FAILURE OF PROJECTS IN CZECH INDUSTRIAL COMPANIES

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Abstract

A large portion of industrial projects fail in one or more parameters of project goals. Therefore, authors of the paper have focused on identifying the failure roots through a survey performed among industrial companies from automotive, foundry & metallurgy and aerospace area located in the Czech Republic. Based on the analysis of projects structure, the paper has defined which parameter most critically affect projects success or unsuccess in the specific sample of companies of all sizes. The paper focuses on and discusses in detail the projects deadline, budget and quality as key parameters which exceeding causes the most often project failures.

Keywords: Project management, failure, time, quality, costs, industry, metallurgy, survey

1. INTRODUCTION

Each project is unique and requires original attitude to reach a goal and expectations. An important input is that every project has to be specific, measurable, achievable, realistic and time framed (SMART). The important fact is that project has to have defined start and the end. Based on that, project can´t be managed as a routine process [1]. Due to uniqueness of projects, they can be split into four main categories based on [2]:

- *time* - short term, middle term, long term,
- *size* - small, medium, large,
- *complexity* - simple, complex,
- *resources* - internal, external, mixed.

It was mentioned that every project is different but there are three basic parameters common for every single project - time, quality and costs. The general requirement is to minimize costs and time of the project and on the other hand to maximize the quality of final product of the project. The quality of the project is evaluated by customer, so it is important to collect all necessary inputs before project start and to find an agreement with the customer about the quality requirement. Also, time frame of the project needs to be defined before the beginning and agreed by all stakeholders. Costs are formed by human resources, material resources and financial resources and it is always a challenge for a project manager to set up the financial plan precisely. All these details have to be prepared before the project start in so called pre-investment phase. [3,4]

The project phase is focused on the project execution. It attempts to meet all requirements and to manage the project effectively until the product is transferred to its final customer. Each project has its project manager who manages and controls all project milestones as well as conditions and monitors how project continuously achieves planned goals and terms [5]

However, it is very hard to meet all key parameters of project - time, quality, costs as every project is unique, it has specific resource requirements and depends on many conditions both internal and external ones which affect achieving goals of the project. [6].

Current literature researches describe that a lot of companies accept customer requirements even if they know that project parameters are not reachable just to get the contract and do their business [7]. Another research presents that project companies accept the project and then provide many excuses during the project phase to justify any project failure. Nevertheless, both approaches are short-sighted because the company reputation and future contracts are threatened [8].

2. METHODOLOGY OF THE RESEARCH

The focus of this paper is to answer several research questions aiming to three key project parameters - time, quality and costs in conditions of foundries & metallurgy, automotive and aerospace companies in the Czech Republic.

2.1. Data Collection

The whole research was performed in 2020 and data were collected in foundries & metallurgy, automotive and aerospace industries in the Czech Republic. Totally 83 questionnaires were sent to the companies via e-mail and 71 replies were received so the return rate of questionnaires was 85,5 %. The structure of sample based on the company size was following:

- 11 small sized companies (<50 employees),
- 36 medium sized companies (51-250 employees¨),
- 24 large sized companies (250< employees).

Based on the industrial area, the sample was followed:

- 23 foundries & metallurgy,
- 35 automotive industries,
- 13 aerospace industries.

Totally 568 projects were performed in 2020 by the whole sample based on data provided. The focus of the questionnaire was to identify root cause of projects failure and to see how much percentage of projects are successful or unsuccessful.

The following research questions were formulated:

1. What was the project structure based on their complexity?
2. How many % of projects were unsuccessful from the whole volume of projects?
3. How many % of projects were unsuccessful due to time parameter?

3.1. What were the main failure reasons?

4. How many % of projects were unsuccessful due to costs parameter?

4.1. What were the main failure reasons?

5. How many percent of projects were unsuccessful due to quality parameter?

5.1. What were the main failure reasons?

3. RESULTS

Following part represents the data analysis based on the data received from the questionnaires.

3.1. Projects Structure

In the first phase all the questionnaires were sorted out into the categories based on the project's lifetime and how complex they are. Based on this, it was possible to define what types of projects were solved in the foundries & metallurgy, automotive and aerospace industries.

The projects were divided into three categories according to their time intensity:

- short-term projects (<1month),
- medium-term projects (1-3 months),
- long-term projects (3 months <).

The data showed that 244 projects were short-term, 182 were medium-term projects and 142 projects lasted more than 3 months.

The complexity of the projects was defined as follows:

- Simple projects - projects with low risk and scope - containing up to 10 milestones, 1 critical path and all actions are well known
- Complex projects - projects that contain more than 10 milestones, more critical paths and not all actions are known.

The following figure shows the projects according to their difficulty and time.

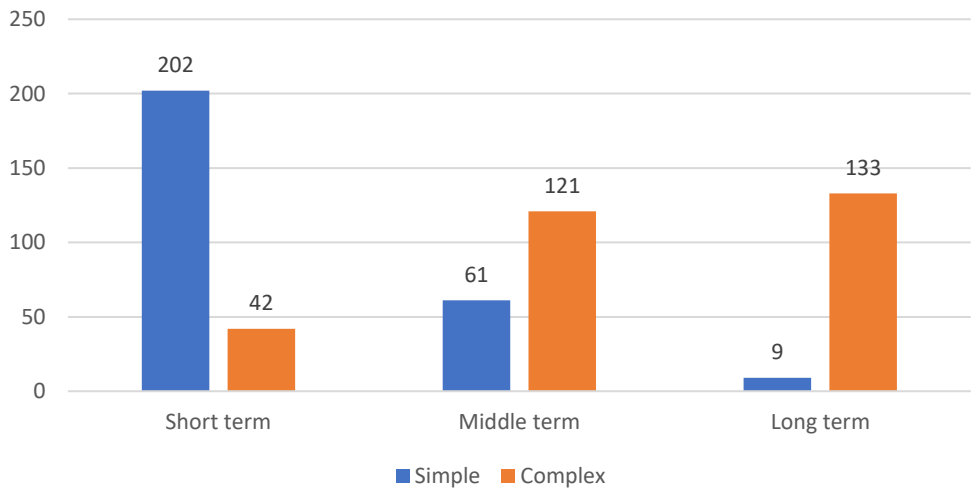

Figure 1 Structure of the projects

Figure 1 shows that short-term projects have significantly higher proportion of simple projects (202; 83 %) than complex projects (42; 17 %). In the case of medium-term projects, there is already a higher proportion of complex projects (121; 66 %) compared to simple ones (61; 34 %). The last category with long-term projects contains the majority of complex projects (133; 94 %), simple projects represent only (9; 6 %) small sample of projects.

3.2. Projects Key Parameters

In the following section, the ratio of successful to unsuccessful projects in the surveyed companies was determined, including key parameters of failure.

Figure 2 simply shows the proportion of successful and unsuccessful projects in the companies surveyed. From the total number of 568 projects, 460 (81 %) were successfully completed in terms of meeting all criteria:

time, price and quality of the project. The remaining 108 (19 %) projects were evaluated as unsuccessful. Unsuccessful projects are projects for which at least one of the key parameters - time, price or quality - has not been met.

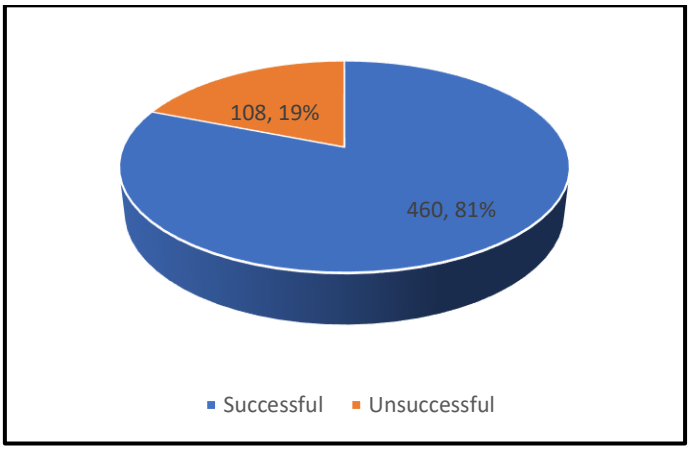

Figure 2 Successful and unsuccessful projects

Figure 3 shows the distribution of failed projects according to key project parameters.

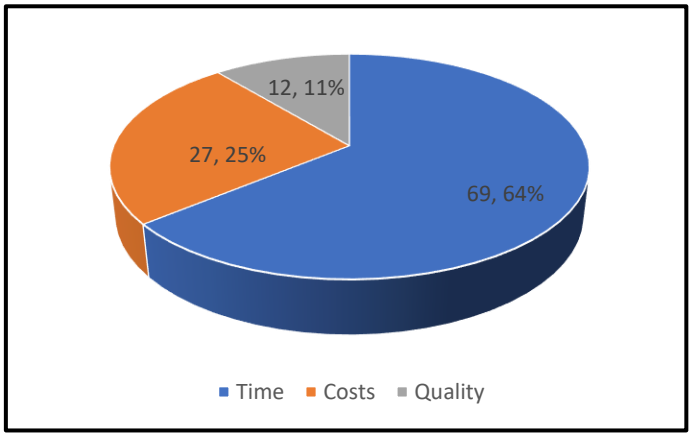

Figure 3 Failure reasons from the key project parameters

4. DISCUSSION AND CONCLUSION

In the survey all projects were divided according to their duration and complexity. The main goal was to identify the main causes of project failure in terms of non-compliance with key parameters such as time, quality and cost (price). These are described below, including the reasons for exceeding the parameter originally defined. The research questions were answered as follows:

1. *What was the project structure based on their complexity?*

   The projects structure of our sample was following - 272 simple projects and 296 complex projects. It is important to mention that complexity of projects grow together with time severity of projects.

2. *How many % of projects were unsuccessful from the whole volume of projects?*

   There were 19 % of unsuccessful projects so totally 108 projects out of 568. Despite the fact that every fifth project is unsuccessfull, we consider this as a little success during the COVID-19 circumstances.

3. *How many % of projects were unsuccessful due to time parameter?*

   From the last picture it is clear, that most of the projects failed due to the time parameter 64 % (69 projects out of 108).

3.1. What were the main failure reasons?

The main reason of this failure in 2020 was caused by covid-19 situation as factories struggled with lack of human resources to ensure all important tasks. Also supply chain was affected by covid-19 so suppliers were not able to deliver required material on time. However, the covid-19 is not the only reason of time failure. Incorrect planning was also one of the key reasons of time failure.

4. How many % of projects were unsuccessful due to costs parameter?

The second largest part of the failure belongs to the cost parameter with the value of 25 % (27 projects out of 108).

4.1. What were the main failure reasons?

The biggest driver is the difference between planned costs of incoming material or service and final costs.

5. How many % of projects were unsuccessful due to quality parameter?

Smallest portion of the failure belongs to the quality with the value of 11 % (12 projects out of 108).

5.1. What were the main failure reasons?

We found that there are two main reasons of failure and these are the lack of qualified human resource and manufacturing processes.

We can say that the sample and data of our research are relatively huge and reliable. From the above is quite clear what portion represents each key project parameter in regard to the failure. Main key drivers of each parameter are also summarized. All the research questions were successfully answered.

Future research can be aimed to the other countries, so we have a data to be compared.

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