

Erp in Indian Smes - A Study of Critical Failure Factors

Manupreet Singh^a and Balraj Singh^a

^a Department of Mechanical Engg., Giani Zail Singh PTU Campus, Bathinda.

Abstract: ERP (Enterprise Resource Planning) comprises of a commercial software package that promises the seamless integration of all the information flowing through the company—financial, accounting, human resources, supply chain and customer information. Research on the implementation of ERP in particular region like India shows that, the job of implementing an ERP is a riskier business for SMEs than for LEs, still SMEs have been receiving lesser focus on ERP from researchers than LEs. Most of the researches to be done on critical success factors CSFs. Many companies in India have implemented ERP to capture its benefits and still there is a lack of examining Critical Factors that contribute in the failure of ERP implementation at Indian SMEs. In this dissertation Qualitative survey based method was used to explore “what are the possible critical failure factors” that contribute in the failure of ERP implementation at India SMEs. A questionnaire is used to collect the data from personal observations and interviews with people those who are having experience of ERP implementation in Indian SMEs. In this study, it was found that an ERP implementation at Indian SMEs is not exactly same from the ERP implementations found in the existing literature for the worldwide LEs. When discussing the critical failure factors for an ERP implementation at Indian SMEs, it was found that although the factors are more or less same but the importance of factors in term of their priorities (importance) are defiantly different from the ERP implementation of LEs.

Keywords: ERP, Critical Failure Factors, Manufacturing industries, SMEs.

I. Introduction

Enterprise Resources Planning systems provide different benefits to all companies. At the same time, ERP systems are powerful software which is supplying companies to integrate different technology. They integrate departments like warehouse, sales, logistics, production etc. by this way produced data in a department becomes immediately available to other departments. A business action is entered only once according its department and its status is changed at other departments according to the workflow of actions. There is no need to enter same information a few minute [12]. ERP system is a chance to fulfill organizational standardization. It forces a company to be a single automation soft to its customers and vendors. Created documents and produced data in different departments, locations and plants can be a common structure under hierarchy. ERP systems can help to companies at improvements the way of doing successful business [13]. But an implementation process of ERP system very difficult. Many ERP implementation projects failed to insufficient planning, lack of the knowledge in project teaming or missing risk analysis. Implementing successful ERP requires the process of selecting appropriate practices provided by ERP vendor or advisor [8, 13].

This research examines Critical Failure Factors (CFFs) in Enterprise Resource Planning (ERP) implementation focusing on Indian small to midsized firms (SMEs). Much of the research on ERP implementation addresses the critical success factors and best practices used in large-scale implementations at large organizations. Little research deals with ERP implementation on critical failure factors in SMEs. Yet, as the largest firms complete ERP implementations, ERP software vendors are focusing on the SMEs market [20]. SMEs face many of the same competitive problems as larger organizations, but have limited resources, experience and staffing skills [13]. As with the larger enterprises, ERP implementation is becoming critically important to SMEs in streamlining business processes, improving operational performance, and integrating data. Understanding the CFFs in ERP implementation is more important to SMEs than larger organizations due to their more limited resources. SMEs may not be able to withstand the financial impact of the partial failures and project abandonments that have impacted many of their larger counterparts [3,20]. CFFs can be defined as “the limited number of areas in which results, if they are satisfactory, will ensure worst performance for the organization” [14]. CFFs methodology has been applied to many aspects of information systems research including ERP systems implementations [4]. Information technology has been a force multiplier for the organizations desirous of gaining a competitive edge in a global business environment. The need to share large quantities of data effectively and efficiently between suppliers, customers, geographically dispersed units, and internal functional departments necessitated the development of integrated information systems. ERP systems are examples of the most strategic tools a business can employ. They help integrate company operations by creating a computing environment that includes a central database for sales and marketing, production and materials management, accounting ,finance, and human resource functional business data. Implementing ERP in

developing countries is faced by several obstacles that delay implementation compared with developed countries [12]. The challenges faced by developing countries vary. On the organizational level, organizations working in developing countries find the ERP cost is a major barrier for implementing ERP systems especially for SMEs. Thus, most of the implementation done in ERP is for large scale companies which can afford the costs. This includes multinational organizations. Another barrier for ERP implementation is related to the IT maturity in both national and organizational levels. In developing countries, IT infrastructure has many weak issues related to the IT penetration such as internet and computer penetration in organizations and social levels. This is in addition to the lack of number of computer and internet users on both national and organizational levels. Other factors which lead to lack of implementation are related to cultural factors and lack of knowledge of ERP systems [13]. ERP systems are widely used to extract and process data from different functional areas across the enterprise [12]. ERP systems are therefore called 'Cross-Functional' systems as they integrate business processes across different functional areas of an organization. These systems are sought after to improve the visibility of information across the organization and to allow a better access to information in a borderless environment [10]. Hence, ERP systems are used by large scale companies as well as SMEs. The challenges accompanied by the implementation of ERP systems are not limited to the size of the organization, but go further to where the organization is implementing its ERP systems. Developed countries are widely accepting and applying ERP systems in their organizations in comparison with developing countries. Statistics show that 88% of ERP market is in North American and European countries while the rest of market goes to the rest of the world [9]. This gap in ERP implementation is directly related to the economic and technological status of each respective country. Developing countries are facing many challenges in applying information systems/information technology projects due to the poor and unstable economic status which is reflected in the delay of the ERP implementation. The enhancement in the performance leads to the reduction in costs which eventually leads organizations to achieve competitive advantage. Even more, the organizations' vision recently is focusing on how to sustain competitiveness via implementing ERP systems. These organizations find sustaining the competitive advantage over their competitors as a major motive for ERP implementation [5, 20].

II. Literature Review

A research frame work for examining how features of an information system affect the decision-making process. The framework is synthesized by merging frameworks from the Accounting Information Systems (AIS) literature and the Human Information Processing (HIP) literature [15]. We adopted a framework covering both the national and organizational factors to assess the influence of these CFFs on the implementation of ERP systems on large companies in China. Findings show that certain factors have more significance in these organizations and their influences vary on the ERP successful implementation. Furthermore, the failure of the ERP implementation was found to have a significant impact on achieving competitive edge for these organizations affected by both the national and the organizational factors [3]. There is a need to focus future research efforts on the study of CFFs as they apply to the perspectives of key stakeholders and to ensure that this stakeholder approach is also comprehensive in its coverage of CFFs. As well, there is need to conduct more in-depth research into the concept of change management [7]. Enterprise resource planning systems are highly complex information systems. The implementation of these systems is a difficult and high cost proposition that places tremendous demands on corporate time and resources. Many ERP implementations have been classified as failures because they did not achieve predetermined corporate goals. This article identifies success factors, software selection steps, and implementation procedures critical to a successful implementation. Critical success factors in enterprise resource planning implementation process. ERP benefits cannot be fully realized unless a strong alignment and reconciliation mechanism is established between technical and organizational imperatives based on the principles of process orientation [14]. Enterprise Resource Planning (ERP) has come to mean many things over the last several decades. Divergent applications by practitioners and academics, as well as by researchers in alternative fields of study, has allowed for both considerable proliferation of information on the topic but also for a considerable amount of confusion regarding the meaning of the term. In reviewing ERP research two distinct research streams emerge. The first focuses on the fundamental corporate capabilities driving ERP as a strategic concept. Another stream focuses on the details associated with implementing information systems and their relative success and cost. This paper briefly discusses these research streams and suggests some ideas for related future research [17]. Chinese enterprise resource planning (ERP) vendors have been able to defend the challenge from global ERP leaders such as SAP and Oracle. This article seeks possible reasons for major international ERP vendors not being able to dominate the Chinese ERP market. ERP vendors have failed in their Chinese implementations are presented and analyzed. Eight factors are identified which have contributed to ERP failure. Implications of the findings for future's ERP implementations in China [18]. Fourteen critical failure factors were identified and analyzed, and three common critical failure factors (poor consultant effectiveness, project management effectiveness and poor quality of business process re-engineering) were examined and discussed. Future research on ERP implementation and

critical failure factors is discussed [20]. In industries the stakes control of integrated systems cannot be limited to the phases of implementation or deployment. Better use of these information systems drives industries to new organizations and to continuous adaption of industry's strategy. It should help in the re-evaluation of the positioning of the ERP in the information system to identify relevant improvement in a given situation [9]. Various ERP implementation factors have been deemed critical to success within diverse business environments. The interaction relationships among these ERP implementation success factors, however, have been overlooked. The objective of this study is to explore the interaction patterns among the ERP implementation success factors from a co variation (co-alignment) perspective [5]. ERP solutions are the revolutionizing the way industries produce goods and services. ERP systems bring lot of benefits to the industries by tightly integrating various departments of the industry. ERP systems are very large and complex and require a careful planning and execution of their implementation. They are not mere software: they affect how a business conducts itself. The top contributor for a successful ERP implementation is strong commitment from upper management, as an implementation involves significant alterations to existing business practice as well as an outlay of huge capital investment. ERP's built in practices as much as possible selecting the right employees to participate in the implementation process and motivating is critical for the implementation success [11]. The ability to implement ERP with minimal customization requires assistance from several other factors, primarily streamlining operations and re-engineering the business - both of which will help the organization to run in a more straight forward manner [10]. The various factors of implementation of ERP in number of companies that lead to successful implementation of ERP. Also their study reveals the decision-making process for ERP implementation from three perspectives; strategic, tactical and executive are examined [8].

III. Research Methodology

Figure 1 represents the systematic flow of all the steps or activities taken to achieve the objectives of the present research. Figure represents a process flow chart to depict the sequence of activities under the methodology adopted in completing the research work. Literature survey is the first step to know the present status of the research and applications of ERP across various manufacturing industries. The literature review has indicated that there are poor evidences on ERP implementation in small scale manufacturing organizations. So, in the case study, an initiative has been taken to justify the highly useful role of ERP systems for manufacturing industries and effect of various critical success and failure factors.

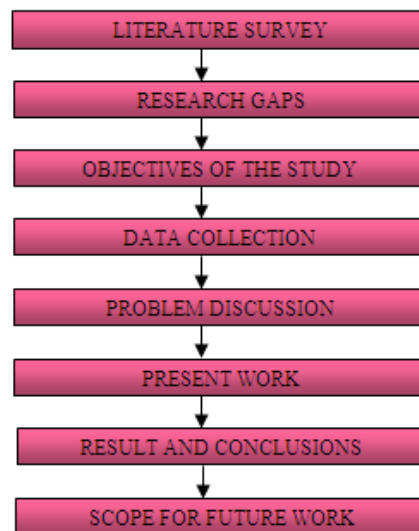


Fig. 1 Flowchart for methodology adopted in research

After identification of the research gaps, the objectives of the study are formulated. This analysis yielded some useful results which are implemented to improve the existing processes. Finally the conclusions are drawn and scope for future is identified to continue the research in this field.

In the survey questionnaire information was asked on ERP implementation and current use in the industry: the respondent's and the industry characteristics, the ERP project characteristics and initial contributors (budgets, timelines, user satisfaction, performance measures, benefits, operational disruptions etc.), organizational characteristics (during and after deployment), needs of improvement /evolution & "Post-go-live" diagnostic. The responses were encoded using a mix of check boxes, open ended answers and a binary scale with 'yes' or 'no' responses. The amount of open-ended questions allowed appreciates numerous details. Given the length and comprehensive nature of the survey, this response rate was concluded to be reasonable.

IV. Result And Discussion

1. On ERP software highlights the following points: (a) SAP as software package for ERP implementation was used by 56.25% industries. (b) Both ORACLE and BAAN as software packages were used by 12.50% industries each. 18.75% of the industries used some other software's.

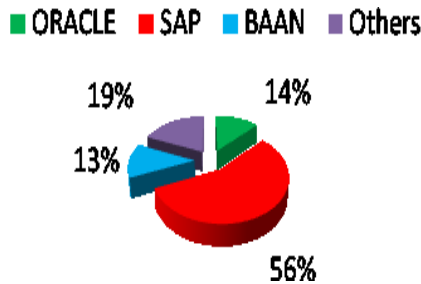


Fig. 2 ERP software/package used by industries

2. Most Organization belongs to Manufacturing 81.25%, 12.50% Automobile Sector and 6.25 Pharmaceutical.

Table: 1 Industrial Sectors belongs to research (Percentage share)

S.No.	Industrial Sectors	Percentage
1.	Manufacturing	81.25%
2.	Automobile	12.50%
3.	Pharmaceutical	6.25%
4.	Infrastructure	None
5.	Food and beverages	None

3. Maximum industries (62.50%) implemented ERP with an intention of customer's satisfaction while only 18.75% of the industries have the objective to achieve goals and 12.50% of the companies want to become a good ERP implemented company. The rest i.e. 6.25% of the industries have other intentions for implementing ERP in their organization like better control over stocks and to optimize business processes.

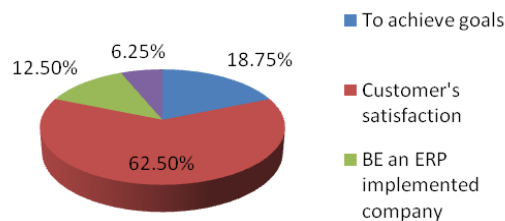


Fig. 3 Major intention of implementing of ERP

4. It reveals that 81.25% industries spent above 60 lacs. While 12.50% and 6.25% Industries spent 20-40 lacs and 40-60 lacs respectively. No industry having ERP software less than 20 lacs.

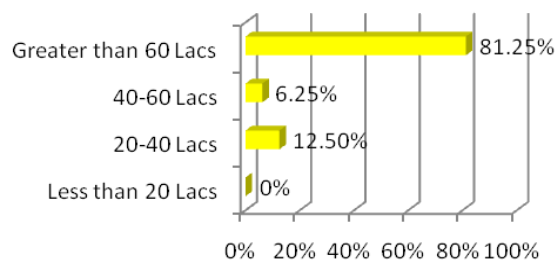


Fig. 4 Amount spent on ERP implementation

5. It reveals that the functional critical failure factors of an ERP implementation are:

Table 2 Functional Critical Failure Factors of an ERP implementation

S. No.	Critical Failure Factors	Percentage %
1	Over realization on heavy customization	43.75
2	Software modification	6.25
3	Lack of formal communication	87.50
4	Poor ERP selection	62.50
5	Functionality problems	50

5. It reveals that 37.5%, 50%, 75%, 18.75, 12.50% industries surveyed these failure factors(Change in management, Budget issues, Lack of experience, Unfriendly user interface, Absence of consultant) were responsible for failure of ERP in Indian SMEs.

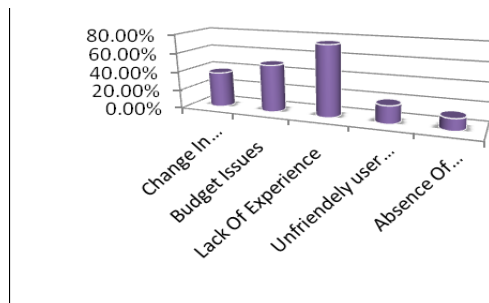


Fig. 5 Responsibility of critical failure factors in failure of ERP

V. Conclusion

The objective of this research work was to identify critical failure factors that contribute in the failure of ERP implementation at Indian SMEs. For this purpose, the author has analyzed opinions those people who are having experience of ERP implementation in Indian SMEs. After the analysis, the following conclusions were drawn: The top most critical failure factors for the failure of ERP implementation at Indian SMEs are as follows:

- (a) Employee’s resistance
- (b) Poor top management
- (c) Budget issues.

It is found from the study that all the critical failure factors have different priority in terms of their mean ranks in the failure of ERP implementation at Indian SMEs. It is hoped that this research will help to bridge the current literature gap and provide practical advice for both ERP academicians and practitioners. More studies will be conducted in future in order to further examine the black box of ERP implementation at Indian SMEs in order to avoid the failure of ERP implementation at Indian SMEs.

References

- [1]. Abdelghaffar Han et al. (2010), “Significant Factors Influencing ERP Implementation in Large Organizations: Evidence from Egypt”. European, Mediterranean & Middle Eastern Conference on Information Systems.
- [2]. Bhatti T R (2005), “Critical Failure Factors for the Implementation of Enterprise Resource Planning (ERP): Empirical Validation”, The Second International Conference on Innovation in Information Technology (IIT’05).
- [3]. Chou Shih-Wei et. al.,” The implementation factors that influence the ERP (enterprise resource planning) benefits”, Decision Support Systems 46 (2000) 149–157.
- [4]. Davenport, T.H. and Brooks, J.D. (2004), “Enterprise systems and the supply chain”, Journal of Enterprise Information Management, Vol. 17 No. 1, pp. 8-19.
- [5]. Eric T.G. Wang, Sheng-Pao Shih, James J. Jiang, Gary Klein, “The consistency among facilitating factors and ERP implementation success: A holistic view of fit.” The Journal of Systems and Software 81 (2008) 1609–1621.
- [6]. Garg Venkitakrishnan, (2006). “ERP Concepts and Practice”, Prentice Hall India.
- [7]. Gattiker, T.F. (2002), “Anatomy of an ERP implementation gone awry”, Production and Inventory Management Journal, Vol. 43 No. 3/4, pp. 96-105.
- [8]. Hakim Amin et al. (2010), “A Practical Model on Controlling the ERP Implementation Risks”, Information Systems, Vol. 35, pp. 204-214.
- [9]. H. Liang, N. Saraf, Q. Hu, Y. Xue, “Assimilation of Enterprise systems: The effect of institutional pressures and the mediating role of top management.
- [10]. Ifinedo Princely et al. (2010), “Relationships among ERP Post-implementation failure Constructs: An Analysis At the Organizational Level”, Computers in Human Behaviour, Vol. 26, pp. 1136-1148.

- [11]. Kumar Pramod and M P Thapliyal (2010), "Failurely implementation of ERP in Large Organization", International Journal of Engineering Science and Technology, Vol.2, No. 7, pp. 3218-3224.
- [12]. Leon, A., "Enterprise Resource Planning", Tata McGraw-Hill, (2009).
- [13]. Liu Pang-Lo et al. (2011) "Empirical study on Influence of Critical Failure Factors on ERP Knowledge Management on Management Performance in high-tech Industries in Taiwan", Expert Systems with Applications, Vol. 38, pp. 10696-10704.
- [14]. Mashari Al et al. (2003), "Enterprise Resource Planning: A Taxonomy of Critical Factors", European Journal of Operational Research, Vol. 146, pp. 352-364.
- [15]. O'Donnell Ed et al. (2000), "How Information Systems Influence User Decisions: A Research Framework And Literature Review", International Journal of Accounting Information Systems, pp. 178-203.
- [16]. Plant Robert et. al., "Critical Failure Factors In International ERP Implementations: A Case Research Approach", University of Miami Coral Gables, FL 33124 Journal of Computer Information Systems Spring 2007.
- [17]. P. Upadhyay, R. Basu, R. Adhikary, P. K Dan. A Comparative Study of Issues Affecting ERP Implementation in Large Scale and Small Medium Scale Enterprises in India: A Pareto Approach. International Journal of Computer Applications (0975 – 8887) Volume 8– No.3, October 2010.
- [18]. Sheu Chwen et al. (2004), "National Differences and ERP Implementation: Issues and Challenges", Omega, Vol. 32,pp. 361-371.
- [19]. Umble J et al. (2003), "Enterprise resource planning: Implementation Procedures and Critical Failure Factors", European Journal of Operational Research, Vol. 146,pp. 241-257.
- [20]. Wong, A., Patrick.Y.K.C, Scarbrough and Davison (2005), "Critical Failure Factors in ERP implementation".