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IMPLEMENTATION OF RISK MANAGEMENT IN SMALL CONSTRUCTION COMPANIES IN CZECHIA

Abstract:

No matter the field, projects are always accompanied by many risks. It is necessary to manage them in order to prevent complications. The paper deals with the implementation of risk management in Czechia, especially focusing on small to medium size companies. The paper is divided into 3 parts: In the first part we define what risk management and risks are and why it is important to manage them. This part also includes various methods of risk analysis and their advantages/disadvantages. In the second part we define risks in the field of construction, separate the risks into several categories and name a few examples. In the third part we talk about the construction field in Czechia, the specifics, and the implementation of risk management and other management systems. The paper ends with a conclusion, where examples of what could improve the situation are provided.

Keywords:

risk, risk management, risk analysis, construction, Czechia, small and medium companies

JEL Classification: L74, D24

Introduction

Risks are present in every project, no matter the field, and can both negatively and positively affect them. While it is possible to minimize some risks, it is not possible to avoid them completely. Risks can disrupt the workflow or affect the projects negatively in other ways, which leads to decrease in profit for the company and longer finish time for the project. Therefore it is best to be prepared and take all the possible risks into account, monitor them and mitigate them. To ensure success in this sector, a risk manager and successful implementation of risk management within the company is needed. All the methods of risk management can improve the situation and prevent unnecessary complications.

1. Risk Management

Before we take a look at the risk management in construction, we have to define what risk or risk management even is. Risk management is defined as a identification and prioritization of risks, followed by application of resources to minimize the risks and have them under control. “Risk is a natural component of the project. It is necessary to recognize it, reduce the possible or acceptable level and it is required to handle the remaining risk“ (Rosenau, 2007). Risk management has 2 parts – a negative one in the form of risks, and a positive one in the form of opportunities. Risks come from many sources, some of which are predictable, and some of which are not predictable and uncertain.

Risk management consists of 4 parts:

- identifying the threats
- assessing the vulnerability of specific assets
- determining and evaluating the risks
- taking control and monitoring the risks

Ultimately our goal is to decrease the risks as much as possible (in the case of risks which we can affect), while increasing the opportunities.

Figure 1: Risk management process



Source: <https://www.nnbinvestigation.com/risk-management>

1.1 Risk analysis methods

There are many methods to conduct risk analysis. Some of the more notable ones include Delphi, brainstorming, Crawford slips, SWOT analysis, identification of roots of problems, individual discussion, learning from past projects, lists, and diagrams.

Delphi – process used to arrive at a group opinion or decision by surveying panel of experts. Those experts respond to several rounds of questionnaires and the responses are aggregated and shared with the group. Some of the main advantages are unbiased answers and the ease of execution, while the main disadvantage is the time it takes.

Brainstorming – team discussion based on materials prepared in advance. Teamwork is the main advantage here, while the disadvantage, like with the Delphi method, is the time it takes. It can be also ineffective if poorly executed, and can be very biased.

Crawford slips – a group of experts individually answers each question with the condition that the same answer can not be repeated. Each answer is written down on a piece of paper. The whole process ends with a discussion. This method is easy, fast and produces large quantity of options and answers. The main disadvantage is that there is no teamwork.

Identification of roots of problems – the method focuses on identification of the root of the problem and its cause. The main focus is on eliminating the cause of the problem, not the problem itself. It can eliminate a lot of problems when problems executed, but it is ineffective against external influences and can generate secondary, hard to identify risks.

Individual discussion – easy to execute, but is usually very biased.

Learning from past projects – main advantage is that its learning from experience projects and solutions, so it works most of the time. Individual dialogue can be added. The main disadvantage is that it takes very long time to research and apply to our current project, and some things can be very different if the project is old.

Lists – fill-in forms, many variants. Main advantage is ease of execution and good for defining priorities. The disadvantage is that it needs materials from other methods as a base.

Diagrams – diagrams such as "fish bone", networks charts etc. They are easy to understand and a good base for discussion. Disadvantage is that they may take long time to prepare.

2. Risk Management in Construction

„With increasing market competition, increasing technology and increasing rate of change, risk management is gaining significance and importance“ (Burke, 2013). While risk management applies to many fields, not many of them are as risky as construction. Risk management plan for a construction project has to be developed in the early stages of planning, as risks can delay the project or immensely further the costs. “The current aim is the attempt to introduce the quality project risk management according to the principles of risk engineering in relation to the risk management of the organization and use of recommended methods for risk analysis“ (Lacko, 2009).

In order to create a successful risk management plan for a construction project, we need to know what risks there are, their specifics and their causes. The causes are divided into predictable and controllable causes - e.g. size, extent and complexity of the project, the qualifications and experience of workers, awareness of common goals, the experience of the project manager, deadlines, specification of tasks, errors of labour intensity estimation, personal influences, motivation, project scopes supremacy, contractual relationships, financial stability etc., and uncontrollable causes - e.g. political conditions, macroeconomic situation, legislation, social climate, culture, technological advances, resource availability, religious influences, consumers behaviour and mentality.“ (Šajdlerová, Konečný, 2008).

We can split the risks into several categories:

- safety risks
- financial risks
- legal risks
- project risks
- environmental risks

2.1 Safety Risks

There are a lot of safety risks in construction, which is indicated by accident fatality being much higher compared to other fields – almost double the average amount. Some of the most notable examples of safety risks in construction include working at height (where access and mobility restrictions further the risks even more), moving objects (due to construction site being an ever-changing environment with a lot of vehicles, heavy equipment, transportation of material etc.), slips, trips and falls (uneven terrain, buildings at various stages of completion, scaffolding...), noise (a lot of excessive and loud noise can lead to long term hearing problems and can serve as a distraction, causing accidents). Not only do the safety risks lead to injuries of workers, but they further stall the project as we need to find a replacement.

2.2 Financial Risks

Without sufficient funds, construction can not proceed, as you will not be able to pay for workers or rent equipment. That is why its very important to identify the risks endangering our cash flow – cost increase of materials, rising prices of equipment, market competition etc. Construction projects typically deal with financial risks in 3 major categories – labor (where overcharges are a major threat to our cash flow), equipment (where we have to consider whether to rent, or invest by buying the equipment), and changes/misunderstandings in project assignments (which can lead to drastic changes and a lot of wasted funds).

2.3 Legal Risks

When planning our construction project, we have to account for legal risks. There are main constraints, such as regulations, code violations, contract disputes with the contracting authorities or suppliers/contractors.

2.4 Project Risks

These risks are often overlooked, but they are a stepping stone for the whole risk management. Projects risks are universal project management risks stemming from underestimating the whole risk management, or from poor management skills. Examples include missing deadlines and falling behind schedule, poor employee management and understaffing, poor management of resources and more.

2.5 Environmental Risks

Those are risks we can account for, but we can not control them. They include anything from a mild storm, to floods and other natural disasters. Not only do they delay the construction by quite a bit, but they can even set it back, as the effects can be devastating. Notable examples are land degradation (especially in the case of big projects, where changing a huge landscape can lead to land erosion and landslides), or even water and air pollution (which can lead to more safety risks and affect the environment outside of the construction too

– high concentration of dust in the air, etc.).

3. Construction companies in Czechia

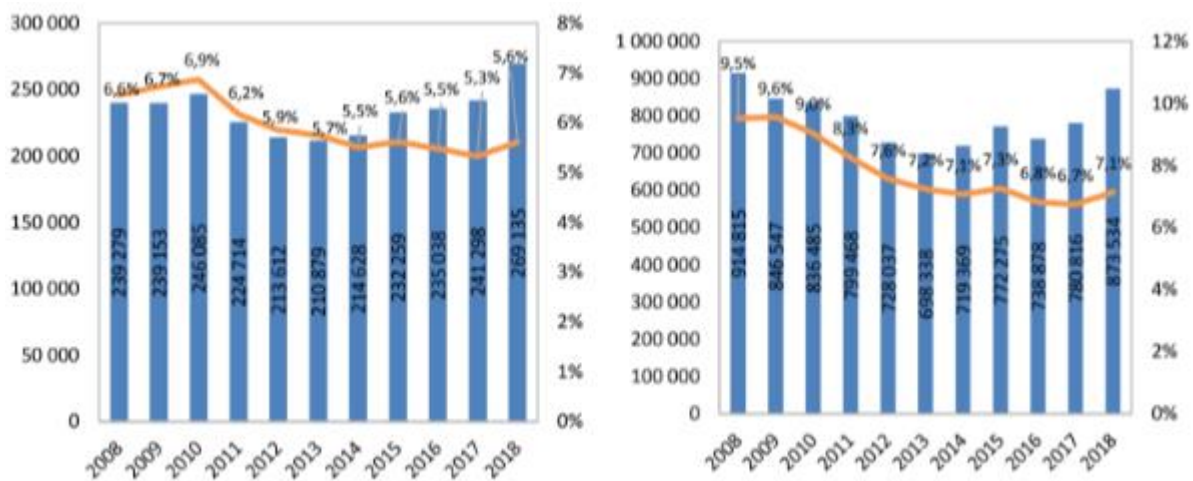
Construction industry in Czechia makes up 6% of the gross domestic product. Construction projects can range from small, even one person projects, to huge projects requiring tens or hundreds of workers working on projects that will take years to finish.

According to European Commission, companies can be split into 4 categories based on the number of employees they have:

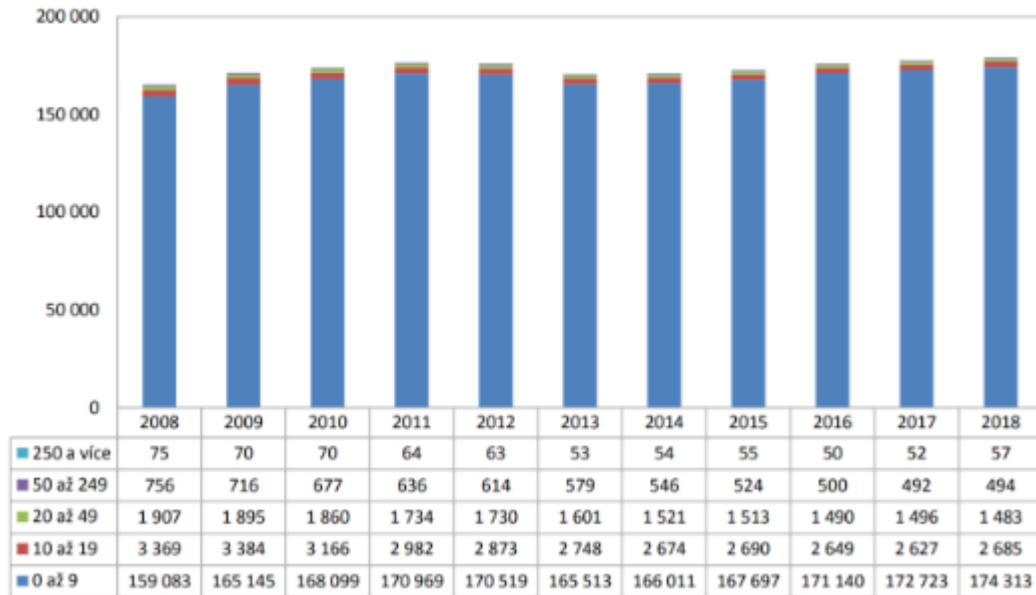
- Big companies, with 250+ employees
- Medium companies, with 50 to 250 employees
- Small companies, with 10 to 50 employees
- Micro companies, with under 10 employees

Even though many projects can only be fulfilled by those big companies, in Czechia 97% of all construction projects are fulfilled by micro companies, with 9 employees being the average.

Figure 2 and 3: GDP (millions, CZK) and the % share of construction industry [left], Production (millions, CZK) and the % share of construction industry [right]



Source: ČSÚ data, MPO calculations; units with 0 or more employees

Figure 4: Number of units split into categories based on number of employees

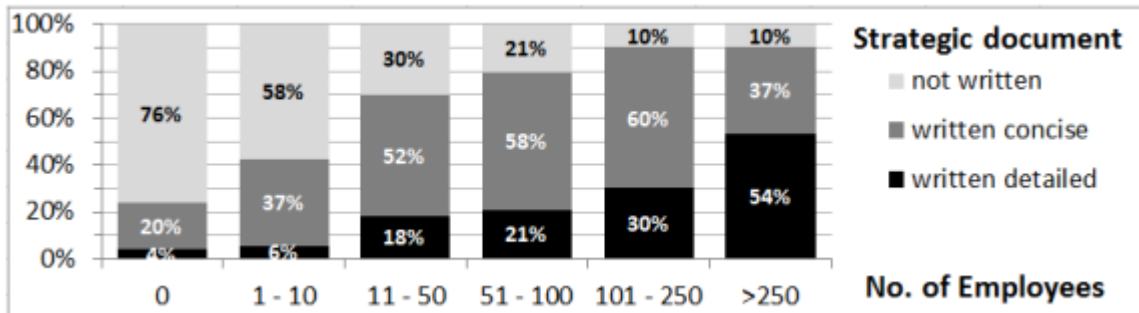
Source: ČSÚ data, MPO calculations, units with 0 or more employees

3.1 Adoption of risk management and other management systems

Big companies in Czechia have managed to successfully adopt risk management, amongst other management systems, but same can not be said about medium and smaller companies. According to surveys from 2014, not only were not management systems successfully implemented in a lot of the cases, but in most cases they were completely absent, including risk management. Due to lack of risk managers and adoption of the system amongst medium and smaller companies, they face disadvantages during negotiation of contractual conditions regarding construction projects. Often times small companies do not have the potential or power to negotiate fair conditions and therefore minimize the risks related to construction projects. To balance out the conditions and make them more fair, its important to create reserves (unit prices and budgetary costs). According to the survey, overwhelming majority of medium and smaller companies in Czechia do not have any positions for risk managers.

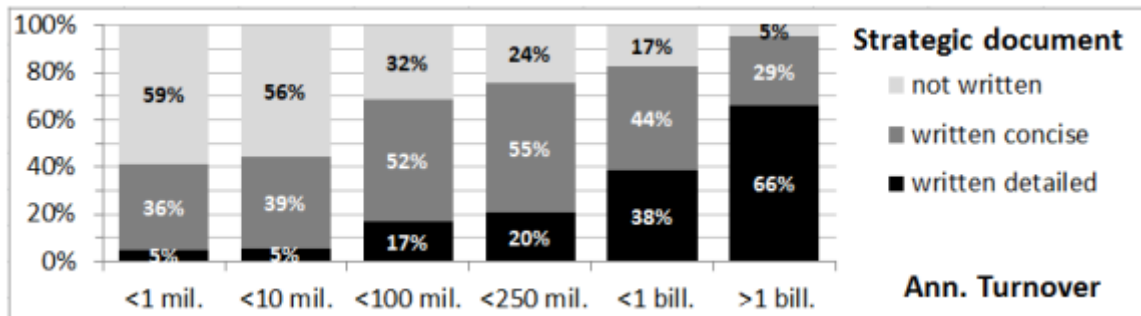
Brainstorming seems to be the most effective method for risk assessment according to our survey, though the outcome does not seem positive overall – risk management does not progress systematically or effectively in regard to follow-up activity. Brainstorming often times leads to absence of relevant measures and creation of reserves. According to the survey, small companies are aware of the need for risk prevention and that they are lacking and ineffective in regards to risk management – most of them only seem to take care of the risks after problems start appearing as a consequence of ongoing events.

Figure 5: Size of companies by number of employees and form of primary strategic document



Source: NAVRÁTILOVÁ, D., PAWLICZEK, P. *Strategic Planning in Enterprises of Different Size – an Empirical Study (2014)*

Figure 6: Size of companies by average annual turnover and form of primary strategic document



Source: NAVRÁTILOVÁ, D., PAWLICZEK, P. *Strategic Planning in Enterprises of Different Size – an Empirical Study (2014)*

Conclusion

While awareness of importance of risk management and other management systems in Czechia is wide-spread, the lack of human and economical resources slows down the advancement in this sector. What would improve the situation for medium and smaller companies is appointment of a responsible manager, who would find out what risks affect the specific company, and try to prevent or eliminate the risks in advance. Another important thing is to plan what our fixed costs, profit margin, ancillary budgetary costs will be. We also need to prepare reserves for all the possible risks which can not be fully eliminated. In regards to the reserves, it would also be a good idea to put the risks in contracts, so that risk margins will proportionally affect the offer price. Doing all of this should help companies with easier orientation in specific cases and situations and be better prepared to deal with consequences.

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