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THE RISK IDENTIFICATION AND ASSESSMENT ON THE EXAMPLE OF COMPANIES FROM THE AUTOMOTIVE INDUSTRY IN POLAND

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Abstract

The issues related to the identification and assessment of risk in the automotive industry are particularly important from the point of view of functioning in a changing environment. The main purpose of the article is to present the basic definitions of risk and its types, as well as to identify the most important sources of industry risk for companies operating in the automotive industry in Poland. In addition, it is also crucial to assess the impact of identified risks on the activities of these enterprises. Two methods were used in the empirical part: a survey questionnaire (research conducted with the management staff) and an in-depth interview, which was conducted with an auditor in the automotive industry. The research results show that in companies from the automotive industry, the main risks are identified in individual areas: operational, legal and IT. One of the main challenges is the ability to adapt to changing conditions, but also the diversification of suppliers so that a key supplier does not shut down the entire production line.

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Introduction

The issues related to risk management are related not only to operational safety, but also have a significant impact on the continuity of the processes carried out in the enterprise. The current geopolitical situation has accelerated the introduction of changes related to the current situation on the global market. However, supply chains broken are hitting the automotive industry. As a result, companies in the automotive industry face numerous challenges related to changes, both local and global. A key element of functioning in a turbulent environment is the ability to adapt, but also to identify and manage risks that are specific to individual industries (Dias et al., 2021; Gurtu & Johny, 2021).

The main research problem defined in the article was formulated in the form of the question: What is the main source of risk for enterprises operating in the automotive industry, and what is the impact of the identified risks on the activities of these enterprises? Moreover, to what extent and at what level of detail should the risk analysis be carried out and what are the ways to reduce the risk and protect against its negative effects?

Considering the above questions, the purpose of this article was formulated, which is to present the basic definitions of risk and its types, as well as to identify the most important sources of industry risk for companies operating in the automotive industry in Poland, as well as to assess the impact of identified types of risk on their activities. The structure of the article was subordinated to this goal. The definitions of risk most frequently used in the literature on the subject are presented in turn. Moreover, the classification of risks and methods of their measurement are presented, as in each industry there are many types of risk that affect the functioning of enterprises to a different degree.

In the empirical part of this article were used two methods: a questionnaire (information on the organization of the risk management system and identification of risks in the automotive industry indicated by the management) and an in-depth interview, which was conducted with an auditor in the automotive industry. Due to the profile of the research, the analysis concerns only companies from the automotive industry. In addition, it is worth emphasizing that the article omits many theoretical issues and issues related to broadly understood risk management. The discussed issues focus mainly on the essence of risk, its types and identification techniques. The key element is the information obtained through empirical research and it can form the basis for further research. The authors realize that their research illustrates only a part of reality concerning the automotive industry. In connection with the above, it is recommended to conduct further research in this area. Due to the limited research sample, the information obtained from the research does not constitute conclusions relating to the entire automotive industry. However, the presented results may constitute a starting point for further research.

Literature review

Risk is a broadly understood concept and there is no agreement as to its final definition. It is an ambiguous term and difficult to define. It is often defined as the possibility of failure in the context of the occurrence of events independent of the acting entity, affecting the achievement of the assumed goals (ISO, 2009; Eastburn & Sharland, 2017; McShane, 2018). In the literature on the subject, it is common to refer to risk as uncertainty. Sinkey (1998) defines risk as the uncertainty surrounding future events or outcomes. At the same time, there is controversy over the interpretation and use of these terms. One of the first dissertations on risk is the work of Willett on The Economic Theory of Risk and Insurance. According to the author, to explain the essence of risk and uncertainty, it is necessary to define the relationship between the risk and the degree of uncertainty. At the same time, the author considered the degree of probability of this event to be less important. Therefore, he defined risk as the objectified uncertainty of the occurrence of an undesirable event, which changes with the uncertainty, not with the increase in the probability level (Willet, 1995). Moreover, the risk is the combination of a probability of an event and its consequence (Institute of Risk Management, Srinivas, 2019). On the other hand, Knight made a strong distinction between the concepts of risk and uncertainty. He stated that the risk was for cases that could be measured and quantified, while in the case of uncertainty there was no such possibility. Thus, we can deal with a situation where we do not know what will happen, but at the same time the probabilities of different scenarios are known. The second situation is uncertainty where not only do we not know what will happen, but also the probabilities of possible scenarios (Knight, 1921). A similar line of thinking was continued by Keynes, who concluded that it is possible to precisely formulate the definition of risk, while confirming Knight's assumptions about the existence of two separate concepts - unmeasurable uncertainty and measurable risk. Subsequent authors often refined the proposed by Knight and Keynes' theories. An example is the definition that risk is both measurable and insurable, while uncertainty does not have these characteristics (Snowdon et al., 1998). According to Czekaj and Dresler (2001), risk means a situation in which future management conditions cannot be predicted with certainty, and their probability distribution is known. The

risk occurs even when only one of the factors of a situation is unknown, and it is probable that it will occur. Nowadays, interpretations distinguishing between the notions of uncertainty and risk dominate. Uncertainty is defined as a state in which the future possibilities and chances of their occurrence are unknown, while the concept of risk is used in situations where the outcome of an event is unknown, but the probability of the future realization of possibilities is known or possible to be estimated (Tyszka & Tyszyński, 2001). Risk management refers to strategies, methods, and supporting tools to identify and control risk to an acceptable level (Alhawari et al., 2012). Moreover, risk management is important because can be referred to as a synchronized set of actions and approaches to direct an organization to minimize the risk for achieving the organizational aims (Nocco & Stulz, 2006; Agarwal & Ansell, 2016; Gurtu & Johny, 2021). In economic sciences, two basic concepts of risk can be distinguished: the negative and neutral concepts of risk (Jajuga, 2007). In the negative concept, risk is treated as a threat, the possibility of loss, damage, or failure to achieve a specific and assumed goal. Then, economic entities undertake several activities aimed at reducing or eliminating the risk. The second concept (the neutral risk concept) can be treated as both a threat and an opportunity. We talk about it when the result of a certain action is not known, it may be both better and worse than the expected results. In this situation, economic entities also consider the positive role of risk, thanks to which there is a possibility of obtaining greater benefits in the case of starting an activity burdened with it. The reward for the side that takes the risk is the increased benefit including the bonus for taking the risk.

As a known, risk is a common phenomenon, there are many types and classification criteria. Taking, for example, the effect as a criterion, we can distinguish market risk. Market risk is the occurrence of losses on unsecured positions due to adverse movements in the market (Janusz, 2018). It addresses factors that affect, but are independent of, individuals or organizations. An example would be a change in the socio-economic situation. Considering another criterion, e.g., the time horizon, operational risk and strategic risk can be distinguished. Operational risk is an endogenous risk - it concerns organizational factors, and therefore the possibility of loss resulting from inadequate or failed internal processes, people, and systems (Radomska, 2016). In this context, the so-called human risk is related to, for example, the lack of appropriate staff or adequate competences of the company's employees. On the other hand, strategic risk is a long-term risk related to making long-term decisions. Considering the environment and technological progress, we can distinguish in turn: static risk and dynamic risk (Karmańska, 2008). The first is natural and is associated with the occurrence of various natural phenomena. The second, in turn, is the result of broadly understood civilization progress. In the context of dynamic risk, one can indicate, for example, IT risk related to improper management of IT systems in terms of changes, development, configuration, or access (Janusz, 2018). On the other hand, due to the strength of impact on the organization, one can distinguish: normal risk, which is necessary to take because it is inherent in nature, acceptable risk, which the enterprise can afford, unacceptable risk, which the enterprise cannot afford, necessary risk and the risk of economic processes (Janusz, 2018). Taking into account the sector of the economy in which the risk occurs, we can distinguish: production risk, commercial risk and financial risk, which may result from excessive costs resulting from ineffective management and supervision, e.g. over the area audited in the company. An especially important type of risk (from the point of view of the risk of unfavorable changes in general economic conditions because of changes in price relations) is economic risk. This risk is examined in the context of specific goals, related, for example, to achieving specific profits, gaining market share, implementing the assumed plans, etc. Therefore, risk accompanies the search and setting of goals and their achievement. The possibility of not achieving the assumed plans, including failures or even losses, is called economic risk. A series of risk studies should enable managers to reduce the opportunities for making wrong decisions, incurring losses, or deviating from set goals. Risk management should consider many methods and tools necessary for identifying, analyzing, and assessing risk as well as making decisions (Kaczmarek, 2005). In the context of the subject matter discussed in the article, it is also worth pointing to more detailed types of risks, such as: counterparty risk, e.g., failure to comply with the terms of the contract or lack of provisions securing the performance of the contract, legal risk related to unfavorable changes in external legal regulations, as well as internal regulations regarding a given contract. The area with which the compliance risk is directly related - non-compliance with legal requirements. Another important type of risk is also the so-called risk of abuse related to unlawful activities such as internal and external frauds and the risk of reputational damage, very important from the point of view of competitors, resulting from the breach of the company's good name because of, for example, forced interruptions in customer service, poor supplier relationships or failure to meet legal requirements (Janusz, 2018). Every enterprise running a business is at risk. Due to the negative effects of its implementation, methods have always been sought to protect the enterprise against its occurrence. In the process of develop-

ing ways of dealing with risk in the first half of the twentieth century, the method of the so-called risk management was developed, which allows for the effective use of appropriate methods to combat or reduce the negative effects of risk. It should be emphasized that risk management is aimed at eliminating the causes and effects of random events that disrupt economic processes, without changing the course of this process. There are no rational indications to determine the appropriate level of risk. It is always a matter of choice made by individuals or groups. The decision to take a risk should primarily depend on two factors: how attractive the outcomes that the action can produce are and how likely they are to materialize. Moreover, the decision to take a risk is made by a person who, as a rule, has different approaches to it. Several attitudes of the decision-maker towards risk can be distinguished. These are: risk aversion, risk neutrality and risk seeking (Jajuga, 2009; Eastburn & Sharland, 2017). The dominant attitude (especially in business activity) is the general aversion to risk. A decision-maker only takes a risk if he receives compensation in the form of a risk premium. The risk premium is the difference between expected return of a risky asset and risk-free interest rate. Expected return is a theoretical concept; it refers to the future possible outcomes and expectations concerning future results (Kliber, 2015). Moreover, the greater the burden of uncertainty in the decision-making process, the greater the bonus should be. The other two attitudes regarding risk indifference or propensity to risk are rather undesirable in the case of business activity. One thing is beyond doubt, in business it becomes necessary to measure the level of risk borne by the entity and take actions that will adjust the amount of risk incurred to the level that the entity is able to accept. Such decision-making and implementation of actions that lead to the entity achieving an acceptable level of risk is called risk management (Jajuga, 2007; Janusz, 2018; Gurtu & Johny, 2021).

Risk is inherent in running a business, regardless of the industry in which the enterprise operates. There are many risk categories. Their classification is useful in practice as it helps the management in finding its sources and ways to minimize the negative effects of risk. In the article, a risk matrix was used to assess the industry risk, in which the sources of risk are classified according to two criteria: (1) the probability of occurrence and (2) the size of losses that may occur in the event of the occurrence of a given risk source. To gather opinions on the most important sources of risk in the industry, a questionnaire was prepared, which was addressed to the management of enterprises. Then, based on the applied risk matrix, the most serious threats related to various types of risk were identified, which in turn made it possible to indicate preventive measures or minimize the negative impact of these risks on the activities of companies in the industry.

The risk identification should be systematic and repeatable, adjusted to changing conditions on an ongoing basis, but also related to the planning process. It should also be remembered that the proper identification of risks should consider the specificity of the organization, its tasks, and goals, but also the further and closer environment (Tchankova, 2002). Of course, there is no single proper method of identification; moreover, in one company, there may be several of them. The survey questionnaire lists techniques for risk identification (brainstorming, Delphi method, checklist, HAZOP threat and operational capability analysis, SWIFT method, BIA impact analysis, RCA root cause analysis, FMEA failure cause and effect analysis, error tree analysis FTA, LOPA security layer analysis, HRA human error analysis, preliminary PHA risk analysis, CBA cost benefit analysis, decision tree, SWOT analysis, Ishikawa diagram, Effect / Probability matrix). The respondents could choose any number of answers or indicate an additional one. The article discusses only those indicated by the respondents as used in the enterprises they represent:

a) Brainstorming: is a classic method of gathering information on a clearly defined topic. It is important that the participants of the meeting are people with comprehensive knowledge of the specifics of the organization and identify problems that arise in everyday work. Each of the participants can freely express their opinions, which are not subject to evaluation in terms of the value of the information. In addition, there are no rigidly defined guide which frames discussion, which may lead to greater openness of participants in expressing their opinions (Kumpiałowska, 2011).
b) Checklist: is a tool that consists of a series of questions about an area. Moreover, they are used in the process of planning and identifying potential threats. When using this technique, one should remember to modify the content of the control questions each time, which are created based on historical data and external sources of information. (Czernyszewicz, 2018)
c) Failure cause and effect analysis FMEA: is a method that relies on the analytical determination of the cause-and-effect relationships of potential product defects and considering risk factors in the analysis. Its purpose is to identify potential defects consistently and systematically in a product or process. The next step is to eliminate or minimize the associated risk (Miller, 2011).
d) SWOT analysis: the name is an acronym derived from English words which define the elements of the analysis (strengths, weaknesses, opportunities,

threats). It is a method that is used for internal analysis of the company and its environment to optimize the company's management strategy or to build a new strategic plan. The subject of the analysis can be both an organization, a project, or an investment, but it is also used in the risk identification process (Nowicki, 2015).

e) Ishikawa Diagram: This is a method of solving problems using a cause-effect diagram and is a graphical analysis of the influence of various factors, as well as their interrelationships, contributing to the emergence of specific qualitative problems. It is worth noting that the Ishikawa diagram was initially created for quality control purposes, but it can also be used in situations where it is necessary to determine the causes of problems, identify potential risks, and detect bottlenecks in production processes. (Miller, 2011).

Certainly, another important element in the risk management process is the determination by decision-makers of an acceptable level for each type of risk. The risk assessment methodology includes various types of techniques, both qualitative and quantitative, thanks to which the risk significance ratio can be estimated, which is calculated using the probability of the risk occurrence and its effects:

$$\textit{The risk significance factor} = \textit{probability of risk occurrence} \times \textit{consequences of risk occurrence}$$

It should be emphasized that the probability of risk occurrence and its effect can be assessed using a point scale. In the questionnaire used by the authors, the respondents assessed the probability and consequences of the risk, using a 5-point scale. (Rowe, 2003; Key Risk Indicators, 2010).

It is important that for each identified risk that threatens proper functioning, necessary measures should be defined to reduce the level of that risk to an acceptable level. If the risk significance ratio is low, usually no action is taken (tolerance of risk). However, in the event of a significant risk, specific actions need to be taken, possible responses include:

a) action (taking actions to reduce the risk to an acceptable level);
b) transfer (transferring some or all of the risk to another party / entity);
c) recall (departure from risk-related activities) (Communication No. 6 of the Minister of Finance of 6 December 2012).

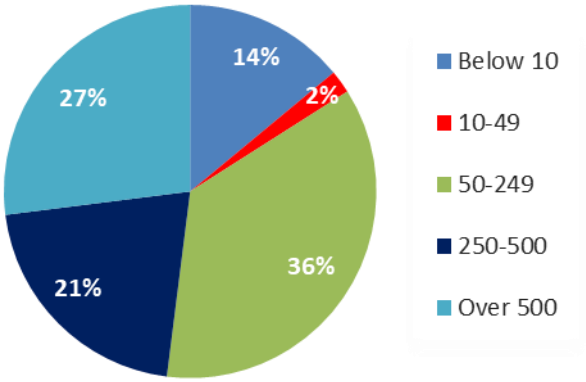
It should be emphasized that proper risk management in the enterprise should be documented and involves keeping a risk register in the form of paper, spreadsheet, database, or a specialized risk management program. According to the research conducted by the authors, in 100% of the surveyed enterprises, risk management is documented with the use of specialized IT programs. Such an approach may be associated with the maturity of risk management systems and a proper understanding of its essence.

Data and Methods

The automotive industry was one of the many industries affected by the pandemic. In addition, the automotive industry is also a very important sector of the Polish economy, as it generates over 8% of GDP and accounts for over 20% of the annual export value (Stawiarska et al., 2021). This is related not only to reduced new car production, but also to supply chain problems. As a known, supply chain risks can generate huge losses for companies (Dias et al., 2021). Therefore, in the opinion of the authors, it was an excellent reason to conduct research in the field of risk identification here and propose certain organizational solutions. This article is based on a pragmatic approach in which it is important to solve practical problems, and its basic criterion is effectiveness in making changes that are to lead to an increase in the effectiveness of the organization's functioning (Sułkowski, 2016). Following this approach, the authors chose Mixed Methods Research. Choosing Mixed Methods Research means running a research process using both qualitative and quantitative approaches or methods in a single research program (Creswell, 2009, p. 4). The research was conducted in 2021 and 2022, using a survey and in-depth interview. The questionnaire was created using the online survey tool (Lime Survey), contained 8 questions, and was sent by e-mail to management responsible for risk management in enterprises in the automotive industry. Next, an in-depth interview was conducted with an auditor in the automotive industry. Thanks to this, it was possible to supplement, clarify and summarize the information obtained thanks to the questionnaires. During the interview, the auditor indicated the main problems that relate to the automotive industry. They have been described in the section on the results of the research.

In the case of the survey, the research group consisted of management staff in companies from the automotive industry (55 people in total). Questionnaires were sent to 400 companies from the automotive industry. Ultimately, 55 people with 28 companies took part in the study. Therefore, the information presented in the article does not constitute conclusions for the entire automotive industry. Therefore, further research in this area is recommended. The respondents specified the number of employees in the company in which they currently work, detailed data can be found in the Chart 1.

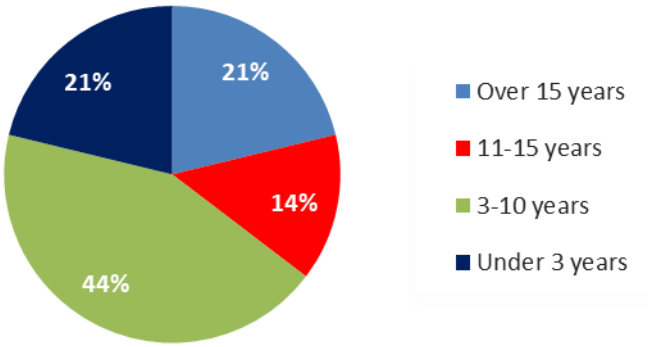
Chart 1: The number of employees by size of the surveyed companies



Source: Own studies based on response by management.

It was also necessary to specify the length of employment in each enterprise, detailed data can be found in the Chart 2. The questions included in the questionnaire focused on the organization of the risk management system, identification techniques and then an attempt to indicate examples of risks that, according to the management, occur in their companies. In the first question, the respondents answered whether the risk management system exists in their enterprises, 100% of the respondents answered in the affirmative. In another question related to documenting the risk management system - 100% of respondents indicated that in their companies the risk is documented. Then 100% of respondents indicated that their enterprises use IT systems that support the risk management process.

Chart 2: The length of employment



Source: Own studies based on response by management.

The next step was to identify techniques that are used in the risk identification process. From the catalog of available techniques, the respondents chose: brainstorming, checklist, FMEA failure cause and effect analysis, SWOT analysis, or Ishikawa diagram. As was established during the research, the choice of identification techniques is also associated with the requirements of contractors. There are specific guidelines on how to use certain techniques. This is related to the widely known certificates and quality standards that must be complied with. Therefore, the selection of the appropriate identification technique very often results from the unified regulations in force in the automotive industry. In addition, the research was asked to identify key risks that occur in certain areas in their enterprises. The answers (Table 1) that were most often indicated by the respondents are presented below. The information presented below comes from the questionnaires and the in-depth interview.

Table 1: Risks identified by the management

Type of risk	Risks identified by the management
Finance risks	- Increase in energy costs - Increase in the cost of raw materials - Increase in disposal costs - Increase in wages - Changes in exchange rates - Problems with financial liquidity - Increase in loan installments due to changes in interest rates
Operational risks	- Lack of raw materials - Unstable situation on the raw materials market - Delays in the supply chain - Failure to meet the requirements for special characteristics for products - Inappropriate management of human resources - Lack of availability of materials for production - Shortages of semiconductor components on the market - The emergence of new competition with high-performance modern technology
IT risks	- Hacking attacks on servers - Phishing - Data loss - Failure of servers - Incorrect selection of the software
Counterparty risks	- Lack of timely payments by contractors - The insolvency of the contractor - The risk related to excessive inventory in connection with dynamically changing orders - Delays in deliveries and defaults
Market risks	- Market failure in a pandemic and / or economic situation - Breakdown of the market due to an unfavorable political situation - Floating exchange rates
Legal risks	- Adaptation of processes to the requirements related to the broadly understood environmental protection context - Dynamic change of legal requirements - The emergence of new regulations that require additional measures to be taken at various levels of the organization's operations - Unclear tax interpretations
Compliance risks	- Uncontrolled emission of dust and gas pollutants to the environment - Failure to adapt the processes to legal requirements in the field of environmental protection
Human risks	- Loss of employees due to economic emigration - Lack of properly specialized staff - High level of employee turnover - Lack of motivation among employees - Poaching of employees by competing companies
Risks of abuse	- Hostile actions by dismissed workers - Loss of know-how - Employee fraud
Risks of reputational damage	- False reviews on the Internet - Environmental failure due to the fault of the company - Many complaints - Delays in production or delivery, caused by the fault of the company

Source: Own studies based on response by management.

Then, managers determined the degree of probability of a given risk occurrence and its effect, using a 5-point scale (where 1 meant the probability / consequences of the occurrence of a given risk as low, and 5 as very high, almost certain). On this basis, a risk map was developed (Figure 1), which shows the materiality thresholds for individual risks (green is low risk, yellow is medium, and red is high risk).

Figure 1: Map of the risk

	Probability of risk occurence				
Consequences of risk occurence	5	10	15	20	25 **B**
	4	8 **A**	12 **E**	16	20 **C, F**
	3	6 **D, J**	9	12 **H, I**	15
	2	4 **G**	6	8	10
	1	2	3	4	5

A – financial risks; B – operational risks; C – IT risks; D – counterparty risks; E – market risks; F – legal risks; G – compliance risks; H – human risks; I – risks of abuse; J – risks of reputational damage

Source: Own studies based on response by management.

Moreover, the respondents had to choose an appropriate numerical value for each risk, determining its significance (1- definitely irrelevant, 4 - undecided, 7 - definitely significant). In addition, research confirms that data from Likert scales becomes significantly less accurate when the number of scale points drops below five or above seven (Johns, 2010).

The last question concerned the identification of 3 groups of risks, the level of which (according to the respondents) will increase in the next 3 years. The respondents predicted that the increase in the level would mainly concern the following risks: operational (96%), legal (89%) and IT (70%). In the long-term perspective, it was also indicated that the problem would be the lack of adequately qualified staff, which may be related to the generation gap, the lack of experienced and educated specialists and "employee poaching". As mentioned, the research carried out and the results obtained only partially reflect the situation related to risk management in enterprises in the automotive industry in Poland. The authors realize that the research group is not representative enough to draw general conclusions about the risk management system in the automotive industry. The research results are only intended to help identify problems that may arise in other enterprises.

Results

The risk management systems are becoming an integral part of the functioning of any organization, regardless of the sector or industry. The ability to properly identify and analyze risk becomes one of the main challenges faced by management. The main purpose of the research was to identify the most important sources of industry risk - companies operating in the automotive industry in Poland, as well as to assess the impact of the identified types of risk on their activities. The information presented below comes from the questionnaires and the in-depth interview. During the research, it was found that companies operating in the automotive industry face problems in the field of risk management in several main areas.

The first is operational risk (related to improper performance of tasks, non-delivery, or delay in delivering products, but also improper organization of tasks and errors in communication). In this area, the following threats have been identified, related to supply chain: it has been emphasized several times that one of the main problems that significantly affect the functioning of enterprises is the collapse of the supply chain. This is related to problems and disruptions in Chinese ports, which are responsible for transporting the necessary raw materials. In turn, air transport is unprofitable and rail transport too dangerous. At present, this situation has significantly worsened. The war in Ukraine and sanctions connected with it led to a complete break in supply chains. Many car manufacturers had suppliers in Russia and Ukraine. As a result, in March 2022, production was once again suspended in many companies, e.g., the VW group or MAN. It is largely caused by delivery problems with electrical harnesses. It is estimated that the six largest suppliers of these products come from Ukraine. It should also be remembered that Ukraine was a leading supplier of

of neon gas used in the production of semiconductors.

Another example of operational risk identified by the respondents is a lack of integrated circuits (semiconductors), due to the high demand in the market, not only in the automotive industry. The pandemic has resulted in the transition of many companies to remote or hybrid work. Education has also turned into a remote form. Only the demand around communication causes the lack of semiconductors on the market. It should also be remembered that integrated circuits are present practically everywhere, e.g., in household appliances. The symbol of such an event in the fourth quarter of 2021 were car parks filled with cars, which customers could not pick up due to the lack of several switches. There were also situations where customers picked up cars with plugs instead of a radio. However, within a few months it was possible to have the missing radio installed in the service center.

The next example of operational risk is raw materials increase in prices and lack of certain raw materials (including steel), which results in production interruptions and problems with meeting deadlines. Moreover 2021 was a significant year in the steel market. Apart from the shortage, the prices of steel and metals also increased significantly. More and more often we are dealing with speculation on the raw material market and making raw material supplies dependent on the purchase of other products. Currently, the waiting time for some metals is up to 80 weeks. Many companies suspend deliveries because there is not enough plastic or cardboard to secure the goods.

The last example of operational risk are shortages of personnel: A lot of employees in production companies came from Ukraine. Some of them returned home to fight, others are bringing their families to Poland. Staff shortages are also felt in transport, where many drivers were from Ukraine.

The second is the legal risk related to changes in external legal regulations that affect the functioning of the enterprise. In this area, the following issues were highlighted are legal regulations in the field of broadly understood environmental and climate protection: One of the key changes is the "Fit for 55" regulation, proposed in July 2021 by the European Commission and assumes a reduction of carbon dioxide by 55% by 2030. The strict emission standards may increase the prices of new cars by up to several percent. Electric or hybrid cars will be promoted, while one should be aware that the Polish automotive industry is based mainly on the construction of internal combustion cars. To this should be added the lack of charging infrastructure for electric vehicles. The new EU proposal started a global discussion on radical changes, also in the automotive industry.

The last is the IT risk is related to improperly managed IT systems in terms of data security, access, configuration, etc. In this matter, it was noted that in this area the key is risk related to data loss and theft. New methods should be emphasized here of economic espionage using the latest technologies such as Big Data or AI. There are more and more break-ins to IT systems of companies through industrial automation devices. These also take place during remote machine repairs or more and more common teleconferences. Therefore, large automotive concerns require TR1 suppliers to have a certified information security system by ISO 27001 and TISAX. Moreover, is it necessary to design and maintain all systems in terms of information security. Designing car control systems and systems resistant to hostile takeovers. As it is only a matter of time before autonomous cars are put into service, there will be problems with taking over control. One can imagine the hijacking of such a car and ransom demand. Last year, such an experiment was successful with a regular game controller.

It was also established that the problem in the long term may be staffing problems. In addition to the difficult situation related to Ukrainian workers, there are also demographic changes and a different perception of work by the generation that will only now make their debut on the market. To this must be added the negative impact of the pandemic on the functioning of the human brain and mental performance.

Conclusions

The risk management issues discussed in the article may be a kind of guidance for management in the automotive industry. One of the key challenges is the ability to adapt to changing conditions, but also the ongoing monitoring of processes taking place in the enterprise so that it is possible to identify possible threats. In addition, enterprises should get used to operating in a changed reality and effectively react to emerging threats. In addition, experts note that difficulties may arise with the appropriate qualifications, experience, and the sourcing of valued specialists by competing companies. The respondents indicated that the relationships and diversification of suppliers should be a key element so that the key supplier does not shut down the entire production line. It was also noted that a global discussion is currently taking place, concerning the use of alternative energy sources, broadly understood environmental protection and the search and implementation of innovative solutions. As you know, all these elements have an impact on the automotive industry. The conclusions from the research and the opinions presented by the authors have one more important feature - they can be considered not only in

Polish conditions, but also in other countries. The presented threats and risks are global; therefore, they can be identified internationally. Conclusions resulting from this study - on the one hand, constitute the basis for in-depth research on the sources and impact of individual types of risk on the activities of companies in the industry, and on the other hand - provide tips that can be used in the practice of managing them.

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