TECHNIKA TRANSPORTU SZYNOWEGO

Maciej DUTKIEWICZ

THE RISK OF THE CONSTRUCTION PROCESS IN TURBULENT ENVIRONMENT

Abstract

The paper emphasizes important role of the dynamics of changes and turbulent nature of the construction process, which enforces the current knowledge to adapt to the current economic situation. Under such conditions, the application of knowledge in practical action should be supported by a analitical model and detailed case studies to generate the most appropriate diagnosis.

1. INTRODUCTION

In order to eliminate the risk that may arise in the construction process taking the decision should be based on considerations deeply analyzed, taking into account the variability of the phenomena in the environment.

The construction is carried out in conditions of strong turbulence, which is linked to external and internal factors creating these conditions. The external factors may include changing legal and tax regulations, volatile market, which is reflected in the changing demand for goods and services, with its source in the changing financial possibilities of consumer, still emerging market of competition with changing supply of goods and services, fluctuations of currency exchange rates and interest rates, the rapid development of technology, political events, shortening of products life, new technologies supporting the economy. Investors are becoming more demanding in terms of quality item of their order, performance and reliability, such as various types of installations included in the project. The dynamics of the projects and the associated turbulence also results from changes in the organization of work and production. The use of automation, both in design (CAD - Computer Aided Designing), in preparation of production (CAP - Computer Aided Planning and CAO - Computer Aided Organization), in the control of production processes (CAM - Computer Aided Manufacturing), in measurement (CAT - Computer Aided Testing) and quality control (Computer Aided Quality Control) is increasing. A situation where the long planning periods accompanied by a short turnaround time becomes the rule.

Situation of turbulent environment requires companies to continuously, dynamically adapt to external conditions and permanently form and modify company's internal policies and its organization. It creates a kind of feedback mechanism, the interaction between the organization on the environment and vice versa. The direct internal factors affecting the implementation of the project in the turbulent conditions include: the structure and relationships of individual departments and business units, the flow of information, skill development and application of current knowledge, the flexibility of the organization to change. Increase of flexibility for change can contribute to better align of the organization

to the rapidly changing environment. The company has to present and offer customers solutions that set it apart from the competition.

Appropriate course of action of the company should be to integrate the needs of the market with the organization of the company. Innovation activity is emphasized by most theorists and practitioners of management [1,2].

Alan Greenspan in his book [3] expresses views on a new era - an era of turbulence. Globalisation and modern technology of communication are factors that changed the face of the global economy and increased dynamics of the relationship between the parties.

This also applies to construction processes. Such conditions are favorable for the formation of turbulence, to a greater extent than a few years ago in isolation from global events surrounding. In view of the correlations of local economies creating one macroeconomic system that is sensitive to changes and fluctuations in the various parts of the world, turbulence is the phenomenon occurring for some time permanently. Therefore, companies need to create and update systems for different scenarios of possibilities. Terms of orderly economy and without turbulence occur in shorter and shorter periods.

According to P. Kotler and J. Caslione [4] turbulence are the norm in both the companies and the markets, contributing to the confusion, risks and uncertainties. A small change, turmoil occurring in a given place and at a given time can cause, according to the "butterfly effect" serious consequences in another remote location, or industry.

In their strategies, construction companies need to find a solution on how to respond to the ever changing conditions which constitute a complication in the implementation of investment, on the other hand, however, can be an opportunity, a new challenge in space and action, bringing the long-term tangible benefits. It seems that risk and uncertainty are characteristics that have dominated the market and reached a much higher level than in the past.

It is important to be aware of the risks that may arise, so the different types and circumstances of his creation will be examined.

2. THE EXTERNAL AND INTERNAL RISK FACTORS

The company is conducting business in the influence of internal and external factors determining a risk of that business. It is important to identify those factors and their inclusion in the business. Internal and external determinants of risk elimination are illustrated in Figures 1 and 2.

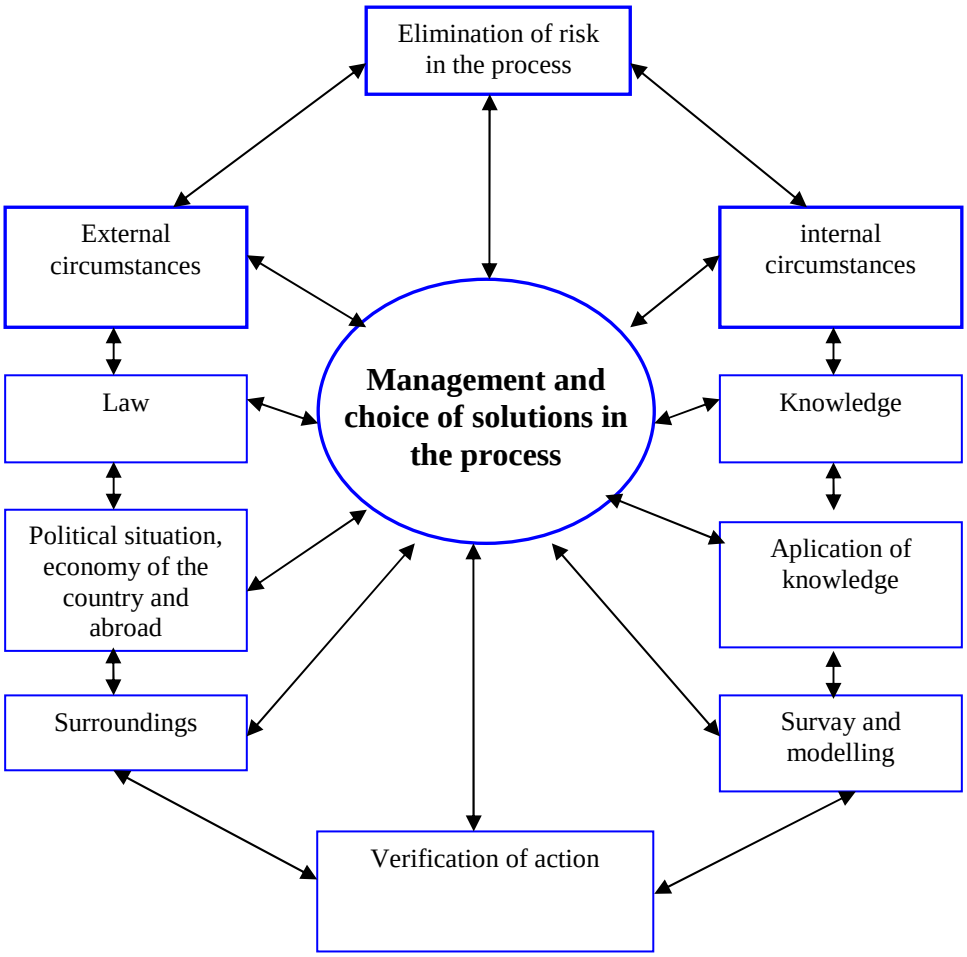

Fig.1. Internal and external context of risk elimination

Source: own analysis

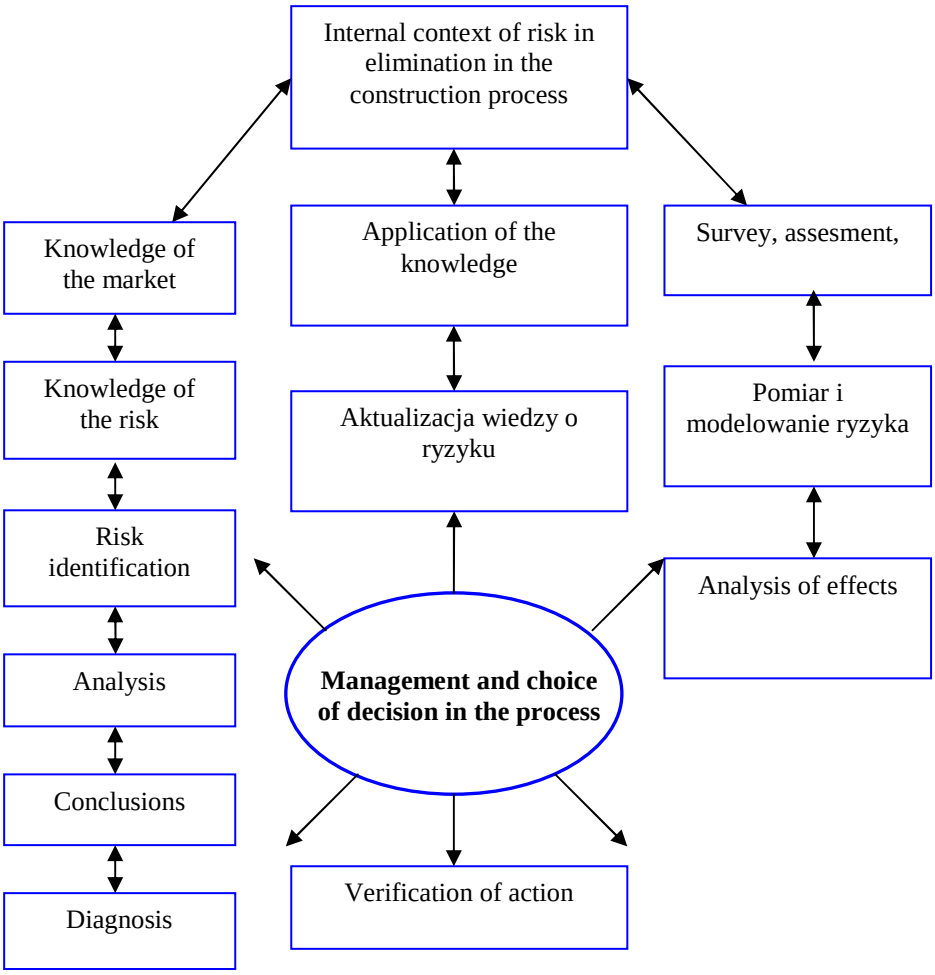

Fig. 2. Internal context of risk elimination

Source: own analysis

In the process of decision-making by senior company management intelligent decision support systems, using mathematical modeling, can play an important role. These modern tools should find wide application in the era of the information society in which knowledge covering many disciplines of life has become the largest capital and the skilful management of knowledge is the key to the success of the project.

The paper analyzed a variety of activities aimed at both inside and outside the organization, but these actions are presented in a multidisciplinary approach.

3. RISK, UNCERTAINTIES AND THEIR DISTRIBUTION AMONG THE PARTICIPANTS IN THE CONSTRUCTION PROCESS

Among the tested types of risk are: business risk, investment risk, economic risk, social, political, etc. The risk can mean many different phenomena, has different definitions and different ways you can approach him. Even just looking at the problem from a different perspective influences the perception of risk. The investor starting to build a new supermarket is interested in expenses associated with this project to fit within the budget, and in opening

within the stipulated time. The purpose of the contractor is profit from this investment. The risk of his point of view is reflected in the management of the design, in order to achieve the estimated profit. Each party sees the risk from a different point of view.

The environment in which you are making decisions can be divided into three areas: security, risk and uncertainty.

Confidence takes place only where you can specify exactly what will happen over time, affected by the decision. Such situations do not happen too often in the construction industry. Decision is made under risk when making decisions intuitively or reasonably can identify probability of a particular event. The risk occurs when calculating the likelihood and amounts to quantify. For example, past experience shows that you can build a 25-storey office building in Poland within 30 months. There is an element of risk in the estimated duration of the construction, but the data from the past give the decision-maker at least some degree of confidence that this can be achieved. The risk of success and the cost of failure can be calculated with the probability of failure.

And uncertainty can be defined as a situation in which there is no historical data relating to the situation considered by decision-maker. An example would be to build a 80-storey office building in the country, which had never built such a facility and the decision-maker may also not have any knowledge of the construction industry in this country. Construction organization must operate in an environment full of uncertainty. The aim is to identify, analyze, evaluate and act in risky conditions. During the process of risk management the uncertainty is replaced in risk.

In the case of the construction industry risk is a term more appropriate than the uncertainty. Even in the case of the second example, some information is available on which you can base the estimation of the duration of the investment.

Construction projects consist of hundreds or even thousands of interacting activities. Each of them is connected with the problem of cost, time, quality, order. The costs and duration are uncertain. There is an approach, still surprisingly common, consisting of ignoring the existence of uncertainty in the hope that all goes as well. Another attitude is seeking views and experiences of expert and intuitive approach to the problem.

These risks and uncertainties should be identified in a structured way, to try to remove the uncertainty.

The dynamic risk is related to maximizing the possibility, for example, it may be associated with the introduction of new innovative products. Dynamic risk means that they will be both potential benefits and losses, it is risking a loss of something to get something uncertain. Each decision in the field of risk management includes dynamic element governed only by rules of practical risk-taking.

Static risk refers to potential losses only in situations where people tend to minimize their losses by avoiding risk.

Each risk includes both the element of danger and challenges. Possibility, opportunity is a threat to those who predict failure and a challenge for those who expect success. Pessimists exaggerate the potential losses and understate the potential gains.

Taking risks like a challenge, but when calculating the chances and risks, most people ignore personal factor – the person making the assessment.

No matter how good and meaningful is any analysis, a man always takes a decision on the risk. When taking risks some basic principles are:

- a preliminary analysis of the profit and loss account,
- the planning,
- a detailed analysis of the sources and consequences of risk,
- alternative options as collateral,
- seeking the advice of experts if needed,

– considering the subject of control and uncontrollable risks.

Intuition suggests that a group of people, company management, boards typically decide on a solution more risky than the average individual of their own previous decisions. The phenomenon of shifting the risk is expressed in the fact that the group's decision-making process moves to riskier positions in most cases and in almost all circumstances. Sociologists seek to explain the causes of the phenomenon of shifting risk. One of the reasons is that risk taking is associated with courage, which may be socially more desirable than conservatism. Most people considered to be no less willing to take risks than anyone else. During the exchange of views among group those with less inclination to take risks tend to increase the level of risk to be seen as courageous rather than cowardly. The second reason is the fact that because of the emotional ties between debators individual feels less responsible personally for the failure of the risky option they would have rejected if they had decided independently.

In the process of building the distribution of risk between the various parties involved is different and involves the responsibility and the scope of their activities. There is a relationship between the propensity for risk-taking and creativity, which limits are generally lower, the risk of making a particular decision is smaller. The graph below, which is based on the author's experiences and observations, presents the above relationship.

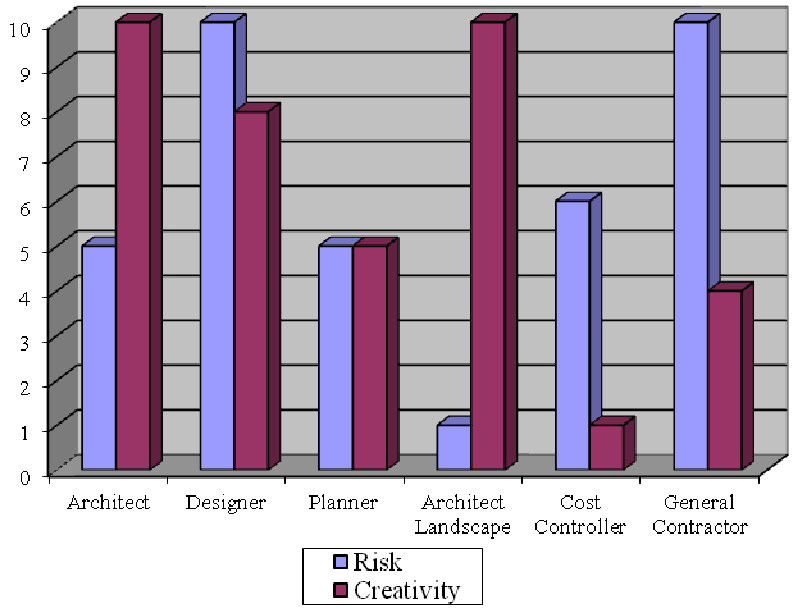

Fig. 3. Risk and creativity among the participants of construction process

Source: own analysis

Figure 3 shows how to classify the people working in the construction industry through their creativity and risk. Architects are innovative and their operation is exposed to medium risk and cost analysts are not very innovative, but their operation is exposed to higher risk.

CONCLUSIONS

This paper presents aspects of risk within the investment activities in the turbulent environment. Proper risk identification is a prerequisite to further management. An additional difficulty is turbulent environment. Risk measurement and analysis allows to find a solution to the elimination or reduction of risk.

In the construction process because of the multiplicity of factors involved and the complexity of the determinants, there are several important features of turbulent environment indicated in the article.

According to the author of this publication the analyzes the development of the management of the construction process in a turbulent environment continues to be developed in the direction of simulation methods based on financial models.

RYZYKO W PROCESIE BUDOWLANYM W OTOCZENIU TURBULENTNYM

Streszczenie

W artykule podkreślono ważną rolę w procesie budowlanym dynamiki zmian i turbulentny charakter otoczenia procesu budowlanego, co wymusza bieżące dostosowanie wiedzy do aktualnej sytuacji gospodarczej. W takich warunkach aplikacja wiedzy w praktycznym działaniu powinna być poparta modelem analitycznym i szczegółową analizą przypadków dla wygenerowania najbardziej odpowiedniej diagnozy.

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Author:

Maciej DUTKIEWICZ - University of Technology and Life Science, Faculty of Civil and Environmental Engineering, Kaliskiego 9, 85-796 Bydgoszcz, e-mail: macdut@utp.edu.pl