The Critical Success Factors and the effect of ERP system implementation on Business Performance (Case study in Egyptian environment)

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Abstract

An ERP (Enterprise Resource Planning) system plays an important role in managing business processes, and effect of on business performance in Egypt.

ERP improves the ways businesses take orders, manufacture goods, ship products, and bill for goods. Businesses see value from ERP software.

Recently, many organizations have implemented ERP systems. However, little research has been conducted regarding these systems how can ERP improve a company's business performance?

This paper explores and analyzes the existing literature on ERP implementation and attempts to identify the critical success factors for a successful implementation of an ERP to improve a company's business performance in Egypt.

This paper proves that the most important critical success factors of ERP implementation to improve a company's business performance in Egypt.

This study has contributed to academic research by producing the empirical evidence to support the theories of CSFs and ERP implementation success.

A case-study on the other hand implemented to help identify the important contributing factors for the relationship between ERP and business performance.

Keywords: Enterprise Resource Planning (ERP) system, critical success factors, Case study analysis, business performance.

1- Introduction

Enterprises Resource Planning (ERP) solution enables the task involved in performing a business process quickly and efficiently.

With ERP, when a customer service representative takes an order from a customer, he or she has all the necessary information to complete the order. Everyone else in the company sees the same computer screen and has access to the single

Database that holds the customer's new order. As and when a department completes their work with the order, it is automatically routed via the ERP system to the next department for the next process.

The order can be tracked any time of point by any department by logging into the system. The order process moves so quickly through the organization, and customers get their orders faster and with fewer errors than before. ERP can extent that application to the other major business process, such as employees' benefits or financial reporting [1].

An example of this would be the study by Hitt et al. (2002). The reason for the insufficiency can be seen in that the financial benefits are measured quantitatively; however, a qualitative approach focusing on operational and intangible benefits can better outline the direct relationship between the ERP system and the business performance [2].

The benefits of ERP systems are usually overestimated by ERP vendors. Promises are made about performance such as fast return on investment (ROI) and fast decision making but such claims need to be researched and tested in order to establish their degree of correctness [3]. The aim of this paper is to review the current research surrounding the benefits of implementing ERP systems and to explore this relationship using a selective case-study based on successful ERP implementation and stabilization [1]. The importance of this topic lies within the wide-spread of ERP systems while there are clearly many examples of unsuccessful ERP effects on business performance. For examples see Gupta et al [4]. Investing into ERP systems which are very costly and which don't return business value will waste business resources. Therefore, it is important to clarify the vagueness surrounding the relationship between ERP and business performance.

To further investigate the relationship between ERP adoption and business performance this paper will provide a literature review of the relationship between Information Technology (IT) utilization and business performance then some applications of the concepts from IT to the more specific variable of ERP. The applications covered in this paper will discuss how ERP is affecting business performance. This will be followed by a case study to test the theories and will start with the methodology, data collection, and case details followed by the results, discussion, and finally conclusion [1].

2- Literature review:

Based on "The Critical Success Factors in Implementation of Software Process Improvement Efforts"research [5]. The Projects Engineering Institute static's shows that: the development and cost of Software have become relatively very high due to complexity of systems that make Software process more complex to be managed. Thus, it is essential to consider the Software Process Improvement (SPI) factors that directly affect the process and try to explore the best solution that helps in best management of the Software process which ultimately produce the desirable results. While in the comprehensive literature review, it becomes obvious that CSFs plays a vital role in the implementation of SPI and change process. However, effective use of factors such as management commitment, staff involvement, etc. that influence the change process is still an argument questions. A number of researches is conducted in this regards, but this question still un-answered. Literature review also explores that motivators and obstacles both have positive and negative impact on the SPI process respectively. These motivators and obstacles also help in motivating and removing hurdle in the change process, if carefully identified and appropriately used. To answer, the above questions, the researcher conducted this study that is based on empirical study that comprises of structure interview with eight SPI practitioners in 5 different organizations across Sweden, Pakistan, Denmark and Norway. The study [5]. Result shows the lists of CSFs, motivators and obstacles that have positive impact on change management. The finding of study guides the practitioners in the overall process of SPI initiatives program that provides better mechanism to manage the SPI activities. Additionally, it helps in enhancing the overall productivity and it has a role in the cost effective implementation of the process improvement program in the comprehensive literature reviews, i.e., based on case studies, experience reports, research articles and books .The researcher identified ten critical success factors table [1] for details.

Critical success factors (CSFs)

Categories	Priority	Percentage , N=17
Senior Management Commitment	1	88%
Staff Involvement	2	71%
Experience Staff	3	53%
SPI awareness and Implementation	3	53%
Training and mentoring	5	31%
Allocation of Resources	6	35%
Communication and Collaboration	7	35%
SPI goals and Objective	8	29%
Organization Culture	9	29%
Organization Politics	10	29%

Table [1]: List of CSFs identified through literature review [5]

It is based on "A Framework for Developing an Effective Monitoring and Evaluation System in the Public Sector – Key Considerations from International Experience" [6]. The author presents a framework that identifies four broad building blocks needed for an effective M&E (Monitoring & Evaluation) system: (i) vision, (ii) an enabling environment, (iii) the infrastructure to supply M&E information, and, (iv) the infrastructure to demand and use M&E information table [2].

Critical Success Factors	Key considerations for success
Drivers	What is driving the demand for M&E? What are the broad goals of the exercise?
Uses	How will M&E information be used? By whom? And, for what audience(s)? Are there real needs for information that are currently not being met?
Leadership	Is leadership supportive? Leading the way? Is there a 'champion' for the M&E exercise?
Commitment	Is there commitment to not only launch an M&E exercise, but to also sustain it? What will serve as the basis to ensure that an M&E system gets implemented? Is sustained?
Resourcing	Where will the resources ($) to develop systems and hire & train skilled personnel come from?

	Will organizations be required to internally reallocate? Or, be given new money?
Accountability	Who will be accountable for ensuring that an M&E system is a functioning part of the public sector? Have roles & responsibilities been firmly established?
Technical Capacity	Is there a capacity (data systems & infrastructure) to collect reliable data & report credible information? Is there an adequate analytical capacity (skilled personnel)? Are there existing institutions that could serve as credible 'partners' (e g. National Statistical Office, Research institutes)?
Infrastructure to Supply M&E Information	Is there a Policy and a set of Standards in place that describe roles, responsibilities & expectations of the operation of the M&E system and the use of M&E information? Are the organizations & Units that collect & analyze M&E information structured & adequately resourced ($ & HR)? Is the M&E information that gets reported credible, timely & responding to the priority issues?
Infrastructure to Use M&E Information	Are there formal policies or requirements on how performance monitoring & evaluation information gets 'used' by organizations? What are the 'incentives' within an organization for using M&E information (rewards and/or sanctions)? Are there formal or informal vehicles/mechanisms/for reporting, sharing or tabling M&E information? Is results-based performance factored into personnel assessments?
Oversight	How will the system be monitored over time to ensure that it is functioning as expected? And, to the level expected? Does the National Audit Office play any role in monitoring the M&E system & the use of performance information across government? Is there a Policy Centre (e g. Centre of Excellence for Evaluation) to monitor implementation? Will the 'performance' of the M&E system itself be measured? Adjusted as necessary?
Values & Ethics	Is there a formal code of conduct describing accountabilities & expected behaviour for public servants (e.g. Transparency, access to information, fair & balanced reporting and accountability)? Is this code well understood and adhered by all? Is 'speaking truth to power' considered appropriate within a public service organization?
Sustainability	What requirements/safeguards are there to ensure that an M&E system will be made sustainable (i.e. allowed to continue over time)?

Table [2]: A Framework for Developing an M & E System [6].

A set of twelve 'Critical Success Factors' are identified to recognize the importance of positioning M&E within a broader context than simply a technical one, and also to recognize the political support factors needed to launch and sustain an effective M&E system. For each element of the framework examined, comment will be provided (drawing on standard practices from other countries) to advice on an appropriate strategy for M&E capacity building.

While cautioning that 'one size does not fit all', the framework can indeed serve as a useful guide or 'diagnostic tool' to international M&E system development in many ways: in planning, in assessing progress and identifying gaps, and, as a communication vehicle and springboard to inform and educate technical and non-technical personnel alike on the various ways that knowledge-building and innovation are being introduced into public sector organizations.

Also based on " A Framework for Successful Enterprise Systems Implementation: Preliminary Findings from a Case" research [7]. While critical success factors (CSFs) of enterprise system (ES) implementation are mature concepts and have received considerable attention for over a decade, researchers have very often focused on only a specific aspect of the implementation process or a specific CSF. Resultantly, there is (1) little research documented that encompasses all significant CSF considerations and (2) little empirical research into the important factors of successful ES implementation. This research [7]. is part of a larger research effort that aims to contribute to the understanding of the phenomenon of ES CSFs, and reports on preliminary findings from a case study conducted at a Queensland University of Technology (QUT) in Australia. This research [0] reports on an empirically derived CSFs framework using a directed content analysis of 79 studies, from top IS outlets, employing the characteristics of the analytic theory, and from six different projects implemented at QUT.

This research introduce framework [7]. consists of fifteen CSFs, including: Top management support and Commitment (F1), Change management (F2), Business process reengineering (BPR) and system's customization (F3), Training and Education (F3), Project management (F5), Team composition (F6),Visioning and planning (F7), Consultant selection and relationship (F8), Communication plan (F9), ES selection (F10), Project champion (F11), Implementation strategy and timeframe (F12), ES testing (F13), Post-implementation evaluation (F13), and Empowered decision making (F15). Table [2] defines the CSFs of the a-priori framework and provides further evidence of the analysis effort. It also shows the number of citations, reported in the reviewed literature, for each factor.

3- A Framework for management of successful ERP selection in Egypt

Based on these findings, Ottar Bakås, Anita Romsdal and Erlend Alfnes presented "Holistic ERP Selection Methodology"[8]. They developed a methodology that has a broader, more holistic focus than the existing methodologies for ERP selection - emphasizing the importance of linking the acquisition process with the organization's strategies, processes and infrastructure throughout the evaluation process. Also, the methodology incorporates evaluation and selection of both an ERP system and an ERP vendor. Their methodology describes four steps towards selection of an ERP system and vendor:

- Preparation
- Analysis
- Evaluation
- Selection

CSF		# of instances cited in the literature	Definition
Top management support and Commitment	F1	28	The level of commitment by senior management in the organisation to the ES project, in terms of their own involvement and the willingness to allocate valuable organisational resources.
Change management	F2	28	The management of an approach that supports the change encountered by the implementation of ES.
Business process reengineering (BPR) and system's customisation	F3	27	The extent to which the implementation team accounts for business process reengineering and system customisation.
Training and Education	F4	24	The extent to which ES end-users have been trained and educated to property use and benefit from the system.
Project management	F5	20	The management of the ES project including defining the project scope, aims, milestones, and plans.
Team composition	F6	18	The capabilities that should exist in a successful ES implementation team, such as an appropriate mix of members, representatives from all business units, team leadership and vision.
Visioning and planning	F7	16	The extent to which the project requirements, objectives, vision, and a comprehensive project plan developed to fit within organisation goals to ensure the success of an ES implementation
Consultant selection and relationship	F8	14	The extent to which ES consultant is part of the implementation process. It is also imperative to arrange for knowledge transfer from the consultant to the implemented organisation.
Communication plan	F9	14	This describes exchange of information (feedback and reviews) amongst the project team members and the analysis of feedback from users.
ES selection	F10	13	This involves the selection process of the ES that fits organisational needs.
Project champion	F11	12	The existence of a high level sponsor who has the power to steer the project, by setting goals and legitimate changes.
Implementation strategy and	F12	10	The extent to which the implementation strategy was addressed, this involves whether the implementation should be
timeframe			centralised or decentralised, considering the multi-site issue, and phased approach.
ES testing	F13	10	The extent to which the implementation team considers the inclusion of testing exercises and simulation exercises during the final stages of the implementation process.
Post-implementation evaluation	F14	9	The extent to which the implementation team considers the allowance of some kind of post-evaluation and the allowance of a feedback network.
Empowered decision making	F15	7	The extent to which the implementation team empowered to make necessary decisions.

Table [3]: Frequency analysis and definitions of CSFs in the literature [7].

Nevertheless this framework does not include cultural issues, thus ERP selection becomes more challenging in Egyptian context because of the national and organizational cultures that have certain value and belief system, and so certain management styles, which all differ from the Western business culture which is embedded in the predefined standard business processes of foreign ERP packages. Thus, Egyptian organizational culture is outlined as an important determinant of ERP selection [9], [10].

Based on [9], [10]. Researcher Define the following Key selection criterion.

3-1.1 Key selection criterion[9],[10]

A key selection criterion includes 12 factors, figure [1]. Each factor is expressed by a number of questions with a total of 114 questions for all factors (explained in chapter 5 at section 5.3). According to the answers of these questions, if the organization has answered for at least 50% of all questions (57 are mandatory questions out of 114) with a positive answer (Yes), this organization can be considered having a successful ERP selection. These governing questions are equal to 50% of the questions for each factor, and then we can select the ERP system that fits the organization requirements as follows:

1) Corporate vision
2) Business process
3) Technology and System Architecture
4) Database and network
5) Hardware and Projects
6) Customization effort implementation
7) Services and support
8) Product functionalities
9) Product total owner cost
10) Supplier longevity
11) Computer Culture
12) Organizational Culture

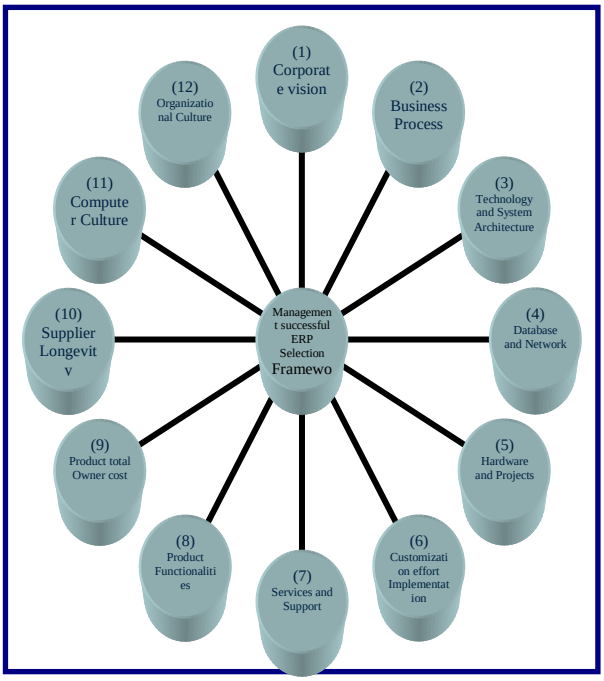

Figure [1]: The proposed framework for management successful ERP selection [9][10]

3-2 The framework [1] has the following advantages

- The framework is fairly intuitive, simple and cost-effective [10][11], and requires few specialist skills to plan and carry out the process from preparation to selection.
- The framework addresses the evaluation and selection of ERP vendors as an integrated part of the process, and thereby helps the organization to avoid the risk of choosing an ERP system that does not have the required vendor support.

- The framework are generic enough and have a dynamic and flexible nature, which make them useful for a wide range of industries and organizations of practically all sizes, while also being applicable to both business and technology driven ERP investments

- The proposed framework represents a useful tool for organizations with regards to the evaluation and selection of ERP systems and vendors.

- The framework was successfully applied in 5 companies, which are now in the final stages of implementing the selected system.

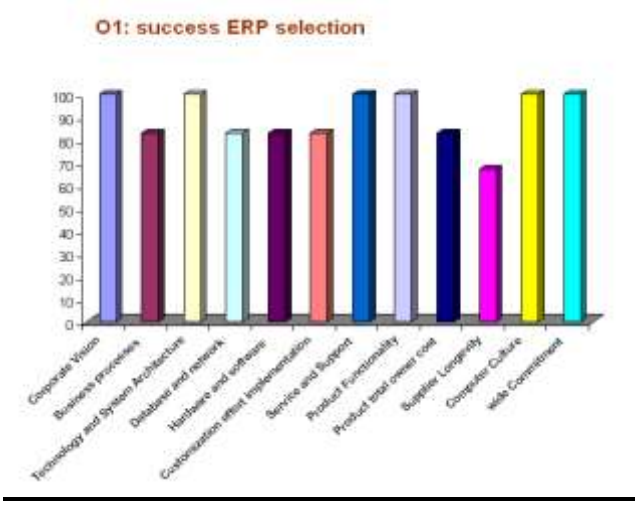

Figure [2] Successful ERP project selection (Organization O1)

Figure [2] shows that 50% of the factors (6 factors out of 12) achieved 100% success rate, five factors (5 factors out of 12) achieved 83% success rate and one factor achieved 67% success rate. That indicates that this organization (O1) meets the criteria of framework success and achieves the successful ERP selection, as follows:

For the factors (Corporate Vision (F1), Service and Support (F7), Product Functionality (F8), Computer Culture(F11) and Organizational Culture (F12)), it is found that these six factors achieved 100% success rate but the factors (Business processes(F2), Database and network(F4), Hardware and Projects (F5),Customization effort implementation (F6), and Product total owner cost (F9)) achieved 83% success rate and the last factor (Supplier Longevity (F10)) achieved only 67% success rate. That refers to the very high level of success of ERP selection in organization (O1).

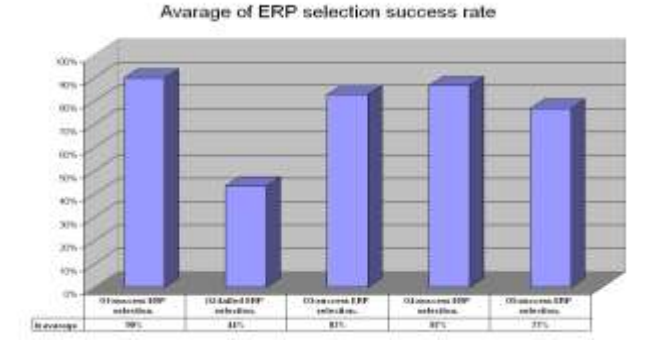

Figure [3] average of ERP selection success rate

Figure [3] shows a summary of all the pervious results according to our framework for management of ERP selection process. This figure shows that four organizations of five under our study, meet the criteria of a successful framework and achieved more than 77% success rate, and only one organization (O2) did not meet the criteria of successful framework and achieved 44% success rate when our framework was implemented.

It is noticed that the organization that failed in ERP selection also failed at ERP implementation.

4- The Framework for Management of Successful ERP systems Implementation.

4-1 Introduction:

For identification of the Critical Success Factors (CSFs) for ERP implementation, a certain review to the related literature was performed. Some of the previous studies have also done this review before (e.g. , Magnusson, J , Nilsson, A & Carlsson, F [12] on Forecasting ERP Implementation Success –Towards A Grounded Framework, Abdelmoniem, E M, Mazen,A S Hassanein,E E (2011)) [10] "An Enhanced Framework For Measuring ERP Implementation Success In The Egyptian Environment" [13][14]. Based on these researches, a number of factors (16) were identified through an extensive literary review and many other interviews with some people including IT managers having previous experience in managing ERP implementation projects and with a faculty member with a good background in this subject.

4-2 The factors were then discussed and five factors were added namely [10][14]

1-Return on Investment (ROT) (F9)
2-Wide Commitment (F13)
3-Resistance (F15)
3-Ease to use (F20)
5- Minimal customization (F21)
Along with a division of the known 21 factors into four categories (Management, Project, Organization and System), our main concern while performing this study was to collect the factors that could be more beneficial to a developing country setting like Egypt. The final list included 21 factors, which will be discussed later.

For the framework to be as usable as possible; the ratio of total level of factor fulfilment to how many of the final 21 factors were fulfilled is the base of evaluation figure [4].

4-3 Framework success Criteria : [10][14]

For instance, if the responding organization fulfils 67% percent of each factor (6 questions per factor (explained in chapter 6 at section 6.3), 3 questions (mandatory questions) and at least four questions must be replied by (Yes) as a positive reply except for factor 15 and factor 18 (resistance and user) that must be replied by (No) to be a positive reply, so, the result will be 67%), the probability of success of this project is 67%. The organization's strengths and weaknesses will be described according to the different factors, and there will be a quick-list of possible future managerial actions to strengthen the identified weaknesses.

Data collection is done using surveys and interviews with major players of the large companies worki

Egyptian market. Findings show that certain factors have more significance in these organizations and their influences vary on the ERP successful implementation.

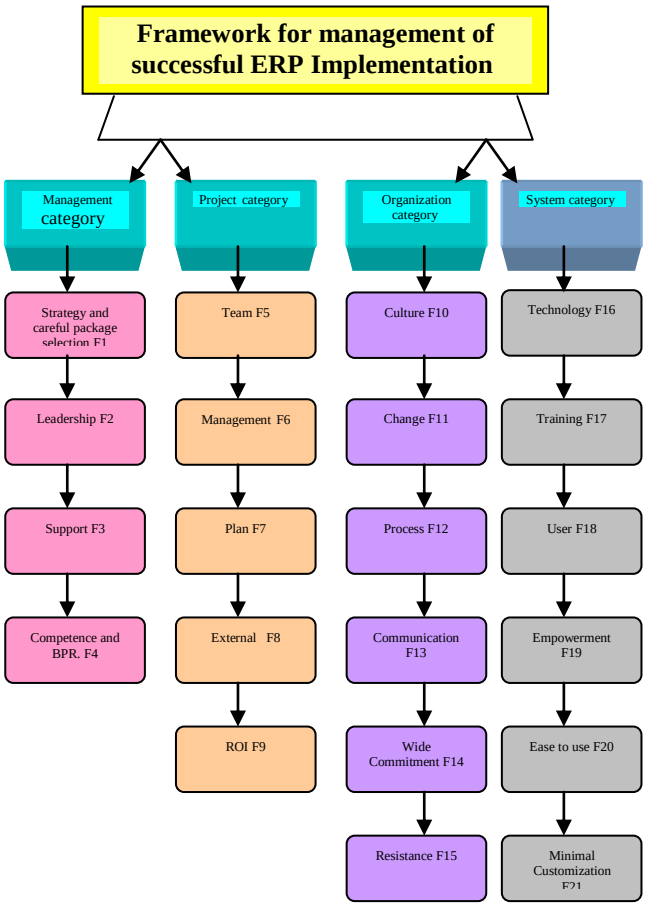

Figure [4]: The proposed Framework for Management of Successful ERP Implementation. [10] [14].

The framework for management successful ERP implementation [10] [14], divided to the four categories were identified as Management, Project, Organization and System, and they are presented together with the underlying factors in Figure [4], Based on the A support describing the 21 factors that are divided into the previous four categories. The fulfilment of the factors is in the basic outline of the framework measured by 6 questions each, resulting in a total of 126 questions. These questions are described over here and they are constantly revised and tested. Summarize in the following factors:

A- ***Management Category factors***

F1 : Strategy and Careful package selection:

Factor F1: Egyptian Management strategy has a positive impact on ERP implementation success

F2: Leadership

Factor F2: Egyptian Management leadership has a positive impact on ERP implementation success

F3: Support

Factor F3: Egyptian management support has a positive impact on ERP implementation success

F4: Competence and BPR

Factor F4: Egyptian Competitive pressure to adopt an ERP system has a positive impact on ERP implementation success

B- ***Project Category factors***

F5: Team

Factor F5: Egyptian Project team for the ERP system has a negative impact on ERP implementation success

F6: Management

Factor F6: Egyptian Effective project management has a positive impact on ERP implementation success

F7: Plan

Factor F7: Egyptian Project planning of best of practices of an ERP system has a positive impact on ERP implementation success

F8: External

Factor F8: Egyptian External support and consultants have a positive impact on ERP implementation success

F9: Return On Investment (ROI)

F9: Egyptian organizational Return On Investment (ROT) has a negative impact on ERP implementation success

C- ***Organization category factors***

F10: Culture

Factor F10: Egyptian organizational culture has a negative impact on ERP implementation success

F11: Change

Factor F11: Egyptian organizational change has a negative impact on ERP implementation success

F12: Process

Factor F12: Egyptian organizational process has a positive impact on ERP implementation success

F13: Communication

Factor F13: Egyptian organizational communication has a positive impact on ERP implementation success

F14: Wide Commitment

F14: Egyptian Company wide support has a positive impact on ERP implementation success

F15: Resistance Factor

F15: Egyptian Organizational resistance has a negative impact on ERP implementation success.

System Category factors:

F16: Technology

Factor F16: Egyptian Organizational Technology has a positive impact with ERP Implementation success

F17: Training

Factor F17: Egyptian training has a positive impact on ERP implementation success

F18: User

Factor F18: Egyptian Users' involvement has a positive impact on ERP implementation success

F19: Empowerment

Factor F19: Egyptian Empowerment has a positive impact on ERP implementation success

F20: Ease to use

Factor F20: Egyptian Perceptions on the ease of use of the ERP system has a positive impact on ERP implementation success

F21: Minimal customization

Factor F21: Egyptian system Minimal customization of the ERP system has a positive impact on ERP implementation success.

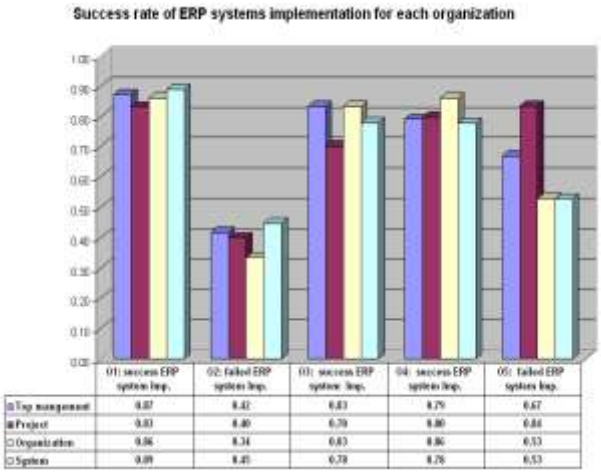

Figure [5] summary of ERP implementation

Figure [5] shows the summary of all pervious results according to our framework of Critical Success Factors (CSFs) of ERP system implementation. It shows that the known 21 factors are divided into 4 categories (Management, Project, Organization and System).

Three organizations (O1, O3 and O4) met the ERP implementation framework success criteria and achieved a good success rate. Two organizations (O2, O5) did not meet the Framework success criteria and achieved 40% and 64% of success rate respectively.

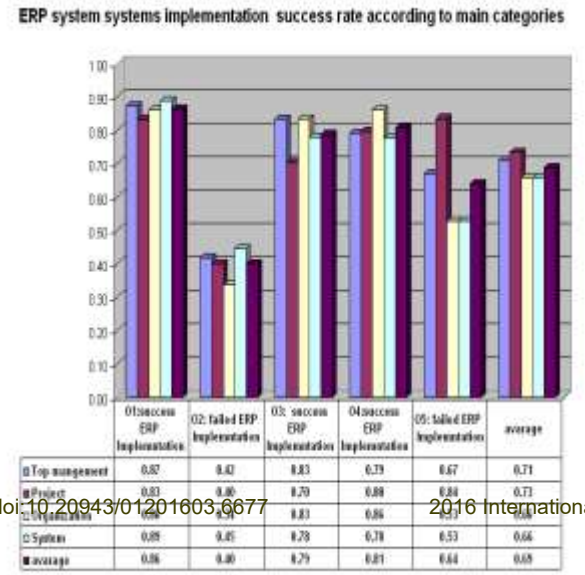

Figure [6] ERP systems implementation success rate according to main categories

From figure [6], it is found that the management category plays a very important role in the failure of ERP implementation systems in organization O5. The

Management category did not meet the criteria of success and achieved only 42% success rate that influenced the failure of ERP implementation at this organization (O5).

Although organization O5 achieved 67% of success rate of the management categories and met the criteria of success of this category at boarder line, two categories (organization and system) did not meet the criteria of success of this category and achieved 53%. So a failed system implementation project in organization (O5) is got.

4-4 Best practices toward achieving a successful ERP implementation

Here, we will attempt to share through ERP consultant's experience, observation and research various strategies that give the best chance of achieving a successful ERP implementation experience.

4-4-1 Strategic factor:

Top management supports have shown that the ERP implementation was in general a top-down decision and the success of such an implementation depended on the alignment of the ERP adoption with strategic business goals. There is a very important point, which is buying a good ERP systems with little customization.

4-4-2 Tactical factors:

Effective project management, in order to successfully accomplish the decision to implement an ERP system, the effective project management comes into play to plan, coordinate and control such an intricate project Re-engineering business processes. It is very important to consider the extent to which the company needs to re-engineer its current business processes in order to be compatible with the ERP Projects. Suitability of Projects and hardware management must make a careful choice of an ERP package that best matches the legacy systems, e.g. the hardware platform, databases and operating systems.

4-4-3 Operational factors:

Education and training – when the ERP system is up and running, it is very important that the users be capable to use it, hence they should be aware of the ERP logic and concepts and should be familiar with the system's features. User involvement – participating in the system development and implementation, the users go through a transition period that gives them time to better understand the project's consequences.

4-4-4 General factors:

- Apply the suggested ERP selection framework
- Manage organization's expectations
- Mitigate risks
- Employment Rehabilitation
- Exploit the best business practices built into the ERP Projects
- Get the step by step phase implementation

- Prepare proper blueprint of ERP implementation
- SRS study - this will help us in selection of Projects
- GAP analysis to map organization process and ERP Projects
- Selection of experienced ERP vendor- new company or vendor may not be able to give us proper support and service even after successful implementation.

5- Implementation Consideration factors:

Take a systematic approach. It is also important to point out early in any discussion about successful ERP implementation some important points and realities about ERP implementations in general. They can include:

1- The ready to use or perfect ERP system does not exist

2- ERP implementations are different in every organization – it never the same as previous

3- There is no perfect ERP implementation.

4- No ERP implementation is ever complete- It requires support and services, upgrades and updates, technological changes; etc. Organization should be open for these situations and ready to adopt new challenges and opportunities.

6- The key critical success factors for ERP evaluations and implementations:

According To ERP report 2010 From Panorama Consulting Group LLC,[15]. here are the key critical success factors that have been observed in best-in-class ERP evaluations and implementations:

1. Focus on business processes and requirements first. Too often, companies get tied up in the technical capabilities or platforms that a particular Projects system can support. More important is the identification of key business requirements and the proper alignment of Projects with business operations. Once these needs are defined, organizations can more effectively choose the Projects that fit their unique business needs and implement them in a way that does not require extensive customization.

2. Do not rush the ERP evaluation process. Too many companies rush into ERP implementation without taking the time to clearly define their specific business requirements, thoroughly evaluate the various vendors, and plan for a successful project. Companies should spend at least three to four months on the selection and planning process. Organizations with over 1,000 employees or $500 million in annual revenues should plan to spend even more time on this step.

3. Focus on achieving a healthy ERP ROI, including post-implementation performance measurement. This requires more than just developing a high-level business case to solicit approval from upper management or a board of directors. It also entails establishing key performance measures, setting baselines and targets for those measures and tracking performance after the go-live. This is the only way to truly realize the benefit potential and success of ERP Projects.

4. Gain commitment from company executives. Any ERP project without support from its top management will fail. Support from a CIO or IT director alone is not enough. No matter how well executed a project may be, obstacles will arise during the implementation. The entire executive staff needs to be involved to resolve issues as they occur.

5. Develop a realistic project plan and implementation timeframe. It may seem obvious that companies do not know their true costs until they develop an implementation plan, but too many companies try to develop an estimate before a plan has been identified. This is a primary cause of significant cost and time overruns. In addition, many companies in our study failed to recognize that an implementation plan and budget should include non-vendor line items such as process and workflow definition, data migration, and customization of training materials to match unique business processes. Most Projects vendors do not include these and other activities in their time or cost estimates.

6. Commit strong project management and resources to the project. At the end of the day, a company implementing ERP owns the success or failure of the implementation. Whether positive or negative, these results must be managed accordingly by a team that includes a strong project manager and other "A-players" from several departments at the company.

7. Ensure adequate organizational change management and training. ERP systems bring enormous changes to employees. The system - no matter how advanced - will prove to be ineffective if the staff does not understand how to use it. A focus on training, organizational change management, job design and other employee support measures are crucial to any ERP project.

8. Limit Projects customization. While it may seem an easy choice and install new Projects to run the business the way it has always been run, these customizations can quickly drive up prices and slow down benefits realization. Changes to Projects source code add to implementation cost, duration, and risk, so it is important to limit customization to areas that are "must-have" competitive advantages to your organization.

9. Carefully understand the advantages and disadvantages of multiple Projects delivery options. All ERP solutions have strengths, weaknesses, and tradeoffs. Organizations have a wide spectrum of options to choose from included SaaS solutions, on-premise solutions and even hybrid solutions that combine benefits of both. It is important to gain an independent and objective perspective on various options prior to making a final decision.

10. Leverage independent ERP expertise. As outlined in our research, ERP selection and implementation initiatives are challenging and require strong expertise. It is often less costly in the long-run to bring in external experts to ensure that your evaluation and implementation goes smoothly. The best-in-class companies leverage third-party expertise to help their internal teams select the right Projects, implement effectively, and manage organizational change.

7- Top 10 ERP Predictions for 2010

Based on the above data and the trends to analysis conducted in previous years, the study expects to see ten key trends emerge or continue in the ERP market in 2010:

1. Diligent focus on ERP Projects benefits realization and ROI. Long gone are the days of throwing money at a problem and hoping for the best. CIOs and COOs will continue to face pressure to prove that every dime of investment in ERP systems is justified and generates a solid return on investment. Look for more deliberate spending, more phased rollouts, as neede

purchases, and hesitancy to invest in more expensive advanced enterprise Projects modules.

2. Small business to get back into the ERP Projects market. The bright spot in any recovering economy is usually small business (SMBs). As the economy emerges from the recession, SMBs will look for small business Projects to automate their operations and scale for growth. In addition, large Projects vendors such as SAP and Oracle will continue to focus on the SMB market to reinvigorate their revenue growth in Projects license sales.

3. Increased adoption of Projects as a service (SaaS) at SMBs. While SMBs may lead the charge in their small business Projects investments, they will likely still have difficulty making the necessary investments. Given that tight credit markets will likely continue into the new decade, many SMBs will look to SaaS ERP Projects to help them minimize up front capital IT costs.

4. Lots of ERP SaaS talk, but not as much action at large organizations. Larger companies, on the other hand, are much less likely than their SMB counterparts to commit to SaaS options. As Projects vendors expand hybrid solutions combining the benefits of SaaS with the flexibility of traditional ERP (e.g., Oracle's On Demand and SAP's Business By Design), larger organizations will continue opting for non-SaaS options to reduce cost and risk while maximizing business benefits in the long-term. These companies will, however, be more inclined to leverage SaaS for some functions such as document management systems (DMS), human resource management Projects (HRM/HCM), product lifecycle management (PLM), and customer relationship management (CRM).

5. Increasing focus on organizational change management and ERP benefits realization. As demonstrated by the exponential growth in Panorama's organizational change management practice, companies are allocating much of their ERP Projects investments to ensure effective implementation and buy-in. The need to more effectively manage organizational and business risk will likely result in a continuation of this trend in 2010.

6. With ERP Projects, it's still a buyers' market. According to our study, 56% of companies plan to replace or upgrade their enterprise Projects in 2010 (compared to 53% in 2009). Even in the most optimistic scenario, however, overall 2010 enterprise Projects spending will not return to pre-recession levels. This means ERP Projects buyers will remain in the driver's seat, which will be reflected in aggressive Projects pricing and shared benefits implementation models.

7. Enterprise Projects risk management. As CIOs and executive teams must continue to prove the value of their investments, risk management will be the name of the game. Look for more ERP implementations to leverage organizational change management and independent oversight of Projects vendors to help mitigate business risk.

8. ERP Projects vendor consolidation. Vendor competition was fierce before the recession and is even more so now. Dozens of smaller vendors are starved for cash and unable to fuel R&D and other product innovations without infusions of capital. Add the facts that larger vendors have cash and that some have grown successfully via acquisition to date (e.g., Oracle and Infor), and continued vendor consolidation looks inevitable.

9. Focus on integration rather than major ERP package enhancements. Given corporate aversion to risk, companies are going to be less likely to bet on entirely new products or risky upgrades. As a result, vendors are more likely to invest in incremental product enhancements and tighter integration between modules rather than revolutionary changes to their Projects.

10. Niches, low-hanging fruit and business value. Look for companies that are very deliberate about how they invest in enterprise Projects, the risks they're willing to take, and how they manage implementations. If executives are not convinced that their enterprise Projects investments will deliver measurable business value, they will not invest in it. Areas that deliver immediate value will be priorities for the coming year.

8- Top 10 Predictions for the ERP Industry in 2016

According To ERP report November 2015 From Panorama Consulting Group LLC [15], here are Top 10 Predictions for the ERP Industry in 2016 that have been observed in best-in-class ERP evaluations and implementations.

The last year in the ERP industry has been an exciting one, with plenty of advances, changes and opportunities for improvement. As another year winds down and we prepare for the holidays, it is helpful to look ahead at what we think will be in store for the next year.

We may not be able to predict the future with 100% certainty, but there are a number of existing and emerging industry trends that will affect potential ERP buyers and implementers in the next year. Below are our top 10 predictions for the ERP industry in 2016:

1. Classification of Tier I ERP system will become obsolete. Although the systems themselves may not become obsolete, the definition of and difference between Tier I, Tier II and Tier III ERP systems certainly will. There are simply too many options and sophisticated technologies in the market to think that the big 3 incumbents (SAP, Oracle and Microsoft Dynamics) are the only packages capable of addressing the needs of large, upper mid-market and high-growth organizations. Even the biggest and most complex organizations have a multitude of options at their disposal. Our classification of Infor as the new Tier I system earlier this year was the first domino to fall in the demise of this dated and arbitrary classification scheme.

2. Increasing adoption of ERP systems among small and mid-size organizations. Up until recently, larger enterprises had a big technological advantage over their small and mid-size rivals. However, newSaaS ERP software and mobile technologies are becoming more cost-effective and easier to deploy, which is causing the smaller and mid-market to catch up to their Fortune 500 counterparts. Gone are the days where a company needs millions of dollars to deploy new enterprise technologies, which will make ERP systems, CRM software and other business technologies accessible to most.

3. Cloud ERP becomes a non-issue. The buzz behind cloud ERP systems is finally starting to die down – largely because most ERP vendors and third-party hosting providers have provided plenty of affordable options for companies wanting to migrate to the cloud. Research and data outlined in our 2015 ERP Report suggests that this trend will continue for the foreseeable future, b

difference is that it will become a normal and accepted part of most ERP systems rather than a trendy buzzword hyped by industry analysts. The question is no longer about whether or not the cloud trend will continue, but it is instead about which organizations will move in this direction and which ones won't.

4. High-profile ERP lawsuits expose the causes of ERP failures. Our ERP expert witness practice is growing like gangbusters, which is a reflection of the state of ERP implementations. Too many are failing and getting mired in lawsuits, many of which are very high profile and will expose the industry's shortcomings. The parties and issues involved in these lawsuits are likely to underscore the reasons why ERP implementations fail, and more importantly, what can and should be done to avoid them.

5.Increasing gap between ERP implementation success and failure. ERP failures do not appear to be dissipating anytime soon. On the other hand, there are still plenty of success stories out there. The difference between the two extremes, however, will continue to become more apparent. The successful ones will do all the right things – effective project management, business process reengineering and effective organizational change management for example – while the failures will continue to ignore or underinvest in those areas. The differing results between these two groups will be even more extreme.

6. ERP project recovery becomes a hot skill set. As ERP failures continue to accelerate, those that can recover troubled ERP implementations to get them back on track will be in high demand – perhaps even more so than traditional project managers. It requires a unique skill set that can get to the root cause of what is causing the failure, which is why our project recovery services are in such high demand at the moment. Add to the fact that ERP failures are not likely to slow anytime soon, and it's easy to see why these skills and toolsets are so hot right now.

7. Best of breed makes a comeback. For the last several years, single ERP systems with very little integration to other third-party systems have been the name of the game for most organizations. However, the increasing ubiquity of Sales force, Workday and other functionally-focused enterprise systems has provided viable alternatives for companies looking for solutions that aren't trying to be everything to everyone. Look for these best of breed solutions to take an increasing share of the market from incumbent ERP vendors.

8. SOA and technology integration becomes cool again. I'm not sure how cool it ever was – and there are certainly plenty of organizations that have been burned by trying to integrate a hodgepodge of ERP systems – but there are plenty of tools that are making this a feasible option for many. Given the rise of best of breed systems (see prediction #7), integration-related skillsets and toolsets are becoming important to a growing number of organizations and IT departments.

9. Customization becomes more accepted by the mainstream. For as long as I've been in the ERP industry, the word "customization" has terrified CFOs, CIOs and other executives. As outlined in our 2015 ERP Report, 9 out of 10 ERP implementations require some sort of customization in order to meet business needs, suggesting that this is a hard risk to hide from. Current ERP systems are making this concern a more acceptable and less risky form of implementation. It's a slippery slope for certain, but one that can be managed in small doses.

10. Techies begin regaining control of ERP implementations. The previous three predictions are in many ways shifting the balance of power back toward the technical types and away from business stakeholders. Technical complexity typically increases dependence on IT and creates the risk of underemphasizing the business transformation aspect of ERP implementations and other enterprise software initiatives. This is not a welcome trend by any means since it escalates the risk of failure and runs counter to the fact that ERP implementations are more successful when treated as business transformations, but it is the reality of the current technological landscape outlined above.

The ERP industry is constantly changing, so understanding the dynamics at play are important in helping navigate and prepare for success. The above trends are the 10 biggest things to keep in mind as you prepare for your ERP implementation in the new year.

9. <u>How ERP systems improve company's business performance?</u>

Enterprises Resource Planning (ERP) solution enables the task involved in performing a business process quickly and efficiently.

With ERP, when a customer service representative takes an order from a customer, he or she has all the necessary information to complete the order. Everyone else in the company sees the same computer screen and has access to the single database that holds the customer's new order. As and when a department completes their work with the order, it is automatically routed via the ERP system to the next department for the next process.

The order can be tracked any time of point by any department by logging into the system. The order process moves so quickly through the organization, and customers get their orders faster and with fewer errors than before. ERP can extent that application to the other major business process, such as employees' benefits or financial reporting.

10. <u>The entire gamut of ERP activities are summarized below</u>:

ERP facilitates a company-wide integrated Information Systems covering all functional areas such as manufacturing, sales and distribution, accounts, payables, receivables, inventory, human resources. Etc.

ERP integrates and automates most business processes and share information enterprise-wide in real-time, thereby improving customer service and the corporate image.

ERP provides complete integration of the system not only across departments but also across companies under the same management.

ERP bridges information gaps across a company and focuses on key issues such as productivity enhancement, customer service, cash management, inventory, quality control and prompt delivery. Etc.

ERP is the solution for better project management.

ERP provides business intelligence tools like decision support system, executive information system, reporting, data-mining, early-warning system, enabling make better decisions and improve business proc

ERP not only addresses the current requirements of the company but also provides an opportunity for improvement and refinement in the business process on a continuous process.

ERP improves the ways businesses take orders, manufacture goods, ship products, and bill for goods. Businesses see value from ERP software.

ERP is often referred to as back-office software. ERP takes a customer order and provides a software road map for automating the different steps along the path to fulfilling the order. When a customer service representative enters an order into an ERP system, he/she has all the information necessary to complete the order (the customer's credit rating and order history from the finance module, the company's inventory levels from the warehouse module and the shipping dock's trucking schedule from the logistics module,). Users in these different departments all see the same information and can update as necessary. When one department finishes with the order, it is automatically routed via the ERP system to the next department. To find out where the order is at any given point, you need only to log into the ERP system to track it.

The ERP screen makes them businesspeople. It flickers with the customer's credit rating from the finance department and the product inventory levels from the warehouse. Did the customer pay for the last order yet? Will we be able to ship the new order on time? These are decisions that customer service representatives have never had to make before, and the answers affect the customer and every other department in the company.

11. ways that a properly implemented ERP system to improve business performance in egypt

There are 4 main ways that a properly implemented ERP (enterprise resource planning) system will help improve business performance (for how to properly implement an ERP system see implementation checklist (http://www.bpic.co.uk/checklist.html)

1) The demand management functionality of the master schedule will enable more reliable delivery promises and so increasing the on time in full delivery record to 98% or better with the best possible lead time. This should lead to an increased share of the available business.

2) The ability to plan material and components in matched sets of parts to meet actual and forecast customer requirements increases efficiency in manufacturing.

3) The ability to plan capacity requirements in advance enables more efficient use of production resources.

4) Better planning leads to lower inventory for the same customer service level.

You can see the typical percentage improvements of ERP implementations evaluated in the ERP benefits table. Please also see http://www.bpic.co.uk/checklst.htm for a link to a cost and benefit analysis.

12. Conclusions

As the findings of the 2010, 2015 ERP Reports indicate, ERP [15]. Projects are a double-edged sword. On one hand, it has the ability to transform organizations by making them more competitive, decreasing costs, and providing a foundation for growth. On the other hand, the selection and implementation process can be very difficult - or even disastrous - if not managed appropriately. The companies that enjoy successful implementations are those that adhere to the best practices outlined above, have a clear vision of their ERP objectives, and leverage internal and external ERP expertise to reduce business risk.

By providing the pervious framework, our aim is to offer independent tools for ERP Projects selection and implementation expertise and tools to reduce the total cost of ERP implementation and optimize measurable business benefits.

Egypt's expenditure on enterprise systems is growing. These systems can undoubtedly deliver benefits to the organizations in the developing countries [16], [0]. However, high failure rates continue to block the delivery of such benefits. Researches to date focus only on some aspects of system outcome and/or focus only on certain specific implementation factors.

The main concern while performing this study was to collect the factors that could be more beneficial to a developing country setting like Egypt.

The national results show that the rate of the ERP projects that failed and challenged in the Egyptian environment is still very high.

By applying the governance framework on 23 IS development projects, it is found that 44% of the national IS did not meet the criteria of success of the governance framework for ERP projects implementation (failed and challenged), whereas the international rate is 50%. This indicating that the rates of the national projects that did not meet the criteria of success of the governance framework of IS development projects implementation are better than the international rates.

The percentage of the ERP projects failure at the Egyptian environment achieved approximately 40% and this percentage is better than the international percentage that achieved 75%.

The successful ERP projects rate in Egypt is greater than the international rate because these projects ratio include some of the challenged projects, also the organizations under study try to achieve the criteria of success by applying our governance framework for success of ERP projects implementation

This research focuses on the common causes of the (CSFs) of IS development projects failure that related to the Egyptian environment and the literatures review didn't focus on details of this CSFs.

This research concentrated on practical testing of the framework. This is mainly done through testing the reliability and validity of the framework by using it with corresponding questions.

This research focuses on IS development Projects success implementation, successful ERP selection, and successful ERP systems Implementation in Egypt .So we developed and tested a framework that investigates the pervious point in literature and the Egyptian culture of the organization.

So, this research adds to the growing body of knowledge on ERP systems implementation, helping studying the ERP projects implementation in the Egyptian environment. For practitioners, it provides ERP adopters with a self-evaluation tool that helps them monitor and p likelihood of project success.

13. Future Work

Due to the limited number of existing frameworks of ERP projects implementation, more researches are still needed to investigate the correlation between the Critical Success Factors (CSFs) for ERP projects.

Our future study will be concentrated on building an expert system for the suggested framework to represent a self-assessment tool for ERP projects implementers in Egypt. Combining both a detailed case study and a large survey would be an ideal method for researchers in the ERP projects implementation field.

14. References:

[1] Ahmed A. Elragal and Ayman M. Al-Serafi ,2011. "The Effect of ERP System Implementation on Business Performance: An Exploratory Case-Study" German University in Cairo (GUC), New Cairo City, Egypt

[2] Velcu, O. (2007). "Exploring the Effects Of ERP Systems on Organizational Performance: Evidence from Finnish Companies," Industrial Management & Data Systems, 107 (9), 1316-1334.

[3] Trott, P. & Hoecht, A. (2004). "Enterprise Resource Planning and the Price of Efficiency: The Trade Off Between Business (Firms," Technology Analysis & Strategic Management, 16 (3), 367–379

[4] Gupta, O., Priyadarshini, K., Massoud, S. & Agrawal, S. K.(2004). "Enterprise Resource Planning: A Case of a Blood Bank," Industrial Management & Data Systems, 104 (7), 589-603.

[5] Z. HABIB ," The Critical Success Factors In Implementation Of Projects Process Improvement Efforts", Master Thesis In Projects Engineering And Management Report No 2009:056 ISSN: 1651-3769, 2009 .

[6] R. Lahey , "A Framework for Developing an Effective Monitoring and Evaluation System in the Public Sector – Key Considerations from International Experience" President REL Solutions Inc , Canada RELahey@rogers com., 2011.

[7] R.A.A., "A Framework for Successful Enterprise Systems Implementation: Preliminary Findings from a Case" Queensland University of Technology, This material is brought to you by the Australasian (ACIS) at AIS Electronic Library (AISeL) It has been accepted for inclusion in ACIS , 2010.

[8] Bakås, A.Romsdal and E.Alfnes " Holistic ERP Selection Methodology" SINTEF Technology & Society, Operations Management, N-7365 Trondheim, Norway 2 Norwegian University of Science and Technology, Department of Production & Quality Engineering, N-7391 Trondheim, Norway,2007 .

[9] E. M.Abdelmoniem, S. A. Mazen, E. E. Hassanein, "A Framework for Governance of final Post-Construction activities in IS development Projects (Case study in Egypt environment)" , IJCSI Paper Notification - September 2012 Issue (Volume 9, Issue 5): Paper IJCSI-2012-9-5-4209

[10] Esmat Mohamed Abdul Moniem, January 2013 , " A Framework for Governance and Management of Post-Construction activities in IS Projects" , A Phd Thesis Submitted To The Faculty of Computers & Information, Cairo University,Egypt.

[11] 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

[12] J. Magnusson, A. Nilsson, & F. Carlsson, "Forecasting Erp Implementation Success –Towards A Grounded Framework" University Of Gothenburg, Department Of Informatics

[13] D. Whyte, & J. Fortune, "Current practice in project management – an empirical study", 2002.

[14] E.M. Abdelmoniem, , A.S. Mazen, E.E. Hassanein, "An Enhanced Framework For Measuring ERP Implementation Success In The Egyptian Environment" Forty Six International Conference For Statistical ,Computer Science And Operations Research From 26 To 29 December 2011, Cairo, Egypt, 231:250.

[15] http://panorama-consulting.com/top-10-predictions-for-the-erp-industry-in-2016/

[16] A. Hawari & R. Heeks ," Explaining ERP Failure in Developing Countries: A Jordanian Case Study ", Centre for Development Informatics, Working Paper 45 ,IDPM, University of Manchester, UK, 2010.

[17] M. R. Moohebat, A. Asemi1, M. D. Jazi " A Comparative Study of Critical Success Factors (CSFs) in Implementation of ERP in Developed and Developing Countries", International Journal of Advancements in Computing Technology Volume 2, Number 5, December 2010.