

RISKS IN THE HUNGARIAN CONSTRUCTION INDUSTRY; INTERPRETATIONS, EVALUATIONS AND PATTERNS¹

Daniel Robert Szabo
Széchenyi István University, Hungary
szabodr@sze.hu

Norbert Kovács
Széchenyi István University, Hungary
kovacsn@sze.hu

Ádám Páthy
Széchenyi István University, Hungary
pathya@rkk.hu

Péter Tóth
Széchenyi István University, Hungary
ptoth@sze.hu

Abstract:

In the construction industry, risk assessment and evaluation of actors vary by their size, market position and their roles in the production process. Actors detect exogenous and endogenous processes differently; dissimilarities can be found in the observation, response, speed, in the forethought and the degree and ability of having influence on the processes, in leader or follower behaviors. Even in this heterogeneity, certain regularities and correspondences can be observed, drawing new patterns. We suppose that the explanation and treatment of risks mainly differ by the size and market position of the actors. Based on this hypothesis, we were interested in risk explanations and risk management experience of Hungarian construction companies, in order to identify different patterns, typologies, risk management techniques and learning processes on this field. We used interviews as a method for qualitative research. We focused on contractors, but to get more precise consequences, we also made interviews with different actors of construction projects such as lenders, insurers and investors. The relations of theoretical knowledge and observed phenomena are also discussed in the study which investigates exclusively into the results of the survey.

Keywords: construction industry, risk management, risk assessment, risk typology

¹ This study was supported by the GOP-1.1.1-11-2013-0111 project "R&D in Risk Evaluation Services of the Construction Industry" funded by the Hungarian State and the European Union.

1. METHODOLOGY

As a part of a long-run research project, the interviews were made to help the development of the later, widely distributed online questionnaire, in order to get more precise information on the Hungarian construction industry. Focusing on the group of contractors, using interviews as a method for a qualitative research, we were interested in the opinions and reflections on the other relevant players of industry such as lenders, insurers and investors. We took into account that size differences of the companies on the contractors' side may lead to major differences in their strategies and opinions about the processes and characteristics of the industry. When it comes to major investments, only prime contractors and/or general contractors can carry these projects out, while smaller firms tend to be found only in small investments or on the bottom of the subcontractor chain. These differences in the roles also have an overall impact on the perception of the industry.

1.1. Materials and methods

As a method for our research, the structured interview was chosen. The questionnaires contained a general section, studying the basic characteristics of the sample, and a specific section, focusing on risks and their managements. Our aim was to show the particularities of the actors' participations in construction investments. The interviewees were asked to draw their definition of risks and risk management, based on their own experiences. The questioned groups of risk factors were collected from the previous scientific literature. The interviews were carried out between May and September in 2013. Most of the interviews were recorded in July. This part of the survey was completed with a 28 successful interviews. As shown in the 1. Table, more than the half of these interviews were made with contractors. The other category covers different experts of the industry, including a market-leading real estate company dealing with distribution of real estates, having a deeper insight into the processes and trends of the industry. Where it was possible or there was a position related to the examined topic we made the interviews with these employees, if such position wasn't existed we contacted the CEOs.

Table 1: Orientation and size of the surveyed contractors

Segment	The average value of work undertaken (thousand Euros)			Total
	>30000	30000-300000	30000-3000000	
Structural architecture	8	2		10
Civil engineering		1	3	4
Both			1	1
Total	8	3	4	15

Source: based on the data of construction companies participating in the interview.

The majority of interviewees are seated in Győr and in its agglomeration or in Budapest. On one hand, it is proven by the fact, that these geographic areas have a relevant construction output. On the other hand, a significant increase can be observed in Győr-Moson-Sopron County, while as a contrast, in Budapest and Pest county, high production values are associated with mild downturn, which was proven as an interesting background process, concerning the answers in the interviews. We did not want to make a representative sample out of these interviewees as this phase of the research was undertaken in order to establish a solid scientific ground for the e-surey.

In the interviews, 9 respondents of the 15 contractors were concerned in civil engineering projects, five businesses represented firms from structural architecture, and one firm is present both segments. Nine companies considered themselves a general contractor. Among them, there were some that are also prime contractors for large projects. The rest of the respondents belonged to the group of smaller subcontractors. The value of projects managed in general showed a high standard deviation at the surveyed contractors, with a spread from 30000 up the multi-million Euros. The three investors covered actors like market-based investors, municipalities, and financial institutions, managing high value EU investments.

During the analysis of the interviews, we kept three main aspects in mind. *In the first aspect*, we picked phenomena, regularities and generic elements that were common in the analyzed material. *In the second aspect*, our aim was to collect and aggregate the interviewees by the presented phenomena and regularities, based on the characteristics of the participants, such as size or role in

the productive chain. According to our realization, many characteristics of the industry (such as competitive behavior, strategic interactions, pricing, etc.) corresponds mostly to the mechanisms of the dominant firm – competitive fringe model (about the model, see more without the claim of completeness by Stigler, 1965; Carlton – Perloff, 2004; Fisher – McGowan – Greenwood, 1983). Of course, in reality alterations of the basic model appear.

1.2. Aspects of the research

Due to their advantage in gathering information, possessed and applied technologies, management skills, and market-mover abilities and connections, dominant firms - or a group of them - are in price-determining position, while a large number of firms of the competitive fringe are price-takers. The dominant player(s), determining the prices, can take advantage of their position, forging ahead and developing their technologies, if they are thinking long term. The dominance of dominant companies can be a result of coordination between lower costs, better quality and distinctive products / services and strategic points. The lower cost can be traced back to stronger managements (X-efficiency), efficient technologies, earlier market access and powerful networks. The dominance of these firms comes forward or characterized by their price-leading roles and a higher market share, based on their revenues. *Our third aspect* was to reveal relations among the participants (during this part of the research investors, contractors, banks as financiers, insurers as underwriters were interviewed). Here, among others, came to the fore the following practices: externalizing problems onto the other players, emphasizing other players' problems, interpreting own positions and their relations to other actors' in term of the subject.

2. RISK MANAGEMENT IN THE CONSTRUCTION INDUSTRY

2.1. Risk assessment in the planning stages

Among the participant companies, fundamental differences can be found in the number and sorts of possibilities, appliances and opinion of the importance of risk assessment in the planning stage. The first fault line can be perceived along the constraints of applications/tenders. For many respondents, it's not possible to carry out risk assessments, or they just don't have the resources, competence or authority for these activities and tasks. According to their opinions, in several cases, the unstable regulatory environment is a major obstacle to risk planning. Generally, at companies where tenders have a highlighted role, the legal side of this type of planning is being promoted increasingly. The relative weight of the planning and construction phase of the risk assessment and management practices appear somewhat contrary, too. The bottom line of one of the approaches is that processes, that couldn't have been assessed - or the company couldn't insured against to - will be out of their hand in the later phases. In contrast, according to others' opinions, opportunities for carrying out risk assessments in the planning stages are very limited, so they are rather a proactive practice in the implementation phase.

2.2. The relationship between the size of the company and risk taking behaviors

Before the discussion of the participant's risk taking behaviors, it's important to emphasize, that the size of companies and their position in the construction chain can show a strong correlation. In addition to the required production equipments, major construction firms, typically present in most parts of the construction chain, also have possession of adequate human resources, networks, and furthermore, they have had accumulated a significant presence in a wide range of knowledge capital. They have a significantly greater awareness in the management of risks, particularly in the case of technical risks. They can professionally and deliberately respond to the risky fields and explored risks. On the basis of interviews, the employment or assignment of the staff, dealing with legal issues and problems, can be particularly important, because the co-operation of legal representatives and / or claim groups can be of key importance for legal proceedings, brought by or against the company.

Human resources and risk management

Examining the human resources, it can be observed, that the degree of diversification can be increased by the involvement in other areas in addition to the main operating profile (like special staff dealing specifically with financial investments). Certain risks - eg. exchange rate risks – thereby can be

reduced substantially. In the content of human resources, larger companies have more freedom in decision-making – whether we're talking about a project or the whole company – so, through the appropriate vehicles, proper formation² of these structures can contribute to the management of risks. In a matrix organization structure, each project leader, from the foundation of the whole process, can call for assistance from the representative of different specialties, significantly reducing industry-specific problems and related plan-fact differences.

Risk management at smaller companies

Regarding the management of risks, there are essentially two possibilities present in the minds of the interviewees, used side by side. One of these is the pricing of risks, or the enforcement of risks in their pricing, which results in the payment of the expected value of the damages by the investors. The other option is to pass these risks to the subcontractors. It should be also noted, that the social capital of larger companies can be risk-reducing, which can have a positive influence on them in the different phases, from the selection of partners and the contraction of assignments to the follow-up stages of the projects.

Typically, smaller companies are only able to perform less complex assignments, that don't require specialized knowledge and / or technology. The majority of these companies, in the absence of specialized knowledge, corresponding assets and human capital, can only work as a necessity or forced businesses and able to undertake specialized or auxiliary assignments. Obviously, they won't occupy general contractor positions in projects. In addition to the less favorable conditions, it's more difficult for them to raise external sources and to collect claims or debts, and they have to fulfill their liabilities on time. In managing liquidity, especially in the absence of major financial knowledge and contacts, they have hard work to do. In many cases, they are working with outdated equipments; failures are frequent by these, compromising the timely completion of the tasks. It's also not a negligible factor that smaller businesses, in terms of material price have less bargaining power, due to the lower volume of their purchases and they are less able to pass unfavorable changes in the prices on their clients.

Smaller companies have insurances only on smaller scales and on fewer scopes, so they are observing and managing their risks instead³. It's also worth mentioning, that during the planning processes⁴, smaller companies typically tend to see their specific, technical risks, rather than economic risks. One main reason for this is that in terms of human resources, smaller companies tend to shift considerably towards professionals of directly specific activities and from this perspective we can often encounter disadvantageous rates. One of the potential results can be the observance of the purely technical risks, without an adequate perception of the other economic or indirect risks. In addition to the above, it can be also a significant risk factor for smaller businesses, whether they expand their organization appropriately, correspondently to their potential growth as a company. Failing that, they may face the undertaking of a new set of risks.

Operating as a small company in the construction industry

Typically operating at the end of the production / business chain, smaller enterprises are more likely to be delayed in the payments or will receive reduced fees. Therefore, their activity is accompanied by greater financial risk. On the lower levels of the chain, in many cases, delayed, or no payments are made, in cases when the client does not, or not fully pays to the contractor. Companies in the higher levels of the chain can plan better, since they are closer to the procurer; costs incurred at them are more likely to be compensated at the right time and degree.

² The ability a group of risk management or risk manager to analyze and manage the risks of multiple projects a can have a great importance.

³ There are usually financial reasons behind this, but the fact that the companies in question operate without them, assumes, that they are willing to accept the orders under such conditions. The retention of their treatment does not necessarily mean risk management, since in many cases the respondents do not know their own subjective and objective risks either, so in these cases there're extra risks, which is kind of equal to "gambling" in the world risk management.

⁴ The planning activity in this case is defined broadly, including the organization of work processes as well.

It's determinative for smaller construction firms, that their number on the market is high, they're using the same, or nearly the same production technology, their products are close or perfect substitutes for each other, and for these reasons, they're price takers. In most cases, pricing of their risks would result in non-competitive offers by them. According to the literature, their situation corresponds to the main characteristics of the distinguished phenomenon of price-taking firms, using the same technology, and struggling with information asymmetry. In addition to the price-taking behavior, they are also taking tasks and schedules correspondently. They typically undertake too many projects, overwork, to ensure a continued realization of revenue, and such phenomena, compared with the undertaking of an ideal amount of tasks, will result in taking additional risks.

The use of black labor is a common phenomenon by them; it also involves additional risks to the long-term operation. It's also not negligible, that contrary to the terms and conditions, it's usually required the contractors to do additional tasks, to get their work accept or taken over by the client. These phenomena can be very harmful for smaller companies in terms of their operation, because carrying out additional tasks can tie up serious amount of resources that can not be operated for other ongoing projects.

Risks and protective measures

Risky behavior is not a bad decision, or a result of a series of decisions, it's a fact for smaller-sized businesses. Their role in the project can significantly determine the size, amount and nature of the risks they run. It's also important, that in a significant portion of cases, they're not protecting themselves adequately, even against identified risks. Hindered by the lack of resources, both directly and indirectly, they aren't able to take protective measures, services or mechanisms appropriately. It is also not negligible, that generally businesses can defend themselves against endogenous risks, concerning the role of the business in the project, are usually less efficient.

Based on the categories of risk-taking and gambling behaviors, we can get to the conclusion, that company size and the place and role in the subcontractor chain can fundamentally determine the belonging of the actors to the categories above. Larger companies with more market power and freedom of choice, which can be partially derived from the former, and to some extent, they are more able to enforce the expected damage in their prices. Smaller companies, as a result of their lower lobbying capacity and sweeps and the existence of limitations in the recognition of their risks, they are less able to put across the expected value of the damage suffered, which can have a significant effect on their operation in the long run.

2.3. Risk management processes and risk managers in the construction industry⁵

Even large construction firms have no separate risk management organization or organizational unit. Duties of the person managing projects includes the exploration, analysis and launch of necessary risk mitigation measures, and in many case the management of these, too. Risk management is usually a part of project management, taking place parallel with the time and cost planning of the projects. At players, working in a matrix organization, the project manager will organize a support team, consists of specialists from different functional areas and will conduct, monitor the project and manage the risks with their help. The project manager is a person who is absolutely concerned in the successfully accomplishment of the project because that is the key factor of the next mandate (About the risk management of construction companies see more without the claim of completeness by Banaitiene and Banaitis; 2012; Zhi, 1995; Jannadi – Almishari, 2003; Kangari, 1988; and Zou – Zhang – Wang, 1985).

The role of the project manager and Risk Management Systems

A project manager assigned, authorized and responsible for managing risks can be a very striking phenomenon. He is in focus, with a good amount of burden and responsibility on his or her shoulders. This can be the risk of a risk management, without a professional base of methodology, protocols, processes and process controlled system. By well-operating, dominant players of the industry, project managers are supported by the top management and the shareholders, particularly in the introduction and implementation of risk mitigation measures. It can be also observed, that even the really big

⁵ About the risk management of construction companies see more without the claim of completeness by Banaitiene, N. and Banaitis, A. [2012], Zhi, H. [1995], Jannadi, O. – Almishari, S. [2003], Kangari, R. [1988], and Zou, P. X.W. –Zhang, G. – Wang, J. Y. [1985]

players have no regulated Risk Management System (RMS), a separate organization, or organizational unit operating these system. Risk management, operating as a part of the controlling and / or the project management processes is not insulated. It is typically treated as a drag and a necessary part of the administrative tasks. Some interviewees even do not believe that a staff or organization, not being the merits of the certain project, could do anything to risk management.

Claims regarding risk management

Investor-contractor battles, related to additional works, emerging in the after-care phases, the increase of bank guarantee requirements and unconditional bank guarantee institution and their drawdown, brought to life claim groups at large enterprises, consisting of qualified legal professionals, managing subsequent claims. Claims are important subdivisions of risk management, in several cases identified by the respondents simply as risk management. Activities related to the management of risks will be held together by the management.

Competitive edge companies

In the case of small, competitive edge companies, where economic activities are mainly limited to accounting, without controlled process systems, employees or departments who deal with the management of risks. Issues and phenomena related to the topic would converge at owner and or managing director, who would make ex post decisions, based on his or her experience and social capital.

3. OPPORTUNITIES FOR THE DEVELOPMENT OF RISK MANAGEMENT FOR VARIOUS COMPANIES

Some of the interviewed, big companies, the *developers* believe that processes, tasks, currently operated and the applied principles at them are not entirely satisfactory, they should be improved, although they're not too bad. The biggest problem is believed to be the project manager, left to his own resources, unbacked, forced to make his own, individual decisions. In the past and today, there have been continuous efforts and pulses in this direction, especially by the owners. The interests of the management may differ, they would withhold when something goes wrong because they're afraid of loosing their jobs. According to the expressed opinions, the area should be developed. The result of these developments should be a simple, digestible, methodology that sums up, provides guidance and can be taught and introduced easily. Training courses, related to the deployment, as well as the development of software, suitable for quantified information have a major role. It's s essential for the management to require a consistent implementation and application of the processes and tasks. According to key opinions, searching for exogenous solution, the education of these above should start at schools; an emphasis should be placed on strengthening the economic approach in the architect and civil engineer training.

The *longing* participants believe that the settlement of legal and economic regulators of the sector would bring to a solution, with normal prices, transparent and predictable regulatory environment and control. As a result of these, everyone could deal with the profession. As a longing and exogenous, but as a less passive solution, or as a part of, professional forums for sharing experiences and institutionalized solutions for these were also present among the answers. Smaller actors don't plan to undertake developments because according to them, these would be beyond their means. The pressure of survival enhances the weight of short-term planning; these actors, adopting follower strategies, applying asymmetric information and exposed to the strong adaptation of constraints, are encouraged to look out for solutions, coming from outside. Small firms hope that the solution will be embodied in the improvement of external conditions.

REFERENCE LIST

1. Banaitiene, N. - Banaitis, A. (2012): Risk Management in Construction Projects. Retrieved from: <http://www.intechopen.com/download/get/type/pdfs/id/38973>
2. Carlton, D.W. – Perloff, J., M. (2004): *Modern Industrial Organization*. Pearson/Addison Wesley, 4th Edition.
3. Fisher, F.M. - McGowan, J. J. – Greenwood, J.E. (1983): *Folded, Spindled, and Mutilated: Economic Analysis and U.S. v. IBM*. Cambridge, MIT Press.
4. Zhi, H. (1995): Risk management for overseas construction projects, *International Journal of Project Management*, 13(4), 231–237.
5. Jannadi, O. – Almishari, S. (2003): Risk assessment in construction. *ASCE Journal of Construction Engineering and Management*, 129(5), 492-500.
6. Kangari, R. (1988) Construction risk management. *Civil Engineering Systems*, 5, 114-120.
7. Stigler, G. (1965): The Dominant Firm and the Inverted Umbrella, *Journal of Law and Economics*, (8), 167-172.
8. Zou, P. X.W. –Zhang, G. – Wang, J. Y. (1985): Identifying Key Risks in Construction Projects: Life Cycle and Stakeholder Perspectives. Retrieved from: http://prres.net/Papers/Zou_risks_in_construction_projects.pdf