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RISK MANAGEMENT IN INDUSTRY

Summary: The article focuses on the definition of business risks in industry, which are associated with risk management. The first part describes the types of risk, the second part summarizes the process of risk management with respect to the current ISO standard and the final parts of the article summarizes the options that can deal with risk in the company.

Keywords: risk, industry, company

ZARZĄDZANIE RYZYKIEM W PRZEMYŚLE

Streszczenie: Artykuł koncentruje się na definicji ryzyka biznesowych w przemyśle, które są związane z zarządzaniem ryzykiem. W pierwszej części opisano rodzaje ryzyk, w drugiej podsumowano proces zarządzania ryzykiem w odniesieniu do aktualnej normy ISO. W końcowej części artykułu podsumowano strategie, które mogą ograniczyć wpływ ryzyk na działalność przedsiębiorstwa produkcyjnego.

Słowa kluczowe: ryzyko, przemysł, firma

1. Introduction

At present, risk management is becoming increasingly important, especially due to the often changing economic conditions. Adverse market developments and risks affecting society can result in high financial losses and, in extreme cases, the end of the business. It is for this reason that it is essential that risks are not underestimated, and that is why risk management should be built into every company. Despite the fact that on the one hand the company is exposed to risks, on the other hand they have opportunities which, if they can use them properly, it helps them to compete or they can gain a better position on the market.

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2. Business and management risks

We define risk management as a process in which the management try to prevent the impact of existing and future risks, proposes appropriate solutions to help reduce the impact of adverse effects. On the other hand, provides the opportunity to take advantage of positive effects. [1]

Effect of business risk:

- positive - they have a motivating effect on the business entity and are assumed to be successful if there is a profit,
- negative - they show worse results than originally expected and we associate them with the subsequent occurrence of a loss.

The classification of business risks can be diverse. The breakdown of business risk by business area is as follows:

- production risks - limited quality or number of resources needed to ensure the production process,
- technical risks - development of new product technologies,
- economic risks - increase in the price of energy and raw materials, foreign trade activities, inflation, doing business in another state,
- business (market) risks - product offer on the market, competition, customer evaluation, growth of the business itself,
- financial risks - possibilities of drawing investment loans, movement of interest on the market, accounting errors,
- political risks - influenced by the political situation in the country (economic policy of the government),
- media risks - the influence of the media on the organization's position in the market,
- information risks - related to the process of development of communication and information technologies. [2]

3. Risk management

Risk management is a tool to identify potential risks that lead to a reduction in the level of safety. The company's risk management is a means of analyzing, evaluating and classifying the risks incurred, from which priorities are further set and procedures for measures to reduce them are created. We understand risk management as a constant systematic approach to working with risk and uncertainty, in which we use various tools, methods and techniques. It forms part of the management, aimed at ensuring the safety and stability of the system, process, project or business activity as such. [3]

The risk management of the organization is used to evaluate and manage the uncertainty of the organization in the form of compliance of business strategy and people, processes, technology. In order for risk management to be implemented in the organization, it is necessary to respect the principles:

- full support of top management,
- the application across the enterprise.

- familiarization of all human resources in the organization with the implementation of risk management,
- creating effective tools to monitor risk. [5]

The role of risk management in an organization consists of protecting and enhancing its assets. These goals are achieved by risk management supporting the goals of the organization as follows:

- improves decision-making, planning and prioritization based on a comprehensive and structured understanding of business activities, project opportunities and threats;
- contributes to a more efficient use and allocation of capital and resources within the company,
- reduces volatility in non-key areas of business,
- protects and strengthens the assets and reputation of the company,
- develops and supports the knowledge of employees and the knowledge base of the company,
- optimizes operational performance. [5]

Risk management can be implemented in the company in the form of various standards and norms. Each organization individually selects these standards and norms according to their needs, or based on the requirements of its partners. The international standard that provides general procedures for risk management is ISO 31000: 2018 Risk management. The Slovak version of the standard is derived from it - STN ISO 31000: 2019 Risk management - instructions. The standard is designed for specific categories in the sector, it is therefore useful to any individuals or groups without discrimination statute - private, public and social. [7]

In this standard lists are the stages of the risk management process shown in Fig. 1.

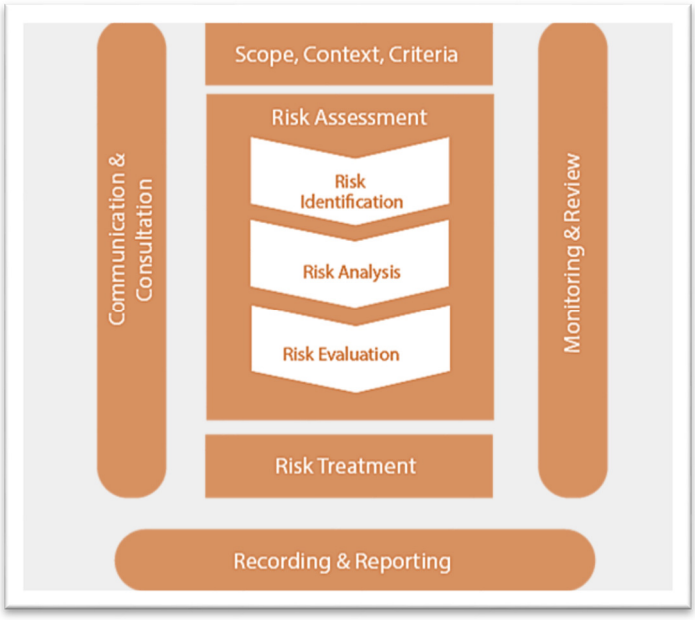

Figure 1. Process of risk management (Modified from: [8])

The stages of the risk management process are consecutive activities and outputs and ultimately represent a cycle. This process is an integral part of business management, and must be adapted to current conditions in practice and corporate culture. [4]

Identified risks are recorded in the risk database or in the risk checklist. It is not recommended to use this database and checklist as the only means of risk identification.

The risk database is a collection of organized information from projects implemented in the past. A formal risk information file is a suitable data retention system for use in other projects.

The risk checklist is a list of areas where problems are expected. The problems are specific to a particular company. The list is designed specifically for a particular type of business or industry. We do not take identification as a one-time matter, but as an activity that we carry out periodically or continuously, depending on the purpose. We use monitoring systems or early warning systems for this. On the basis of selected indicators, which monitor the development of selected risks at regular intervals and in case of exceeding the set limits, they draw attention to the increased values of the risk of the responsible person..

In conclusion, I would like to emphasize that risk identification is the most important and time-consuming stage in the risk management process. It requires previous experience, systematicity, the ability to anticipate even such phenomena that we do not expect yet and we have no information about them, teamwork and a priority for the future. [3]

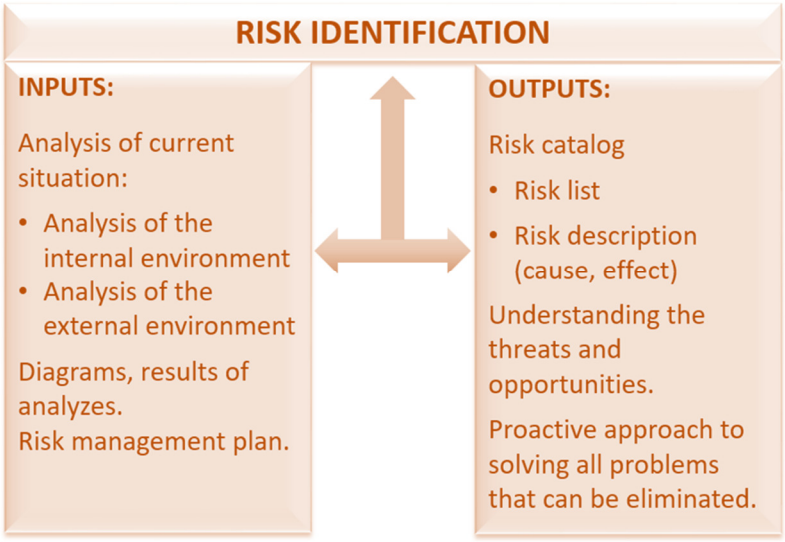

Figure 2. Identification risk (Modified from: [4])

4. Treatment of risks

Risk prevention is one of the risk management techniques. In general, it is possible to prevent risks in the planning phase of operation, for example. by rejecting the dangerous place and then selecting a new one.
Loss reduction is the best technique for dealing with any risk. In this case, steps are taken to reduce the frequency or likelihood of loss by building a safety awareness at all levels of management and using the expertise of external agencies. The costs incurred at this stage bring significant savings in the future with potential losses in the future.
At this stage it is necessary to proceed to the following measures:

- security education and training
- provision of all machines and equipment
- safe design and construction
- safety and protective equipment for employees
- introduction of safe working methods
- prevention or elimination of bad conditions
- fire protection
- pollution control and environmental protection
- maintaining hygiene and health standards
- installation of fire protection system, fire hydrants and fixed fire extinguishing equipment
- installation of hazardous gas leakage alarm devices
- motivating employees to have accident-free work records

Including losses or self-insurance. In this case, the company can take acceptable risks to themselves either ineffective insurance against such risks or the process of self-insurance. In the case of self-insurance, a fund is created, to which any losses are credited. Self-insurance is needed when risks can be maintained and insurance costs are high. Small losses occurring at a high frequency can be left through self-insurance. In large companies, it may be more advantageous not to take out insurance, especially when the cost of insurance is higher than the possible losses caused by accidental risks. Each company has a certain level of tolerance for accepting the maximum loss depending on its cash flow, profitability, liquidity, resources and assets to eliminate losses.
The following five factors must be taken into account by the company when including the risk:

- probability of occurrence of an event causing a loss
- extent of tolerated loss
- possible loss in critical situations
- available remedies
- a fundamental deviation of the actual consequences compared to the estimate

Transfer of losses or insurance. Higher losses occurring at a lower frequency can be transferred or insured. In that case, the company comes into a relationship with the insurance company, which compensates it for any damages incurred. Insurance can be arranged in the form of damages or on the basis of restoration and repair of damaged equipment. The company itself should not be the victim in case of risk.

Some of the risk transfer methods are the following:

- contractually transfer risk-related activities to an external company,
- transfer responsibility for the consequences of the risk through a relief clause in the contract.

The following factors need to be kept in mind when transferring the risk to the insurer:

- insurable risk affecting the business
- frequency of risk occurrence
- types of risk
- compliance with laws such as the law on compensation to employees, the law on motor vehicles and the like.

In any case, the optimal strategy is a combination of self-insurance and risk transfer to insurance companies. [9]

5. Development of an automated diagnostic and inspection system based on artificial intelligence designed to eliminate risks in industrial companies

At present, we can see a decline in industrial production in almost all the countries affected by the viral disease, which has grown to a pandemic. Significantly reduced customer demand for manufactured products, disrupted the logistics chain of supplies and labor force was attacked by a virus, which is scarce in many sectors, which caused a drop in production. Such but similar situations may recur in the future. Therefore, it is necessary to pay great attention to all critical factors in production - man, machine, energy, etc.

It is appropriate to create a model for crisis assessment of the threat to an industrial enterprise in various crisis situations (viral disease, natural disasters, energy crisis, etc.) in order to quickly and effectively quantify the impact on the enterprise itself (economic and other indicators) and offer alternative solutions.

At present with the development of artificial intelligence methods, camera systems and automation means, it is appropriate to design a concept of diagnostic and inspection automated system based on rope robots, which will use camera systems to monitor material flow in production but also justified migration of people within the production system.

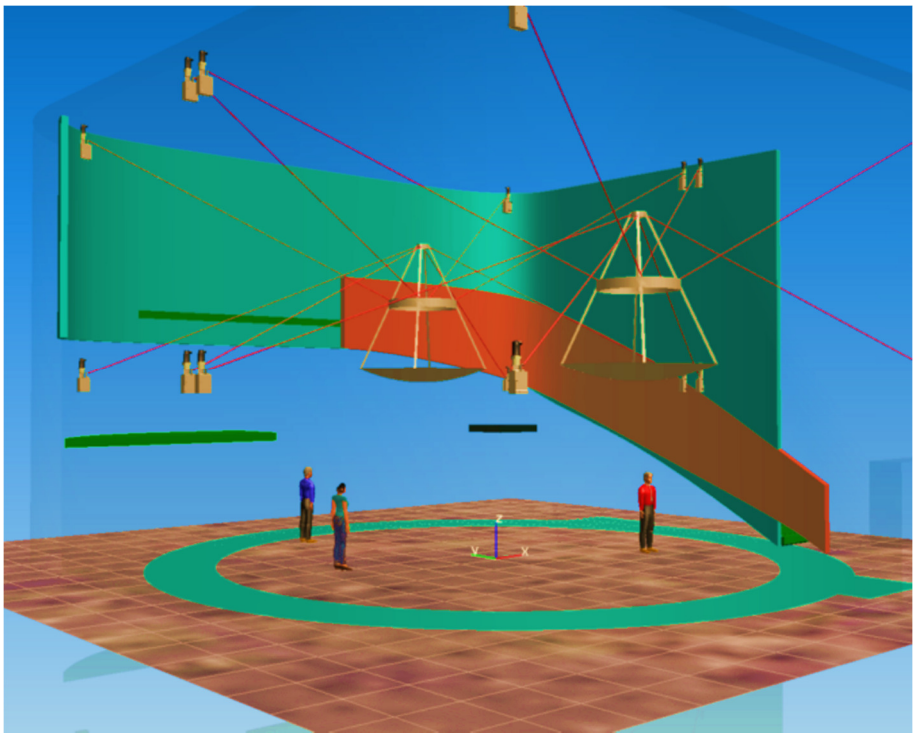

Figure 3. Draft of the cable robot (Modified from: [10])

6. Conclusion

If a company wants to create or maintain its reputation in the market, generate profits and increase its value, then it needs to constantly adapt to customer requirements and changes in the ongoing business environment. As a result of such rapid changes in the internal and external environment, the company is exposed to many risks that need to be timely estimates and take appropriate measures to prevent the onset or reduce them to an accepted level. That's why the importance of risk management for the organization continues to grow.

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