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RISK MANAGEMENT IN INFORMATION SYSTEM PROJECTS

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Original scientific paper
This paper presents a studious overview of key project success factors in the implementation of information system to business systems. The paper presents the results of theoretical and practical studies, which have shown that the process of managing development of information system projects holds many problems and uncertainties in practice, which despite many improvements in the area of development methods, techniques and tools are still facing some problems and difficulties in the process of implementation of integrated information systems. Managing ERP implementation projects is associated with different specific problems, which are essentially different from the traditional information system developments, because they contain the strategic, tactical, organizational and business environment factors.

***Keywords**: ERP, information system, project management*

Upravljanja rizicima projekta informacijskih sustava

Izvorni znanstveni članak
Ovaj članak predstavlja studiozan pregled ključnih čimbenika uspjeha projekta u provedbi informacijskog sustava u poslovnim sustavima. Članak prikazuje rezultate teorijskih i praktičnih istraživanja, koja pokazuju da proces upravljanja razvojnim projektima informacijskih sustava ima mnogo problema i neizvjesnosti u praksi, koji se unatoč brojnim poboljšanjima u području razvoja metoda, tehnika i alata još uvijek suočavaju s nekim problemima i teškoćama u procesu implementacije integriranih informacijskih sustava. Upravljanje projektima implementacije ERP (planiranja resursa poduzeća) je povezano s različitim specifičnim problemima, koji su bitno različiti od onih tradicionalnih informacijskog sustava razvoja, jer sadrže strateške, taktičke, organizacijske čimbenike te čimbenike poslovnog okruženja.

***Ključne riječi:** ERP, informacijski sustav, upravljanje projektima*

1 Introduction

There are many factors and changes that occur in an increasingly competitive global business environment. The process of managing project of implementation ERP solutions to companies and business systems is a fundamental activity which in the time of global economic crisis sometimes can lead to deterioration of those systems and companies, due to the implementation failure. Some researches in the companies have shown that in the world in about 90 % of implementation projects of ERP solution the project consumes more resources than originally planned. In more than 20 % of project implementations, the same one was considered as unsuccessful. Only 30 % of companies estimated that ERP implementation was successfully completed [1].

Considering the capital investments of information system implementations to companies and the fact that many of these projects were unsuccessful, it was necessary to identify analytical tools that will determine the success of the implementation of information systems. As analytical tools critical success factors were investigated already in the seventies and eighties. At that time, the "information revolutions" were global information systems which provided the appropriate information to business managers, which were seeking appropriate solutions to easier make business decisions. Based on provided information, managers were enabled to easily perform the analysis of available information, to identify the most relevant data and based on them to make critical business decisions [2]. IT development and new software solutions are integrating information technology with a new, process-oriented business model. The technical aspects of implementation are no longer the most important elements, however, it is important to find the balance between business process design and software configuration on one hand, and corporate strategy and organizational strategy on the other hand [3].

Table 1 Critical success factors model [4]

	Strategic level	Tactical level
Organizational level	Support of top management Management of changes Management scope Project team Business Process Reengineering Project manager Managing projects Participation of end-users Trust between partners	Commitment to employees and consultants Good internal and external communication between project members Formalized project plan Adequate training program Elimination of systematic errors The proper function of partners Appropriate delegation of duties for project team members
Technological level	Appropriate strategy for implementing entire solution Avoiding technically demanding adjustments The choice of appropriate ERP solution and version	Proper software configuration Supervision and monitoring performance Data transfer from old ERP solution

In the literature there are numerous studies of eminent experts in the field of critical success factors, which play an important role in highlighting some of the most important aspects in the implementation of comprehensive integrated solutions [5÷15]. One of the studies about critical success factors is classifying them into four levels: 1) strategic, 2) tactical, 3) organization and 4) technological.

Experiences show that it is very important to follow the unwritten rule that a man should learn from the mistakes of others because all experiences are important. In order to successfully complete implementation project, we need to satisfy the success of all factors within certain limits. The success, failure of some implementation project or of information system update depends on a relationship between strategic and tactical levels, how each affects the other within the area of key success factors. As proof of this theoretical study model, appropriate measurements were conducted in companies, and they show the customer satisfaction with new user interface.

Feedbacks were taken from forty company users. Work mode or performance measurement mode is derived from conversations with users (approximately thirty minutes with targeted customers), filing out surveys and observation. Although the graphical user interface of the new program is quite variable, we can easily conclude that users have adapted well to its use. In fact, we can see that users were not satisfied with the use of user interface in the old ERP solution. The reason of that is that user was using the old application, only a few months before implementation of the new application. Answers and results of key users of mySAP Business Suite project are given below.

Table 2 The rating of the user interface

Measurement and formula	Interpretation of measurement	Type of metric scale	Measurement type	Measurement
$X = \{1, 2, 3\}$ 1 - full knowledge, 2 - partial knowledge, 3 - user does not have knowledge	$X = 1$ and $X = 2$ Acceptable answer	ordinal scale	X = mark	Observation of the user experience or questionnaire/survey

Table 3 The significance and comparison of KFU ERP projects in the region and worldwide [4, 16]

	Technical literature	Survey
Clear objectives of strategy and of scope of introducing solution	2	1
Involvement and support of top management	1	2
The organization of the project team and its competences	3	3
Involvement and participation of users	9	4
Communication between the project team and with others in the organization	7 ÷ 8	5
Communication within the project team	7 ÷ 8	6
Training of end users	4	7
Business Process Reengineering	5	8
Hiring external consultants	11	9
The active role of the project sponsor	13	10
Transferring data from old solutions to ERP	10	11
As little as possible customization of ERP to organization specifics	15	12
Using the principles of project management	12	13
Clear goals, strategy and scope for the implementation of solution	6	14
Selection of ERP technology architecture	14	15

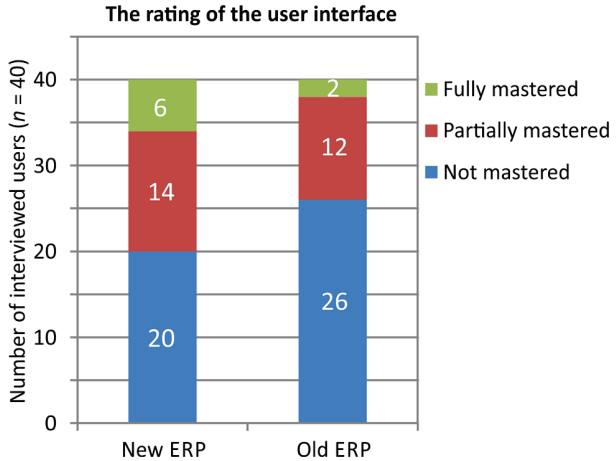

Figure 1 The rating of user-interface -myNIS

We can conclude that support of the management is required through all stages of project implementation.

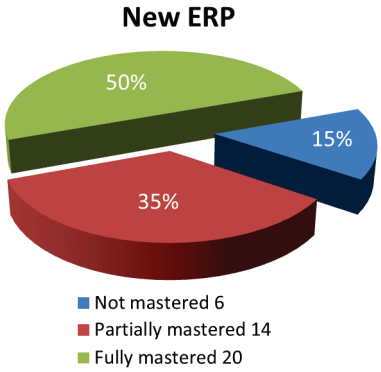

Figure 2 User interface evaluation of a new ERP solution
(1 - not mastered: 6; 2 - partially mastered: 14; 3 - fully mastered: 20)

The project must be approved by the top management in the early stages of its implementation and it needs to be in accordance with the business objectives of that company. If the top management is not directly involved

in implementation of ERP solution, positive effects of the project are impossible to be expected.

Company management needs to formally and publicly explain that the project has the highest priority and that they are committed to put all available company resources to that project. We have an interesting research in Computerwoche magazine [17] about difficulties in area of implementing ERP systems, which was noticed by managers (Tab. 4).

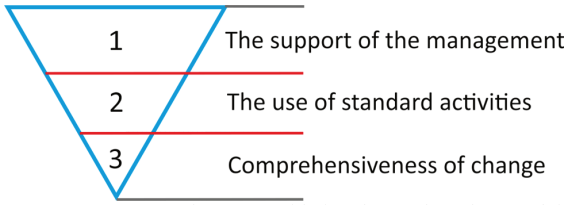

Figure 3 Key success factors considering the conducted research in practice

Table 4 What would the management change for re-introduction of the ERP system?

80 %	More attention to the optimization of the process
65 %	Implementation which is in accordance with monitoring company goals
60 %	More attention to cooperation of business segments
55 %	Introduction of the project leaders from relevant factors
50 %	The simultaneous implementation of MIS
45 %	Intensive education
35 %	Stronger involvement of the company representatives
35 %	More courageous approach to changes
30 %	A better proof of effectiveness
20 %	Avoiding the big-bang implementation

From the above mentioned survey, we can see that the most prominent problem is the lack of attention in the optimization process. The reason is very simple, and yet many times overlooked: no matter how much the technology alone is effective, it cannot help the company in achieving their business goals if business processes are not carefully defined previously. Therefore, business processes need to be improved, decisions (about which processes should be changed or thrown away) need to be made and after that implementation of modern information technology tools can start.

2 Conclusion

From the above mentioned analysis we could say that the most important key factor in the successfully managing implementation project of new ERP solution or updating existing information system is active support of the company's top management. Also, failure to comply with established methodology has a negative impact on the efficiency and effectiveness of the investment processes as well as on economy and profitability of the business system. ERP consists of a series of best practical means of performing standard business processes. To get the most out of this software, you have to convince people in the company to accept the ways of performing business processes in a manner as described in the software. If people from different sectors-departments do not agree with the described methods, and they think their current / old methods are better, they will refuse to use the new methods or they will require from the implementation / maintains team to modify the system to support their methods. That is the key moment when the ERP system may fail. It is not necessary to mention why it is not recommended to create some bigger change in ERP software. Besides the risks of software bugs and inability of standard performance software upgrade, the complete functionality of the ERP system may be compromised. Studies show that if your company has a resistance to change, the more it is likely that the process of implementation of ERP systems will fail.

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