

THE ATTRIBUTES OF RISK SOURCES AND DRIVERS IN CONSTRUCTION PROJECTS

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Abstract

The paper describes sources of risk in construction projects in Croatia. The introductory part points out very shortly the main aspects of changes in transition period. The middle part of the paper describes possible classifications of risk sources and the main sources of internal and external risks in construction projects, including a report of risk drivers. The most frequent consequences of risks, such as cost and time overruns, are discussed. The end part of the paper analyzes the results of risk source research that has been performed in Croatia since 1994. The differences between main project participants attitudes regarding risk sources and responses are expressed.

Keywords: transition countries, construction project, risk, time overrun, cost overrun.

1 Introduction

The abundance, interaction and unpredictability of significant factors suggest a continuous insecurity in the management of construction projects. Due to this, risk and uncertainty analysis is always used for predicting main project goals in the early phases of construction projects [9]. During the last 20 years, various research [3,5,8,9] has considered risk management in projects. However, there is an insufficient amount of research in the field of risk management, so many risk sources and drivers, so as scenarios, are not known. Consequently, deviations in original cost and time goals are very frequent. Such trends cause a decrease in investment, and weaken all parties in business.

2 Transition period

Transition process involves the global change of particular country political and economic attributes. In such situations every business system is exposed to concurrent and interactive effects from political and economic changes, among which maybe the most influential is the change in ownership - privatization. The whole economy, so as construction sector, is passing through very difficult period. In Croatia construction was also affected by war conditions and economic recession. Because of the after war rebuilding process after 1996, the overall situation was improved, and construction is characterized by significant share in GDP.

3 Risk in construction projects in countries in transition

Many authors who have been studying risk believe that qualitative analysis is most essential [8]. According to them information about risk source is the first important step. Construction risk researches in Croatia [4,5,6] were based on basic breakdown approach that was suggested in 1994 (shown in Table 1).

Table 1. Breakdown of risk sources

EXTERNAL SOURCES –outside the project		INTERNAL SOURCES – inside the project	
LEGISLATIVE	1 - local regulations	CONTRACT	1 – unrealistic deadline
	2 – permits and agreements		2 - unrealistic price
	3 – law changes		3 – other contract provisions
	4 – standards	TECH. DOCUM.	1 – delay
POLITICAL	1 – policy changes		2 – incompleteness
	2 – elections		3 – imprecision
	3 – war		4 .- new solutions as a consequence of 2 and 3
	4 – existing agreements	ORGANIZATION	1 – bad management
ECONOMICAL	1 – economic regulations		2 – bad organization of works
	2 – price rises	TECHNOLOGY	1 – poorly chosen tech. solutions
	3 – exchange rates		2 – obsolete technology
	4 – financing conditions	RESOURCES	1 – shortage of workers
	5 – economic policy changes		2 – shortage of machinery
SOCIAL	1 – education, culture		3 – machinery breakdowns
	2 – seasonal work		4 – late delivery of materials
	3 – strike	HUMAN FACTOR	1 – productivity
	4 – human fluctuation		2 – sick leaves
NATURAL	1 – climate		3 – motivation
	2 – soil		4 - errors and omissions
	3 – subterranean waters		
	4 – natural disasters		

The most serious consequences of risk occurred were identified as cost and time overruns. These events are among the worst outcomes which contribute in project failure scenario. Figure 1 shows the results of a review of 107 construction projects realized in the transition period between 1991-2001. in Croatia [2].

It has been shown that time and price overruns are very frequent, as in some international reports. Indeed there are just a few construction projects finished on time, according to initial schedule. The amount of contract price overrun is less than time overrun. The reason for this may be client orientation to fixed price contracts or better cost control than time control in projects.

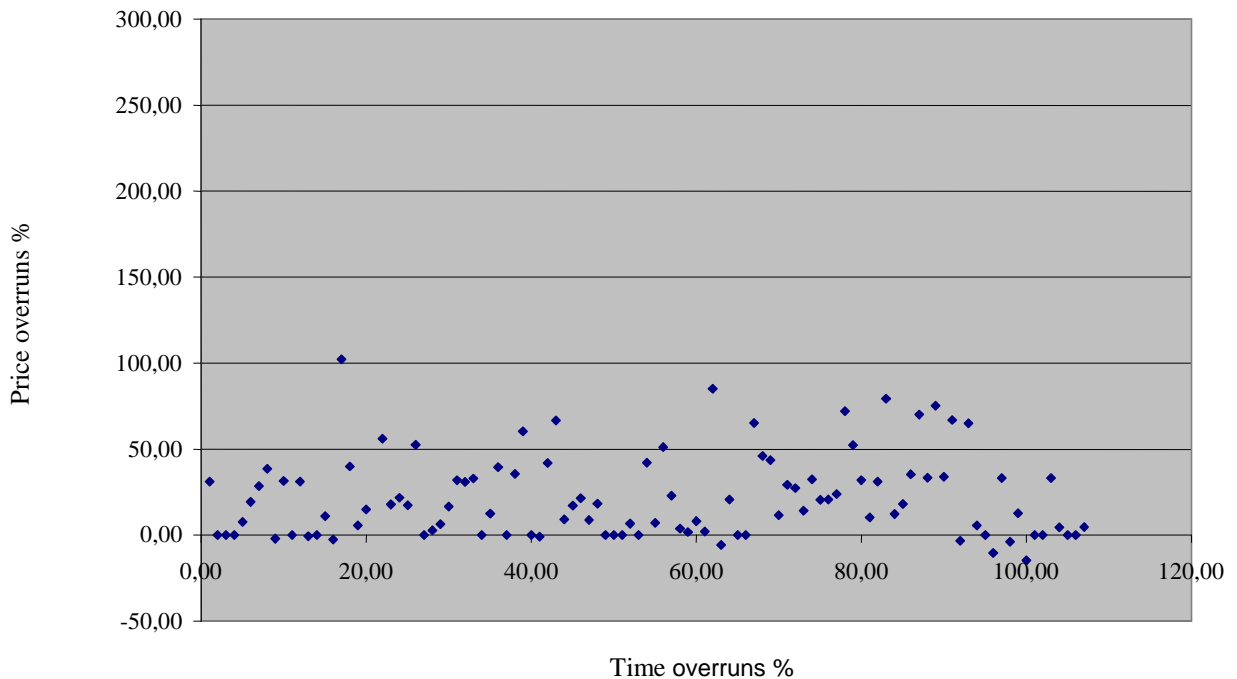


Figure 1. Price and time overruns-107 construction projects in Croatia 1991-2001.

4 Results of the risk source research

The research of risks in construction projects in Croatia is an ongoing action. The results up to today show that there is a conformable influence of internal and external sources of risk, but at the same time the value of more than 50% of internal risks indicates an increased responsibility of management. From the aspect of project management, the internal risk sources are more important, because they can be managed by project team. It is obvious that very often projects are started without completed preparation processes, analyses and adequate support. The detailed structure on risk sources shows that in a construction project time and contract price overruns are very much generally influenced by several almost uniformly formed internal risk source groups. These are namely design, contract, organization, technology and resources. Moreover, the analysis of randomly selected 107 Croatian construction projects, shows that in period 1991-2001. there were four dominant internal risk sources: technical documentation with 57% share, contracting with 17%, organization and technology with 14% and resources with 9% (Figure 2).

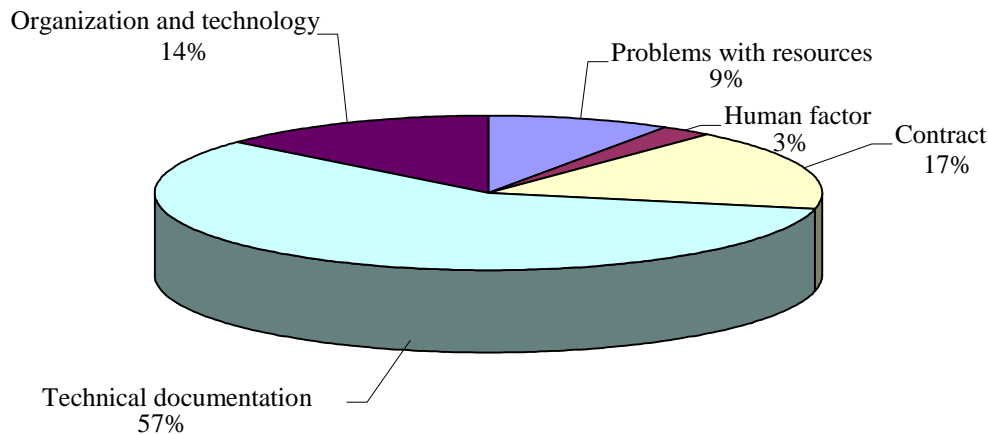


Figure 2. Internal risks source breakdown – 1991-2001, 107 construction projects in Croatia

5 The project participant attitude regarding risk

The research [10] has shown that project participant attitudes regarding risk analysis have been changed a little. There is no longer a strong tendency to carry on the analysis by aid of modern techniques. On the contrary in countries in transition, risk in construction projects is often ignored, or is dealt with by simply adding 5% to the total price of the estimates.

Some “progress” has been made in relation to transferred risks. Generally it means an approach of putting as many risks on a business partner as it is possible. The contracting process is oriented in that way. The clients create the policy of risk transferring to contractors by taking advantage of market situations where projects are in a shortage. But according to risk management theory risks should be allocated to the party that is able to control and influence the sources, so simple transferring risk to other parties is not proper solution. However, contractors are under pressure to win tendering processes, and during the contracting process they usually accept unrealistic goals. But in many situations the participant relationships are under the pressure of different claims very soon from project start-up. The process of claiming damages in court is very long and uncertain, so it is often better for solving the problem through settlement. The contractors of course know this, so they take advantage of that, and a circle in which no party is satisfied is created. The only solution should be participant joint strategy for risk management and reduction, so as proper strategy about sharing different risks.

Our research [10] has also shown a very strong correlation between project participant disagreement and risk drivers. There is a general tendency for participants to declare various random events or perhaps some external unknown factors as a risk drivers. However, the structure of risks sources [5, 10], shows that internal sources of risk make

share of more than 50% in total. This fact indicates that many drivers are connected to project participants and executives.

6 Conclusion

Risk management is perhaps the most important part of project management [1]. In construction projects which last long, changes are unavoidable, data is stochastic, and risk is part of the norm. This manner of doing business creates the possibility for numerous deviations from initial project goals. The most frequent consequences of risk occurrence are overruns in originally planned cost and time. The construction industry in countries in transition suffers very much from such events [4,5,10]. There is much responsibility on the company heads and project managers in dealing with risk and its consequences. From that point, the people that are responsible have to accept methods of managing risk in projects, because by applying those methods there are better chances for achievement of initial goals.

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