



Analysis of critical success factor ERP implementations (A review)

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Abstract

Planning, designing and implementation of ERP systems is done in such a way that they are able to compete, they are flexible, productive and are responsive to customer needs with respect to global economy. The ERP systems provide support for organizations for exponential effectiveness and enhancing capital savings. However in present scenario, there is no guarantee that an ERP system just after its implementation will result in a wholesome advantageous product, as massive number of large and mid-sized organisations have already implemented an ERP System. Rather, a remarkable notion would be implementation of an ERP System – specifically if the objectives of ERP Implementation are achieved by ERP Project Management. Amidst all the Critical Success Factors of ERP Implementations our focus is on bringing out the valued worth of Project Management.

Keywords: ERP project management, ERP implementation, critical success factors, success of ERP

Introduction

Many successful ERP Implementations in business have been registered that have achieved the advantages of integration with working environment, standardized process and operational benefits to the organization. Coincidentally, the reported failure cases of ERP implementations and improper implementations, that have led the organisations to level of insolvency and in noticeable number of cases organizations determined to isolate the ERP implementation projects half-the-way. *ERP Project Management* is considered to be a significant Critical Success Factor (CSF) that can infer the status and health of remaining all other CSF-s identified along the ERP Project Life Cycle.

Methodology

This work reviews of Literature solely about the value of Project Management with respect to all the other Critical Success Factors (CSF) of ERP Implementations. All the articles referred were published in prestige journals. ERP Project Management, ERP, Enterprise Resource Planning, ERP success factors are implicitly and explicitly used terms. The search has been restricted between (1999 and 2017) in order to review relatively new articles. This literature study is being carried out at an iterative manner in several stages.

Critical Success Factors (VS) Project Management

The critical success factors (CSF), represent elements of an organisation's activity which are epicentre to its future success. The concept of CSF was introduced as a mechanism to pin point the information requirements of chief executive officers (CEOs) so as to ensure successful competitive performance for the organisation. (Yehoshua Itzhaik, 2012) [22]. Enormous numbers of authors have penned down the CSF-s of ERP Implementations, a comprehensive list of CSF-

s collated from these research papers are as mentioned.

- Top management support
- The implementation team
- Project Management
- Business plan/vision/goals
- Architecture choices, technical implementation, technological infrastructure
- Training
- Legacy systems knowledge (data analysis & conversion)
- Re-engineering Business Process
- Organizational Culture
- Change management programme
- Communication
- Partnership / Vendor Support
- Testing Effectiveness
- Employee's general IT skills
- Company-Wide Commitment
- Management of Risk
- Organization's or firm size
- Organizational structure
- Data Management

Amongst the list, researchers identified and assigned with the priorities and rankings, however the Project Management is the Key and hence we had to take a 'deep dive' on this notion.

Significance of Project Management in ERP Implementations

Effective project management is vitally important for the successful implementation of ERP. For effective project management clear project objectives should be defined, work and resource plan should be developed and project's progress must be carefully tracked (Goeun Seo, 2013) [24]. Use of skills is involved in Project Management and along with knowledge in coordinating the schedule and monitoring of well-defined

tasks to ensure that the scribed objectives of implementation of the projects are achieved. A formal project implementation plan specifies project activities, commits organizations to those activities, and enhances support of organization by

organizing the implementation process. (T.R. Bhatti, 2005) [7]. The average rating gets inferred as 5.88 towards Project Management where, 1 is lowest and 9 is highest rating for the significance.

Author	Converted Rating for Project Management Factor									Rank	Sum	Converted Rating
	1	2	3	4	5	6	7	8	9			
Christopher P. Holland and Ben Light (1999) [2]										5	25	8.00
G. Shanks*, A Parr***, B. Hu*, B. Corbitt* (2000)										4	5	2.00
Liang Zhang, Matthew K.O. Lee, Zhe Zhang1, Probir Banerjee (2002) [4]										4	10	6.00
Ada Wong, Harry Scarbrough (2003) [5]										3	10	7.00
T.R. Bhatti (2005) [7]										1	10	9.00
Houman Kalbasi (2007) [10]										5	6	1.67
E.W.T. Ngai, C.C.H. Law*, F.K.T. Wat (2007) [12]										13	18	2.78
Khaled Al-Fawaz, Zahran Al-Salti, Tillal Eldabi, (2008) [15]										4	8	5.00
Stephan A. Kronbichler & Herwig Ostermann and Roland Staudinger										5	15	6.67
Miguel Maldonado (2009) [17]										2	10	8.00
Gordon Baxter (2010) [19]										3	6	5.00
Majid Aarabi 1, 2*, Muhamad Zameri Mat Saman (2011) [20]										6	17	6.47
YEHOASHUA ITZHAIK (2012) [22]										5	11	5.45
Otto Korhonen (2013) [23]										5	22	7.73
Gooun Seo (2013) [24]										3	12	7.50

Fig 1: Significance of Project Management in ERP Implementations

As scribed in above table and after understanding the significance of Project Management as very Critical Success Factor for ERP Implementations, let is review the literature on the same for the benefit of Industry.

The study of Critical Success Factors brings forth a deep interest to find out how these authors have tried to set priority of the CSF-s when they present to the industry. Out of 23 authors, whom we have taken for study, 15 were actually touched upon the Factor - Project Management. This has for sure expressed the importance of Project Management with respect to an ERP Implementation. Further, we tried to associate the ‘Ranking’ provided by these authors when they actually listed the CSF-s in their study. Though in many of the studies it is not explicitly stated as the ‘Rank’ of each CSF, we

interpreted for the purpose of our study in the same order that has been listed. This helps to visualize the significance of Factor - Project Management and tabled as below matrix with Bar Chart.

ERP Implementation Methodology (VS) ERP Project Management

PMBOK Fifth Edition, 2013, converges that a project life cycle can be documented within a methodology. As every project has a well-defined start and a definite end, the pin pointed deliverables and actions that take place in between will differ widely with the projects. Regardless of the specific work involved in managing the project the lifecycle provides the basic frame work for its management.

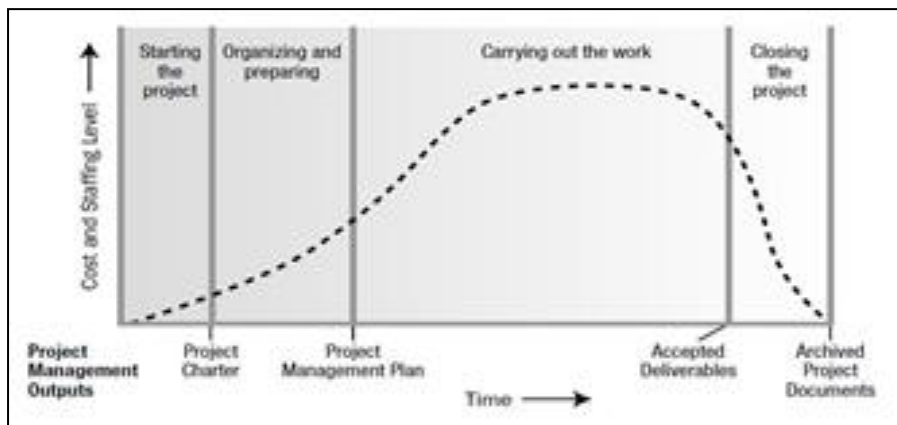


Fig 2: Project Life Cycle

A project can be divided into any number of phases. A phase of a project is a logically related collection of the project activities that results in the completion of deliverables. When a project has more than one phase, these are subset of generally sequenced processes that are doctored to ensure well defined control of the project and get the desirable results.

Water Fall Methodology

Water fall method depicts a sort of Sequenced interaction among Phases. This closely relates to ‘Sequential Relationship’ scribed in PMBOK Fifth Edition, 2013. According to PMBOK Guide, in a sequenced relation, one phase begins if a former phase is completed.

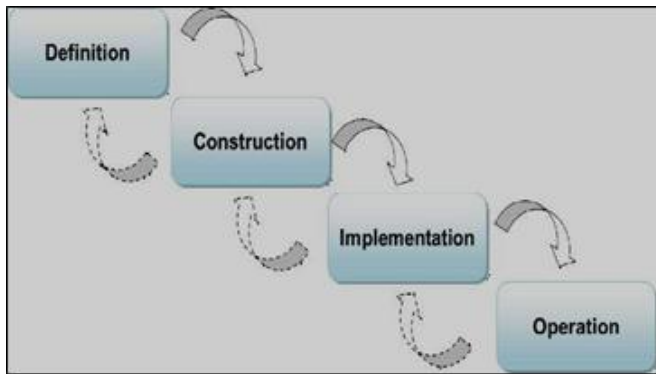


Fig 3: Waterfall Methodology for ERP Implementations

Agile Methodology

Agile method is known as ‘Adaptive Life Cycles’ according to PMBOK Fifth Edition, 2013, it intends to activate and act in response to greater changes and current stake holder role. Agile or Adaptive methods are recursive in nature and tend to increment successively, but varies in the recursion quickly.

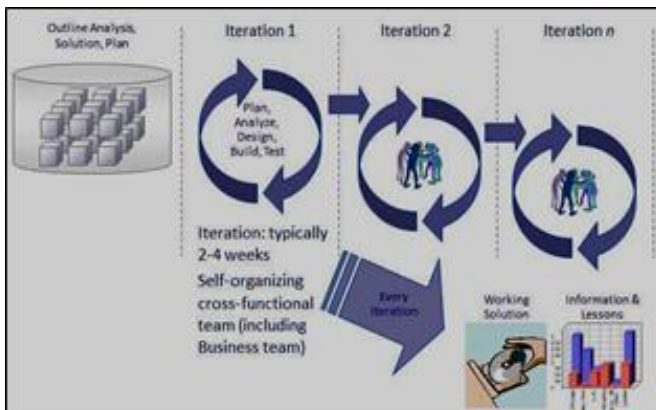


Fig 4: Agile Methodology for ERP Implementations

The scope of this work is forked into blocks of requirement or task to be done. In start of recursion, the peer members identified number of critical items that can be given in the later recursion. In the end of every recursion, the item must be awaiting for the feedback of customer. Adaptive / Agile methods are mostly chosen while handling quickly mutating environment, where scope and the requirements are hard to be predicted.

ASAP Methodology from SAP

A cultured pathway is considered by standardised ASAP Method for managing project, organization change, solutions and management of life-cycle of the application deployed in implementing SAP solutions. The Standardised ASAP Methodology is engineered with respect to the Management model of SAP Advanced Delivery and deploys tools, questionnaires, various checklists along-with guide-bible and promoter templates to frame a project team. The promoted features and tools that are predefined and embedded in SAP solutions render organisations to utilise the ASAP Methodology.



Fig 5: ASAP Methodology Road-Map



Fig 6: Standard ASAP Methodology Phases

The phases of a standard ASAP Methodology are as follows

- **Project Arrangements:** This phase imbibes initial planning and preparation for a SAP project.
- **Business Plan (Blueprint):** This phase achieves know-how of how the organisation desire to implement SAP to help their business. A Business Blueprint and detailed documentation of the results gathered during requirement workshops are the results of a Standard ASAP Methodology.
- **Implementation (Realization):** This phase executes all the business process needs depending upon the Business Blueprint. For system configuration two packages are used in a Standard ASAP Methodology i.e. major scope and remaining scope. The solution is also verified in this phase.
- **Coup ‘de grace:** This phase completes the last task i.e. technical testing, training the end user and managing the system to mark the inference as final.
- **Executing:** This phase proceeds from a project-oriented, pre-production environment to execution.
- **Implementation:** In this phase the central operation platform and SAP Solution Manager implements the business plan.

Each phase has a package of outputs that acts as pipeline concept for following phases. Each intermediate input yields set of outputs consisting methods used to yield the output.

Project Management Process

As defined in PMBOK Fifth Edition, 2013, Project Management is application of skills, tools, knowledge and techniques to project activities to fulfil the project requirements. It is done with the relevant application that integrates 47 logically related processes which are classified into pentagonal groups and decagonal Knowledge Areas as scribed:

Pentagonal Process Groups

- Initiating
- Planning
- Executing

- Monitoring and Controlling and
- Closing

Decagonal Knowledge Areas

- Project Integration Management
- Project Scope Management
- Project Time Management
- Project Cost Management
- Project Quality Management
- Project Human Resource Management
- Project Communications Management
- Project Risk Management
- Project Procurement Management
- Project Stake Holder Management

Discussions on ERP Project Management

From literature review, valuable observations through earlier studies on ERP Implementations and relevant Critical Success Factors were found. Helo *et al.* (2008) suggests that nearly 90% of all ERP projects may be assumed to be failures with respect to project management. Implementations of an ERP system is very complex task as it requires a big lot of time, investment, management of distant stakeholders, standardization of data, management of consultants/vendors and foremost, integrating system with various information systems. This in turn elaborates the odds of traditional project management, dropping more thorns in implementing (Otto Korhonen, 2013)^[23].

Liang Zhang *et al.* (2002)^[4], in their work mentioned ERP systems implementation as a set of complex tasks, that involves all business activities and almost requires two years of hard toiling, therefore the organisations must stall efficient project management schema to handle implementation process, sidelining loads of investment and making sure the implementation within stipulated duration. Project management is classified into five main sections: (1) Formal implementation schema, (2) A stipulated time slot, (3) Regular project status verification meetings, (4) Effective project leader and (5) Project team i.e. stakeholders.

Ada Wong *et al.* (2003)^[5], discussed that because of restricted ERP knowledge, ineffective capability and low project management skills, no project managers were able to oblige effective project management of implementation of ERP. They impressed that the epitome factors that yielded implementation failure are a failure to plan, lead, handle and scrutinize the project. As the ERP system was complicated and collaboration with top management, different departments, users and consultants was required to implement well.

As ERP project involved managing systems, people and re-doctoring business processes it was considered to be very challenging and demanding. According to the outcome inferred by T.R. Bhatti (2005)^[7], There is a strong correlation between Project Management and other success factors of ERP Implementations.

Boo Young Chung, (2007)^[9], Wilder *et al.* (1998) pointed to the poor planning/project management as the nuclear reason for failure of IT projects.

E.W.T. Ngai *et al.* (2007)^[12], made it clear that project management is important for implementation of any project.

Good project management as contrast to a project plan with well-defined objectives, outputs and check points makes sure that project is effectively planned and executed.

Eli Hustad *et al.* (2016)^[28] In their work clearly stated that ERP projects are complicated and require enormous resources. Mis-Adoption of business requirements of an organization and (or) Mis-functioning of the ERP's leads to failure. They have rightly quoted the term 'misfit'.

Ignatio Madanhire *et al.*, (2016)^[27] put forth the implementation framework for ERP and proved that the implementation improved the operational efficiency of the manufacturing system. Moreover their work mentioned that the ERP system improved the efficiency of the employees as well.

Vladimir Ilin *et al.* (2017)^[29] determined the factors that emboss a big impact in the adoption of e-business. They developed a research model with reference to diffusion of innovation (DOI) theory and the environmental context from the technology-organization-environment (TOE) framework. Their inference creates different aspects of (1) managers in ERP-enabled firms and non-ERP-enabled firms, (2) e-business and ERP vendors, (3) governments of five developing countries and (4) practitioners from manufacturing, distribution and service industries.

Conclusions

The importance of Project Management amongst all the other Critical Success Factors that the researchers have identified and put forth so far, have been tried to infer out through this analysis. The Project Management is a field and subject in existence, when conglomerated with the ERP area concerned with all the other CSF-s, overall assigning of an ERP Implementation is becoming more complex and thus requires more vigilance from all the stake holders including the Senior Management Team. This complexity can to be handled efficiently deploying knowledge, skills, tools and techniques of Project management principles.

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