems and associated tooling. Modules related to knowledge storage and automation of the design process have, for example, CAD systems such as CATIA (Sycz, 2012). There are many ICT tools for creative problem solving e.g.: IWB (Innovation WorkBench). Such software packages use diagrammatic representation of problems and automatic analysis of generated diagrams, leading users to an abstract solution. The Innovation Assessment Program - invented by the United Inventors Association - helps inventors, entrepreneurs and marketing professionals to honestly and objectively analyse the risks and potential of ideas and inventions, and focuses on evaluating the invention (Sorli, Stokic, 2009).

The automotive industry faces the task of developing open-source innovations. The Automotive Grade Linux (AGL) community at the Linux Foundation is building an open source platform that can serve as a de facto industry standard. The common platform allows developers to create an application once and have it run everywhere. Car manufacturers can focus on developing new products and innovative new features that can be brought to market faster. The AGL Unified Code Base (UCB) infotainment platform is rapidly gaining popularity across the industry. Toyota adopted the AGL platform for its next-generation infotainment system in 2018. Dedicated ICT tools are available to project teams appointed by Volvo. They help project managers to analyse project risks, minimize those risks and document team management.

ICT tools still have much to offer in the area of initiating relationships between innovators. Initial research has focused on the phenomenon of open source free software (von Hippel, von Krogh, 2003), crowdsourcing platforms (Di Gangi, Wasko, 2009; Leimeister et al., 2009), online innovation brokers (Whelan et al., 2013). The contribution of ICT to knowledge absorption capacity has been analyzed (Chatterjee et al., 2002), as well as new technologies for data mining, simulation, prototyping and visual representation to support collaborators in new product development (Dodgson et al., 2006). Currently, there is intensive development of design software in the IO model, based on Blockchain & Smart Contract technology. The Networking Innovation Room (NIR) model is a novel model for the protection of collaboratively created Intellectual Property IP (IP), embedded on the Blockchain platform. NIR proposes the use of a Non-Disclosure Agreement (NDA) as a smart contract, where the remuneration is a virtual currency of 'Wits' measured in 'Cleverness' (Carrillo, de la Rosa, 2007). Blockchain is a peer to peer platform using ICT to track ownership of generated and transferred assets in an IO model (Bogers et al., 2017). Smart inter-organizational contracts, are run and stored on Blockchain (Tapscott, Tapscott, 2016). NIR controls the value added by co-operators, thereby reducing companies' concerns about losing or undervaluing intellectual property contributions. In the NIR concept, special care is

given to SME firms (Bikfalvi et al., 2016). Everything that companies report is disclosed in the NIR and is also time-stamped, indexed, preserved, searchable and traceable, and reported when requested by collaborating companies. The Enterprise Europe Network (EEN) using the NIR-VANA platform is considered the largest organization and platform in Europe. EEN coordinators believe that the integrated modules in the NIR already support the work of EEN advisors by enforcing workflows. The process of sourcing innovative solutions using the NIR model can be boiled down to the following activities:

1. an SME application/co-operation offer is registered and then prepared for use on www.imtdemo.eu, which is an online CRM tool for EEN consortia activities, and on www.easypp.eu, which is a tool for online co-creation of partnership profiles between SMEs and EEN advisors;
2. an Expression of Interest (EOI) is sent via NIRVANA to EEN advisors potentially interested in the proposal/offer;
3. the EEN advisor receives the EOI and finds interested partners often among SMEs.
4. parties are invited to attend the NIR to co-create the EOI project, once the NDA confidentiality agreement is signed, the collaboration begins. Interactions, data and IP protection are developed in the NIR.

It is recommended that NIR participants declare the intellectual property and knowledge contributed, and NIR will signpost the contribution of values over time and store them. Values are cited and disclosed at the same time. Companies apply for property protection. They will need protection to implement the consortium agreement, in future project proposals or to document their contribution to co-created solutions. Smart contract - the NDA confidentiality agreement is digitally accepted and can be signed when the user enters the NIR. The agreement clearly describes the IP regime within the NIR and how the co-created innovation will be protected. All those who want stronger IP protection in the NIR perform peer review of the IP in another NIR (Lusch, 2015). The function of the application under development is to sign legally binding smart contracts, which are produced using artificial intelligence that creates a trail of records on the block chain. This process is also called 'IP document notarization'. Inventions, designs, evidence can be quickly registered and a blockchain certificate will confirm the ownership, existence and permanence of the IP asset. All secured notarization, information will remain private through cryptography.

Table 2 compares the functionalities of different Blockchain platforms, with a possible composition of functionalities: (PoE timestamp, integrity and notarisation; IP registry; Content metadata; User authentication; Inventory; Access control; Licensing; Traceability; Citation monitoring; Reward mechanisms; Proprietary currency; NDA management; Industrial property registry; Proof of receipt).

Table 2.
Functionality of various interactive blockchain platforms

	PoE time stamp	IP register	Content metadata	User authentication	Evidence	Access control	Licensing	Traceability	Monitoring of citations	Reward mechanisms	Own currency	NDA management	Industrial property register	Proof of receipt
Blockai.com	+	+												
Originstamo.org	+	+												
Poex.io	+	+												
Bitcoin.com	+	+												
Blocknotart.com	+	+			+									
Copyrobo.com	+	+			+									
Sidnatura.co	+	+		+	?									
Po.et	+	+	+	+	+	+	+	+		+	+			
Creativechain.org	+	+	+	+	+	+	+	+	+	+	+			

Adapted from: Tapscott D., Tapscott A. (2016), *Blockchain Revolution: How the Technology Behind Bitcoin is Changing Money, Business, and the World*, Penguin Random House.

A smart contract is a solution that is used to create accounts, works between two or more participants. It allows the partners to establish a business relationship without any authority or intervention from the head office. The fairness of the transaction is secured and guaranteed not by the agents, but by the ICT system. Smart contracts are based on computer coding (using software that formally encodes terms and outcomes). The coding requires the agreement of the parties to the contract. Ethereum, which is a more advanced version, uses a virtual currency used to pay for the use of smart contracts. A smart contract can embed the contract entirely in its code or extend the natural language of the contract with encoded performance or with an encoded payment mechanism. There are already frameworks that help implement smart contracts, such as OpenZeppelin, Solidity, Enterprise Smart Contract Framework, Embark or Populus. The Smart Contracts Alliance (Smart Contracts, 2017) presents 12 smart contact use cases:

- Digital Identity.
- Records to store digital files, enable auto-renewal and release.
- Securities enable automation of dividend payments.
- Trade Finance: faster acceptance and payment initiation.
- Derivatives: enforce standard terms and conditions, eliminate duplicate records and check processes.
- Recorded financial data: uniform results, accurate recorded financial data.
- Mortgages: tool enables automatic payment processing and issuance of mortgages.
- Title recording: the tool prevents fraud and property transparency in transfers.
- Supply chain: provides reliable tracking of goods from factory to shop.

- Car insurance: recording of policies, driving records, accident processing reports.
- Clinical Trials: tool improves visibility during privacy.
- Cancer Research: improving data sharing between sectors.

Part of intensive innovation, requires fintech services, (Khan et al., 2017). Smart workflow linkages across the collaborative community are possible. Agreements are required on what each player has to do in the collaborative process, when and what corrective actions are to be applied, what rewards or penalties are applied for achieving/not achieving task milestones, etc. In this way, the open innovation pathway proposed by Chesbrough (who advocates smart contracting in his most recent publications) can be developed.

The established "Platform Industry 4.0" - an ideal thematic collaboration including automotive design is supported by international standardization bodies. While the degree of standardization in individual countries is at a relatively high level, standardization between automotive companies from different countries is often in its infancy. Free data conversion tools have therefore been developed. When data is encoded in a different way, it needs to be translated to make it accessible. Automotive decision-makers sponsor, develop and offer the resulting software for free or support the open-source community that works on such software. Data security is a fundamental requirement for the digital transformation of innovative automotive projects. This includes confidentiality (access only by authorized parties), integrity (modification only by authorized parties or by authorized means) and availability (legal access is not prevented). Automotive decision-makers support data security throughout the supply chain with the development of recommendations. With clear recommendations, all actors across the supply chain can publish more securely. Published data is classified as sensitive, classified and stored accordingly.

To increase the transparency and accountability of its supply chain for raw materials and the development of battery components, the BMW manufacturer has implemented block chain technology. Cobalt, the key mineral needed for electric car batteries, mainly comes from the Democratic Republic of Congo. Here, around 20 per cent is produced by artisanal miners, operators - often children - who mine by hand under threat of human rights violations and negative health impacts (Amnesty International, 2016). BMW has used block chain to reassure stakeholders (designers, manufacturers, customers) that it only uses cobalt mined in line with Corporate Social Responsibility in its batteries (Lewis, 2018).

3. Conclusion

This paper presents possible ICT solutions to support the management of inter-organizational innovation projects. Automotive companies are not only adapting innovation processes internally, but also experimenting with new patterns of collaboration with other actors. They are finding creative ways to collaborate with start-ups and supply chain partners.

A key challenge for innovation project management is digitalization. Digitization requiring inter-organizational and international standardization of data, data security and makes it easier for designers to acquire data security skills.

Solutions, standardization and security for innovation projects can be found in the automotive industry.

Based on a literature review, a conceptual framework for the management of inter-organizational innovation projects is introduced. Digital technologies for secure interaction were addressed. Platform capabilities are presented. Only selected platform capabilities supporting inter-organizational management of innovation projects are used by companies. Most often, the solutions mentioned are implemented by the automotive industry. Decision-makers in the automotive industry associated with Platform Industry 4.0 are aware of the possibilities, but also of the need to standardize solutions. A study by Marion and Fix on (2021) shows that the application of innovation design using digital platforms is a challenge for automotive companies, which are still very autonomous in R&D activities, traditional and hierarchical. And if component design is done in an open model, it is done in an asynchronous way. Platforms for cross-organizational innovation design are a key challenge for the future and for further research. To remain innovatively competitive, automotive companies must adopt them.

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ANALYSIS OF HUMAN RESOURCES MANAGEMENT PROCESS IN A LOCAL GOVERNMENT UNIT ON A SELECTED EXAMPLE

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Introduction/background: Dynamic growth and competition of an organization need also improving the human resources management processes. However in local government units, this system has always been shaped under completely different conditions, determined by legal provisions. Meanwhile with socio-economic development and changing society people started to expect effectiveness and efficiency also in the public sphere, which resulted in focusing attention on the effectiveness of people employed and raising the level of customer service in public administration. Therefore, it became necessary to introduce the process of human resources management also in local government.

Aim of the paper: The objective of the conducted research was to make an analysis and qualitative assessment of the process of human resources management in local government units and to show the influence of this process in local government on the efficiency and effectiveness of its functioning.

Materials and methods: The conclusions presented in this paper are a result of a critical evaluation of the literature related to the topic of the work, legal provisions, participant observation, individual case study of the examined public organisation and a survey conducted among 60 people. The research methodology that was used in the study is a quantitative method.

Results and conclusions: The research showed that local government units improve the recruitment process, carry out periodic assessments and develop an employee development plan, but do not create a coherent process and limit themselves to the obligatory minimum. So, the local government administration must strive to fill job positions with professional, competent and properly prepared employees.

Keywords: human resources management, local self government, local government officials.

1. Theoretical aspects of the human resources management process

Human resource management (HRM) is a relatively new concept of social capital management (Andrzejczak, 1998), which emerged in the 20th century (Król, Ludwiczynski, 2007). The issue of human resource management has received a lot of attention in the literature, especially in terms of its effectiveness in the implementation of tasks (Ślusarczyk, 2018).

In an attempt to define HRM, the concept of human resources must first be clarified. At the outset, it should be noted that people are not resources, but they have resources, or more precisely the total of characteristics embodied in them. The key human resource factors are, among others: knowledge, skills, abilities, attitudes and values, health or motivation. It is important to bear in mind that the owners of the human resource are the individual employees and it is up to them to determine the extent to which they engage with the resource at work. This means that the organization has limited control over the human resource from which it benefits in business processes (Król, Ludwicyński, 2007).

According to M. Armstrong's theory, human resource management is a strategic and coherent approach to the process of managing an organisation's most valuable asset - the people it employs, who contribute to making its goals real both individually and collectively. Human resource management identifies people as the valuable source of an organisation's performance and treats them as a permanent asset rather than a variable cost, so they need to be provided with the best possible leaders and also given the opportunity to maximise the development of their skills (Armstrong, 1996).

So far, the most comprehensive definition of HRM among those proposed in the literature was presented by A. Poczowski. According to his theory, human resources management is a management concept in the scope of the personal function of an organisation, in which human resources are perceived as an element of the company's assets and a source of competitiveness. It also indicates the necessity of shaping the organisational culture of the company, integration of personal processes and building the involvement of employees as an instrument of achieving goals (Król, Ludwicyński, 2007).

The objective of the human resource management process is to aim for a state in which tradition, quality, work mode, employee involvement and motivation bring the organisation closer to the desired success. With the intention to achieve this, it is necessary to take measures that will help to achieve the employer's goals while developing employees (Buzowska, Paliga, Pujer, 2017).

Thus, the primary objective of human resource management is to achieve competitive advantage through human capital, which is created by engaging employees with competitive competencies (Romanowska, 2011).

The primary objective is translated into the following specific objectives:

- guaranteeing services that support the organisation's goals (Romanowska, 2011),
- aiming at building relationships focused on openness, trust and self-fulfilment,
- attracting and retaining competent, motivated and committed employees. The success of a company depends on the skills of its employees, on the results they achieve, on their creativity, flexibility and productivity, and on their ability to provide high quality services (Ślusarczyk, 2018),

- ensuring the development of employees' potential by creating favourable conditions for this, e.g. enabling learning and continuous development (Letkiewicz, Szankin, 2001),
- creating the right climate for effective and conflict-free employee-management relations that foster a sense of mutual trust,
- creating conditions conducive to teamwork,
- ensuring that staff and managers are properly appraised and rewarded for both their contribution and the results of their work,
- ensuring equal opportunities for all employees and managers,
- adopting flexible staff management principles based on care for people, fairness and transparency,
- maintaining proper mental and physical condition of employees and improving it in case of poor condition (Romanowska, 2011).

In view of the above, it can be concluded that the objectives of human resource management are related to the core activities and objectives of the organisation, and more specifically to the creation of values and conditions that have a key impact on its development and survival (Romanowska, 2011).

2. Functioning of the human resources management system in local government

For a proper course of the majority of social and economic processes, the organisation of the local (local and regional) administration, its scope of competence and efficiency of its operation are of key importance. In the 90's in Poland there were decisive reforms in this respect. They were based on further stages of decentralisation of public authority, the introduction of new territorial units of the state and the appointment in them of authorities with links to the managed communities through general elections (Gąciarz, 2006).

The first step in this direction was the 1990 municipal reform, which introduced a system of local government administration at the basic level of the country's territorial division, with far-reaching legal autonomy, an independent budget, property and independent sources of income (Gąciarz, 2006).

The next stage of the process took place in 1998. It was then that a package of laws was adopted which changed the territorial organisation of the country and created local government administration at the poviát and voivodeship level. The final effect of the reform was the introduction of a new three-tier division of the country on 1 January 1999 (Gąciarz, 2006).

Local government is an essential element of the democratic system (Piekara, 1998). It constitutes a community of inhabitants of a certain region of the state. This community is distinguished by common consciousness, fate and above all common goals, so the development

of local government must enable direct and indirect participation in exercising power to local communities. It is also supposed to lead to the authority satisfying the needs of the inhabitants, as well as creating the right conditions for economic, social, cultural and civilizational development (Gołębiowska, Zientarski, Stępien, 2016).

The principles of human capital management envisaged for the private sphere, which have been discussed above, are increasingly applied in the public sphere. These transformations were based on the assumption that the streamlining of the work of the public administration must be linked to the reorganisation of its employment policy, so as to bring the methods of this policy closer to an enterprise operating in the market. Moreover, these reforms were aimed at reducing public expenditure (Gąciarz, 2006).

The following elements of the human resource management process in public administration can be distinguished: human resources planning, recruitment, selection, assessment, remuneration and career management (Kozuch, 2004).

The legal status of local government employees in Poland is defined by the Act of 21 November 2008 on local government employees (Journal of Laws of 2019, item 1282, as amended), hereinafter referred to as the A.l.e. In terms of human resources management, this Act refers in particular to elements such as recruitment of candidates for vacant positions, preparatory service, periodic evaluation of the employee, raising, remuneration, rewards, internal promotion, improvement of knowledge and professional qualifications (Władek, 2013).

On the basis of the A.l.e., local government employees were classified according to two criteria - the type of positions and the basis on which the employment relationship was established (Szewczyk, 2012).

Against the backdrop of the local government pragmatics, the division into particular groups of local government employees in terms of the type of work is not very clear. According to this criterion, the following groups of local government employees can be distinguished:

1. political positions in local government - persons holding positions in local government bodies,
2. managerial, independent and other positions - other persons employed in LGU in official positions,
3. support and service positions (Szewczyk, 2012).

However, with regard to the criterion of the basis of the employment relationship, local government employees are employed on the basis of:

1. selection:
 - a. members of the regional board - if the voivode statute so provides,
 - b. members of the district board - if the powiat statute so provides,
 - c. members of the board of the LGU association, if the statute of the association so provides,

- d. head of commune/mayor/ president of a city - obligatory,
 - e. in the office of the capital city of Warsaw: district mayor, deputy district mayor and other district board members – obligatory,
2. appointments:
 - a. deputy head of commune/mayor/president of a city,
 - b. the treasurers of LGUs,
 3. employment contracts - of other local government employees, including LGU secretaries (Art. 4, par. 1 of the Law on local government).

Local government employees working as clerks both perform public tasks and take part in exercising public authority. Official positions in the organisational structure of a given territorial local government unit can be divided into:

1. managerial positions,
2. other official positions (Szewczyk, 2012).

Among the persons employed in clerical positions in LGU there are:

1. persons employed in leading official positions who perform the functions of bodies in local government, either by election or appointment,
2. persons employed on managerial official positions in local government units, as defined in Art. 4, par. 2 of the A.l.e., who hold their positions on the basis of an employment contract,
3. other persons employed in official positions that are delegated on the basis of an employment contract (Szewczyk, 2012).

In relation to local government employees employed on the basis of an employment contract, a replacement contract is also allowed, but it is nothing more than a variation of a fixed-term employment contract (Szewczyk, 2012).

An enumerative list of clerical positions, including managerial clerical positions, is contained in the (subsequent) Regulation of the Council of Ministers of 28 October 2021 on the remuneration of local government employees (Journal of Laws, item 1960).

Managerial clerical positions include, among others: secretary, deputy treasurer, chief accountant, spokesman, internal auditor. Other clerical positions include, for example: chief specialist, senior accountant, legal advisor, clerk, inspector, cashier.

Only employment contracts may be concluded with persons employed in auxiliary and service positions. In the first place, the provisions of local government pragmatics, not reserved for persons in official positions, apply to them, while in unregulated matters - the provisions of legal acts belonging to the general labour law (Szewczyk, 2012).

The list of auxiliary and service positions is contained in Appendix 3 of the aforementioned CM Regulation. When analysing the positions which are included in this group, one may come to the conclusion that it is quite diverse, due to the fact that it includes, among others, warehousemen, drivers, secretaries, cleaners, as well as office managers. However, the Salary Ordinance does not distinguish between support and service positions, so that some of the positions listed in the table are difficult to qualify in practice.

In local government, the employment relationship is most often established on the basis of an employment contract. However, the other two employment bases have been assigned only to a closed, narrow circle of local government employees (Rotkiewicz, 2016).

An employment relationship based on the form of employment that is election is established with persons performing the functions of local government bodies (in political positions). Currently it is the legal basis for the employment of local government employees at the commune, powiat and voivodeship level. Election is a legal form of entrusting managerial functions, mainly in local government units by virtue of a resolution adopted by a relevant collective body or as a result of an election procedure assuming the participation of all entitled persons. An elected employment relationship is established for a fixed period, i.e. for the duration of the term of office of the head of a head of community /mayor/city president. The act of election creates the mandate, which automatically establishes the employment relationship. No additional actions, either legal or factual, are required for the act of election to be effective, which establishes the employment relationship (Jochymczyk et al., 2011; Szewczyk, 2012).

Appointment is a non-contractual form of establishing an employment relationship. This relationship is less secure for the employee than the one established by concluding an employment contract. This is due in particular to the reduced protection of its permanence, as the employee may be dismissed from his/her position at any time (Ura, 1995). By virtue of appointment, legally established managerial and other independent positions are entrusted to suitable candidates and at the same time an employment relationship is established with them (Szewczyk, 2012). Persons other than those listed in Article 4(1) of the Local Government Employees Act cannot be employed on the basis of an appointment, so it cannot be applied to, for example, a secretary. The form of employment relationship on the basis of appointment gives the appointing authority freedom in the choice of persons to whom important positions are entrusted. The act of appointment results in establishing the employment relationship and entrusting the employee with a particular post. This act is a unilateral statement of will of the appointing authority (Rotkiewicz, 2016). The employment relationship on the basis of an appointment is established for an indefinite period of time. However, if under special provisions the employee has been appointed for a specific period of time, the employment relationship is established for the period covered by the appointment (Article 68, § 1¹ of the Labour Code).

The formalised procedure for recruiting local government employees applies only to vacant official positions, including managerial official positions. With regard to, for example, auxiliary or service positions, general employment principles apply, which have not been specified by the legislator in terms of specific recruitment stages. Table 1. presents recruitment procedures for individual local government positions (Rotkiewicz, 2016).

Table 1.*Recruitment procedure for individual posts in local government*

Position	Selection procedure
Vacant clerical position and managerial position	Formalised; application of the law, possibility to fill the position by transferring a local government employee from a given unit based on an agreement or an employee from another unit employed on clerical position
Support and service position	Informal; application of rules adopted in a particular unit
Replacement employee	The recruitment of a replacement employee does not require a statutory recruitment procedure

Source: Own study based on: Rotkiewicz M.: op. cit., p. 34.

The selection procedure for vacant clerical positions shall include:

1. notice of vacancy,
2. receipt of application documents,
3. pre-selection,
4. final selection,
5. drawing up the minutes,
6. decision to select the best candidate,
7. announcement of recruitment results (Rotkiewicz, 2016).

Recently, the legislator has introduced many positive solutions in the field of human resources management to the local government. Also in this area, he took into account the needs of local government employees and defined in Article 19(3) of the A.l.e. the so-called preparatory service (Weber, 2012).

Pursuant to the provisions of the Act, a local government employee employed for the first time in an clerical position and in a managerial position is obliged to undergo preparatory service (Art. 19(1) of the A.l.e.). In connection with the imposition of that obligation, term contracts are concluded with such persons for a period not longer than 6 months (Art. 16(2) of the Public Employment Service Act). This service is organised in order to prepare the employee both theoretically and practically for the proper performance of his/her official duties. Each local government employee employed for the first time in a local government organisational unit is obliged to take an examination completing preparatory service. In line with Art. 19(5) of the A.l.e., an exception to this rule is the possibility for the head of an organisational unit to submit a motivated request for exemption from the obligation to undergo preparatory service for a given employee (Art. 19(5) of the A.l.e.). However, the condition for further employment of such an employee is obtaining a positive result of the examination ending the service (Art. 19(6) of the A.l.e.). The legislator did not specify the duration of the service, but assumed that it cannot last longer than three months. The term is to be adapted to a particular person and be dependent on his/her predispositions and skills. After completion of preparatory service and passing the exam, it is possible to establish another contract of employment with such an employee, however, the legislator did not specify the type of employment contract, so the local government employer has full freedom in this respect, and it can be a contract for a definite or indefinite period of time (Jochymczyk et al., 2011).

The scope of the preparatory service is the same for all posts in matters such as familiarising the employee with:

1. organisational regulations, organisational structure of the unit concerned, the detailed scope of activities of specific organisational units and independent work posts in accordance with the type of matters conducted,
2. protection of personal data and classified information,
3. circulation of correspondence, registration of documents and their signing,
4. other internal regulations, i.e. labour regulations, remuneration regulations, benefit funds, etc.,
5. financial management rules, including the circulation of financial and accounting documents,
6. rules governing the operation of the unit,
7. functioning of the quality management system as well as basic documentation in this respect (Rotkiewicz, 2016).

A key task of the human resource management process is to enhance employee motivation and engagement, which improves organisational performance and retention of talented people. Motivation is the process of encouraging employees to engage in activities that are designed to help achieve the company's goals while satisfying their own needs. It involves identifying the goals and values of the organisation with those of the employees (Slusarczyk, 2018).

An employee, in order to perform tasks related to his professional profile and to take up new challenges with enthusiasm, must have the right motivation to work. This is the role of superiors at every level of management, who, in order to obtain certain behaviours from their employees, must motivate them accordingly. Motivating is the basic function of management, performed by all managers. It is a process of deliberately influencing the behaviour of employees through appropriate means, by creating the conditions necessary to achieve their goals and the goals of the organisation (Buzowska, Paliga, Pujer, 2017). An appropriate motivational system should ensure individualization of motivational methods and a comprehensive approach to influencing employees' professional activity through a proper link between financial and non-financial instruments (Juchnowicz, 2010).

One of the biggest drawbacks of the public administration system is the lack of a motivational remuneration system (Władek, 2013). The lack of freedom in this respect is caused by the definition of the conditions for the remuneration of local government employees in the aforementioned CM Regulation (item 1960). In addition, the occurrence of salary differences in similar positions and non-uniform rules adopted in individual offices affect the unfriendly atmosphere in the administration (Władek, 2013).

The education and development of employees is the process of completing skills, knowledge and competences necessary to properly perform tasks. In view of possible promotions, transfers or organisational changes, acquiring new knowledge undoubtedly broadens an employee's horizons. Employees need to be trained in managerial, communication,

supervisory, specialist and professional skills. This leads to increased quality of work and personal development (Witkowski, 2016).

The problem for all employers recruiting new staff is that there is no certainty that they will be the most highly qualified, even in the case of highly educated candidates. This rule also applies to candidates for clerical positions. A good practice is their systematic further training and education (Wiśniewska-Mikosik, 2013). Due to the constant changes in the environment, training takes the form of a never-ending process. Therefore, investing in human resources becomes essential as it fulfils both a motivational function (in the context of satisfying the need for self-realisation) and results in an expected increase in the quality of task performance. Given the changing nature of work, there is an increasing demand for employees with a high level of competence, skills, knowledge, motivation and experience, as well as ready to work in changing conditions (Jankowska, 2013).

The Law on Local Government Employees aims to guarantee the professional performance of public tasks by the local government, and more specifically by local government employees (Art. 1). This is ensured primarily by the provisions:

- specifying the qualification requirements to be met by local government employees (Art. 5(2) and 6),
- on periodic reviews of such staff (Art. 27 and 28),
- and imposing an obligation to continuously improve professional skills and qualifications on local government officials (Article 24.2.7) (Jochymczyk et al., 2011).

These provisions are complemented by Art. 29 of the Act, according to which local government employees take part in various forms of increasing knowledge and professional development. These may include: postgraduate studies, courses, training, conferences (Jochymczyk et al., 2011). Local government units are obliged to provide for the necessary funds in the financial plans of their units and facilitate participation in these forms of education for their employees by providing adequate funds for training, so as to at least partially finance the costs of raising qualifications. It constitutes a material guarantee of raising knowledge and professional qualifications (Rotkiewicz, 2016).

In local government, legal regulations on planning career paths of local government employees are not detailed and obligatory enough to define and impose the way of professional development of these employees. The high degree of discretion entails a different level of advancement of offices in this area, which means that there are both very advanced offices and those in which nothing is done in this regard.

Recruitment, selection, training and professional development of clerical employees are only part of the HRM process in public administration. During the employment relationship, the employee is evaluated. In principle, these are classic instruments of human capital management, but they remain a very important element of this process in any organisation, including public ones (Wiśniewska-Mikosik, 2013).

A periodic appraisal system should be understood as a repetitive process, performed within an agreed timeframe, oriented towards development, which is carried out by persons properly prepared on behalf of the organisation. It is conducted in order to objectively and professionally analyse the effects of work, the need and development potential of employees, which is necessary for proper planning and conducting activities from the field of HRM of the organisation in accordance with its strategy and mission (Juchnowicz, 2010).

The A.l.e. assumes the obligation to carry out periodic evaluations of employees and specifies how this evaluation is to be carried out, in what form, at what time, who is to carry it out, what are the means of appeal, as well as describes the consequences of negative evaluations (Szaban, 2011).

Periodic evaluation within the meaning of this Act applies to employees employed in a clerical position, including a managerial clerical position. Other local government employees may be evaluated on the basis of the provisions of the Labour Code and with the effects provided for in this Act (e.g. promoting, rewarding or punishing the employee) (Jochymczyk et al., 2011).

Pursuant to Article 27(2) of the A.l.e., the appropriate entity to perform a periodic appraisal is the direct supervisor, i.e. head of the desk, head of the department as well as head of the office. The legislator considered that the direct superior has the best knowledge of the work of the assessed person (Rotkiewicz, 2016). This evaluation is done in a written form. The frequency of the evaluation was determined by two parameters: minimum - not less frequently than once every 2 years and maximum - not more frequently than once every 6 months (Jochymczyk et al., 2011).

A local government employee has the right to appeal against the periodic assessment. The appeal is lodged with the head of the unit within 7 days of the date of service of the assessment (art. 27 section 5 of the A.l.e.). The appeal must be examined within 14 days of the date of lodging it (Art. 27(6) of the A.l.e.). Within this period, a decision must be taken on the appeal, i.e. acceptance or rejection (Jochymczyk et al., 2011).

Currently, the manner and scope of periodic evaluations is not imposed by regulation. Detailed regulations in this respect are determined by the manager of a local government unit by way of a regulation. The manager determines, among others, the manner of conducting assessments, the periods which the assessment concerns, the criteria on the basis of which the assessment is prepared and the scale of periodic assessments. When taking these aspects into account, he/she takes into account the necessity of correct assessment and the specificity of the functioning of a given unit (Art. 28 of the A.l.e.).

On the basis of the provisions discussed above, the doctrine formulates proposals for the proper conduct of periodic assessment (Table 2).

Table 2.*Instructions for conducting periodic assessment of local government employees*

No.	Step description
1.	Conducting a written periodic assessment of a local government employee by the immediate supervisor.
2.	Prompt delivery of the assessment to the employee and to the unit manager by the immediate supervisor.
3.	Possibility to appeal against the assessment within 7 days of its service to the head of the unit.
4.	Consideration of the appeal within 14 days of its service by the head of unit.
5.	If the appeal is upheld, the head of unit shall either amend the assessment or make it a second time.
6.	In the event of a repeated negative evaluation, the head of the unit is obliged to terminate the local government employee's employment contract with a period of notice.

Source: own work on the basis of: Rotkiewicz M.: op. cit., p. 224.

3. Test results

The objective of the conducted research was to make an analysis and qualitative assessment of the process of human resources management in local government units and to show the influence of this process in local government on the efficiency and effectiveness of its functioning. In the paper, the method of analysis and critical evaluation of the literature related to the topic of the work and the analysis of documentation was applied. The method of participant observation and individual case study of the examined public organisation were also used. Conclusions, on the other hand, have been drawn from the adopted theoretical views, based primarily on the specialist literature on the subject and the A.l.e., as well as from the conducted research. In the study, local government employees employed in a municipal office were subjected to research. It was conducted among 60 people. The research methodology that was used in the study is a quantitative method. A survey consisting of 10 closed questions of single and multiple choice was conducted among the employees.

The first question sought to identify the definition of human resource management with which employees most identified (Figure 1).

Almost half of the people - 41.7% chose the notion of HRM as the perception, retention, development of employees and effective use of the potential inherent in human resources. The next most frequently chosen definition was the understanding of HRM as an approach to the process of managing the most valuable asset of the organisation, which are its employees (35%). In contrast, none of the respondents identified with this notion as not important what the HRM process does, but what it leads to.

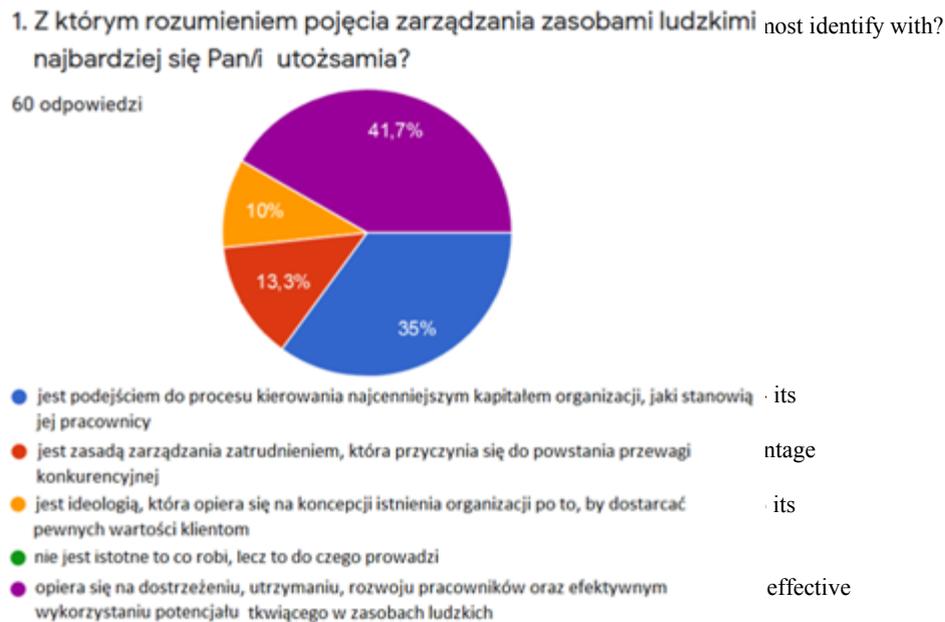


Figure 1. Which understanding of the concept of human resource management do you most identify with? Source: own work based on survey.

In the next question, employees were asked to indicate which elements of the HRM process they think are present in the analysed organisation (Figure 2).



Figure 2. Which elements of the human resource management process are present in your organisation according to you? Source: own work based on survey.

The respondents had a choice of 6 elements of the HRM process. The vast majority indicated the following elements: recruitment and selection (88.3%) and employee assessment (81.7%). Only 18.3% of the respondents believe that there is a process of motivating employees in the unit. Such a low result of this element in comparison with the others is very alarming, because the process of motivating is very important for the proper functioning of every organisation. On the other hand, such a numerous indication of the elements of recruitment and selection, employee assessment and adaptation results from the provisions of the A.l.e. which regulate these issues.

What type of recruitment is used in your workplace?

3. Jaki rodzaj rekrutacji jest stosowany w Państwa miejscu pracy?

60 odpowiedzi



Figure 3. What type of recruitment is used in your workplace? Source: own work based on survey.

The next question concerned the recruitment methods used in the office (Figure 3). Respondents had a choice of three answers: external recruitment, internal recruitment or both. Almost all (93.3%) believe that the office uses both external and internal recruitment.

In the next question, the respondents were asked to answer a question on the recruitment tools they used when applying for employment in the office (Figure 4).

The respondents had a choice of seven recruitment tools. Most of them were used in similar extent. The least frequently chosen tool was the references (13.3%).

Which recruitment tools did you submit when applying for the position?

60 answers



Figure 4. Which recruitment tools did you submit when applying for the position? Source: own work based on survey.

Another question concerned the issue of employee motivation in the surveyed organisation (Figure 5). The question aimed to verify whether, in the opinion of the respondents, the employer offers numerous and diverse elements of motivation.

The respondents had a choice of as many as 12 elements of motivation. Most of the respondents indicated three motivation elements present in the organisation: additional life insurance (78.3%), sports system on preferential terms (76.7%) and co-financing of education costs (73.3%). None of them indicated additional holiday days, so it can be concluded that this element is definitely not present in the surveyed organisation.

Which of the following elements of the incentive system are used in your organisation?
60 answers

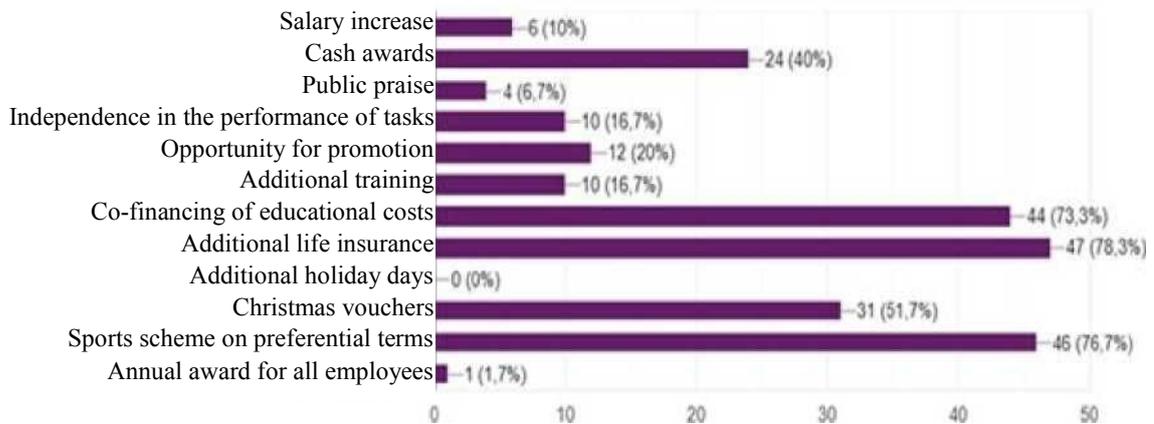


Figure 5. Which of the following elements of the incentive system are used in your organisation?
Source: own work based on survey.

The next question was linked to the previous one. The question aimed to indicate which, in the opinion of the respondents, are the most effective ways of motivation and whether they overlap with the elements of motivation present in the office. Respondents were allowed to select up to three ways that were most effective in their opinion. The answers to this question were very diverse (Figure 6).

Which of the given ways of motivation do you think is the most effective?
60 answers



Figure 6. Which of the given ways of motivation do you think is the most effective? Source: own work based on survey.

Respondents in this question had a choice of ways of motivation, which were also included in the previous question. Only three of them were indicated by more than half of the respondents: a salary increase (88.3%), the possibility of promotion (81.7%) and cash rewards (55%). None of the respondents indicated public praise, additional life insurance and a sports system on preferential terms.

The next question concerned the frequency of organised training to improve employees' qualifications (Figure 7). The purpose of the question was to establish whether the employer cares about the development of both its employees and the office.



Figure 7. How often is your organisation organising training for employees to improve their skills? Source: own work based on survey.

Respondents in this question had a choice of five frequencies of organised training in the surveyed unit. Most of them, because more than a half of them, think that trainings improving employee qualifications are organised once a year (56.7%). According to 18.3% of employees the employer does not organize trainings, which does not show well for the workplace. Slightly less respondents are of the opinion that trainings take place once in half a year (16.7%). Only 8.3% of the respondents indicated the frequency of training once a month. None of them think that trainings in the surveyed organization are organized several times a month. Such ambiguity of answers may be related to the fact that the surveyed employees are employed in different positions and have different training needs.

The next question also referred to the organised training in the surveyed entity. The answers to this question were to determine what the organised trainings have the strongest influence on in the organisation (Figure 8).

Each of the possible answers was indicated by more than half of the people surveyed. One of the respondents added her own answer, more precisely, according to her, the organised trainings have the strongest influence on potential equalisation of employees' knowledge in the discussed issue (1.7%). Thus, it can be seen that training is a very important motivational factor as it affects many aspects and develops both the employees and directly the organisation itself.

What do you think the organised training has the strongest impact on?
60 answers

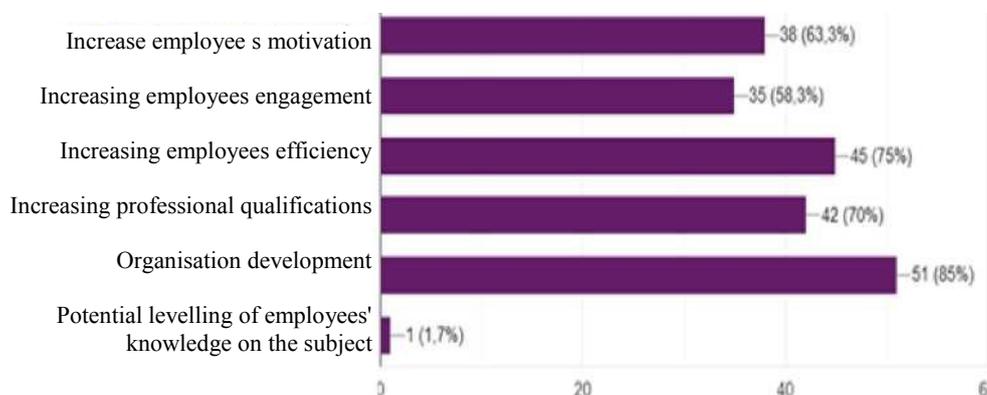


Figure 8. What do you think the organised training has the strongest impact on Source: own work based on survey.

The next question sought to gather opinions on employee evaluations and how they are used by the employer (Figure 9).

According to more than half of the respondents (63.3%), employee appraisals in the surveyed unit are used as a reason for terminating the employment relationship. On this basis, it can be concluded that in the opinion of the majority of employees, the appraisal process is not perceived as a positive phenomenon. Slightly less than half of the respondents indicated that employee evaluations are used for training (48.3%) and salary increases (45%).

According to you, the results of employee appraisals are used as a basis for:
60 answers

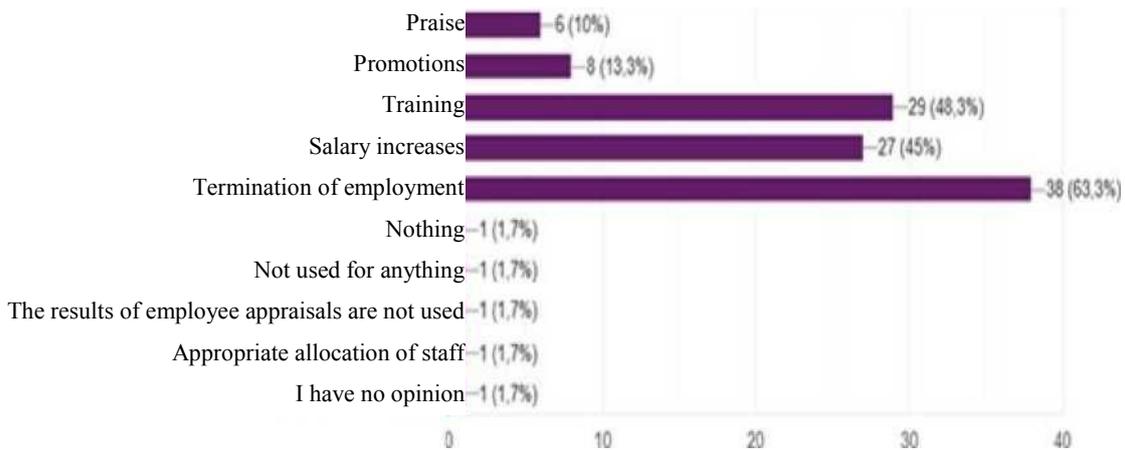


Figure 9. According to you, the results of employee appraisals are used as a basis for. Source: own work based on survey.

In the last question, the respondents were asked to express their opinion on 15 statements regarding the human resource management process in the surveyed unit. Respondents were asked to rate each statement using a five-point scale (Figure 10).

10. Please express your opinion towards the following statements:

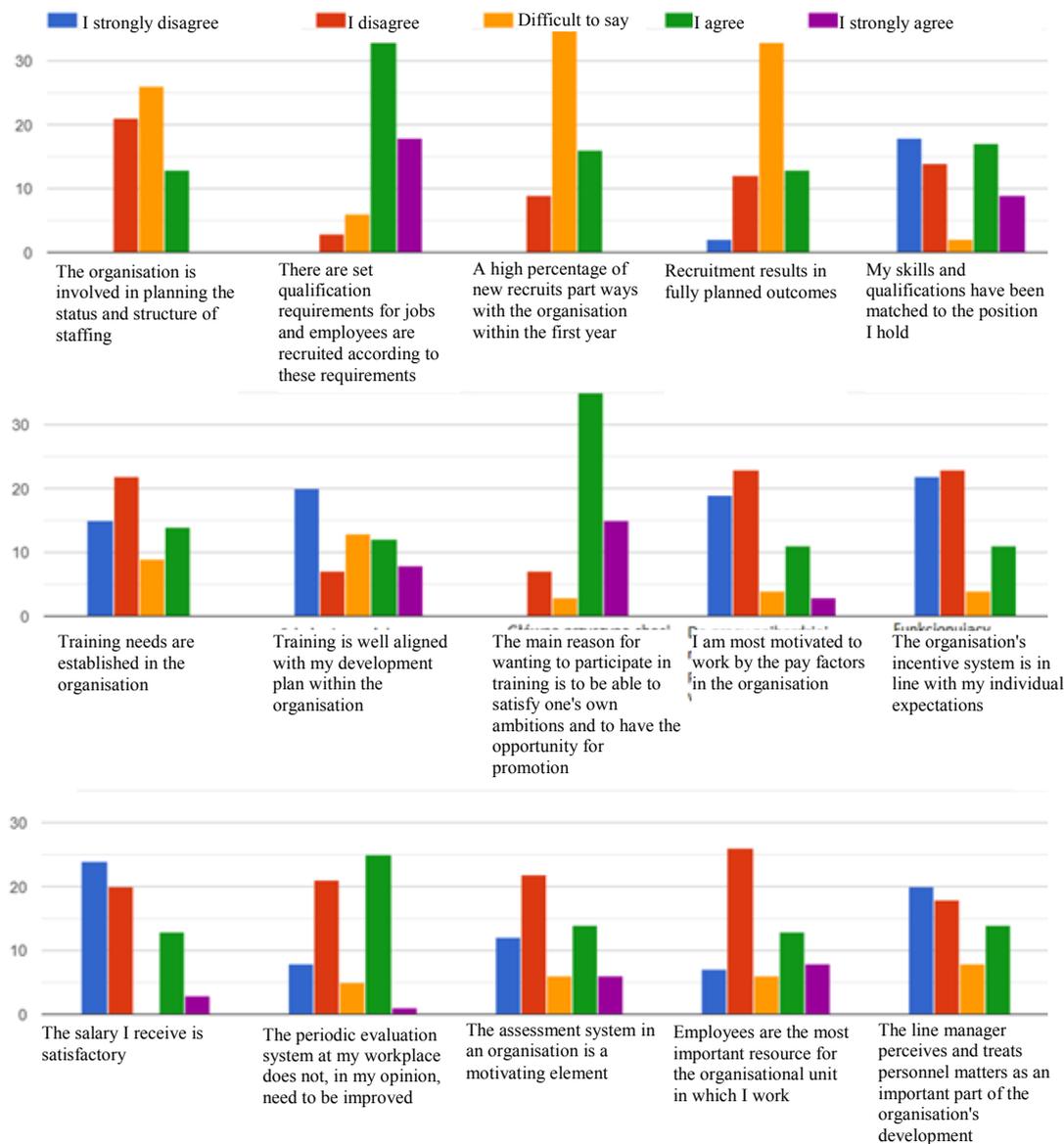


Figure 10. Please express your opinion towards the following statements Source: own work based on survey.

Some of these result are especially important and interesting. Most of the respondents (85%) agree with the statement that there are established qualification requirements for certain jobs and employees are recruited according to those requirements. They also agree that the reason of participation in training is to be able to satisfy one's own ambitions and to have the opportunity for promotion (83%). At the same time many respondents (55%) disagree with the statement that the employees are the most important resource for the organizational unit in which they work. Such a result suggests that they do not feel like an appreciated part of an organization. This is also shown in the high disagreement (63%) with the statement that the line manager perceives and treats personnel matters as an important part of the organisation's development. What is more, surveyed employees believe there is a discrepancy between the organisation's incentives system and their individual expectations (75% of respondents disagree

that the system meets their expectations). Finally, majority of the respondents do not think that their salary is satisfactory (73%) and that periodic evaluation system is motivating them (57%). In view of the above, a highly surprising notion is the fact, that 42% of respondents believe that the motivation system does not need any improvement.

4. Recommendations and conclusions

The research carried out showed that local government units are active in the area of HRM, i.e. they improve the recruitment process, carry out periodic assessments and develop an employee development plan, but do not create a coherent process and limit themselves to the obligatory minimum.

The reasons for negligence in the field of HRM in offices are mainly due to the inconvenient influences of the changing environment and inactivity of local government authorities, office management and employees themselves. On the other hand, the positive influence in this area is exerted by the legal regulations in force, first of all by the Act on local government employees and the local government system acts, which define both the status of local government and the legal status of local government employees.

Unfortunately, local government authorities, on which the quality of human resources depends to a large extent, are still not convinced that an investment in the organisation's most valuable asset - its employees - is an investment in the development of the local government unit, as well as in the quality of services it provides. The rate of return on investment in human resources is high, but it is spread over time, so the tenure of local government does not have a positive impact on its implementation.

In most of the units, local authorities are so preoccupied with current problems, political struggles, lack of funds in the budget and the search for personal benefits, that they are reluctant to implement innovative management concepts that modernise the functioning of the local government, but prevent private interests.

Through the implementation of human resources policy in the local administration and its recognition as a key task influencing directly the professionalisation of the office's activities, the development of local government units has taken place recently. Irrespective of the top-down legal regulations, as well as restrictions in the employment and remuneration of local government employees, the management of the office and persons dealing with personnel policy and human resources management aim both at the development of local government units and strengthening the competitiveness of offices through a reliable approach to all stages of HRM, i.e. human resources planning, recruitment and selection, adaptation, motivation, training and development, as well as assessment of employees, thus contributing to the satisfaction of local communities and meeting their needs.

In conclusion, it should be noted that the local government administration must strive to fill job positions with professional, competent and properly prepared employees. A qualified official should be able to combine a personal career with work in local government, regardless of the prevailing political party. The degree to which the mission of a given office is fulfilled, as well as its efficiency of operation, depend on the skills, competences and commitment of local government employees (Góral, 1999).

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COUNTERACTING UNEMPLOYMENT AND PROMOTING EMPLOYMENT IN POLAND FROM 2000 TO 2021

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Introduction/background: An analysis of the issue of counteracting unemployment and promoting employment was presented in the paper. Among the social problems, the one concerning unemployment appears as one of the most important. The consequences of unemployment, particularly such of a high rate and the long-lasting one, are especially adverse, not only for the economy, but also for specific people, their families and entire society. However, the phenomenon of unemployment has a varying character. The institutions which aim to counteract unemployment can significantly affect the level of unemployment through their actions. In the years 2000-2022, the actions counteracting unemployment and promoting employment have evolved - they had a varying character.

Aim of the paper: The aim of the paper is to analyse the process of counteracting unemployment and promoting employment, as well as presenting the evolution of changes within this matter from 2000 to 2021.

Materials and methods: The paper presents an analysis of the literature concerning the studied phenomenon, an analysis of legal acts and available statistical data on the studied problem.

Results and conclusions: The paper historically presents the problem of counteracting unemployment and promoting employment in 2000-2022, and the influence of changing actions of the public institutions on the level of unemployment. The authors also indicated arising problems that affect unemployment such as the COVID pandemic and the war in Ukraine.

Keywords: unemployment, counteracting unemployment, promoting employment.

1. Introduction

Unemployment is a social issue resulting in multidimensional effects in many fields of life. This phenomenon is caused by complex internal and external factors, which makes the fight against it and counteracting it an extremely difficult task. Such challenge had to be faced by many countries in the world, including Poland.

Developing an adequate technique and tools necessary in facing this problem might take a few decades. There is no model method yet which would eliminate unemployment completely. By means of the fish and the rod method, where the rod stands for providing the job and the fish for providing the social welfare - the years of institutional and legal practice indicate an advantage of the first one. Unemployment cannot be overcome without jobs.

The subject of the study is the problem of counteracting unemployment and promoting employment in Poland in 2000-2021. The choice of such time perspective was supported by the willingness to fill out the deficit of current studies on this matter, because many studies dedicated to unemployment and labour market institutions in Poland focus on the years of political transformation or on short, specific periods of time, e.g. the economic crisis. Among publications related to the unemployment issue, labour market and its institutions, there is a lack of items discussing this phenomenon also in the short term, including entirety of society, not only selected problem groups.

2. Active and passive policy of the labour market and its instruments

The policy of labour market strives to resolve structural problems on the labour market and to improve its functioning. In order to do so, the instruments specialised in influencing the structure of labour supply on the structure of labour demand are being used. A term of different nature is the employment policy directed on general level of employment in the economy – primarily on its growth (Wiśniewski, 2010).

Both the employment policy as well as the labour market policy use a wide range of measures and instruments oriented on certain elements of the economic system with the aim of producing an effect of reducing unemployment, alleviating its consequences, or halting its growth (Nagel, Smandek, 2010). These measures are called methods of counteracting unemployment. There are different ways of their classification, e.g. considering the results, they are divided into methods alleviating the consequences of unemployment, reducing the number of unemployed and counteracting unemployment. The most widely used criterion is the impact on productive potential, according to which a distinction is made between: an active labour market policy and a passive labour market policy.

An active labour market policy is characterised by a duality. On the one hand, it operates microeconomically – it is to help the unemployed to find a job, activate them and limit the processes of losing professional qualifications. On the other hand, it takes action from a macroeconomic perspective by reducing mismatches between demand and supply in the labour market and minimising the negative effects of business cycle (Nagel, Smandek, 2010).

The macroeconomic policy refers to the economy as a whole, that is why among its instruments there are such, which influence the entire labour market. Within the macroeconomic policy, the country reduces unemployment created as a result of imbalance on the labour market, that is, it either stimulates global demand or it creates more favourable economic conditions for manufacturers to develop production (Kwiatkowski, 2018). For this purpose, fiscal instruments such as taxes are being used.

The microeconomic policy is of selective character and it focuses on reducing unemployment in specific groups of the labour force (Kryńska, Kwiatkowski, 2010), e.g. among young people, women, people of particular profession etc. The actions taken within the microeconomic policy include range of instruments, which probably are most commonly associated with counteracting unemployment. These are:

- Public employment programmes that involve creation of jobs by the state in sectors which are not of interest to the private sector – e.g. public works.
- Non-repayable financial aids for the entrepreneurs who resign from the planned downsizing or create new jobs – so called intervention works.
- Loans for the employers in order to create new jobs.
- Loans for the unemployed for setting up their first business.
- Professional training for the unemployed.
- Services of the job placement and the job centres that involve collecting and providing information on available jobs (Kwiatkowski, 2018).

The execution of the above tasks is primarily carried out by the labour offices. Private companies of the job placement have more narrow field of activity – they mostly provide services of career counselling and improving professional qualifications and they mediate between the unemployed and the employer in the process of job searching.

Among the activities unavailable to the non-state labour market institutions, passive labour market policy is primarily included. Its subject is a social security for the unemployed in the form of benefits, one-off compensation for the people who have lost their job and pre-retirement security. Passive instruments also include introducing early retirement for particular, social or professional groups. Reducing unemployment cannot be counted among the effects of the passive labour market policy, because its mechanisms do not realistically influence the activation of the unemployed or the employers. Early retirement system only vacates the jobs on the labour market, whereas adequately constructed benefit system for the unemployed motivates them to find a job quickly.

In order to limit the appearance of preying on the benefits and realistically encourage to take up employment instead of collecting the financial aid, the state must accordingly construct the system of social security. The benefits should not be too high, only provide enough funds for minimal existence. Eligibility criterion cannot include all unemployed, only those who really need help. The maximum period of collecting the benefits should also be defined. Variety

of solutions concerning benefits in specific countries results from their financial feasibility and the importance assigned to the passive labour market policy in the process of counteracting unemployment (Kwiatkowski, 2018).

While creating legal bases and systems of counteracting unemployment, the instruments of active and passive labour market policy should be connected in such way, that they complement each other, provide effectiveness of action and security of public funds.

3. Legal bases of counteracting unemployment in Poland

Conducting rational and effective policy of counteracting unemployment requires, first of all, establishing its legal basis. Due to this, the institutions dealing with employment and unemployment issues are created and equipped in various instruments of action. Therefore, the first law concerning counteracting employment after political transformation has been passed on 29 December 1989 - the law on employment¹. This legal act has been replaced by a new one in 1991², and then in 1994³. These acts have been repeatedly amended in order to meet the requirements and face the problems that Poland was struggling with after the introduction of the democratic system and the free market economy.

Constitution of the Republic of Poland of 1997 takes the highest place in the hierarchy of legal acts and regulates the matter of counteracting unemployment in art. 65 par. 5, ordering public authorities to pursue such a policy, which leads to complete, productive employment⁴. Programmes of counteracting unemployment, career counselling, professional training, public works and intervention work are intended to serve this purpose. The aforementioned programmes of counteracting unemployment are developed by the government and are often inspired and based on the programmes contained in European Union documents, also when Poland was just aspiring to join the union (Kwiatkowska, 2012).

Poland has been a part of European Union since 1 May 2004. Membership in the union brings many benefits as well as requirements. Due to that, there was also a necessity to actualise Polish law and pass the Act of 20 April 2004 on employment promotion and labour market institutions⁵, which (along with amendments) is functioning to this day. This act defines, among others, tasks of the state related to employment issues, mechanisms for institutional service of

¹ Act of 29 December 1989 - Journal of Laws No. 75, item 446.

² Act of 16 October 1991 on employment and unemployment - Journal of Laws No. 106, item 457.

³ Act of 14 December 1994 on employment and combating unemployment - Journal of Laws No. 1995 No. 1, item 1.

⁴ Constitution of the Republic of Poland of 2 April 1997 r., Journal of Laws No. 78, item 483, as amended.

⁵ Act of 20 April 2004 on promoting employment and institutions of the labour market, original text, Journal of Laws of 2004 item 1001, consolidated text Journal of laws 2021 item 1100 as amended; other acts dealing with these problems were: the Act of June 13, 2003 on social employment - Journal of Laws No. 122, item. 1143; Act of July 9, 2003 on the employment of temporary workers - Journal of Laws 2003 No. 166, item 1608.

the labour market, professional activation and alleviation of the effects of unemployment (Ziomek, 2007). It also introduced bigger possibilities of using an active state policy on the labour market. Within the meaning of the Act, the above tasks of the state are implemented by the minister responsible for labour on the basis of the National Action Plan for Employment, which is passed by the Council of Ministers (Ziomek, 2007).

Among other legal acts providing market institutions with a basis for action, the Act of 11 October 2013 on specific solutions related to protection of jobs⁶ can also be mentioned, as it regulates the matters of granting the benefits for protection of jobs and funding training courses for the employers included in specific solutions for protection of jobs.

In accordance with the current law of 20 April 2004 on employment promotion and labour market institutions, the employment authorities include: the minister responsible for labour, governors, provincial marshals and mayors. Along with the district and provincial Labour Offices, they form the so called Public Employment Services. The state organisations are also the Voluntary Labour Corps, specialised in activities for young people - especially those at risk of social exclusion. They provide job placement, career guidance and professional preparation. They also help young people, who did not graduate from the primary or middle school, by enabling the possibility of gaining professional qualifications.

The law also mentions employment agencies, which are non-public labour market institutions. These are the economic activities included in the register of subjects running employment agencies. They can provide job placement services (in the country and abroad), career guidance, personal guidance and temporary employment. Training institutions, which provide out-of-school education, that is training courses for the unemployed, can also take a non-public form.

Labour market institutions include the so called social dialogue institutions. These are the trade unions (and their organisations), employer organisations, unemployed organisations and non-governmental organisations, whose status includes carrying out employment promotion tasks, alleviating the effects of unemployment and professional activation. Another group of institutions implementing actions and projects for the labour market are the local partnership institutions and training institutions.

4. Evolution of counteracting unemployment and employment promotion

Conducting the policy of the labour market requires constant observation and adapting it to the needs of the citizens, as well as answering to the problems arising in the economy. Subjects and instruments of the labour market policy in Poland were created from the scratch after the

⁶ Uniform text 2019 Journal of Laws, item 669 as amended.

political transformation of the late 1980s and early 1990s, and have been repeatedly changed and modified in the following years by defining new goals and ways of achieving them and focusing on the priorities. At first, the labour market policy was of protective nature and was conducted mostly with the means of social support for the unemployed. In the following years, its objective was oriented more on professional activation, investing in human capital and promoting employment (Szytko-Skoczny, 2014).

In the 1990s, unemployment was being reduced by the early retirement system. In 1998, it has been practically eliminated and replaced with pre-retirement benefits, which were directed toward the long-term unemployed with low chances of finding a job. Reformation of the retirement system in 1999 has also introduced the bridging retirement. It is assumed, that before the reformation, an actual retirement age was approximately five years lower than the statutory one. It has been emphasised, that further reduction in labour supply instead of an activation of the unemployed may lead to a crisis of the public funds system due to funding so many retirement benefits. Restriction in granting the pre-retirement benefits took place in 2004 by the Act of 30 April on retirement benefits⁷. Service of these benefits was transferred from the Labour Fund to the Social Insurance Institution (Stasiak, 2008).

M. Szytko-Skoczny brought the attention to the institutional transformations of the labour market service. She named the first system of the labour offices created in the 1990s a special government administration. This model has been replaced by a government – self-government model (Baron-Wiaterek, 2008) in 2000, and then a public – non-public model (Szytko-Skoczny, 2014) in 2004.

At the end of the 20th century (1990-1999), the organisation of employment institution was of hierarchic, linear nature. It included the minister responsible for employment, National Labour Office, Provincial Labour Office and Regional Labour Office (Ziomek, 2007).

The change in organisation of the Labour Offices in 2000 was dictated by former self-government reform of the state, under which the number of provinces was reduced, districts were established and a three-level territorial division was introduced. In that moment, the Provincial and Regional Labour Offices were no longer subordinate to each other (Firlej, 2002).

Organisational system of employment institution after the reform in 2000 is presented by the scheme below.

⁷ Act of 30 April 2004 on pre-retirement benefits, uniform text Journal of Laws of 2020 item 252 as amended.

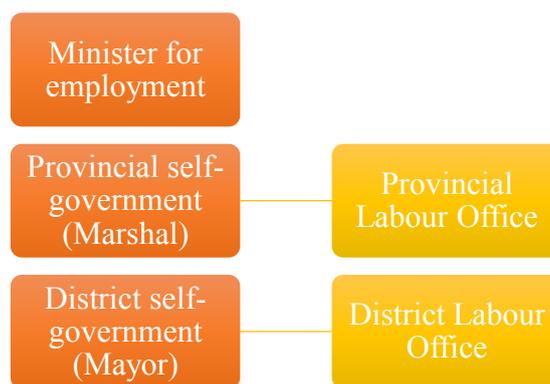


Figure 1. Government - self-government model - horizontal system of the Labour Offices in Poland (since 2000). Source A. Ziomek, *Wybrane problemy rynku pracy w Polsce w okresie transformacji*, Agencja Artystyczna PARA, Katowice 2007, p. 60.

An important change in organisation of work in the Offices was abolishing the mutual dependence of the Provincial and District Offices. Instead, they began performing advisory functions to each other. Labour Offices were incorporated into the district's combined administration and provincial self-government, and they were subject to: Provincial Labour Office - to the Marshall of the Province, District Labour Office - to the Mayor.

This system of organisation of the Labour Offices functions to this day. The reform conducted in 2004 did not change it, but joined in cooperation the public subjects (Labour Offices) and non-public subjects (employment agencies, job placement services, voluntary labour corps). An Act on employment promotion and labour market institutions (2004) has begun a new approach to the labour market policy in Poland, which is no longer focused on social security of the unemployed, but it helps them to return to the labour market. The 2014 amendment, which deepened the cooperation between public and private subjects, also expanded the meaning of professional activation. The aim of the changes was to adjust the employment service to the implemented labour market policy, that is „moving away from a benefit state to a labour state” (Szytko-Skoczny, 2014). The process of this transition is reflected by a changing number of the unemployed who register in the Labour Office and have the right to the unemployment benefit.

Also, in 2014, under the Regulation of the Minister of Labour and Social Policy of 14 May 2014 on profiling an aid for the unemployed⁸, the so called profiling of the unemployed was introduced. Everyone registering in the Labour Office went through a process of defining the profile of offered help. Profile I was attributed to self-reliant and active persons, who were then addressed to the job placement services. The unemployed who obtained profile II, defined as less self-reliant, were given a wide range of support (excluding Activation and Integration Programme). Whereas long-term unemployed were defined as profile III. In their case, the Office could apply the activation and social integration programmes. In practice, the persons

⁸ Journal of Laws of 2014 item 631.

from the third group were to be more affected, because they did not have the possibility of using all the instruments related to counteracting unemployment (Żebrowski, 2019).

The Supreme Audit Office, in the report on profiling the unemployed, came to conclusion that „profiling of the unemployed was limiting the possibilities of the offices’ actions and discriminated the unemployed depriving them equal rights“ (Żebrowski, 2019). The Ombudsman also spoke on this matter. The problems were also noticed by the Labour Offices themselves, whose view was that rigid forms of profiling did not allow for effective activation of the unemployed.

Finally, in June 2018, the Constitutional Tribunal repealed the regulation, and in 2019, an Act on employment promotion and labour market institutions was changed and profiling has been completely discontinued⁹.

The Individual Action Plan is still available to the Offices and the unemployed. This Instrument, also implemented in 2014, allows to customise an aid provided by the labour institutions to the needs, possibilities, education and skills of the unemployed. This Plan includes both the actions taken by a district Labour Office, but also the unemployed themselves, e.g. by browsing the offers. Customer advisor chooses activities for the unemployed, their completion dates and conditions for completing the plan. The progress is monitored at least once every 60 days¹⁰.

In order to present the transformation of the Labour Offices’ work, the following table includes data concerning the entire discussed time period, that is 2000-2021, during which the legal-institutional changes were taking place in the handling of unemployment. The number of the unemployed with the right to the benefits among the total number of the unemployed registered in the Labour Offices was presented in the form of a numerical value as well as a percentage.

Table 1.

Share of the unemployed with the right to the benefits among all those registered in the Labour Offices

Year	The unemployed registered in the Labour Offices in thousands	Including the right to the benefits in thousands	Percentage of the unemployed with the right to the benefits
2000	2702.6	548.6	20.3%
2001	3115.1	624.3	20%
2002	3217.0	538.7	16.7%
2003	3217.7	478.1	15.1%
2004	2999.6	425.8	14.2%
2005	2773.0	374.3	13.5%
2006	2309.4	310.8	13.5%
2007	1746.6	250.7	14.4%

⁹ *Koniec procedury profilowania bezrobotnych – zmiany od 14 czerwca 2019 r.*, Kadry.infor.pl, <https://kadry.infor.pl/wiadomosci/2945471,Koniec-procedury-profilowania-bezrobotnych-zmiany-od-14-czerwca-2019-r.html>, 4.06.2020.

¹⁰ *Indywidualny Plan Działania*, Departament Rynku Pracy MRPiPS, Psz.praca.gov.pl, <https://psz.praca.gov.pl/dla-bezrobotnych-i-poszukujacych-pracy/abc-bezrobotnego-i-poszukujacego-pracy/indywidualny-plan-dzialania>, 4.06.2020.

Cont. table 1

2008	1473.8	271.3	18.4%
2009	1892.7	380.0	20.1%
2010	1954.7	326.6	16.7%
2011	1982.7	326.5	16.5%
2012	2136.8	358.3	16.8%
2013	2157.9	297.8	13.8%
2014	1825.2	242.4	13.3%
2015	1563.3	217.3	13.9%
2016	1335.2	186.7	14%
2017	1081.7	159.6	14.8%
2018	968.9	153.3	15.8%
2019	866.4	142.5	16.4%
2020	1046.4	167.8	16%
2021	895.2	19.3	13%

Source: Own study from 2013 to 2021 with the use of: K. Siuprzyńska-Rudnicka, *Zmiany w zasadach przyznawania zasiłku dla bezrobotnych i ich wpływ na realizację funkcji dochodowej w motywacyjnej tego świadczenia*, Nauki Społeczne 2(8), Wrocław 2013, p. 151; oraz *Roczniki Statystyczne Polski 2010-2021*¹¹; <https://psz.praca.gov.pl/documents/10828/18302263/2021%20Bezrobocie%20rejestrowane.pdf>, 15.07.2022.

Beginning of the 21st century was characterised by a large number of the unemployed with the right to the benefits. The tightening of requirements in the granting of benefits resulted in a decrease in the number of benefits between 2002 and 2007. In the following two years, the number of unemployed people with the right to the benefits has increased. The reason behind that was a global economic crisis. Subsequently, an improving situation of the labour market, increased number of jobs and modified employment administration, contributed to systematic decline in the number of the unemployed with the right to the benefits from 2010 to 2022 (excluding 2012 and 2019). At the same time, the overall number of the unemployed has also decreased. This data proves that methods of the Labour Offices' activity have changed. Throughout the years, the regulations related to benefits have been gradually tightened. As a result of these actions, fewer unemployed people could apply for them (Siuprzyńska-Rudnicka, 2013). It is also worth noticing, that an increased number of the unemployed caused by the pandemic in 2020 did not translate into an increase in the proportion of unemployed with the right to the benefits, instead, it continued its decreasing trend. The amount of the benefit was reduced over the period in question to the extent that it represented between 61.5% and 66.5% of the minimum social security value.

¹¹ *Rocznik Statystyczny Polski 2010*, Zakład Wydawnictw Statystycznych, Warszawa 2010, p. 271; *Rocznik Statystyczny Polski 2013*, Zakład Wydawnictw Statystycznych, Warszawa 2013, p. 251; *Rocznik Statystyczny Polski 2014*, Zakład Wydawnictw Statystycznych, Warszawa 2014, p. 271; *Rocznik Statystyczny Polski 2016*, Zakład Wydawnictw Statystycznych, Warszawa 2016, p. 254; *Rocznik Statystyczny Polski 2017*, Zakład Wydawnictw Statystycznych, Warszawa 2017, p. 252; *Rocznik Statystyczny Polski 2019*, Zakład Wydawnictw Statystycznych, Warszawa 2019, p. 255, *Bezrobocie rejestrowane I-IV kwartał 2019 r.*, Zakład Wydawnictw Statystycznych, Warszawa 2019, pp. 14-15, *Rocznik Statystyczny Polski 2021*, Zakład Wydawnictw Statystycznych, Warszawa 2021, p. 255; *Bezrobotni zarejestrowani i stopa bezrobocia. Stan w końcu grudnia 2021 r.*, access date: <https://stat.gov.pl/obszary-tematyczne/rynek-pracy/bezrobocie-rejestrowane/bezrobotni-zarejestrowani-i-stopa-bezrobocia-stan-w-koncu-grudnia-2021-r-,2,113.html>, 17.03.2022.

Within 2000-2008, the qualifying requirement for unemployment benefits was a length of seniority of at least 365 days. Moreover, only those periods of employment were included in the required seniority, which monthly wage level was at least as high as the lowest wage in the economy (Siuprzyńska-Rudnicka, 2013). The amount of granted benefit was varied depending on the length of seniority. The unemployed with seniority of 5 to 20 years were granted the basic amount of benefit, the unemployed with seniority of less than 5 years – 80% of the basic amount, and the unemployed with seniority longer than 20 years – 120% of the basic benefit amount (Pasterniak-Malicka, 2015).

Till the end of March 2000, the benefit was valorised quarterly by the consumer price index and the consumer services index. Up until April 2004, this has been taking place every six months and then (from June 2004) once a year (Siuprzyńska-Rudnicka, 2013).

Collection of the benefit is limited in time. This means that once granted, the benefit is not paid for life, but for a specific period of time. In the early years of economic transformation, the benefit for the unemployed could have been collected for 6 months if you were a resident of a district with an unemployment rate not exceeding that of the country; for 12 months if you were a resident of a district with an unemployment rate higher than that of the country; for 18 months if you were a resident of a district with an unemployment rate at least twice the rate of the country and additionally had at least 20 years of seniority that allows for the benefit, or had at least one dependent child under the age of 15 and a spouse who is also unemployed and has lost the right to benefit.

It can be noted, that receiving of the benefit for the shortest intended period (6 months) did not require many conditions to be met at the same time. The benefit for the unemployed for 6 months was directed toward residents of the districts with better situation on the labour market, where the unemployment rate is lower than that of the country and finding employment should be easier. The benefit granted for 12 months was intended for the unemployed from the districts of worse situation on the labour market, whereas people in a particularly difficult living situation, residing in the districts of a very high rate of unemployment, were granted the benefit for 18 months.

In 2004, only the requirements for the benefit of 12 months were changed. The unemployment rate in the district where the unemployed resides had to exceed 125% of the country's unemployment rate. An additional restriction for the benefit was the impossibility for a registered unemployed person to refuse, without valid cause, a proposal of: a job, professional training, retraining, interventional work, public works, participation in a training or in a practice and professional preparation in the workplace - issued by the Labour Office. Refusal was equal to losing the right to benefit for 90 days (Siuprzyńska-Rudnicka, 2013).

Currently, in 2022, time period of collecting the benefit totals: as a rule, 180 or 365 days. Throughout 180 days, the benefit is collected by unemployed persons residing in the district if the unemployment rate in this area on 30 June of the year preceding the day of acquiring the right to the benefit did not exceed 150% of the average unemployment rate in the country;

throughout 365 days, the benefit is collected by the unemployed residing in the districts if the unemployment rate in this area on 30 June of the year preceding the day of acquiring the right to the benefit did not exceed 150% of the average unemployment rate in the country, or if they are over 50 years old and have at least 20 year-long period that gives them the right to the benefit, or they have at least one dependent child up to the age of 15 and the unemployed person's spouse is also unemployed and has lost the right to benefit due to the expiry of the benefit period after the date on which the unemployed person became entitled to the benefit, or is a single parent of at least one child up to the age of 15.

Poland's accession to the European Union obliged the state to implement the European Employment Strategy, which goal is to create more and better jobs in every country of the European Union. Currently, this strategy is a part of the Europe 2020 Strategy and the member states have to include employment guidelines in their employment policy, prepare reports and assessments of employment outcomes, submit national reform programmes and apply recommendations specific to each country.¹² Each country, adequately to the needs of its own labour market, adjust its programmes and legal basis to the European Employment Strategy.

5. Summary

Beginning with political transformation of the late 1980s and early 1990s, the problem of unemployment, its reduction and prevention and, in the longer term, the promotion of employment, has been an important focus of a social policy in Poland. The first decade of continuous legal changes did not bring expected solution on the matters of unemployment and employment, but new challenges. The situation began to change significantly in the second decade.

The Act on employment promotion and labour market institutions passed on 20 April 2004, as well as its numerous amendments, defined the legal framework for Poland - the member of the European Union - and has allowed a shift in the focus of labour market policy from social security for the unemployed to helping them return to the labour market. This has been influenced by changes in the organisation of the structure of labour offices and including the non-public subjects in cooperation. At the same time, the requirements for the right to the benefit for the unemployed were being tightened. The reason for those measures was not only to achieve an effect of significant relief of the burden on the public finance system, but primarily to motivate the unemployed to find a job quickly.

¹² <https://ec.europa.eu/social/main.jsp?langId=pl&catId=101>, 16.05.2022.

These measures have had the desired effect. Poland's accession to the European Union has initiated a downward trend in the unemployment rate. Global economic crisis in 2008 resulted in a renewed increase in the number of the unemployed people, but a proper system of counteracting unemployment and employment promotion allowed to overcome the crisis quickly. In December 2019, the lowest historical unemployment rate has been noted - 5,2%, and in 2021, despite the COVID-19 pandemic, only 5,4%.

The impact of the COVID-19 pandemic on the unemployment and employment in Poland was not as drastic as the crisis in 2008. Nevertheless, the labour market faces another challenge, which is the war in Ukraine and influx of the refugees. Even though the residents of this country have helped Polish economy to fill the deficiency in employment for years, it is unknown if the labour market (still impaired after the pandemic) will be able to receive such a big number of people willing to work. Undoubtedly, institutions counteracting unemployment face new challenges requiring intensification of the use of available forms and instruments of counteracting unemployment and employment promotion.

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FORMATION OF HEALTH-ORIENTED MANAGEMENT SKILLS OF FUTURE MANAGERS IN UKRAINE

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Introduction/background: Nowadays realities of social life create the need for unified, fundamental mechanisms of forming the motivation of future managers for their comprehensive understanding of not only the economic processes, but also the peculiarities of human life. That's why the particular importance becomes to improving the professional training of future managers in the context of forming their health-oriented management skills.

Aim of the paper: To substantiate the neediness and features of formation the health-oriented management skills of students-future managers in Ukraine.

Materials and methods: The research was conducted during 2020–2021. The study involved 345 persons from Lviv region (Ukraine): 320 persons aged from 25 to 55 years, who work in the organizations and 25 students of the third and fourth years of study, which are trained in the specialty “Management”). The following research methods were applied: theoretical analysis and synthesis of professional scientific literature, analysis of Internet resources, pedagogical observation, surveys (questionnaires).

Results and conclusions: The research data indicate the neediness to change not only the structure, content, forms, and methods of the system of professional training of future managers for the formation of their competence in health-oriented management issues, but also to search the new, non-standard motivational factors. The educational system of training of future managers, which includes the mechanisms of formation their readiness for health-oriented management, should be specially structured and include certain motivational parts, components and indicators. Management which is based on a human-centred approach, focused on the fact that the highest value of the organization is not just human resources, but the health of each individual employee, we define as health-oriented management. Using of substantive theories of motivation for the training system in health-oriented management for the future management is a necessary condition for their successful future professional activity.

Keywords: health-oriented management, health-preserving, motivation, students-future managers, professional education.

1. Introduction

The development of theoretical model of health-oriented training system of a modern manager of the XXI century in Ukraine is inextricably linked to the conceptual awareness of complex and dynamic motivational processes generated by the globality of problems and tasks which are arising in the educational environment. The theory of motivational transformations as an integral component of general pedagogy is characterized by the entirety of qualitative features associated with highlighting the complexity of the educational process, innovative changes in education.

The transition from industrial to a spiritual and informational society, the transformation of economic development models under the influence of economic globalization, intellectualization and individualization of work, the steady dematerialization of production and transformation of human capital into the dominant factor in economic development, unprecedented dynamic of transient processes – all of these generate fundamentally new problems in the process of training students-future managers, which are not included in the framework of traditional ideas of pedagogical science and require conceptual solutions and methodological approaches (Robbins, Coulter, 2012; Semiv, 2011).

The modern realities of social life, which are characterized by humanization, socialization, intellectualization, environmentalization and globalization, create the need for unified, fundamental mechanisms of forming the motivation of future managers for their comprehensive understanding of not only the economic processes, but also the peculiarities of human life. The deepening of understanding the nature of human activity is gradually forming a new motivational sphere of professional pedagogy in the process of training future managers, caused by a real tendency of shifting the priorities – from economic wealth to social, humanistic wealth. Human health is a fundamental and common feature of all components of human development. Human capabilities growing process in all its manifestations depends on health (Griban et al., 2021; Hrishnova, 2009; Mazhak, 2013). In this regard, the approach to education as to a process of formation of motivational factors that have an independent value and act as a driving force for educating the specialists of management sphere which will have a health-oriented outlook – becomes particularly significant and relevant.

Nowadays many scientists are studying the problems of the general theory of health and health-preserving, healthy lifestyle education and a responsible attitude to own health in young people, and the creation of a health-preserving space (Bida, Oros, Bzhezhinska, 2018; Griban et al., 2021; Nosko, Harkusha, Voiedilova, 2014; Nosko, Hryshchenko, Nosko, 2013; Ozdemir, Oguz, 2008; Prontenko et al., 2019; Spivak, 2016; Staroselska, 2012 etc.). A human as the main object of economic science, the concept of human capital, human development, problems of improving the quality of life, health as an economic category are considered in

the scientific works: Asiaei, Jusoh, 2015; Bleakley, 2010; Howitt, 2005; Hrishnova, 2009; Kondyrina, 2010; Krushnitska, 2013; Mazhak, 2013; Nerdrum, Erikson, 2001 etc. Problems in the field of management, HR- management, labor economics and social-labor relations, organizational behavior became the subject of study of many researchers, in particular: Amabile, 1993; Elg et al., 2011; Guest, 1997; Kolot, Tsybalyuk, 2011; Vlodyarska-Zola, 2003; Robbins, Coulter, 2012; Semiv, 2011 etc. It is obvious that numerous scientific works are devoted to the problem of creating and introducing the newest technologies into the professional education system. However, studies of the mechanisms of formation the health-oriented management skills focus only on certain issues.

The aim of this paper is to substantiate the neediness and features of formation the health-oriented management skills of students-future managers in Ukraine. To achieve the aim we have solved the following tasks: to outline the prerequisites of formation the health-oriented management skills of students-future managers in the conditions of new socio-economic challenges; to distinguish the structure of readiness of future managers for the implementation of health-oriented management; to carry out a meaningful analysis of motivation in the process of professional training of students-future managers in health-oriented management and clarify the content of this definition.

2. Materials and Methods

The following research methods were applied: *theoretical*: study of general psychological, pedagogical and special scientific literature; analysis, systematization, comparison of different views on the investigated problem; retrospective analysis of normative documents regulating the educational process in higher educational establishments (analysis of curricula and educational programs for students of specialty “Management”, identification of problematic issues in the system of professional education of future managers); *empirical*: sociological (surveys, questionnaires, testing) and pedagogical (pedagogical experiment – the qualifying stage). Analysis of own teaching experience in higher educational establishments.

The scientific validity of the results is explained by the using of a complex of general scientific approaches of experimental and empirical knowledge, general principles of philosophy, basic modern provisions of pedagogical science, psychology, management, theory and methods of physical self-improvement as *a methodological, theoretical and practical* basis for solving a number of issues aimed at improving the system of professional training of modern manager in Ukraine. The reliability of the obtained scientific results is confirmed by the using in the work the mentioned above research methods.

The research was conducted during 2020–2021 years in two directions:

1. On the basis of organizations, which are functioning in Lviv Region (Ukraine). Participants of the survey were 320 persons aged from 25 to 55 years: employers, top-managers of organizations (107 persons); managers (university graduates, who acquired the profession of manager) – 112 persons; employees (101 persons).
2. On the basis of universities of Lviv Region (Ukraine). The survey was conducted among students of the third and fourth years of study, which are trained in the specialty “Management” – 25 persons.

3. Results

Nowadays the society determines the social order and the list of competencies of future managers. The labor market and employers determine the content: what future manager needs to learn in order to become a competitive, full-fledged member of society.

3.1. The prerequisites of formation the health-oriented management skills of students-future managers in the conditions of new socio-economic challenges

According to surveys of potential employers (top-managers) who are interested in a high-quality "product" produced by higher educational establishment, we compiled a rating of the competencies of a modern manager. The first position in this rating was taken by competence, which refers to the availability of graduates with an appropriate level of general culture (culture of behavior, culture of health, culture of free time, etc.). TOP-10 necessary competencies of future managers according to employers, except general economic ones, include: the ability of future managers to motivate people and direct them to achieve new goals; the ability to understand the psychophysiological effects of work on the human, the possibility to make a psychoanalysis of a person; the ability to provide subordinates with safe working conditions, readiness to create a health-oriented organizational environment and the ability to use modern health-preserving technologies (Zavydivska et al., 2018). It is obvious that European standards require employers to pay attention to the things, which weren't interesting for them during recent past. Even not so long ago, for example, ten years ago someone from the top-management, making rating the competencies of a manager, would have hardly paid attention to those, which were describing above.

The fact that during the year the number of employers, who at the time of hiring managers pay attention to the level of their readiness to provide health-preserving measures in work conditions, increased – has also turned out to be interesting. At the beginning of the qualifying stage of the pedagogical experiment, there were 34.6% of such employers, and at the end – 60.2%. The number of top-managers who don't pay attention to the health-oriented

management skills of managers during hiring has decreased from 27% to 14.7%, and those who don't see the neediness to pay attention to such skills of managers – has decreased from 38.4% to 25.1% (Figure 1).

In our opinion, such an increase in the interest of top-managers in managers capable to provide health-oriented management indicates the neediness for a paradigmatic and methodological shift in the content of the professional training of students-future managers towards socialization without any restrictions. A modern managerial specialist must be able not only creatively use information related to the economic and legal norms of the profession, but also be socially motivated and find opportunities for searching the mechanisms for preservation of health of the organization's personnel.

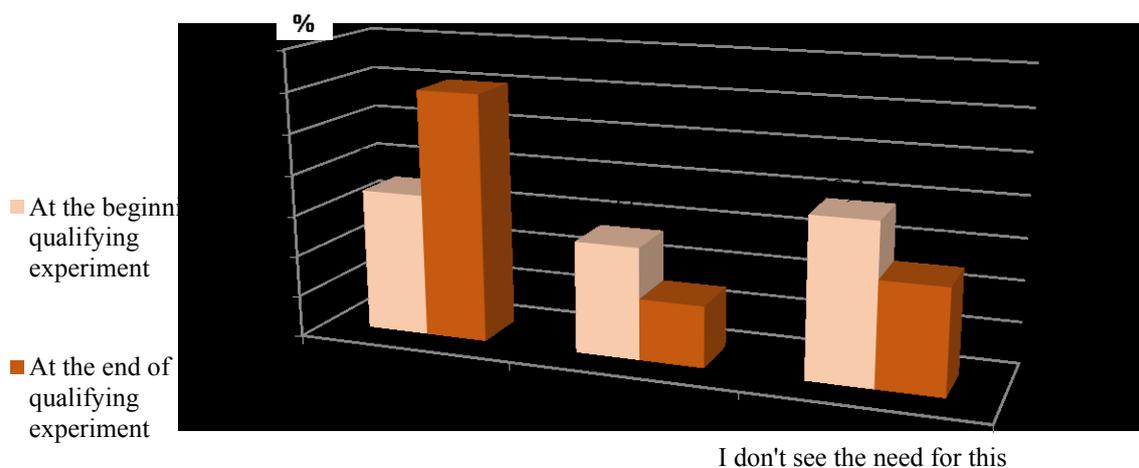


Figure 1. Diagram of changes in the interest of employers (top-managers) in hiring managers with health-oriented management skills, (%)

At the same time, only 6.1% of top-managers, 7.1% of managers, and 6.7% of employees consider themselves competent in the issues related to health-preserving opportunities in the organization. In general, 54.4% of managers (top-managers and managers), which is more than a half, don't consider themselves competent in the health-preserving issues. 27.7% of top-managers and 39.3% of managers indicated that there are difficulties in the organizing safe working conditions and preserving health of working people, and this is 67% of top-managers and managers. More than half of the interviewed people of different ages (51.8%) testified that they are ready to improve their physical health at the workplace. For 58.7% of respondents, the working environment is not such that allows them to care about their own health. The largest number of those who consider that it necessary for managers to have knowledge, skills and abilities to create a health-oriented environment in the organization are ordinary employees (20.4%).

The survey of students confirmed that 35.7% of students, who acquire this specialty, recognize management as managing the team of people for the sake of the people themselves, namely their well-being and health-preservation in the conditions of the organization. 79.5% of respondents believe that additional knowledge, skills, and abilities are necessary for

implementing health-oriented management in the organization in the future. Only 5.4% of respondents understand the essence of health-preservation in the organization, and 43.8% of students admitted that they don't know anything about the mechanisms of health-oriented management. The results of students' self-assessment of their own motivation and readiness to implement health-oriented management indicate that only 3.2% of respondents consider themselves suitable for such activities. The majority of students (53.5%) consider themselves not ready for the implementation of health-oriented management (Figure 2).

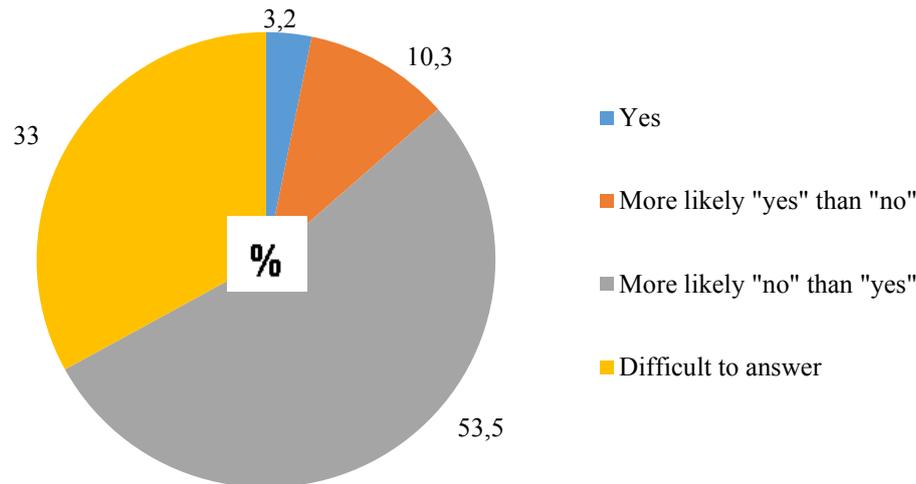


Figure 2. Results of students' self-assessment of their own motivation and readiness for the implementation of health-oriented management in the future, (%)

3.2. The structure of readiness of future managers for the implementation of health-oriented management

Education is actually an effective mechanism of the process of forming health-oriented motivation. Exactly through the education students gain self-awareness, an understanding of their unity with the world, the ability to take into account the interests of other people, and the convictions are formed in the neediness to extend the years of a healthy life (Zavydivska et al., 2020). Health-oriented thinking, formed during student years, is revealed in the management skills of the future managers. The health-oriented thinking forms health-oriented consciousness and the consciousness determines the behavior of students-future managers and forms the internal foundations of their activities in the future profession. Health-oriented consciousness is a higher level of management culture of the future managers, a system of scientific & theoretical knowledge and practical skills, a set of ideal images, concepts, ideas, views, perceptions that affect the quality of their professional training. It is about the dynamics of civilizational and cultural management. The readiness of future managers for the implementation of health-oriented management is determined by certain motivational parts, components and indicators (Figure 3).

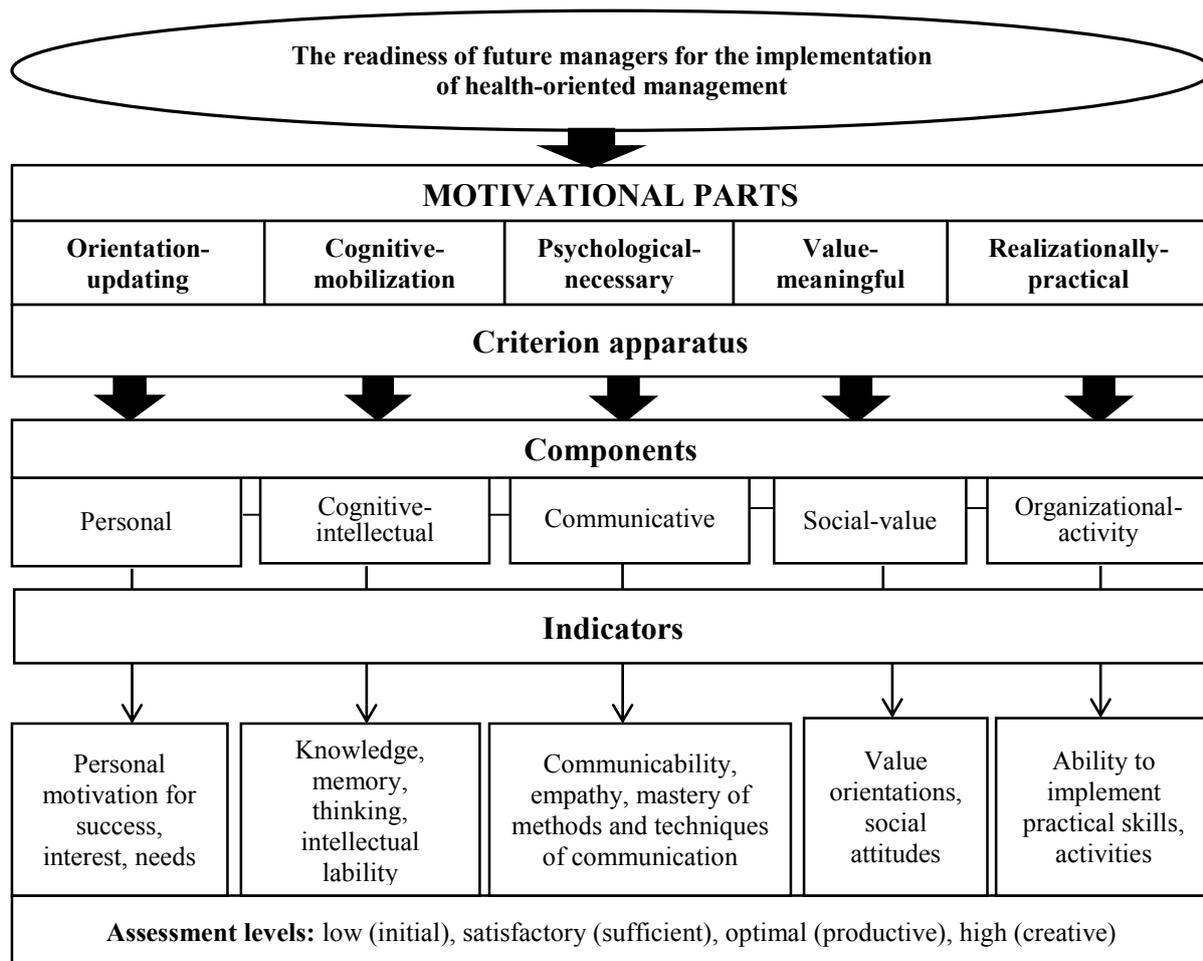


Figure 3. The structure of readiness of future managers for the implementation of health-oriented management. Source: Own work.

3.3. A meaningful analysis of motivation in the process of professional training of students-future managers in health-oriented management and clarify the content of this definition

In our opinion, students' motivation is the basis and the tool for the formation of health-oriented management skills in the process of professional training of future managers. Motivational parts are important factors in the formation of health-oriented management skills of students-future managers and affect the level of their health culture. In addition, it shouldn't be forgotten that the motives for preservation of health of employees are a powerful subjective factor in increasing labor productivity. Motivation for the formation of health-oriented management skills of future managers contributes to their awareness that a human is a subject of work and a conscious producer of material and cultural values. As for preservation of health, it can be said unequivocally that there are no people who wouldn't like to be healthy. Preservation of health is a common need and motive for everyone, but the choice of health-oriented technologies is already the prerogative of everyone (Bida, Oros, Bzhezinska, 2018). People should be able to choose for themselves the ways of maintaining their own health, taking into account their own preferences.

It is well known that job satisfaction and labor productivity are not directly proportionally dependent. For example, a person may like his/her job because considers employees as friends and by communicating with them such an employee simply satisfies his/her social needs. For him/her, communication with friends is more important than completing assigned work tasks. Therefore, there is job satisfaction, but labor productivity will be low. Even motivating factors don't always contribute to increasing labor productivity (Amabile, 1993; Robbins, Coulter, 2012). However, labor productivity directly depends on the level of health. Due to the fact that the need for a good health is common to everyone, there is a neediness to strengthen the responsibility of middle managers for health-preserving processes in the organization. As for motivation, it later became clear: in order to explain the mechanisms of motivation, it is necessary to study many behavioral aspects and parameters of the surrounding educational environment of students-future managers (Elg et al., 2011; Kolot, Tsymbalyuk, 2011). It is about procedural theories of motivation. Having considered the main provisions of each substantive theory, it is possible to make sure that all of them, first of all, determine the needs that motivate people to the health-oriented activities and complement each other.

At the heart of the health-oriented motivation, in our opinion, is the concept of expediency, in which a person compares the tasks and expected results with the means and possibilities of their achievement that are available today, and only then makes a decision whether it is worth starting to do something. According to this concept, in the process of forming health-oriented management skills of future managers, the following feature of behavior should be remembered: people try to repeat the behavior that is related to their satisfaction of the need to be healthy. Future managers should understand that before starting to use the labor potential of employees, it is necessary to satisfy their basic need – to preserve the health and provide subordinates with a certain range of opportunities for this. In addition, students-future managers should be able to ensure the availability of motivating health-oriented factors for employees and be able to structure tasks and responsibilities for this in a certain way. It is necessary to train future managers the ability to teach others and the ability to delegate health-oriented management authority to others. Authority, in this case, is a limited right to manage and introduce health-preserving technologies into work conditions. In this way, the subordinates, and even more so, the managers themselves, will have a sense of responsibility for their own health and the health of the company's employees. It is about the responsibility of the executor and head-manager. And if the executor's responsibility is reduced to participation in relevant health-oriented measures, the manager's responsibility is to understand the consequences of ineffective health-oriented management. It is generally known that any management involves planning and control. And this aspect shows the real difficulty of health-oriented management, because, in fact, neither planning nor control exists in the conditions of the organization. Most of information about health-oriented technologies managers receive informally. Communication with subordinates, friends, social

networks determine the amount of information that managers receive about the ways how to organize health-oriented working conditions. That's why students-future managers need to be taught the habit of being interested in and processing much more information about the possibilities for preservation of health of employees, if they want to achieve success in creating effective health-oriented management.

Management which is based on a human-centred approach, focused on the fact that the highest value of the organization is not just human resources, but the health of each individual employee, we define as health-oriented management. The health-oriented professional activity of the manager is considered as a personal quality of the professional activity of future managers and as a holistic competence aimed at preservation of health of subordinates. This makes the multifacetedness and non-standard nature of the process of professional training of students-future managers in health-oriented management obvious, which indicates the neediness for an integrated approach.

4. Conclusions

Critically assessing nowadays realities, we have to state that socio-political and economic changes, the process of systemic transformations in Ukraine have given rise to a deep crisis in many aspects of human life.

Nowadays Ukraine is going through a difficult period of socio-political and economic development, a stage of various threats and challenges, a war with Russia. All of these deepen the crisis in the country, spread poverty, and increase the social stratification of society, which have led to sharp dissatisfaction of the population with their standard of living. A significant number of people don't see the way to go out of the unfavorable situation regarding the deterioration of their own health and the ability to improve it at the expense of their own resources; they have forming a state of forced helplessness. Such radical changes in Ukrainian society (the speed, uncertainty and inconsistency of socio-economic processes) led to the fact that the theory of human resources development, focused on the problems of demography, employment, health care, and education, became the basis of the concept of human development. Deepening the understanding of the nature of human activity and philosophical regularities is gradually forming a new subject area of professional pedagogy, determined by a real tendency to shift priorities – from the economic wealth to social, humanistic wealth. The leading component of this wealth is a person as an individual, and its health as the highest value.

In this regard, the unification of the professional environment comes to the fore via the creation of prerequisites for the formation of spiritual and moral values of employees through the using of health-oriented management mechanisms during work conditions as a powerful

factor of conscious harmonization of individual development. The "inclusion" of employees in the work process, which is aimed at preservation of their health, is an important and necessary phenomenon for the successful financial growth of any company, which is already a proven fact. The issue of organizing and encouraging employees to take health-preserving measures in the work process remains a problem. It is obvious that the success of such initiatives directly depends on the professionalism of managers, because the uniqueness of specialists of this profession is that they are needed in all spheres of activity, in institutions of any form of ownership. In our opinion, exactly their ability to provide the health-oriented management will determine the business success of the organization in the future. The above was confirmed by the results of our research and experimental work. Thus, there is an increasing in the number of employers, who at the time of hiring managers pay attention to the level of their readiness to provide health-preserving measures in work conditions (from 34.6% to 60.2% during the year). At the same time, 54.4% of managers (top-managers and managers), which is more than a half, don't consider themselves competent in the health-preserving issues. 27.7% of top-managers and 39.3% of managers indicated that there are difficulties in organizing safe working conditions and preservation of health of working people, and this is 67 % of top and middle managers. The survey of students confirmed that 79.5 % of respondents believe that additional knowledge, skills, and abilities are necessary for implementing health-oriented management in the organization in the future. 79.5% of respondents believe that additional knowledge, skills and abilities are necessary for implementing health-oriented management in the future, but most of them (53.5%) consider themselves not ready to implement health-oriented management.

Such facts indicate the neediness to change not only the structure, content, forms, and methods of the system of professional training of future managers for the formation of their competence in health-oriented management issues, but also to search the new, non-standard motivational factors.

The educational system of training of future managers in Ukraine, which includes the mechanisms of formation their readiness for health-oriented management, in our point of view should include several aspects: the using of scientific approaches and theories of motivation; studying the effects of not only economic laws on the effectiveness of the management decision, but also the health reserves of employees; providing future managers with quality information about the effects of work processes on the health of employees; using the functional and cost analysis, forecasting, modelling and economic substantiation of each health-oriented management decision in the educational process; structuring and building the problem of health-preserving in the content of educational programs; providing different variety of blocks of the optional disciplines with a health-oriented vector; training in the legal aspects of the labor code in terms of the right of employees for the health-preserving working conditions; formation the responsibility of students-future managers for the quality of health-oriented management.

Using of substantive theories of motivation for the training system in health-oriented management for the future management is a necessary condition for their successful future professional activity. The real difficulties of health-oriented management arise from the constant change of motivational factors. The labor resources and potential of employees of any organization are in constant motion. If the external environment is constantly changing and doesn't depend on us, then the conditions of the production and working environment are created by us through the awareness of the needs and motivational factors of employees. And if managers don't respond in time to people's need to preserve a health, the consequences may be unfavourable for the organization, which will negatively affect all economic indicators.

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