Risk Management in the Business Projects

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Introduction

The literature review shows that risk in investments might be approached by testing the business cases with the so called neural networks. The goal of most of these networks is to decide when to buy or sell securities based on previous market indicators. To do so, a neural network must be trained on some input data (Vose, D., 2005). The challenge is determining which indicators and input data will be used, and gathering enough training data to train the system appropriately. Training a network involves presenting input patterns in a way so that the system minimizes its error and improves its performance (Alfalla-Luque, R., Baltov, M. e al., 2015). The training algorithm may vary depending on the network architecture. Practical applications have now verified the theoretical advantages of trained neural networks (Boateng, P., Chen, Z., Ogunlana, S. and Ikediashi, D., 2012) by demonstrating their superior forecasting ability and put them in the front line of applied research in financial forecasting (Chapman, C. B., Ward, S. and Ward, S. C., 2003).

Even though it doesn't consider a portfolio of European projects its methodologies are based on similar-in-nature endeavors. This article starts with basic definitions of the concepts of risk and stakeholder management. It then explores the processes involved in risk and stakeholder management, the elements that form the environment and an identification of the consequences of inadequate consideration of these two aspects in project management.

Questionnaires, examinations of completed projects and literature review were used as an approach methodology for the research. The questionnaire is to establish the perceptions and the importance of risk and stakeholder management and their impact on project performance. The examination of previous projects is to identify the relationship and the level of stakeholder consideration. The literature review is to relate the findings with research and theories. A risk and stakeholder management exercise on a major project indicated that, to be successful, the function of project teams goes beyond the realm of theory to find other means to handle the risks identified. A new dimension for the classification of risks is added to the matrix to handle the risks in a more efficient way.

The research concluded that a large percentage of the delays, difficulties and cost overruns are attributed to risks related to poor stakeholder-needs-identification and the absence of clear risk and stakeholder management strategies. The Author also argues that proper stakeholder management is a measure of the success of project delivery.

Things we should be aware of when we consider risk management

Risk management strategy is an obligatory element in the process of the entire investment project management. Each project is very dynamic and undergoes constant transformations- in terms of time, money, participants; therefore there is always the possibility of risk, which has to be managed.

The project risk is related to an event or condition which can bring positive or negative consequences with its appearance. The things that can cause risk during the project implementation are various: late involvement of a new participant in the project, inexperienced staff, bad management practice, strong influence of outside participants, abrupt change in the social or economic situation in the country, change of main strategic documents, etc. The risk level in the project can be found in both- the threat not to implement the project and in the possibility of its approval.

If testing the business investment projects cases with the neutral networks appears that the independent variable – delay of project and cost overrun->claims lasting after the project has been completed. It turns important identifying the factors, ie risks that delay projects; steps taken to mitigate them: improving communication (Supply chain management), enhancing procedures (Utilities) and focusing on programme (project team). The way to do that was with a survey over 9 investment business projects cases, one the Danube

Bridge 2 describes in this article - presenting risk exercise on an actual project; and classification of and quantification of risks.

In assessing risk, no matter how complex the procedure, two things is usually calculated – probability of the specific risk and its potential impact. The function of risk manager is to evaluate risk both with quantitative tools and judgment. Risk can never be entirely avoided, hence goal is not truly to "minimize" risk but take smarter risks.

First step is identification and measurement of risk. The key issue is whether the expected profit warrants the assumed risk (Hillson, D. and Simon, P., 2007). Risk is not always measured in absolute terms, sometimes it needs be measured with respect to a benchmark. Evaluation of risk management quality has to distinguish between unfavorable occurrences to the firm/project/initiative because of bad luck or because of poor risk management:

a) Known knowns;

b) Known unknowns;

c) Unknown unknowns: government changing rules; counterparty's counterparty a.k.a. network externalities.

The research in this working group proved that risk management failures occur due to: model risk; impulsive events within the environment of operation; risk limits are not enforced; poor communication of risks. In the event of missing data a possible solution is: proxies (Kerzner, H., 2009). Important is to be cautious when using proxies in the event of lacking data from similar projects – survivorship bias must be acknowledged: severe risks with low probability that have caused failures and/or bankruptcies may not be well represented since the companies/projects that were affected no longer exist. A testing was performed with data mining risk – analysts search over different (empirical) models for solving a problem and only report the results of the one that gives them favorable outcomes.

Each risk is unique in its essence, but there are risks which were identified and analyzed in previous projects and which are likely to be predicted and described in the risk management strategy (Burcar Dunović, I., Radujković, M. and Vukomanović, M., 2013). The institutions which implement projects accept the risk as a possible threat but not as a condition for possible success. In order to guarantee the project success, all the information related to the risk in the organization has to be oriented towards the project. Risk management in the projects is a systematic process of identification, analysis, taking measure in terms of the risk in the project.

The aim of risk management is to increase to a maximum level the probability of positive impact on the project or to reduce to a minimum level the probability for a negative one. In the investment project management the concept of "risk" is related to "uncertainty" and "probability". The risk management is the implementation of well described processes with the aim to prevent any change of the main planned and approved parameters of the investment project in a negative direction (prolonging the project duration, for example). These processes which are also called management processes (Baltov, M., 2014) are the following:

➢ Defining the influencing factors - analysis and evaluation of the factors which can cause change in the project elements.

➢ Risk identification- defining the variables which characterize the basic project elements which are likely to be changed as a result of the indicated factors.

➢ Quality risk analysis- defining the probable way of changing the identified risk variables.

➢ Quantity risk analysis- setting the quantity parameters of the made quality analysis.

➢ Risk assessment- risk assessment is performed on two levels. The first level of risk assessment is related to the concrete realization of the project goals within the planned duration and budget. The risk assessment here is done from the point of view of the investment project management. The second level is assessment of the risk of the calculated project effectiveness.

➢ Defining the permissible level of risk- applying the procedures and techniques for increasing the possibilities and reducing the obstacles in front of the objects of management.

➢ Monitoring and control of risk- exercising permanent control of the identified risk activities, finding new ones, implementing the planned activities in terms of the risk.

The risk management technology in the investment projects shows the logical consequence of implementation of all described in the present manual steps. Since the risk management is an iterative process which is realized during the project life cycle, the control is related to the repetition of all described in the presented technology activities at an interval determined by the project participants

(Baltov, M., 2013).

At the planning phase, after the risk has been assessed, the respective measures for taking the existing risk are planned (Flyvbjerg, B. and Bank., W., 2005). The control is exercised by accessing the level of neutralizing the negative risk when carrying out the planned measures. At the implementation phase, the control is exercised by carrying out the planned and if necessary additional measures (Williams, T., 2002). The presented technology of risk management is realized through concrete methods. Some of these methods combine more than one step in the technology, other carry out just single steps. These methods' application is related to analysis of their positive and negative sides and choice of the best one, or a combination of several of them.

Risk mitigation in the case of the Danube Bridge 2 project

The Danube Bridge II Vidin-Calafat has been constructed after the method of the cantilever installation, which is done for the first time in Bulgaria, combined with the cable stays (Baltov, M. 2015). Three hundred segments of width 2, 15 m and weight of about 120 tons form the bridge construction in the non-navigable channel of the river and 162 bigger segments of width 4, 18 m and weight of about 250 tons – in the navigable channel of the Danube. All they were produced in the production plant of FCC Construccion, situated in the Free Zone – Vidin.

In 1999, a stability pact for South East Europe was signed by banks and national governments, aiming to bring investments to countries like Bulgaria and Romania. Chairman of this stability pact was Bodo Hombach, who had set up a great lobby in favor of the new bridge between Vidin and Calafat. Initially the European Investment Bank granted the project a credit loan 2000. In 2004, a research on the design of the bridge was financed by the PHARE program. In 2005 and 2006, consultants were hired to control all procedures in the building process and private companies were invited to send in a bid. In 2012, the building the Danube Bridge 2 and its adjoining infrastructures raised was almost ready and in 2013 it was opened and operational.

The bridge has three parts – one section in the non-navigable channel of the river with 80 m spans, another in the navigable channel of the river with 180 m spans and an approach elevated track with 40 m spans, as their total length is 1791 m. Under the superstructure of the bridge in the non-navigable channel of the Danube are constructed eight piers of height from 3 to 20 meters – depending on the terrain and the slant of the bridge itself. Under each of these piers there are 7 piles with diameter 2 m, at a depth of up to 60 meters. In the navigable channel of the river there are four piers erected, with height from 39 to 45 m. Under each of them there are 24 cast in-situ piles with diameter 2 m at a depth to 80 meters.

According to the methodology of this research, it was identified (Baltov, M. 2015) that:

- The project type is a transport infrastructure – for road and for rail.
- The source of financing is from government budget 31 %; the development or investment bank 31 % (European Investment Bank); EU funds 31 % and other 7 % (KfW,AFD).
- The type of contracting is design-bid-build. Partly the reimbursable are based on progress – Red FIDIC Book works contracts.
- The technology is stable, known, proven technology.
- The project is on-going, in the Operation phase currently.
- The success criteria was to provide a new fixed link over the River Danube on priority corridor IV in order to facilitate the growth of international and regional traffic and trade between South-Eastern Europe and Central Europe.

The constraint were:

1. Trans national character of the project.
2. Economic situation in the neighbouring countries and in the region and beyond.
3. Novelty of the technology.

The impact on success criteria were:

1. The expectations, requirements and capabilities of the partners affect the project scope, funding arrangements, responsibilities of the various stakeholders.
2. Delay in the implementation of the fixed link between the two countries due to the complex coordination process.

Affects the outcomes from the project in the phase of operation of the bridge in terms of variations in the volume of the cross border traffic flows towards the facility. This particular technology is utilized for the first time for a bridge between the two countries. The critical factors were:

1. Construction of 1971 m long main bridge.
2. Construction of the Bulgarian Adjoining Iinfrastructure, ie: 7 km road; 7 km railway line; and more than 20 rail and road overpasses.
3. Construction of the Romanian Adjoining Infrastructure .

The risk event (+stakeholder associated with) is related to:

- Late access to the construction site;
- The responsible Romanian &Bulgarian authorities;
- Occurrence of unexpected adverse physical conditions.

The source(s) (+stakeholder associated with) showed:

- Contractors` access to the construction site in its entirety has been hampered;
- Delays in the issue of the Construction Permits and other authorizations and permits;
- Non-coherence in the legislation of the neighbouring countries Bulgaria and Romania. It was possible to start construction works on the Bulgarian bank using the preliminary design provided by the Contractor as part of his tender, whereas in order to start the construction works on the Romanian bank was required fully-fledged technical design.
- Changes in legislation;
- In addition, during the same period, the Romanian legislation in the field of the forests utilization has changed and the change affected the use of the rural roads. The use of such road was necessary for the access of the Contractor to the Romanian side part of the construction site.
- The ground conditions of the river bad proved to be more adverse than expected. This led to a change of the design of the foundations of the bridge – from metal sheet to reinforced concrete piles;
- The ground conditions along some parts of the road and rail alignments of the BG adjoining infrastructure were more adverse than expected;
- The layout of the Adjoining Bulgarian Infrastructure Works contract is crossed by a great number (over 20) overhead High Voltage lines;
- During the implementation phase of the contract a regulation of the national enterprise responsible for the exploitation of the High Voltage

overhead lines was amended. The new regulation required new cross sections for the cables used and certain changes in the insulators. The new cross section of the cables (greater) made the cables heavier, thus affecting (shortening) the distance between two poles of the line. Re-design of the part overhead power lines from the initial design was required.

The driver(s) (+stakeholder associated with) were:

- Lack of construction permit and other necessary for the commencement of the works on the Romanian bank documents.
- Reports from the detailed on site tests and surveys necessary for the execution of the relevant works.
  - o The Contractor
  - o The Supervising Engineer
  - o Lack of access to the whole site.

Conclusion

The factors which influence the project can be divided into three main groups. They are external for the stakeholders, which indirectly influence the projects. Internal for the primary administrators of budget credits and municipalities factors, which directly influence the project implementation. And internal for the project factors whose influence is most important to the project.

The external for the stakeholders factors, which have to be described in the obligatory project documentation, are also called "Basic Prerequisites" (BP). They are the following: political factors; economic factors; laws and regulations; level of scientific and technical development; factors related to culture; factors related to nature and ecology.

The internal for the stakeholders factors which directly influence the project implementation, are the following: management of stakeholders, areas of investment, areas of production, areas of services, areas of the infrastructure, other areas and spheres. The internal for the stakeholders factors are inseparable from the existing strategic documents on a national, regional and municipal level. These factors are specific for each project and have to be described in accordance with the actual situation. Their clarification is possible only after the approval of the investment initiative and the formation of concrete parameters important to the project.

The internal for the project factors, whose influence is most important to the realization of the goals and tasks, is the following: management style, organizational structure, project participants, management team, communications, and other factors. The internal for the project factors are made clear at the phase of detailed planning.

And a big question regards what is the variable that is being affected/what are we considered about (in finance it is profits) – when we look at different risks but what is it that they impact.

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