

An Analysis of Critical Failure and Success Factors for ERP Systems Implementation in Large Organizations (Case Study in Saudi Arabia Environment)

Esmat Mohamed Abdel Moniem el Sayed

College of Business/ University of Jeddah, Kingdom of Saudi Arabia

Abstract: Many companies are failing to set up the ERP system and not every company gets the return from using the ERP system. Often large ERP implementation projects fail before they even start. The ERP is not only a technology that support the management but also a way of the management. ERP provides many benefits but in nutshell any ERP system provides two major benefits that do not exist in non-integrated departmental systems, A unified enterprise view of the business that encompasses all functions and departments; and an enterprise database where all business transactions are entered, recorded, processed, monitored. there is a lack of research that identifies how environmental factors affect the success of ERP systems in Saudi Arabia. This research investigates how environmental and organizational factors affect the success of ERP implementation in Saudi Arabia. Both qualitative and quantitative approaches are used to collect data from IT managers. Besides we introduce ERP Evaluation Survey Questionnaire, unlike many recent ERP surveys have focused mainly on the reasons for failure. In this survey, we took a more balanced view is taken by examining the factors which contribute to both success and failure and by identifying the extent of business benefits delivered across a range of areas. One of the most important success factors for the implementation of ERP systems in large organizations in Saudi Arabia is the tendency to Cloud-based computing

Keywords: ERP, Implementation failures, success factors, Saudi Arabia. Cloud-Based ERP Software, ERP Solutions Providers in Saudi Arabia

1. Introduction

A significant number of ERP implementations surveyed did not deliver anticipated benefit or value where 31% of companies surveyed fail to realize at least half of the business benefits they expected from their ERP systems, and 22% of implementations fail to deliver at least some measurable business benefits that they from their ERP solutions [1]. In addition, over one in three companies surveyed (30%) realized major operational disruptions after implementation go-live, such as the inability to ship products or to close the books. Finally, only 68% of executives and 61% of employees are at least somewhat satisfied with their ERP solutions. figure [1] illustrates this information [1].

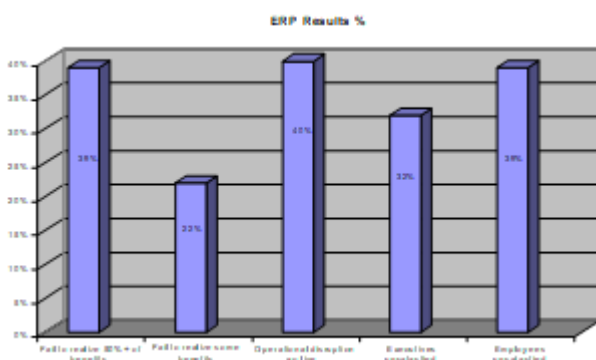


Figure 1: ERP systems failure reasons

Industry statistics show that greater than 60% of ERP implementation historically failed from the start. Does this mean that we are doomed from the start? Of course not, if

we learn from the mistakes of others. So, the pertinent question is what are the main causes of ERP failure and what can be done to prevent this from happening to us? According to G. Ligus -2003 from Rockford Consulting Group, Ltd [2][[3]], and their surveys on the Egyptian enterprises adopting ERP system the researchers found that there are twelve major reasons for why companies get bogged down or fail in implementing ERP.

Businesses without a central ERP system spend a lot of time performing redundant tasks, re-entering data, and reconciling duplicate data. Data entered one system may appear different in another system. These additional tasks result in increased labor and personnel frustration. An ERP system eliminates vertical data in our organization, breaking down the virtual walls between departments. One database contains all company data, and all departments pull data from the same database.

While the end results of a streamlined system include increased productivity and data availability, the prospect of selecting and integrating an ERP Projects solution into the business can be daunting. It is certainly a major undertaking to uproot many of the entrenched systems and train personnel to use the new system but understanding how the ERP Projects system will improve the business processes and creating a strategic implementation plan will keep the end benefits in the mind and smooth the integration of the ERP Projects into the business.

It was reported that 75% of the ERP projects are classified as failures [4]. 51 % viewed their ERP implementation as not fully completed. Based on the ERP survey conducted by

Meta Group in 2002, the average cost of ERP ownership was \$15 million ranging from half millions to \$300 million. The average cost per user per year could be as high as \$20,000. However, there are also frequent reports of ERP failure: "between 50 percent and 75 percent of U.S. firms experience some degree of failure. One recent survey revealed that 65 percent of executives believe ERP implementation has at least a moderate chance of hurting their business [5]. "Three quarters of the ERP projects are considered failures and many ERP projects ended catastrophically" [6].

Managing knowledge in an ERP implementation project is a complex and difficult task, as a typical ERP system entails many users, both internal and external, ranging from top executives to data entry operators, external consultants to software vendors.

ERP system facilitates the smooth flow of common functional information and practices across the entire organization. In addition, it improves the performance of the supply chain and reduces the cycle times. However, without top management support, having appropriate business plan and vision, re-engineering business process, effective project management, user involvement and education and training, organizations can not embrace the full benefits of such complex system and the risk of failure might be at high level.

Business grows, the increasing number of employees, clients, products, services, and functions increases the complexity of organizing the data associated with each of these entities. One way to streamline system processes and data control is with the implementation of Enterprise Resource Planning (ERP) software [7]. ERP solutions are designed to integrate all the data and processes within the company into a single system. A single system allows for data from one process to be used by a second process, with a single database tying the systems together.

Businesses without a central ERP system spend a lot of time performing redundant tasks, re-entering data, and reconciling duplicate data. Data entered into one system may appear different in another system. These additional tasks result in increased labor and personnel frustration. An ERP system eliminates vertical data "silos" in your organization, breaking down the virtual walls between departments. One database contains all company data, and all departments pull data from the same database.

While the end results of a streamlined system include increased productivity and data availability, the prospect of selecting and integrating an ERP software solution into the business can be daunting. It is certainly a major undertaking to uproot many of the entrenched systems and train personnel to use the new system but understanding how the ERP software system will improve the business processes and creating a strategic implementation plan will keep the end benefits in the mind and smooth the integration of the ERP software into the business.

2. Literature Review

As investment in ERP systems implementation projects in organizations is strategic and highly risky due to the complexity involved, high implementation cost and change management issues, so it is crucial to select an ERP software that suits the organizational goals and objectives for successful implementation .

By using the pervious researches, we can review the rate and the cost of ERP Project Failures from the year 2001 till the latest researches as follows:

At Year 2001:

In 2001, Robbins-Gioia Survey [8] found that 51% of the participants viewed their ERP implementation as unsuccessful.

At Year 2002:

It was reported that 75% of the ERP projects are classified as failures [9]. 51 % viewed their ERP implementation as not fully completed. However, there are also frequent reports of ERP failure: "between 50 percent and 75 percent of U.S. firms experience some degree of failure".

Based on the ERP survey conducted by Meta Group in 2002, the average cost of ERP ownership was a \$15 million, ranging from half a million to \$300 million. The average cost per user per year could be as high as \$20,000. However, there are also frequent reports of ERP failures: "between 50 percent and 75 percent of U.S. firms experience some degree of failure". [10].

Based on the ERP survey conducted by Meta Group in 2002, the average cost of ERP ownership was \$15 million, ranging from half millions to \$300 million The average cost per user per year could be as high as \$20,000.

At Year 2003:

One recent survey revealed that 65 percent of executives believe that ERP implementation has at least a moderate chance of hurting their business. According to Umble 2003 [11], "three quarters of the ERP projects are considered failures".

One recent survey revealed that 65 percent of executives believe ERP implementation has at least a moderate chance of hurting their business " (Umble&Umble 2003 [[5]])

At Year 2005:

"Many ERP projects ended catastrophically" (Rasmy et al 2005 [9]). Managing knowledge in an ERP implementation is a complex and difficult task.

"three quarters of the ERP projects are considered failures and many ERP projects ended catastrophically" (Rasmy et al 2005 [**Error! Reference source not found.**])

At Year 2006.

In an article by Bob Lewise [12], he even claimed that 70% of ERP implementations failed.

At Year 2007

According To A Response By Nic Harvard On 2007 [13].

- 80% of customers in the MFG sector are unhappy with their current ERP.
- 60% of ERP projects fail, given the time/budget/deliverable metrics.
- 90% fail to deliver any ROI.
- 80% of projects which dedicate 15% or more of total budget succeed according to the above metrics.
- 95% of companies which (directly or indirectly) dedicate less than 10% of total budget to education/training/change of MGT fail to hit any of the above measures.

At Year 2008

Saroukhani et al. (2008) [14] presented in the review done of the literature published on the methods of the ERP selection and done some comparison between the methods.

The researchers have investigated various model of the ERP acquisition process, evaluating tools, performance prediction system, neural networks and supply chain management (SCM), etc.

At Year 2009

Hebrean (2009) [15] presented an objective oriented approach to ERP vendor selection process in which they emphasized that the selection process should consider their ability to help transform business processes to achieve the customer’s objectives.

Cebeci (2009) [16] presented a case study on approach to select a suitable ERP system for an industry having challenges of variant structure of products, production variety and unqualified human resources and proposed to match the ERP package objectives with the business objectives and provided an analytical tool to select the most suitable ERP software. In this study, a fuzzy extension of the multi-criteria decision-making technique analytic hierarchy process (AHP), was used to compare these ERP system solutions.

Strategy, structure, culture, and operations. Making an organization and ERP system compatible may require the organization to change some or all the facets of the business. This drive change to business process, which means people must also change. If change management is not handled well, ERP projects are apt to fail. In fact, most ERP failures are blamed on people issues rather than technology issues. People, process and technology are the three drivers of change management for ERP projects.

At Year 2010:

According to the Prinzo Group [17], Nearly 70% Of Implementations fail.

The following are some statistics describing failure rates about failed CRM projects:

- 2001 Gartner Group: 50%
- 2002 Butler Group: 70%
- 2002 Selling Power, CSO Forum: 69.3%
- 2005 AMR Research: 18%

- 2006 AMR Research: 31%
- 2007 AMR Research: 29%
- 2007 Economist Intelligence Unit: 56%
- 2009 Forrester Research: 37%

They relate eight competencies required for successful change management based on literature of Crawford and Nahmias (2010) [18] especially to ERP projects. These competencies are leadership, stakeholder management, planning, team selection/team development, communication; decision making and problem solving, cultural management and project management.

Poti et al. (2010) [19] presented the analysis of the relationship between organizational change processes and its impact on individuals from the perspective of ERP users. The study is based on the perceptions of ERP users on change processes adapted in their organizations and its outcome at an individual level. The data collected has been analyzed using statistical techniques such as multiple regressions. The identified relationships would facilitate decision-making on change processes as per their impact. The study of this nature is the first of its kind in India.

According to the pervious analysis about the ERP project failures and according to the results of 2010 ERP Report of Panorama Consulting Group [20] [21], it is found that:

- ERP can deliver huge benefits to the organizations, but it needs to be managed effectively
- Evaluation process is very important and a key point to ensure successful ERP implementation
- Most ERP Challenges are related to business and human issues, not technology
- Misalignment of expectations is often the first domino to fall early in a troubled implementation
- Table [2] shows vendors were listed most frequently, with one out of five companies (20%) are considering SAP, 13.9% of companies are considering Microsoft Dynamics, and 9.8% are considering Oracle e-Business Suite. The strong presence of listed vendors is most likely due to strong brandawareness and reputation as well as the variety of products offered by these vendors
- As might be expected, seven of the most frequently short-listed vendors were also the most frequently selected. The selection rate was based on the frequency of each vendor being elected over the frequency of each being considered in the selection phase. Table [2.16], Oracle e-Business Suite and SAP had the highest selection rate.

Vendor	Frequency	Selected vendor	Selection rate
SAP	20.3%	Oracle E-Business Suite	53.2%
Microsoft dynamics	13.9%	SAP	53.1%
Oracle E-Business Suite	9.8%	Infor.	38.5%
Epicor.	7.7%	Oracle JDE	37.7%
Infor.	3.9%	Epicor	33.3%
Oracle JDE	3.3%		
Oracle PeopleSoft	2.2%		
IFS	2.2%		
Table [1] Top 7 Short Listed Vendors		Table [2] Top 5 Selected Vendors	

At Year 2011:

Johansson et al. (2011) [22] studied relationship between factors influencing selection of implementation approach and companies' ability to stay within budget when implementing ERPs. The main findings are that: 1- the number of implemented modules influences selection of an implementation Approach 2- companies with information strategies are more likely to stay within budget regarding ERP systems implementation. More research is required to understand relationship between factors influencing selection of implementation approach and ability to stay within budget for ERP implementation.

Rouyendegh and Erkan (2011) [23] presented a comprehensive framework for selecting a suitable ERP system by using AHP which can systematically construct the objectives of an ERP selection to support the business goals and strategies of an enterprise. In the case study they could realize their selection by using parameters of total costs, implementation time, functionality, user-friendliness and reliability.

The framework addresses only the software-related selection, criteria and not vendor-related. More research is required to link the business strategy and IT strategy with the framework proposed.

Hurt (2011) [24] relates in the case study several established management and information systems concepts: the value chain, expectancy theory, change management principles, the capability maturity model and the systems development life cycle.

Al-Shamlan and Al-Mudimigh (2011) [25] discussed that the top management usually faces an unexpected attitude from potential users during implementing an ERP system.

As their resistance may cause failure of project top management should deal with this problem using effective change management strategies and processes. They also provided a very significant and very explicit contribution towards the change management factors for ERP implementation. Though paper discusses the strategies and processes used for the successful enterprise system through a case study there is scope for improvement for research by evaluating the impact of change management on employees and various stakeholders.

Adams and Martin (2011) [26] in the web paper discusses in detail role of change management to address the People aspect in an ERP implementation project, realize the path for delivering the new processes and ERP solution into production operations, and gain 'reach' into the organization. It also addresses how resistance to change affects ERP implementation and how to mitigate these challenges. The paper also stresses the importance of organization alignment, skill assessment, training requirement during the project execution. This good concept needs to be applied in other implementation and analysis to be done through the results. There is need felt for development of tools and methodologies for better assessment.

Hammerman (2011) [27] reports trends for next five years to shape the future of enterprise applications and ERP that will introduce new levels of process flexibility, improve the transparency of ownership costs, and accelerate the speed of process execution. As outlined in recent research from Forrester, seven technologies will drive this transformation: SaaS, mobile, BPM, usability by making these apps user-friendly and adding advanced analytics capabilities, PaaS, social networks, and elastic computing.

This research work is very useful in our work as we have incorporated future technology trends also in our ERP selection frame work.

Reddi and Moon (2011) [28] presented a service-oriented architecture (SOA)-based framework to carryout engineering change management (ECM) across a supply chain.

Each service in the SOA framework accomplishes an independent task, then performs a set of tasks constituting a business process. This framework enables the interaction between the partner's information systems in a communication backbone to achieve an effective ECM over a collaborative network of product development.

Oztemel et al. (2011) [29] proposed effective automated knowledge management systems including agent-based approaches, such as strategic enterprise resource management (SERM) together with active knowledge management models such as enterprise knowledge management model (EKMM) as well respective supporting systems in order to be intelligent enough in own operations. SERM is capable of handling corporate level strategic planning, traditional ERP systems, technology management, customer relationship management (CRM) as well as performance monitoring. EKMM on the other hand is designed to handle the corporate knowledge in a systematic way to assure that the right knowledge becomes available to the right person at the right time.

At Year 2012:

Radut and Codreanu (2012) [30] argued that the most important part of adopting an ERP system is the selection part and the selection process should be specific to organization as it considers the requirements of the organization and should be an analytical method based on criteria. The most important of which are functionality, technology and expertise, flexibility and application scalability, costs, implementation and ease of use.

Their offering is a simple sequential qualitative model with selection criteria/characteristics composed of six attributes, namely functionality, reliability, efficiency, usability, maintainability, and portability.

Ratkevicius et al. (2012) [31] presented analysis of different classifications of the fundamental criteria for the ERP system selection process, and defines two main groups – software-related, and implementation-related. The significance of ERP system functionality as the principal software-related ERP selection criterion is emphasized.

Eleven other criteria were defined as important to consider, such as the total costs of the ERP implementation project, vendor reputation, ERP reliability, ease of integration with other systems, technology advance, scalability, upgrading ability, customization/parameterization possibilities; ease of use; flexibility and modularity. The importance of all-round knowledge for a successful ERP implementation is emphasized, including ERP software functionality, project and change management, business processes, organization of training etc. All these areas are closely connected with implementation-related ERP selection factors: organizational fit, end-user readiness, training, system support quality.

The researchers have not proposed any quantitative technique for evaluation. There is scope for future work to create a decision support system which would automate the ERP selection process.

Juell-Skielse et al. (2012) [32] presented a novel method for ERP selection which better utilizes the strengths of service oriented ERP named agile method for ERP selection (AMES) as conventional on premise installations of ERP are now rapidly being replaced by ERP as service. AMES is designed to shorten lead time for selection, support identification of essential system requirements, increase learning during the selection process and increase control over the subsequent ERP. AMES, has three phases: envision iterate and decide. Though the researchers have proposed a novel method for ERP selection but it is being used only a small firm the method needs to be evaluated in more organizations of different size, organizational settings and industries.

Asl et al. (2012) [33] presented after a thorough review on literature and extracting all the identified criteria through the previous valid studies, using Delphi method, the following factors: cost, software quality, vendor and software capability were identified as the main factors which should be considered by the organizations. These criteria were, then, ranked using Shannon Entropy technique and the vendor was identified as the most important criterion. The study gives good insight and also scope for more research in developing a robust selection framework in which intended needs and criteria of an organization are specified and the best choice which meets the needs of organization is selected.

Onut and Efindigil (2012) [34] presented a hierarchical framework ERP software vendor selection process and have also presented a real-world case study. As a multi criteria decision making (MCDM) tool, they used AHP and its fuzzy extension to obtain more decisive judgments by prioritizing criteria and assigning weights to the alternatives.

There is more scope to widen the scope and take into consideration all aspects and develop a comprehensive frame work.

Madapusi and D'Souza (2012) [35] presented a literature-based and theory-driven model developed to examine the relationship between ERP system implementation and operational performance and also influence on operational performance. A better understanding of the contribution of

ERP systems to operational performance can be obtained if researchers address and assess changes at modular and system level also the use of longitudinal designs to capture and tease out the time delayed effects between ERP system fine-tuning (at the module and sub-module levels) as well as changes in operational performance.

Hofton et al. (2012) [36] has identified the critical people-related challenges organizations typically face at each phase of an ERP implementation, as well as specific steps to take to mitigate them. With so much on the line, consider what your organization should plan to minimize risk and make the ERP project implementation journey as smooth as possible. It presents the top ten change management challenges and provides guidance for mitigating the same.

Krigsman (2012) [37] in his paper discusses transforming the business using cloud-based ERP and explores the important role of professional services when implementing cloud ERP. The author also offers suggestions to encourage cloud ERP adoption, an important foundation to create business transformation that endures.

There is scope for research to understand role of ERP-related professional services in the cloud and implementation and realization of benefits needs to be evaluated.

organizations imply some sort of challenges. While ERP systems are meant to increase the organizational efficiency by enhancing the information processing capability of the enterprise knowledge management initiatives aim at mobilizing the knowledge through organized knowledge repositories of explicit knowledge and communities of practice as a means of sharing and creating tacit knowledge, having their overall focus on improving innovation capabilities by increasing flexibility.

Zakari and Ahmad (2012) [38] in the paper identify two major areas of concern regarding the management of knowledge in their study: managing tacit knowledge, and issues regarding the process-based nature of organizational knowledge viewed through the lens of organizational memory. The competitive advantage of organization arises from its capabilities in internalizing and integrating the adopted processes with the existing knowledge paradigms and harmonizing the new system and the organizational culture towards getting the most out of the implementation effort.

At Year 2013:

Garg and Khurana (2013) [39] presented the ERP product selection criteria for Indian SMEs. The finding of this research will help the marketing and sales team of ERP product companies to improve upon the key points and enable end users to make informed decisions in selecting the ERP package for the organization.

Kazancoglu and Burmaoglu (2013) [40] presented the TODIM method, which allows the usage of both qualitative and quantitative data through a case study which involves ERP software selection process of a steel forming firm. Further research is required to assess the applicability of this new approach toward ERP software selection and to deal

with the complex calculations in the decision-making process in various industries include manufacturing companies.

Neto and Morais (2013) [41] propose a new approach to support the transference of the knowledge related to the software process to workers that need it. The proposed approach will support the software requirements engineering through the creation of an agent-based model to assist the development of intelligent agents that can realize the knowledge needs, interact with the information systems and support executing the software developer tasks.

Martens (2013) [42] analyzed that many ERP vendors debuted product or fleshed out their strategies for SaaS ERP in 2012 and further developments are set for future with focus SaaS ERP, SaaS offering in hybrid harmony with on-premises ERP, PaaS and infrastructure-as-a-service (IaaS) strategies. Given the success of SaaS CRM and HCM, SaaS financials seems the next area likely to resonant with a larger set of enterprise customers.

At Year 2014:

Kazemi et al. (2014) [43] presented ERP system criteria based on opinions of the project expert team and tried to select the best vendor option of ERP system and determine a suitable ERP package for enterprise using multi-criteria

decision making technique and combining them with goal programming and fuzzy theory.

Ozturkoglu and Esendmir (2014) [44] proposed a model for selecting the ERP software selection in which they combined grey relational analysis (GRA) with an intuitionistic fuzzy set multi-criteria method (IFS). In the case study, they first obtained the weights with using IFS method and then rank and select the alternatives with using GRA. The model to be applied in different other organization to study the increase in the efficiency of decision making procedure for the decision makers.

Addo-Tenkorang and Helo (2014) [45] proposed ERP-SaaS model and attempts to propose industrial systems solution value-adding benefits including: low preliminary and-anticipated ongoing costs, faster implementations and value-adding, affordable ownership cost, greater reliability, improved support, reduced IT complexity and improved business motivation.

At Year 2016:

Panorama Consulting Solutions developed the 2016 [46] Report on ERP Systems and Enterprise Software to investigate software selection, implementation and satisfaction trends across industries, organization sizes and geographic locations.

Table 3: Data Summary by Year

YEAR	COST	% COST OVER RUNS	DURATION	% DURATION OVERRUNS	% RECEIVING 50% OR LESS BENEFITS
2015	\$3.8M	57%	21.1 Months	57%	46%
2014	\$4.5M	55%	14.3 Months	75%	41%
2013	\$2.8M	54%	16.3 Months	72%	66%
2012	\$7.1M	53%	17.8 Months	61%	60%

According to Panorama’s independent ERP research over the past four years table [3] , overall project cost has decreased while the percentage of respondents experiencing cost overruns has increased. Duration overruns, on the other hand, are becoming less common, while overall duration has increased. The duration increase is not necessarily a bad sign as organizations appear to be planning for longer durations and have more realistic expectations about what it takes to achieve ERP success. While costs, durations and benefits realization fluctuate year-to-year due to economic conditions, implementation trends and dataset makeup, the facts remain:

And according Panorama Consulting Solutions developed the 2016 Report on ERP Systems and Enterprise Software [46] :

- 81% of organizations are either in the process of implementing ERP software or have completed implementation.
- 14% of organizations are in the process of selecting software.
- 5% are in the process of upgrading software.

At Year 2017:

Panorama Consulting Solutions developed the 2017 Report on ERP Systems and Enterprise Software to investigate software selection, implementation and satisfaction trends across industries, organization sizes and geographic locations [47] . This report summarizes Panorama’s independent research into the experiences of software customers with regard to enterprise systems, vendors, consultants and overall implementations.

While there has been a 13% increase in success rates since last year, there also has been a 19% increase in respondents characterizing their project as a failure. Both increases were due to the dramatic decrease in respondents reporting outcome ambiguity



Literature review Conclusion:

Out of the previous survey, the rate of the international ERP project failures is explained in the following table [4] over the last 10 years as follows:

Year	Rate of ERP project failures	Rate of CRM project failures
2001	50%	50%
2002	51%	70%
2003	65%	69.3%
2003	66%	29%
2005	69%	18%
2006	70%	31%
2007	60%	29%
2008	65%	56%
2009	69%	37%
2010	70%	36%
2012	36%	30%
2016	28%	50%
2017	26%	--

Table [4], the rate of the International ERP project failures during the last 17 years

Out of table [4] it is found that the rate of ERP project failures has increased during the last 10 years. Although this rate decreased during year 2007 and year 2008, it increased again in year 2009 and year 2010. For the CRM projects, the rate of CRM project failures decreased during the years 2003 to year 2007 and increased again during the year 2008 to year 2010.

a) Review of Enterprise Resource Planning (ERP)

This blog review of Enterprise Resource Planning (ERP): Implementation procedures and critical success factors. Now the ERP use is generally common in big corporations and even SME's are using various available ERP packages. But not every company gets the return from using the ERP system. I have been part of 3 different ERP systems and in my experience companies are failing to set up the ERP system because they cannot reach the predetermined goal [48]. The ERP is not only a technology that support the management but also a way of the management. ERP provides many benefits but in nutshell any ERP system provides two major benefits that do not exist in non-integrated departmental systems:

- A unified enterprise view of the business that encompasses all functions and departments; and.
- An enterprise database where all business transactions are entered, recorded, processed, monitored.

b) Critical Success Factors in ERP Implementation in Saudi Arabia

Through our study of the large Saudi organizations and through our experiences we suggest 10 critical factors for the successful ERP implementation in Saudi Arabia:

- 1) Clear understanding of strategic goals
- 2) Commitment by top management
- 3) Excellent project management
- 4) Organizational change management
- 5) A great implementation team
- 6) Data accuracy
- 7) Extensive education and training
- 8) Focused performance measures
- 9) Multi-site issues
- 10) Tendency to Cloud-Based ERP Software

So, from these critical factors, we can find that a successful implementation of the ERP system is not only set up a technology support of the information system, but also change the way of management. Successful ERP implementation requires the organization engage in excellent project management. This includes a clear definition of objectives, development of both a work plan and a resource plan, and careful tracking of project progress. And the project plan should establish aggressive, but achievable, schedules that instill and maintain a sense of urgency. A clear definition of project objectives and a clear plan will help the organization avoid the all-too-common "scope creep" which can strain. From this part, we can find that the ERP system is an information system. It is in charge of the collection, storage and supply of the information. But the critical factor of the successful is not how to build the information system but how to use the information that we get from the information system.

Unfortunately, some companies view ERP as simply a software system and the implementation of ERP as primarily a technological challenge. They do not understand that ERP may fundamentally change the way in which the organization operates. This is one of the problematic issues facing current ERP systems. I think the reason why ERP implementation fail is generally due to poor planning or poor project management, change in business goals during the project, and lack of business management support are the top three reasons for the failure of IT-related projects cited by IT managers. I believe that the main reason why implement fail is not the failure of the ERP system itself but the usage of the ERP system [48].

How to choose an ERP system which is adopted to the company is very difficult and there are no fix standard criteria available to decide. The key steps to choose the ERP system from available choices:

- 1) Create the vision.
- 2) Create a feature/function list.
- 3) Create a software candidate list.
- 4) Narrow the field to four to six serious candidates.
- 5) Create the request for proposal (RFP).
- 6) Review the proposals.
- 7) Select two or three finalists.
- 8) Have the finalists demonstrate their packages.
- 9) Select the winner.
- 10) Justify the investment.
- 11) Negotiate the contract.
- 12) Run a pre-implementation pilot.
- 13) Validate the justification.

ERP systems can be complex and difficult to implement, but a structured and disciplined approach can greatly facilitate the implementation. Here are 11 recommended steps for a successful implementation:

- 1) Review the pre-implementation process to date.
- 2) Install and test any new hardware.
- 3) Install the software and perform the computer room pilot.
- 4) Attend system training.
- 5) Train on the conference room pilot.
- 6) Establish security and necessary permissions.
- 7) Ensure that all data bridges are sufficiently robust and the data are sufficiently accurate.
- 8) Document policies and procedures.
- 9) Bring the entire organization on-line, either in a total cutover or in a phased approach.
- 10) Celebrate.
- 11) Improve continually.

The ERP system is a complex system, and it is a hard job to implement the ERP system successfully. The second question is why. Why we need the ERP system. What can be brought by the ERP system?

The ERP system including the finance management, Supply Chain management and human resource management. So the implement of the ERP system should be the change of the whole company management. It is better to hire a professional consulting company to do the case. They can help you to analysis your business, and they are familiar with the different ERP system. So by reading this article, we can find the key factor of the successful implementation of the ERP system. That is looking the ERP system as the innovation of the company management. Not only look the ERP system as software can make any decision.

c) Cloud-Based ERP Software

Cloud-Based ERP Software is the name of new innovation in the business industry. Software as a service (SaaS) model is being recognized after the Cloud Based ERP Solutions software's developments. This approach has given new dimension to resource planning by making it usable in cloud operation environment. ERP software is offering services in a more flexible business process by innovation in computing platform. ERP solution is giving you services of managing

operations of your business domain within an integrated environment. Cloud-Based ERP Software is workable for domains of varying sizes. Cloud-Based ERP Software has eradicated the need of managing the organization's tasks manually. Cloud-Based ERP has established an automated way of managing resources with the personalized DB System.

d) What is Cloud ERP Software?

Cloud-based computing (also called Software as a Service, or SaaS) allows users access to software applications that run on shared computing resources (for example, processing power, memory, and disk storage) via the Internet. These computing resources are maintained in remote data centers dedicated to hosting various applications on multiple platforms.

Cloud ERP is Software as a Service that allows users to access Enterprise Resource Planning (ERP) software over the Internet. Cloud ERP generally has much lower upfront costs, because computing resources are leased by the month rather than purchased outright and maintained on premises. Cloud ERP also gives companies access to their business-critical applications at any time from any location [50]

While technically the only difference between Cloud ERP and on-premises ERP is where the software is physically located, there are other significant differences. Here we explain some of the key characteristics and advantages of Cloud ERP software.

The Cloud is particularly valuable to small and medium-size businesses (SMB's) because it provides access to full-function applications at a reasonable price without a substantial upfront expenditure for hardware and software. Using the right cloud provider, a company can rapidly scale their business productivity software as their business grows or a new company is added to Your Costs with Acumatica Cloud h at any

The Benefits of Cloud Computing

Cloud ERP has been proven to reduce costs in many ways because it:

- Avoids upfront costs for all computing infrastructure such as hardware and data servers
- Reduces IT support services because IT support is provided by the data center
- Eliminates paying upfront for application software licenses in favor of a monthly fee
- Shrinks the cost of maintaining and supporting those applications since the cloud vendor handles the updates and upgrades

The most important benefits of Cloud ERP go beyond cost-savings and include:

- Paying only for the computing resources needed
- A fixed monthly rate so companies can use their cash on other business initiatives
- Taking advantage of Cloud ERP applications faster since installation of hardware and software on servers or user devices is not required
- The ability to adjust the amount of cloud service as a company's computing or storage needs fluctuate

- Enjoying the confidence that the data has been backed up and there is a disaster recovery plan
- Avoiding attacks on the company's server because the data is not stored locally, but in the cloud
- Accessing the system from anywhere makes it easy for a company to expand geographically since the Internet is everywhere and there is no need to implement hardware and software at remote locations

e) Top 10 Cloud Based ERP Solutions Providers in Saudi Arabia [49]

Now I'll going to discuss the list of top 10 Cloud-Based ERP service providers in Saudi Arabia one by one.

1) SolutionDots

Cloud Based ERP Systems of Solution Dots have gained popularity from past 5 years. There 100% customer satisfaction factor has given it unique identity in industry. Among many core features in their services, 24 hours technical support is most eye-catching one. Solution Dots ERP is a Cloud Based ERP Solutions Systems, provides broader functionality with zero cost of extra upholding, technical staff. Solution Dots ERP is a wide-ranging cloud ERP solution urbanized exclusively for small & medium sized businesses and is delivered in the software as a service (SaaS) model.

Solution Dots ERP has been developed from the Solution Dots next generation ERP solution. Our on-demand ERP leverages core functionality that has been in use and verified at hundreds of customer. With Solution Dots ERP you got access to everything in one integrated system to administer your business. You are granting everything you call for to handle your opportunities, orders, and operations in one integrated web-based ERP solution.

2) SAP enterprise resource planning

With more than 40 years of experience and nearly 50,000 customers, our market-leading enterprise resource planning (ERP) software is a proven, trusted foundation – built to support the world's largest organizations as well as small and midsize companies in 25 different industries. Leverage role-based access to critical data, applications, and analytical tools – and streamline your processes across procurement, manufacturing, service, sales, finance, and HR. Achieve real-time insight and enable operational excellence and innovation for the business processes you need – today and tomorrow.

3) Solutel

Solutel is the fastest growing Multi National IT Business Management Firm with more than 1000 clients and offices in 4 Countries. They deliver outstanding results: delivering & maintaining one of India's Largest Ecommerce store, providing Web Design, development & Maintenance for one of the largest Classifieds Web Portal in Saudi Arabia, Unifying brand messaging & improving online presence for a top brand in KSA and easing out business operations for one of the Biggest Medical Center in Saudi Arabia. An experienced Cloud consulting partner like Solutel makes sure the Business Applications you choose truly meets your Business Requirements and helps you manage your business efficiently.

4) Saudi ERP

Saudi ERP has been established to satisfy the growing demand for Information Systems -IS- that can help you achieve your organization's objectives. Enterprise Resource Planning –ERP- software applications allow clients to deliver the best-experience to their customers with the highest Return-on-Investment (ROI), thanks to the ERP fundamental concept of "Enterprise Integration". ERP is a global, tightly integrated closed-loop business solution package and is comprehensive. SaudiERP contributes to the adoption of ERP systems in Saudi Arabia in many ways like ERP solutions, ERP services and ERP consulting.

5) Business Management Technology Co. Ltd. (BMT)

Business Management Technology Co. Ltd. (BMT) has started providing hosted ERP solutions of Microsoft Dynamics ERP, CRM, SharePoint, Oracle ERP, CRM, Infor ERP, CRM, EAM etc. from large enterprises to small and medium companies in KSA and in Middle-East. This initiative will enable effective, transparent and low cost IT solutions to the to the industries in Riyadh, Jeddah, Al Khobar, Dammam etc. including middle-east and UAE countries. With BMTs on Cloud ERP solutions the users do not have to worry about software, upgrades, implementation, support on hardware, network and application. BMT will provide state-of-the-art data security and up-time with 24/7 technical support and proper data backup services to the clients.

6) Digital Technology Co. Ltd

Digital Technology Co. Ltd is one of the leading provider of technology solutions in the Kingdom of Saudi Arabia and are proud of the fact that our services are presently being used all over K.S.A and in some of the most remote areas of Saudi Arabia. ERP's allow for the easy management and distribution of information across organizational functional boundaries and also break down the barriers between HR, marketing, production, engineering, sales and other important departments. With Microsoft Dynamics, offered by Digital Technology, your company can enjoy all the tremendous advantages of an ERP system without the terrifying costs.

7) CompuSoft

CompuSoft Co. Ltd. specializes in the selection, implementation and support of Microsoft Dynamics AX, GP, Microsoft RMS, add-ons and customized solutions to meet industry specific requirements to solve the needs of Small, Medium, Enterprise sized businesses that work in the area of General Trading, Food and Beverages, Medical Supplies, Home Appliances, Professional Services, Constructions, Real Estate, Holding Groups with multiple industries exposure, etc. CompuSoft Co. Ltd. is equipped with the quality products and dedicated qualified technical and functional resources which forms the crucial components for the success of any ERP or related product implementation.

8) Skitnet Business solutions

Professional, specializing in the ERP Analysis, Software Architect and application implementations, has delivered many large system integrations, implementations and services for 1000 of clients. ERP on Cloud covers the entire

spectrum of enterprise functions through a suite of products – Manufacturing, Financial Management, Supply Chain Management (SCM), Human Capital Management (HCM), Customer Relationship Management (CRM), Enterprise Asset Management (EAM), Project Management, Process Control, Analytics, Advanced Planning & Optimization, and Connectors . You can decide which solutions you want to use, scale up and add more solutions as your business grows.

9) Sahabyah cloud solutions

Cloud-based ERP systems reside in the cloud. The cloud provides the computing power to run the ERP solution which is available to users “on demand”. They’re on a mission to replace under-performing, Complex and Expensive on-premise ERP with fully customizable, high quality and simple cloud-based ERP solutions provided by our partners. Depending on your business size and needs, they offer a wide array of tier 2 and 3 ERP solution; they will customize a tailored, fully-integrated package for your need!

10) POSibolt

POSibolt’s highly competent, focused and responsive management team has extensive Experience in achieving performance excellence and is determined to go that extra mile to ensure customer delight. POSibolt streamlines your business and enhance the Retail Experience for the shoppers. They are specialized in utilizing tailored cloud-based ERP solutions to meet our client’s business needs. A Business-need driven approach, as it has proven to be the best approach they provide their clients with the most fit solutions at the most cost-efficient price.

Conclusion

In this paper, we provide a very significant and explicit contribution to highlight the most important critical success factors of ERP implementation in Saudi Arabia. This research will add knowledge on ERP implementations in developing countries. Literature shows that the high failure rate in implementing ERPs even after spending huge amounts on them but still could not ensure success of their implementation.

We review 10 Critical Success Factors in ERP Implementation in Saudi Arabia, One of the most important success factors for the implementation of ERP systems in large organizations in Saudi Arabia is the tendency to Cloud-based computing (also called Software as a Service, or SaaS) allows users access to software applications that run on shared computing resources (for example, processing power, memory, and disk storage) via the Internet. These computing resources are maintained in remote data centers dedicated to hosting various applications on multiple platforms.

Cloud ERP is Software as a Service that allows users to access Enterprise Resource Planning (ERP) software over the Internet. Cloud ERP generally has much lower upfront costs, because computing resources are leased by the month rather than purchased outright and maintained on premises. Cloud ERP also gives companies access to their business-critical applications at any time from any location and we

review the top 10 Cloud Based ERP Solutions provider in Saudi Arabia.

References

- [1] M.Krigsman, "ERP Failure : New Research And Statistics: E-Business Insight - ERP, CRM And Supply Chain Management", 2005-03-12, [Http://Www Sysoptima Com/Erp/ Cost_Of_Erp Php](http://www.Sysoptima.Com/Erp/ Cost_Of_Erp_Php) , February 3, (2010)
- [2] G. L. Richard , President Of Rockford Consulting Group Located In Rockford,IL , [Http://Www.Articlesbase.Com/Management-Articles/The-12-Cardinal-Sins-Of-Erp-ImplementationEdit Article | Posted: Feb 01, 2009](http://www.Articlesbase.Com/Management-Articles/The-12-Cardinal-Sins-Of-Erp-ImplementationEdit Article | Posted: Feb 01, 2009).
- [3] E.M. Abdelmoniem,, A.S. Mazen and E.E. Hassanein,"Management & Governance Of Successful ERP Implementation In Egyptian Environment" Fifth International Conference On Intelligent Computing And Information Systems (Of ACM, ICICIS,3 JULY 2011, Cairo, Egypt, 231:250
- [4] T.L.Griffith,L. Zammuto,and L.Aiman-Smith, "Why new technologies fail?" *Industrial management*:29-34,1999.
- [5] E.J.Umble, "Avoiding ERP Implementation failure", *Industrial Management* February, 2003.
- [6] M.H. Rasmy, A.Tharwat and S. Ashraf "Enterprise Resource Planning (ERP) Implementation in the Egyptian Organizational", Cairo University, Egypt,2005.
- [7] S. Iuliana,"The Role of Tacit Knowledge Management in ERP Systems Implementation", Bucharest Academy of Economic Studies, Proceedings of the 3rd International Conference Knowledge Management - Projects, Systems and Technologies, Bucuresti, Romania, 2008.
- [8] Robbins-Gioia, LLC, a provider of management consulting services located in Alexandria - Virginia, made a study over the perception by enterprises of their implementation of an E.R.P. (Enterprise Resource Planning) package, The Robbins-Gioia Survey (2001)
- [9] M.H. Rasmy, A.Tharwat And S.Ashraf "Enterprise Resource Planning (ERP) Implementation In The Egyptian Organizational", Cairo University, Egypt, 2005.
- [10]E. M.Abdelmoniem, S. A. Mazen, E. E. Hassanein, " Governance of Post-Construction Activities in IS Development Projects " , *IJCSI International Journal of Computer Science Issues*, Vol. 9, Issue 5, No 1, September 2012, ISSN (Online): 1694-0814, www.IJCSI.org, pp. 428:437, September 2012.
- [11]E.J. Umble, "Avoiding ERP Implementation Failure", *Industrial Management*, pp. 1-9, February, 2003.
- [12]Lewis, Bob. (2003). "The 70-percent failure", [InfoWorld.http:// archive. infoworld.com/articles/op/xml/01/10/29/011029/ opsurvival.xml](http://archive.infoworld.com/articles/op/xml/01/10/29/011029/opsurvival.xml) ,Viewed 12/12/2003
- [13]Nic Harvard via [erp-projectmanagement](http://erp-projectmanagement.com) " To Subject 08/22/2007 08:21 RE: [erp-projectmanagement]
- [14]Saroukhani et al. (2008) Review done of the literature published on the methods of the ERP selection More research is required to develop a selection framework.

- [15] Hebrean, L. (2009) Factors Influencing ERP Projects Success in the Vendor Selection Process, Paper No. 14430, posted 3. pp.1–10, [online] <http://mpa.ub.unimuenchen.de/14430/MPRA>, (accessed 2 November 2010).
- [16] Cebeci, U. (2009) 'Fuzzy AHP-based decision support system for selecting ERP systems in textile industry by using balanced scorecard', Elsevier Journal of Expert Systems with Applications, July, Vol. 36, No. 5, pp.8900–8909.
- [17] Prinzo Group, The Prinzo Group is an independent consulting firm that helps government agencies optimize enterprise business processes and applications in 2010, Rob Prinzo launched The Prinzo Group.
- [18] Crawford, L. and Nahmias, A.H. (2010) 'Competencies for managing change', International Journal of Project Management, Vol. 28, No. 4, pp.405–412 [online] http://epublications.bond.edu.au/sustainable_development/57 (accessed 6 May 2012).
- [19] Poti, S., Bhattacharyya, S. and Kamalanabhan, T.J. (2010) 'Change processes and its impact on individuals: perception of ERP users in India', International Journal of Information Systems and Change Management, Vol. 4, No. 4, pp.275–298.
- [20] M. Rashed, "Critical Success Factor In Implementing Enterprise Resource Planning (ERP) Systems In EGYPT" Maastricht School Of Management, Msm Maastricht, The Netherlands: 20-21, 2011.
- [21] Panorama Consulting Groups (2011) 2010 ERP REPORT ERP Vendor Analysis Available <http://Panorama-Consulting.Com/Documents/2010%20ERP%20Vendor%20Analysis%20ReportPdf>, Last Accessed Niv-2011.
- [22] Johansson, B., Sudzina, F. and Newman, M. (2011) 'ERP system implementation costs and selection factors of an implementation approach', International Journal of Business Information Systems, Vol. 8, No. 1, pp.87–105.
- [23] Rouyendegh, B.D. and Erkan, T.E. (2011) 'ERP system selection by AHP method: case study from Turkey', International Journal of Business and Management Studies, Vol. 3, No. 1, pp.39–48, ISSN: 1309-8047.
- [24] Hurt, R.L. (2011) 'Application of management concepts to ERP implementation', Journal of Business Administration Online, Spring, Vol. 10, No. 1, pp.1–12.
- [25] Al-Shamlan, H.M. and Al-Mudimigh, A.S. (2011) 'The change management strategies and processes for successful ERP implementation', International Journal of Computer Science Issues, Vol. 8, No. 2, pp.399407
- [26] Adams, B. and Martin, B. (2011) *Organization Change Management Strategy*, pp.1–10, Washington Community and Technical Colleges ERP Project.
- [27] Hammerman, P.D. (2011) *Forrester: Seven Trends to Shape the Future of Enterprise Applications and ERP*, Forrester [online] <http://www.computerweekly.com/news/2240105104/Forrester-Seven-trends-to-shape-the-future-of-enterprise-applications-and-ERP> (accessed 15 July 2012).
- [28] Reddi, K.R. and Moon, Y.B. (2011) 'A framework for engineering change management in enterprise resource planning using service-oriented architecture', International Journal Business Information Systems, Vol. 8, No. 1, pp.46–65.
- [29] Oztemel, E., Arslankaya, S. and Korkusuz Polat, T. (2011) 'Enterprise knowledge management model (EKMM) in strategic enterprise resource management (SERM)', Elsevier Procedia Social and Behavioral Sciences, Vol. 24, pp.870–879.
- [30] Radut, C. and Codreanu, D-E. (2012) 'Selection of an organization specific ERP system', Ideas REPEC Journal, Vol. 18, No. 2, Supplement, pp.384–389.
- [31] Ratkevicius, D., Ratkevicius, C. and Skyrius, R. (2012) 'ERP selection criteria: theoretical and practical views', Ekonomika, Vol. 91, No. 2, pp.97–116, ISSN 1392-1258.
- [32] Juell-Skielse, G., Nilsson, A.G., Nordqvist, A. and Westergren, M. (2012) 'AMES: towards an agile method for ERP selection', Proceedings of CAiSE Forum (24th Int. Conf. on Adv. Information Systems Eng.), pp.98–105.
- [33] Asl, M.B., Khalilzadeh, A., Youshanlouei, H.R. and Mood, M.M. (2012) 'Identifying and ranking the effective factors on selecting enterprise resource planning system using the combined Delphi and Shannon Entropy approach', Elsevier Procedia – Social and Behavioral Sciences, Vol. 41, pp.513–520.
- [34] Onut, S. and Efendigil, T. (2012) 'A theoretical model design for ERP software selection process under the constraints of cost and quality: a fuzzy approach', J. of Intelligent & Fuzzy Systems, Vol. 21, No. 6, pp.365–378
- [35] Madapusi, A. and D'Souza, D. (2012) 'The influence of ERP system implementation on the operational performance of an organization', International Journal of Information Management, Vol. 32, No. 1, pp.24–34.
- [36] Hofton, P., Morican, K. and Heather, S. (2012) *The Top Ten Change Management Challenges*, Deloitte Publication [online] <http://www.deloitte.com> (accessed 5 May 2013).
- [37] Krigsman, M. (2012) *Change Management and Adoption for Cloud ERP*, pp.1–8, Asuret [online] <http://www.heincpa.com/wp-content/uploads/2013/02/Change-Management-and-Adoptionfor-Cloud-ERP.pdf> (accessed 2 July 2013).
- [38] Zakari, U.M. and Ahmad, M.N. (2012) 'Knowledge management in success of ERP implementation', International Journal of Advances in Engineering & Technology, Vol. 3, No. 1, pp.21–28.
- [39] Garg, P. and Khurana, R. (2013) 'ERP product selection criteria for Indian small and medium enterprises: an empirical study', International Journal Business Information Systems, Vol. 14, No. 4, pp.443–460.
- [40] Kazancoglu, Y. and Burmaoglu, S. (2013) 'ERP software selection with MCDM: application of TODIM method', Int. J. of Business Information Systems, Vol. 13, No. 4, pp.435–452.
- [41] Neto, F.M.M. and Morais II, M.J.O. (2013) 'An agent-based approach for supporting the knowledge transfer in the software requirements engineering', International Journal Business Information Systems, Vol. 12, No. 1, pp.23–43.
- [42] Martens, C. (2013) <http://scn.sap.com/community/business-trends/forrester-thoughts-for-2013-erp-trends-revealed> (accessed 4 March 2014).

- [43] Kazemi, A., Saeidi, S.R. and Azizmohammadi, M. (2014) 'Selecting an ERP system using multi-criteria decision making method: a goal programming and fuzzy approach', *International Journal Business Information Systems*, Vol. 16, No. 1, pp.55–71.
- [44] Ozturkoglu, Y. and Esendemir, E. (2014) 'ERP Software selection using IFS and GRA methods', *Journal of Emerging Trends in Computing and Information Sciences*, Vol. 5, No. 5, pp.373–370.
- [45] Addo-Tenkorang, R. and Helo, P.T. (2014) 'ERP SaaS value chain: a proposed SaaS model for manufacturing SCM networked activities', *International Journal of Business Information Systems*, Vol. 17, No. 3, pp.355–372.
- [46] Panorama Consulting Solutions developed the 2016 Report on ERP Systems and Enterprise Software to investigate software selection, (Panorama-Consulting.com) during a recent twelve-month period (March 2015 - February 2016). A total of 215 respondents completed the surveys upon which this data is based
- [47] Panorama Consulting Solutions developed the 2017 Report on ERP Systems and Enterprise Software to investigate software selection, implementation and satisfaction trends across industries, organization sizes and geographic locations. 2017 Report was conducted on Panorama's website during a recent twelvemonth period (March 2016 - February 2017). A total of 342 respondents completed the surveys upon which this data is based, Copyright © 2017 Panorama Consulting Solutions, LLC. All Rights Reserved.
- [48] <https://www.flickr.com/Dr. Muddassir Ahmed, Ph.D> Divisional Supply Chain Manager at Eaton Published on October 4, 2015 "Critical Success Factors in ERP Implementation
- [49] Saudi ERP & Website Solution Blog March 7, 2015
- [50] <https://www.acumatica.com/what-is-cloud-erp-software/>