ERP PROJECTS FAILURE: ANALYSIS OF CRITICAL FACTORS BASED ON INTERNATIONAL EXPERIENCE

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Abstract

ERP (Enterprise Resource Planning) Projects usually confront many problems at different stages of their implementation process, often leading to partial or complete failure of the implementation itself or their productive operation, with sometimes disastrous results for the enterprise or the organization involved. There are many factors causing these problems. Our research attempts to indicate the most significant, after the analysis of 30 ERP projects failure all over the world. Our analysis, found that the leading factors causing the failure of an ERP project, are the wrong project designing and inadequacies in its management. As important factors have been identified, the lack of the support from the organization staff and the staff training, as well as factors related to inadequacies in the infrastructure and software and the ERP support after its productive operation. Finally, based on our research findings, proposals are suggested, for the successful implementation of ERP project systems, with special account to the characteristics of the Greek ERP market.

Περίληψη

Η υλοποίηση ενός έργου Συστήματος Διαχείρισης Επιχειρησιακών Πόρων (ERP) μπορεί να συναντήσει προβλήματα σε διάφορα στάδια του, που είναι δυνατόν να οδηγήσουν σε αποτυχία της ολοκλήρωσής του ή της λειτουργίας του, με καταστροφικές πολλές φορές συνέπειες για την επιχείρηση ή τον οργανισμό που το υλοποιεί. Αυτά τα προβλήματα οφείλονται σε πολλούς λόγους, οι σημαντικότεροι από τους οποίους αναζητήθηκαν, καταγράφηκαν και αναλύθηκαν στη παρούσα ερευνητική εργασία, μετά από την μελέτη 30 περιπτώσεων αποτυχημένης εφαρμογής έργων ERP συστημάτων διεθνώς. Από την ανάλυση που πραγματοποιήσαμε, διαπιστώσαμε, ότι οι σημαντικότεροι παράγοντες που οδηγούν σε αποτυχία τα έργα υλοποίησης ERP συστημάτων εντοπίζονται, κατά κύριο λόγο στον λανθασμένο σχεδιασμό και σε ανεπάρκειες στη διοίκηση του έργου, κατά δεύτερο στην έλλειψη αποδοχής από το προσωπικό και στην πλημμελή εκπαίδευσή του και τέλος σε αδυναμίες της υλικοτεχνικής υποδομής και του λογισμικού και στην ελλιπή υποστήριξη μετά τη λειτουργία του. Τέλος, με βάση τα ευρήματα της έρευνάς μας, διατυπώνονται προτάσεις για την επιτυχή υλοποίηση έργων ERP συστημάτων, με ιδιαίτερη αναφορά στα χαρακτηριστικά της Ελληνικής αγοράς.

Keywords: ERP; Enterprise Resource Planning; ERP failure; ERP projects failure

1. Introduction

ERP is an acronym of Enterprise Resource Planning and is sometimes a confusing term. In simple words an ERP System is a software solution used by companies as a business tool for planning and operating throughout everyday business. An Enterprise Resource Planning System is a cross-functional enterprise system and the most widely implemented business software systems in a wide variety of industries and organizations. ERP is comprised of many modules such as an accounting module, an inventory module, a human recourse management module, a production module etc. Each of these modules shares information that are stored in a common database. ERP systems facilitate the breaking down barriers between departments within a company, as an ERP system allows all departments to have access to valuable and updated information. An ERP system integrates business processes across departments onto a single enterprise-wide information system. The benefits of an ERP system are improved coordination across functional departments and increased efficiencies of doing business. The ERP gives Quality and Efficiency, Decreased Costs, Decision Support, Enterprise Agility. An ERP system is not only an Information Technology project but an organizational project. So, it is necessary to ensure that ERP systems are acquired in accordance with the vision of the company.

The complexity of an ERP system means that there are difficulties in any ERP implementation. Also implementing an ERP can be a difficult, a time-consuming and an expensive project for every company. The technology is tightly integrated and requires a commitment from all divisions and often a shift in the way a company does business to make it work. Usually it can take years to complete and costs as much as millions of euros (€) for a large company. Moreover, there is no guarantee of a successful outcome.
There are two aspects of ERP success or failure: process and outcome. The first aspect, studies the success or failure of an ERP implementation process. Implementing an ERP system often constitutes an enterprise most expensive investment of software ever and a large corporate project. There are many factors that may affect the initial budget. Also depending on the implementation strategy adopted, ERP projects are often long and intense. From surveys, it is found that the average time of implementing an ERP system is about 2 years.
Outcome success or failure aspect, studies the extent of post-implementation ERP benefits. Enterprises implementing ERP expect lots of benefits as transactional, informational and strategic. These benefits include reduction in operations costs, inventory carrying costs, business process cost, operating labor costs. Also ERP systems increase the quality, accessibility and flexibility of information and improve managerial decisions.
An ERP Project Failure is "an implementation that does not achieve a sufficient return on investment identified in the project approval phase". With this definition, it has been found that failure rates vary from 60 to 70 percent.
What provokes an ERP Project failure? The failure of an ERP project means never actually implementation of ERP system. Also a project can be considered failed if the new system is not fully utilized. Failures of multi-million dollar ERP projects are reported once in a while even after 20 years of ERP implementation.

2. ERP Failure: Identifying the Critical Factors

Our research attempts to indicate the most significant factors, causing an ERP project fail. For this reason we examined 30 ERP projects failure all over the world.
It is very difficult to find statistics and evidences for every failure case because these cases usually lead to lawsuits between companies which installed the ERP system and companies which supplied and supported the ERP software. Also these evidences are sensible and valuable data. Also, hundreds of unsuccessful or failure cases for many reasons are never brought forward, usually to avoid any sort of bad advertising. Over the past few years globally it has been noted that large companies gone bankrupted because of an ERP System which has been taken down.
The profile of companies which we examined is large enterprises and organizations from a variety of business sectors.
Even if our sample is not representative, the ERP cases we examined show similarity with ERP systems market share. Therefore the software is not the main cause of ERP project failure. This can be seen in table (1) below.

ERP Software	Number of failures in our Research	percentage of 30 cases in our research	Market Share (2006)*
SAP	12	40,0%	41%
Oracle- Peoplesoft	5	16,7%	21%
Baan (SSA)	2	6,7%	3%
Other	11	36,7%	35%
	30	100%	100%

(*) AMR Research 2007.

Table 1: ERP Software in Failure cases compared with Market share

The most common implementation methods of an ERP system are the Big-bang method, the method of prototype and the parallel implementation of a new system while the previous one works.
An ERP software can be customized or pre-configured. Table (2) describes the methods of implementation and the type of ERP software in the cases we studied in the present paper. It is noted that most failures occurred when Big-bang implementation is chosen. Also, the type of ERP product is not significant in failures, since customized ones resulted in failures too. That means that the main reasons of failure is project design and inadequacies in its management.

ERP Software	Implementation Method			
	Bing Bang	Prototype	Parallel	
Customized (tailor-made)	12	2	4	18
Off-the Shelf (pre-configured)	5	1	6	12
	17	3	10	30

Table 2: types of ERP Software and implementation methods

An ERP life consists of three major phases: i) pre- implementation ii) implementation and iii) post-implementation. The problems are obvious in post-implementation and the failure usually evident in this phase but the failure could be due to reasons from previous phases or to project design. The table (3) shows this.

Phase		
Pre-implementation	Implementation	Post-Implementation
1	8	21

Table 3: Phase where the problem was obvious.

An ERP System has four components: a) ERP software, b) Business Processes that ERP supports, c) Users, d) Hardware and Operating Systems that save and run ERP applications. The failures in one or more of those four components could cause the failure of an ERP project. But an ERP project often fails when the Design, the Management or the business process reengineering fails. The wrong time of implementation can even cause the failure. We examine analytically 30 failure cases and describe the factors that caused this.
From the results as shown in the tables (4) and (5) the most significant factors causing the failure of an ERP project, are the wrong project designing and inadequacies in its management. As important factors have been identified, the lack of the support from the organization staff and the staff training, as well as factors related to inadequacies in the infrastructure and software and the ERP support after its productive operation.
The factors are summarised in groups according to the component of ERP System they belong to.
In each case there is more than one factor that can cause failure as seen in Table (4). In Table (5) only the main reason is shown.

Factor	numbers	total	Percent.
Insufficient Training	9		
Lack of qualified personnel	4		
Insufficient cooperation between project teams	6		
Personnel rejection or reluctancy	4	23	20,00%
Business process reengineering	20		
Project Design	28		
Project Management	16		
Project scope - Object of project	5		
Timing	3	72	62,61%
Data migration	7		
Connectivity, codes, reliability	8		
Unsupported processes or processes mistakes	4	19	16,52%
Hardware	1	1	0,87%
	115		

Table 4: Factors that can cause ERP project Failures

Factor	numbers	total	Percent.
Insufficient Training	2		
Lack of qualified personnel	1		
Insufficient cooperation between project teams	2		
Personnel rejection or reluctancy	2	7	20,00%
Business process reengineering	3		
Project Design	9		
Project Management	4		
Project scope - Object of project	1		
Timing	1	18	63,33%
Data migration	1		
Connectivity, codes, reliability	2		
Unsupported processes or processes mistakes	2	5	16,67%
Hardware	0	0	0,00%
	30		

Table 5: Main reason for ERP Project Failure

The table (6) below shows the organizations used in this survey. The resources are from world wide literature so the data in table (6) may not be concise.

ORGANIZATION	IDENTITY	ERP	DAMAGES	YEAR
American LaFrance	construction of specific and security cars	IBM	over $200 million	2007
Avis Europe	car rental company	PeopleSoft	between €40 and €45 million	2004
Oxford Health Plans Inc.	Health organization	Oracle, Unix	$81 million	1998
The city of San Diego, USA	Municipality	Axon	over $11million	2008
The city of Oak Park, Illinois, USA	Municipality	PeopleSoft	$1,6 million	2007
Texas State, USA	State Government	IBM	about $900000	2008
OAED	Greek governmental organization	Intracom	unknown	2008
Overstock.com	Online retailer	Oracle	$10,3 million	2008
Levi Strauss	clothing company	SAP	98% failure in net incomes compare to 2007	2008
Britain's national tax system	British government	unknown	unknown	2002
Hershey Foods Corporation	food corporation	SAP, Manugistics and Siebel	$151 million	1998

ORGANIZATION	IDENTITY	ERP	DAMAGES	YEAR
Signal International	Multinational corporation	Global Lease (E-Systems)	unknown	1998
Nestlé usa	food corporation	SAP	$280 million	2000
FoxMeyer	health and pharmaceutical corporation	SAP R/3, Pinnacle	over $1billion	1996
Whirlpool	Electrical appliances manufacturer	SAP R/3	67% failure in net incomes compare to 1999	2000
Poolrite	Swimming pool accessories manufacturer	Baan	$580.000	1999
Dell	Computer manufacturer	SAP	$115 million	2006
Dow Chemical	chemical company	SAP R/2	$500 million	2005
Fort Worth	travel corporation	Confirm	$125 million	2007
LTC Corporation ltd	manufactural and commercial corporation	Orion Advantage (3i Infotech)	$500.000	2005
Novartis	health and pharmaceutical corporation	SAP	unknown	2005
Sobeys	chain of enterprises	SAP Retail ERP	$89 million	2000
StoneCo	stone corporation	Movex ERP (Intentia)	$250000	1999
Technologiki Cliniki	Constructional enterprise	Emetris S.A.	unknown	2007
HewlettPackard	Electronic instruments and computer Manufacturer	SAP	$160 million	2003
Nike	sportswear and footwear company	i2 Tech, SAP, Manugistics, Siebel	$48 million	2001
Norfolk Southern Corp.	railway corporation	unknown	$113 million	1999
Tri Valley Growers	agricultural co-operative company	Oracle	$6 million	1997
Snap-On Inc.	Commercial and Industrial chain of enterprises	Baan	profits sink 22% compared to 1997.	1998
W. W. Grainger Inc.	industrial supplier	SAP	lost $19 million in sales and $23 million in profits	1999

Table 6: The 30 Failure cases we examined

3. Conclusions and Recommendations

The implementation of an ERP project is a complex engagement. It is a high-risk project that needs to be managed and planned properly because it affects nearly every aspect of organizational performance and functioning. In the present paper, we have developed a comprehensive list of ERP project failures all over the world that have been broadly presented and studied in the literature.
Organizations have to learn how to identify the critical factors that affect the implementation process and know what elements in the process can drive them effectively, so as to ensure that the promised benefits can be obtained and potential failures can be avoided. Also they have to develop techniques and approaches for the risk management of the ERP implementation projects.
According to our research outcomes, critical causes of the ERP Failures are: Underestimating complexity of planning, development and training needs, failure to involve users-employees, too much actions too fast, insufficient training in new tasks, failure in data conversion and testing, over-reliance on ERP vendors or consultants support. Another critical factor may be that in the pre- implementation phase (known as the planning phase) the vendor did not estimate the needs of the company sufficiently. Also the vendor in that phase did not involved the company staff to succeed in a good result and proposed a system that finally could not accomplish the p company expectations.
The most significant success factors are: Top Management commitment and Support, Business Process Reengineering, Use of Project management techniques in the implementation, Change Management Culture & Program, Clear Goals, focus and scope (Business Plan and Vision), the right team Selection (competence), Avoidance customization, User Training and Education, Effective Communication, Use of ERP's consultants, Vendor package selection, Integration of the system, Appropriate Management expectation, Appropriate Business & IT Legacy Systems, Software Development, Testing & Troubleshooting, Vendor Partnership, Use of vendors' development tools, Performance Monitoring & Evaluation, Management Structure, Interdepartmental cooperation and communication
Over the past years only large and medium to large enterprises attempted to implement ERP systems. Nowadays the adoption of ERP systems is common even to the SMEs, bringing up problems in ERP implementation projects which are specific to these types of companies and therefore need to be properly analyzed. There is an evidence that inadequate project management leads to short term solutions, resulting from insufficiencies during the implementation phase, with substantial side effects when systems go live.
In Greece 85-90% of the enterprises are small and small to medium-size. They represent an important share in the ERP software market. The problem is to ensure a successful ERP project implementation to SMEs. An aggravating factor is that the small and small to medium-sized enterprises are unable to spend a lot of money and usually don't have specialized personnel. Also, they do not have enough experience in similar projects and they do not easily trust consultants. ERP implementation failure is a major concern for companies resulting to limitations and mistakes.

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