

RISK MANAGEMENT IN E-LEARNING PROJECTS

TOMASZ WOŹNIAKOWSKI, PIOTR JAŁOWIECKI

Department of Informatics, Warsaw University of Life Sciences (SGGW)

The paper describes risk management process on the basis of one of leading methodologies Prince2 in e-learning project management. There have been defined basic ideas connected with project risk and Prince2 methodology. The main aim is to show practical side of risk management, techniques used for risk identification and assessment, common mistakes of project leaders and managers as well as necessary document templates. The work contains numerous tables and schemes which are aimed at better presentation of the discussed problem.

Keywords: risk, project, risk management, Prince2, e-learning

1. Introduction

For most of us risk is associated with something negative, with the threat and loss. But there is no single definition of risk. According to the New Dictionary of the Polish Language [1] risks include the possibility of failure, loss, and action that can have such effects.

Actually there are two concepts of risk: 1st The negative concept of risk and 2nd Neutral concept of risk.

Negative concept of risk is shown by examples in further part of the document. Such a concept is adopted for example in insurance, no one here will tell you about the risk of injury as a chance but only as a threat [3].

While the first concept of risk represents the possibility of not achieving the desired effect a neutral concept, says the risk is not only in the context of risk but

also opportunity. For example, it is a good chance that the construction of a new national stadium will be completed earlier than planned.

The aim of this paper is to present topic of risk management in e-learning projects. An important aspect is to show the relevance of the difficulties but also the proper subject of risk management.

The risk is the state that results from the uncertainty about the possible occurrence of negative situation that may have consequences to the project. Therefore, the project with a high level of risk is such an initiative in which the overall assessment of potential adverse influence of risks lies beyond the acceptance limits. Intuitively speaking, the risk may be defined as the possibility of lowering the overall success of the undertaken initiative.

In order to make the right decisions, management should not only be familiar with these factors, their strength, relationships and the dynamics of change, but also have the practical possibility of their simulation and forecasting. [8] If it happens that a project fails when it is already deployed (it is not able to fulfill some of the previously imposed requirements and expectations), it is likely to be considered as failure. If we wish to examine root causes that stand behind system failures, we will definitely notice that the majority of them are not associated with technology. Instead, they are associated with social and organizational aspects - they were either not appropriately considered, or were separated from the technological aspects. It should be especially taken into account that these two aspects of the whole system (soft and technological) are developed in parallel. That is why, if it happens that they are deployed separately, any mismatches that may appear may not be detected until the project is in its final stage. As a consequence, they appear to be invariably expensive and time-consuming in the context of correction, and can even result in project abandonment.

2. Identifying potential risks in e-learning

When taking into consideration project ultimate success and key factors to obtain such state, possible failure must also be included. That is why, there is a need to broke it down into these following, more detailed levels:

- a) Process failure - when project is not completed within the imposed constraints (ex: time, scope budget, quality etc.).
- b) Expectation failure - when the systems do not correspond with user expectations.
- c) Interaction failure - when users express negative attitude towards the system.
- d) Correspondence failure - when there is no match between planned objectives and the system.

A fundamental importance, from the project's success viewpoint is undoubtedly understanding and then practical application of these key aspects.

Let us assume that e-learning project consists of LMS preparation (setting up) and learning content creation phases. To identify potential risks several steps have to be made:

- Reviews of previous projects & project documentation,
- Brainstorming
- Interviews with stakeholders
- SWOT analysis

Risks presented below were developed by experts in the field of e-learning implementations with the usage of Delphi method. Experts were asked to identify both the most common and the most serious risks, that they believe generate problems during implementation [9].

As a result of this study, 42 major issues were identified, 15 of them gained the largest number of indications by individual experts and therefore they were identified as key risks. These crucial risks in e-learning implementation are the following:

- a) The management of the organization does not have a centralized and organized knowledge about learning processes already defined
- b) Inappropriate choice of suppliers, with no minimal experience in the specific knowledge
- c) Improperly defined goals to obtain and expectations towards e-learning implementation
- d) Top management did not state the importance of the deployment among employees which translates into a lack of support for the project
- e) System Tests carried out inaccurately and/or incompletely, which leads to a failure in detecting system errors
- f) The implemented system does not correspond to the requirements and safety procedures and/or formal-legal regulation
- g) Inappropriate Project Manager - that results in problems at the very beginning, mainly in implementation and enforcement of the work. That leads to incorrect change management, risk management and scope management
- h) The project team (on the client side) has not been appointed and roles/accountability have not been defined yet
- i) Scope creep - liquidity of the project scope (uncontrolled, large number of changes)
- j) Until the implementation starts, waveforms of target processes are not specified. That leads to conversations on this subject during the implementation phase
- k) Implementation costs have been underestimated which results in the lack of financial resources to complete the implementation phase.

- l) As a result of an unclear division of competence/influence there is a risk that those involved in project support will not have sufficient authority to adopt roles and undertake tasks attributed to them. It can prolong decision-making (in connection with the need of escalating) or the inability to take “strong” strategic decisions in the project.
- m) As a result of poor ROI analysis, there is a risk that the validity and viability of the business case will be weakened and therefore project would become unprofitable.
- n) Because various initiatives compete for the same employees, possible lack of resources appears (such as overloading of key personnel, unavailability of experts, unavailability of the necessary training or equipment), which may lead to failure in the project not going according to the plan.

Figure 1. Example risk assessment method

Priority = (Likelihood + Impact) / 2				
ID	Likelihood	Impact	Priority Score	Rating
Key employees are leaving company	15	80	47,5	Medium
Wrong budget management	21	100	60,5	High
Inernal/ external frauds	30	80	55	Medium
Products mistake	40	100	70	High
IT systems breakdowns	30	75	52,5	Medium
The application doesn't work in older browsers	50	70	60	Medium

Priority Score	Priority Rating
0 – 20	Very low
21 – 40	Low
41 – 60	Medium
61 – 80	High
81 – 100	Very High

Priority Rating	Colour
Very low	Blue
Low	Green
Medium	Yellow
High	Orange
Very High	Red

Table 1. Example risks in e-learning project

Examples
<p>Risk of human factor:</p> <ul style="list-style-type: none"> a) departure of key employees of the company, b) the employee's illness or vacation / personnel necessary to complete a certain stage of the project, c) not enough trained staff, d) trained employees but at the wrong positions.
<p>The risk of information systems:</p> <ul style="list-style-type: none"> a) a sudden interruption of business, b) the failure of IT systems.
<p>The risk of flaws in the process:</p> <ul style="list-style-type: none"> a) bad business practices, b) defects in products, c) the risk of not clarifying the process requirements.
<p>The risk of internal events:</p> <ul style="list-style-type: none"> a) changes in the structure of the company, b) loss of goodwill, and thus the loss of part of the project budget.
Risks associated with inaccurate estimation aspects temporarily - the financial project.
<p>Risks associated with too optimistic reporting of progress of the project:</p> <ul style="list-style-type: none"> a) the deviation of actual product size in relation to the planned (e.g. length of code), b) deviations in the implementation schedule, c) deviations in the plan expenditure of funds, d) variations in the number of errors and the effectiveness of their removal (projects shall design software).
The risk of failure of the results of the project resulting quality criteria of external pressure on the project.
Risks associated with poor quality of the process design / implementation of the system and a low degree of compliance with its definition.
Risks associated with the novelty and complexity of technological solutions and system.
<p>The risk of a business:</p> <ul style="list-style-type: none"> a) the risk of marketing b) market risk.
<p>Risks arising from customer specifications such as:</p> <ul style="list-style-type: none"> a) an unrealistic schedule or budget, b) inadequate functionality of the system, c) the wrong user interface d) hidden design problems, e) frequent changes in requirements.

In next steps you have to prepare communications management plan. It describes the strategy for keeping the project's stakeholders sufficiently informed to avoid any disappointment regarding cost, schedule or quality [6]. The plan identifies what kind of information will be distributed to which stakeholders [7].

3. Risk assessment in e-learning project

The risk is uncertain event or set of events which, if they occur will have an impact on the achievement of goal. A measure of risk is the product of the likelihood of perceived risk or chance, and the size of its impact on the objectives is given by the formula (1), and the priority by the formula (2). In figure 1 preparation for working purposes in a spreadsheet is presented.

$$Risk = Likelihood \cdot Effect \quad (1)$$

$$Priority = \frac{Likelihood + Impact}{2} \quad (2)$$

In the context of financial mathematics, risk has been interpreted as the degree of variability in returns on investment. This way of looking at risk captures both the probabilistic nature of risk and the element of uncertainty. However, it is a specialized measure that is rarely used outside the discipline [2].

Expected monetary value. This is a technique that allows you to specify a monetary value on the expected cost impact of product risk and the likelihood of this risk in formula (3).

$$EMV = Likelihood \cdot Impact \quad (3)$$

In example, if the cost, which you will incur in the event of materialization of the risk is 40 000 PLN, and the likelihood of this risk is 25%, the expected monetary value will then be equal to 10 000 zł (40 000 zł * 0.25).

This technique is useful when you need a very concrete measure of risk with categorization. The example of concrete calculation is presented in figure 2.

With probability/impact matrix of the Steering Committee of an e-learning project can easily determine any risk tolerances. Darkened area covering the upper right box of the matrix determines the boundary line; this is called risk tolerance line. All risks, which will be located above this line, will require some action for lowering any likelihood of the risk.

The area in the lower left corner (white rectangles) is called "Safe area". For risks located in this area it does not take any remedial action.

Many of factors can inhibit the success of an e-Learning project, and many of them are associated with the project resources of people, time and money. Project managers who are proactive in identifying potential resource-related risks on an e-Learning project, and who are able to develop strategies to mitigate those risks, will have a higher likelihood of successfully delivering the expected results (table 2) [5].

	A	B	C	D	E	F	G	H
1	Prawdopodobieństwo	0,9	B. wysokie 71-90 %	0,045	0,09	0,18	0,36	0,72
2		0,7	Wysokie 51-70%	0,035	0,07	0,14	0,28	0,56
3		0,5	Średnie 31-50%	0,025	0,05	0,1	0,2	0,4
4		0,3	Niskie 11-30%	0,015	0,03	0,06	0,12	0,24
5		0,1	B. niskie poniżej 10%	0,005	0,01	0,02	0,04	0,08
6				B. mały	Mały	Średni	Duży	B. duży
7			0,05	0,1	0,2	0,4	0,8	
8		Wpływ						

Figure 2. Probability/Impact matrix

Implementation of risk response plans, identification of new threats, tracking identified risks, monitoring residual risks, and assess the effectiveness of this process throughout the duration of the project. In this process, techniques such as analysis of the deviations and trend analysis are applied (table 3).

Table 2. Response Plan to the example risks (A-Avoidance, M-Mitigation)

Risk	Owner	Type of reaction	Plan
Improperly defined goals to obtain and expectations towards e-learning implementation	Program Manager, Project Manager	A	It is important to figure out how implementation will translate into (previously mapped) learning processes. There is also a need to organize an efficient and effective communication between departments involved in implementation process. Preliminary analysis of experienced, external consultant is also useful.
System Tests carried out inaccurately and/or incompletely, which leads to a failure in detecting system errors	Technical Manager	A	The availability of adequate resources to carry out tests must be guaranteed. When tests are successfully completed, it is required to obtain a tester's signature of the conducted scenarios. Tests must be performed on real data.
Inappropriate Project Manager - that results in problems at the very beginning, mainly in implementation and enforcement of the work. That leads to incorrect change management, risk management and scope management	Managing Director, Vice President	A	Project manager, who will not allow for many initially unplanned changes – scope creep. Any changes must always be accompanied by justification and careful analysis in terms of impact on the project. Change management process will ensure essential documentation.
The project team (on the client side) has not been appointed and roles / accountability have not been defined yet	Project Manager on the Client	M	Obtain a formal assignment of employees who are dedicated to the project
Scope creep - liquidity of the project scope (uncontrolled, large number of changes)	Project Manager	M	Conduct an overall, preliminary analysis to determine business needs in the context of selection of an appropriate IT solution.

Table 3. Concepts for monitoring identified risks

Risk	The concept of monitoring
The management of the organization does not have a centralized and organized knowledge about business learning already defined	Monitoring and updating the knowledge base in the organization in which business processes are stored.
Improperly defined goals to obtain and expectations towards e-learning implementation	Cyclic meetings of the project team and other stakeholders ensure that the objectives are clear and understandable for everyone..
System Tests carried out inaccurately and/or incompletely, which leads to a failure in detecting system errors	Verification of testing scenarios in terms of their appropriateness and completeness, before testers start their work
The implemented system does not correspond to the requirements and safety procedures and/or formal-legal regulation	Cyclic verification of compliance with formal and legal regulations
Inappropriate Project Manager - problems from the very start, mainly in implementation and enforcement of the work. That leads to incorrect change, risk and scope management	Checking the compatibility of the requirements for the position of Project Manager with profiles of potential candidates for this role
Until the implementation starts, waveforms of target processes are not specified. That leads to conversations on this subject during the implementation phase	Before starting the implementation phase set of processes has to be verified and appropriately adjusted. During the implementation phase, further verification is to be conducted as for validity and accuracy of processes.
Implementation costs have been underestimated which results in the lack of financial resources to complete the implementation phase	Verification of expenditure and financial needs in a cyclic manner, accurately tracked and monitored consumption of the budget. It should be conducted in advance to be able to take corrective action (ask for the additional amount)

4. Conclusion

The risk is and always will be inseparable from everyday life, both business and activities of non-work activities. By taking the project any or a single task, we must deal with uncertainty about its outcome and the course of its implementation [4].

This study shows how important it is to have a comprehensive look at the risks, how often they practice and what form should be used for risk management to be effective.

The basic error of a large part of Project Managers is a tendency to play down the risks and treating it as a kind of formality. They very often begin to think seriously about the risk at the time of its visibility, which entails the unexpected effects of the project.

This work was presented as one of the leading methodologies for project management and its approach to the subject of risk.

But whatever the methods employed, whether it is Prince2, PMI or Scrum, each of which proposes a very clearly defined set of tasks, roles, and documents. The use of such methods in practice will allow a more structured and consistent approach to risk. You should also consider whether your project does not use software to manage risks such as described in the work of the Risk Manager. The person managing the risk must be borne in mind that risk management does not share, but a continuous process.

Risk management is not easy, but the sooner we learn to properly identify risks, evaluate them and minimize their impact on the project, the more such projects will be successful.

REFERENCES

- [1] New Dictionary of the Polish Language (2003), PWN, Warsaw, Poland
- [2] Williams, C.A., Smith, M.I. and Young, P.C. (1998), *Risk Management and Insurance*, Irwin McGraw Hill, London, UK
- [3] Larkin, J. (2002) *Strategic Reputation Risk Management* Palgrave MacMillan, London, UK
- [4] Mobey, A. and Parker, D. (2002) *Risk evaluation and its importance to project implementation*, Work Study Vol. 51, No. 4, pp. 202-206
- [5] Baccarini, D., Salm, G., Love, P.E.D. (2004) *Management of risks in information*
- [6] Verzuch, E. (2008). *The fast forward MBA in project management*. Hoboken, NJ USA
- [7] Schwalbe, K. (2010). *Information technology project management*. Cengage Course Technology, Boston, MA USA
- [8] Woźniakowski T., Jałowiecki P.: *Metodyczne oraz informatyczne aspekty badań rynkowych*, Wydawnictwo SGGW, Warsaw, 2012 (in polish).
- [9] Woźniakowski T., Jałowiecki P., Jałowiecka E.: *E-Learning Design in Business Models*. In: P.Jałowiecki, A.Orłowski (ed.): *Information Systems in Management, Distant Learning and Web Solutions for Education and Business*, 7, WULS Press, Warsaw, 103 - 109, 2010.