ANNALS OF THE UNIVERSITY OF ORADEA
Fascicle of Management and Technological Engineering
ISSUE #2, AUGUST 2014, http://www.imtuoradea.ro/auo.fmte/

# IDENTIFICATION OF INFLUENTIAL FACTORS OF PROJECT IMPLEMENTATION INFORMATION SYSTEMS

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***Abstract*–** In this studious major research paper presented analysis of implementation erp system, through research relevant scientific literature or in practice and determining the most common mistakes (errors) than occur when introducting information system and to define ways to minimize such errors or eliminated. Results of this study can serve as the material to everyone involved in the current issues and who decide to implement modern integrated Enterprise Resource Planning (ERP) solutions for their companies and for this to expand their knowledge.

***Keywords*–**Information systems ERP, Project management

## I. INTRODUCTION

Investment in information technology (IT) is no longer as investment in the future but in the present and the development of the IT sector, ensure development of the entire society which is in the current global economic crisis particularly important for business systems and enterprises in Serbia. The company is now in such new circumstances and conditions luck with the has reality: forecasting, retaliation and respond to the growing demands of the market or to fail [1]. In such a competitive environment business strategy in Serbia not only determines and provides the resources, but also provides a livelihood enterprises.

## II. INFORMATION TECHNOLOGY AS A FUNCTION OF BUSINESS

Today, as never before effective business strategy focuses on aggressive and productive use of information technology. Information becomes a strategic resource and the introduction of IT in the modern business caused primarily information and management needs of management, which are at different level of decision-making encounters with the need to dispose of the information they depend on his decisions. The development of information and communication technologies (ISTs) and their use in business company finds company in Serbia and the region completely unprepared [2]. Companies must rapidly adapt to changes and new circumstance that appear on the market. In most examples, unfortunately, wrongly prevailing opinion, that business become successful as soon as the company replaced an information system, a modern system that is based on the modern ICT [3]. The results of this study, based on a review of the impressive list of relevant scientific literature and examples of implementation in the world and in Serbia clearly indicate that a key factor in the successful execution of the implementation of a new ERP solution or renewal of an information system is certainly the active support of top management i.e. top leadership of the company [4].

## III. IMPACT ERP ON THE COMPANY

ERP system and integrated business information system is a software system that integrates core business processes in the enterprise such as production, distribution, finance, i.e. Accounting into a single whole. ERP is a system through which is possible to operate with one hand all the human and material resources and on the other plan, develop and monitor business processes and procedures. Figure 1 provides an overview of the basic functions of ERP system [5]. Thanks to the use of modern ICT is anticipated that the business over the next ten years, more than a change in the last fifty years. The application of information technology is very important for management because it provides specific information tools and programs that enable the management of the collection and creation of the necessary information for the purpose of efficient business decision-making and increase the efficiency of the company.

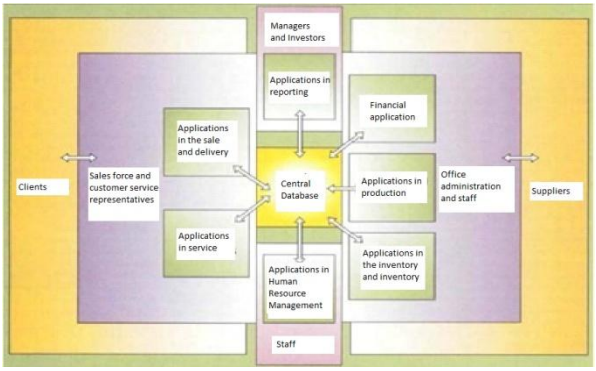


Figure 1. Anatomy of ERP system [5]

Inclusion of Serbian industry and enterprises in the European and global trends is necessary reality. Companies in Serbia have overnight given the competition from the European Union and the world, and for the survival and development of enterprises are forced to look for solutions to the increasing challenges of today's economy. A large number of companies in times of dynamic changes facing the realization that he wants to improve, or primarily to maintain their

**TABLE I:** - WORLD ERP MARKET, 2010, [6]

| | 2010 ERP world market Income (in millions$) | 2010 Share in (%) | Key markets |
|---|---|---|---|
| SAP | 6318 | 18.8% | Companies, small and medium enterprises |
| Oracle | 3718 | 11.0% | Companies, small and medium enterprises |
| Sage | 1479 | 4.4% | Small and medium enterprises, health care |
| Infor/Lawson | 1310 | 3.9% | Manufacturing, health care |
| Microsoft | 1233 | 3.7% | Small and medium enterprises |
| Epicor/Activant | 526 | 1.6% | Retail, Distribution |
| UNIT4 | 470 | 1.4% | Professional Services |
| TOTVS | 442 | 1.3% | Small and medium-sized enterprises in Brazil |
| Constellation Software | 389 | 1.2% | Government institutions, civil |
| Intuit | 339 | 1.0% | Small and medium enterprises |
| Other | 17460 | 51.8% | All markets |
| Total | 33683 | 100% | |

position, so they are forced to modernize their operations. In doing so, they can help information technology i.e. Comprehensive ERP software solutions which somehow enable this transformation and provide solutions to the demands of markets and customers. In the Table I is represented by the ERP market in the world in 2010 [6].

## IV. CRITICAL SUCCESS FACTORS ERP IMPLEMENTATION

This paper defines a unified model of critical success factors, CSF (Critical Success Factor) for ERP

**TABLE II:** - CRITICAL SUCCESS FACTORS MOST FREQUENTLY CITED IN THE LITERATURE [9]

| | Critical Success Factors (CSF's) | a | b | c | d | e | f | g | h | i |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Appropriate business and IT legacy systems | | | | X | X | | | X | X |
| 2 | Architectural choices | X | | | X | X | | | X | |
| 3 | Business plan and vision | | X | X | X | X | | | X | X |
| 4 | Business Process Reengineering | X | X | | X | X | | X | X | |
| 5 | Careful selection of packages | X | | | | X | X | X | | |
| 6 | Readiness for change and culture | X | X | X | X | X | | X | X | |
| 7 | Objective and clear objectives | X | | | | X | X | | | |
| 8 | Communication | X | | X | X | X | X | | X | X |
| 9 | Daily analysis and conversion | X | | | | | | X | | |
| 10 | Training for new business processes | X | | | | X | | | | X |
| 11 | Improving decision-making | | | | | X | | | | |
| 12 | Acquiring knowledge | X | X | | | | | | | |
| 13 | Managing expectations | X | | | | | X | | | |
| 14 | The minimum adjustment | X | | | | X | | | | |
| 15 | Monitoring the progress of performance | | | | X | | | | X | |
| 16 | Organizational trust among partners | | | | | X | X | | | |
| 17 | Partnering with vendors | X | | | | | | | | |
| 18 | Champion the Project | X | | | X | X | X | | X | |
| 19 | Project Management | X | X | X | X | X | X | X | X | X |
| 20 | Strategic IT Planning | | X | | | X | | | | X |
| 21 | Teamwork and composition | X | X | | X | X | X | X | | X |
| 22 | Support of the top management | X | X | X | X | X | X | X | X | X |
| 23 | Use of consultation | X | | | | X | | | | |
| 24 | Using the Management Board | X | | | | | | | | |
| 25 | Using the tool vendors | X | | | | | | | | |
| 26 | User training and education | X | X | X | | X | | X | | |
| 27 | Support vendors | X | | | | | X | X | | X |

Legend: Studies: a: Somers & Nelson, (2001); b: Stratman & Roth, (2002); c: Al-Mudimigh, Zairi & Al-Mashari, (2001); d: Nah, Zuckweiler & Lau, (2003); e: Esteves, Sousa, Pastor & Collado, 2000; f: Akkermans & Helden, (2002); g: Zhang, Lee, Zhang & Banerjee, (2002); h: Nah & Lau, 2001; i: Holland, Light & Gibson, (1999)

implementation. This model was developed through the implementation of open coding process from the initial theoretical methods and is based on a set of known CSF, which was on the 10$^{th}$, new research relevant literature, this number is as shown in Table 2, expanded to 27. As can be seen the number of CSF is relatively large, but they are divided into four perspectives: strategic, tactical, organizational and technological perspective. An important aspect is that most of these factors can be considered "classic" because they are not specific to individual ERP implementation. [7] However given the complexity of these projects, each factor "taken on

greater significance". The analysis of scientific literature on CSF shows that management support the most important factor in ERP implementation, followed by management organizational change. These CSF have almost nothing to do with technology and are almost all related to people and processes, due to the efforts that should be undertaken by the entire in the project in this nature [8]. The research literature shows that most of the CSF can be regarded as a key factor. Below in Table II provides an overview of the key success factors most often mentioned in the relevant scientific literature and research studies.

Appropriate and adequate ERP solutions are one of the basic conditions for achieving the strategic advantages of each company. The selection system is extremely complicated. At the same time for such an integrated system, such as a comprehensive solution, the key is just integration of all the desires and demands of employees and management in the company. Also, the ERP must be open enough to connect with other information technologies, to enable business enterprises in the global market [4]. From these ERP solutions in the global market are quoted SAP R/3, Oracle, JD Edwards, PeopleSoft and Baan. They are lately more and more used and introduced by SAP R/3 although it is obvious that this is a comprehensive and can tell a complicated project, a long-term process that requires skilled professional as well as willingness of companies to adopt [10].

In the past companies mostly alone developed software solutions that fit their business. There was no need to adopt business processes solutions, but the solution itself adjusted and specialized according to company business, until the moment when those solutions are not able to monitor the growing needs of modernization and operations, working methods and business processes. Today there are on the market in the world and in Serbia comprehensive ERP software solutions, which largely correspond to business enterprises [11]. That's why more and more business systems and enterprise decides to introduce such solutions. ERP solutions have the potential ability to integrate all processes and function in the company and give us a complete overview and presentation of business enterprise as a whole [12]. At ten in the last couple of years out of the companies to decisions that lead to the modernization of business reengineering or upgrading of existing information systems. At that forces them increasingly competitive market, new products as well as services, new technologies [13]. Companies in the global economic crisis must rapidly adapt to changes and innovations, which appear on the market [14]. In most examples, unfortunately, wrongly prevailing opinion, it would become a thriving business enterprises, once in the company replace the existing information system with a new one is modern and based on contemporary technologies. [15]. Most of the companies is opting for this option without having done through analysis and re-engineering business processes, which inevitably leads to failure of the implementation of ERP solutions [16]. The causes for this are found easily in the cost of such a project, because the majority of employees in enterprises to be viewed as the huge financial bite. In additional to overlook and non-financial indicators and long-term goals and benefits of introducing a new business information system based on the complete reconstruction operations [3].

**TABLE III:** - THE MEAN VALUES OF THE ORDER OF CSF BY THE DEGREE OF IMPORTANCE IN ERP IMPLEMENTATION [9]

| Or. Num. | Critical success factors (CSF) | Mean | The standard deviations |
|---|---|---|---|
| 1 | Support of the top management | 2.0 | 1.6 |
| 2 | Business plan and vision | 2.3 | 1.1 |
| 3 | Teamwork and composition | 6.8 | 4.5 |
| 4 | Project Management | 7.5 | 3.8 |
| 5 | Champion the Project | 8.0 | 3.9 |
| 6 | Acquiring knowledge | 8.6 | 6.9 |
| 7 | User training and education | 9.4 | 6.2 |
| 8 | Readiness for change | 9.8 | 3.5 |
| 9 | Support vendors | 12.2 | 8.3 |
| 10 | Communication | 12.3 | 8.4 |
| 11 | Objective and clear objectives | 13.1 | 6.0 |
| 12 | Using the Management Board | 13.2 | 5.0 |
| 13 | Daily analysis and conversion | 14.8 | 8.0 |
| 14 | Monitoring the progress of performance | 15.4 | 6.0 |
| 15 | Managing expectations | 15.4 | 7.6 |
| 16 | Business Process Reengineering | 16.3 | 5.4 |
| 17 | Partnering with vendors | 17.0 | 5.6 |
| 18 | Careful selection of packages | 17.0 | 6.1 |
| 19 | Improving decision-making | 17.5 | 4.6 |
| 20 | Training for new business processes | 17.5 | 8.7 |
| 21 | Use of consultants | 17.6 | 6.6 |
| 22 | Architectural choices | 18.6 | 5.8 |
| 23 | Using the tool vendors | 19.2 | 5.9 |
| 24 | The minimum adjustment | 20.7 | 4.2 |
| 25 | Organizational trust among partners | 20.8 | 5.8 |
| 26 | The availability of jobs and IT legacy systems | 22.6 | 3.6 |
| 27 | Strategic IT Planning | 23.4 | 2.7 |

Causes of failure of implementation and introduction of new business information system can also easy be found in the absence of appropriate experts to introduce or implementers (consultants) of such systems, whether it's a lack of knowledge of business processes, any lack of knowledge of business information systems as a product features [17]. All these are reasons why the practice by many studies more than 75% of projects in implementation of ERP in the enterprises failed [18]. The number of available resources in turn depends on the number of experts that the company owns as an implementer and employs. Therefore there is a need tabulation of mean values of order CSF according to their importance in ERP implementation, as shown in Table III [9].

In Serbia, more recently, the company decided to introduce the ERP system in order to increase the impact of its basic functions, such as procurement, preparation and processing of purchase orders, receivables, etc… Anyone who understand the people generally were unprepared and did not understand how such a complicated job can easly be applied to the introduction of such a system, [19].

## V. CONCLUSION

Implementation of the project of introducing a business information system ERP, as a key resource, it is always a complex and expensive project with far-reaching consequences for the organization. However, as long as the project is implemented, and it periodically in almost all organizations, it is often the case that the project, the longer you delay the procurement. Organization and implementation of modern business system, will inevitably procrastinate and its presence the global market, not to make a profit and savings that the new system delivers, or archive a competitive advantage over the competition. The information system is part of the infrastructure of the company or organization, so it is a strategically important for the survival and success of enterprises. ERP solutions and enterprise information system are being introduced with the task of increasing productivity and never vice versa. The most common price is the only element that decides the vendor software, which is essentially a false basis. That is why the question is what ERP solutions purchase, wherever the home-made solutions, or a better party solutions, which offer was still very high. Company management, who take decisions, in most cases, is not familiar with it, what the ERP solution is, which vertical solutions are and what their mission is. Prior the procurements of any ERP solution must carefully dissect and define business processes, organization and determine the internal team, comprised of leading executives of the company who have a vision and want to introduce ERP. In this regard, the management concepts, such as business process reengineering (BPR), Total Quality Management (TQM), and the production just in time (JIT) and so on. Without going deeper into the modern management concepts, here are highlights only one aspect where it and is are appropriate informational "backbone" and the basic for the integration of information and processes, which is particularly evident in the concept of CIM (Computer Integrated Manufacturing)

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