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Critical Failure Factors for Enterprise Resource Planning Implementations in Indian Retail Organizations: An Exploratory Study

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Abstract

Enterprise resource planning (ERP) systems are increasingly being adopted by many Retail organizations in India. The implementation of ERP systems in organizations is an enormously complex undertaking and costly affair. So far, ERP implementations have yielded more failures than successes. Around 75% of the ERP projects are classified as failures. This paper explores and validates the existing literature empirically to find out the critical failure factors that lead to the failure of ERP in context to Indian retail organizations. If Retail organizations can focus and improve on their management of these failure factors, they can increase the rate of success in the implementation of the ERP system.

Keywords: Enterprise Resource Planning, Retail, Critical Failure Factor.

Introduction

Enterprise resource planning (ERP) commercial software packages exploded into the market during the 1990s as a popular way by which companies attempted to integrate their financial, human resource, operation, and customer information. The "seamless" integration of computer systems was appealing to organizations because it would allow real-time access to data, reduce redundant data elements and lower the costs associated with maintenance of multiple systems. ERP systems were intended to help organizations increase efficiency and provide a higher level of customer service.

An ERP system may be defined as a packaged business software system that enables a company to manage the efficient and effective use of resources (materials, human resources, finance, etc.) by providing an integrated solution for the organization's information processing needs (Nah *et al.*, 2001). ERP systems provide firms with two new and different types of functionality: a transaction processing function, allowing for the integrated management of data throughout the entire company, and a workflow management function controlling the numerous process flows within the company. ERP facilitates the flow of information between all the processes in an organization. ERP systems can also be an instrument for transforming functional organizations into process-oriented ones. When properly integrated, ERP supports process-oriented businesses effectively (Al-Mashari, 2000). Recently, several practitioners have stated that ERP implementations have so far yielded more failures than successes in large organization.

Economic liberalization has brought about distinct changes in the life of urban people in India. A higher income group middle class is emerging in the Indian society. Demographic changes have also made palpable changes in social culture and lifestyle. In this environment Indian Retail Organization is witnessing rapid growth. AT Kearney has ranked India as fifth in terms of Retail attractiveness. Indian Retail Organization is the largest employer after Agriculture (around 8% of the population) and it has the highest outlet density in the world however this organization is still in a very nascent stage. The whole market is mostly unorganized and it is dominated by fragmented grocery (Kirana) stores. A poor, supply chain and backward integration has weakened the whole process. A McKinsey report on India says organized retailing would increase the efficiency and productivity of entire gamut of economic activities, and would help in achieving higher GDP growth.

Enterprise resource Planning has become a key business driver in today's world. Retailers are also trying to reap in the benefits of the technology. Enterprise Resource Planning-ERP is, essentially, an integrated software solution used to manage a company's resources. Retailers are using ERP for product planning, parts purchasing, maintaining inventories, interacting with suppliers, providing customer service, and tracking orders. With ERP, retailers can save money in maintaining inventory, reduce the respondent time to the marketing demand, and get competence. More and more enterprises in the world are using it since its initial adoption.

A typical ERP implementation in a large retail organization takes between one and three years to complete and costs millions to billions. For these reasons, there is an urgent need to understand the underlying critical failure factors (CFF) that lead to the failure of ERP implementations in such firms.

This paper is organized as follows. Section 2 describes the review of the literature on CFF of ERP implementation in context to retail organization. The third section and forth section of the paper describes the research objective and methodology adopted for this paper. The fifth section elaborates on the finding and describes the factors that play a role in success of ERP implementation in Retail organization. The last section draws some conclusion.

Review of Literature

Past studies have identified a variety of CFFs for ERP implementation, among which context related factors consistently appear. Some top CFFs which can be found frequently in literature include: ERP system misfit, high turnover rate of project team members, over-reliance on heavy customization, poor consultant effectiveness, poor IT infrastructure, poor knowledge transfer, poor project management effectiveness, poor quality of Business Process Reengineering (BPR), poor quality of testing, poor top management support, tight project schedule, unclear concept of the nature and use of ERP system from the users perspective, unrealistic expectations from top management concerning the ERP System, users' resistance to change based interrelationships between critical failure factors, Inaccurate data, change in business goals during the project, ERP implementation is viewed as an IT project etc. These factors have been found relevant as reported in some of the earlier studies.

In order to adopt a suitable research methodology we present the commonly identified CFFs as they have been identified by several researchers.

Why ERP implementations fail? In a recent survey, information technology managers identified three primary reasons for the failure of all IT-related projects: poor planning or poor management (cited by 77 percent), change in business goals during the project (75 percent), and lack of business management support (73 percent).

Since ERP is an IT-related project, the above are valid reasons for explaining ERP implementation failures. There are four primary reasons that ERP implementations fail, they are: inadequate education/training, poor leadership from top management, resistance to change, and unrealistic expectation (Tapp, et al, 2003). Failure has been defined as an implementation that does not achieve a sufficient Return on Investment (ROI) identified in the project approval definition, it has been found that failure rates are in the range of 60–90% .Failures can be defined in other forms like exceed budget, lag behind projected schedule, and fail to match expectations. As ERP implementation failure rates are so high and the consequent impacts are so detrimental to business, there is a compelling reason for opening the "black box" to investigate the factors causing failure (Ptak C, 1999).

Critical failure factors (CFFs) are the key aspects (areas) where "things must go wrong" in order for the ERP implementation process to achieve a high level of failure. Failures of ERP system implementation have been known to lead to organizational bankruptcy (Markus and Tanis, 1999; Davenport, 1998). There are significant overlaps between the success measures for information system and ERP systems. Most of the success measures for information system are applicable to ERP systems. However, there are still some sophisticated aspects of ERP system, which cannot be addressed effectively by information system success measures such as the tremendous difficulties in practical implementation and the transfer of embedded tacit business knowledge (Lambe and Pan, 2003).

From the literature, it has been realized that companies could spend hundreds of millions of dollars and many years implementing ERP solutions in their organizations. Once an ERP system is implemented, going back is extremely difficult because it is too expensive to undo the changes ERP brings into a company. There are several failed ERP attempts, and companies lost not only the capital invested in ERP packages and millions paid to outside consultants, but also a major portion of their business. Thus, Implementing an ERP system is a careful exercise in strategic thinking, precision planning, and negotiations with departments and divisions (Bingi, Sharma and Godla, 1999).

It is important for companies to be aware of certain critical issues before implementing any ERP package. Careful consideration of these factors will ensure a smooth rollout and realization of full benefits of the ERP solution. Main failure of ERP in manufacturing sector was that, manufacturing systems were focused on traditional inventory control concepts and most of the software packages were based on traditional inventory processes whereas ERP covered tangible-related functions as well as intangible-related functions, i.e. service-oriented activities. So the process of ERP implementation demands the preparation of business processes (i.e. organizational fit), preparation of people (i.e. corporate culture) and preparation of technical

systems (i.e. legacy systems), change management competencies, and project management (i.e. planning and competencies etc) all of which are much less needed in MRP implementation (Farshad, 2006) ERP covers a wide range of functional areas, it is important for the company to have a clear goal, focus and scope prior to ERP implementation as a lack of this CSF will most likely lead to project failure, companies that do not have a clear strategic plan in regards to their businesses have high failure rate of ERP implementation (He, 2006). CSF will most likely lead to project failure, companies that do not have a clear strategic plan in regards to their businesses have high failure rate of ERP implementations (Stefanou, 1999).

Objective of the study

The objective of this paper is to explore the critical factors causing failure in the implementation of the enterprise resource planning (ERP) system. Relevant literature indicates the existence of critical failure factors (CFFs) in the implementation of ERP systems. In the literature CFFs do not go through data collection verification from the organizations that implement ERP systems, in this study we will validate the CFF's empirically and present the valid findings obtained from a survey on top management, ERP project managers, key users and end users from retail organizations in India.

Research Methodology

The research process involved the following steps. First, a literature review was undertaken to identify what parameters to consider in research. It outlines the previous research and critical failure factors for ERP implementation in retail organization were studied. Second, questionnaire was constructed and it was piloted. Last in depth interviews were held (with firm which have implemented ERP) to establish the evaluation criteria and factors were identified which result in critical failure factors for ERP implementation in retail organization.

Reviewing the existing literature in ERP, we find out that 30 failure factors have been recognized and studied. Further investigation revealed that 20 failure factors were more frequently mentioned and studied in the previous research. The questionnaire which was developed for this research was based on these 20 CFFs and the scaled used was a 5 Level Likert Scale. To ensure data validity and reliability of the survey instrument, an iterative process of personal interview with eight knowledgeable individuals (i.e. two IS faculty, two ERP supplier, two ERP consultant and two managerial level user) were conducted to modify the questionnaire before sending it out and their comments also helped us improve its quality. The questionnaires were sent to the ERP project managers and senior project team members of selected companies.

In this study, only organizations with prior experience of implementing ERP systems were selected as our investigative sample. The questionnaire was administered on 355 respondents out of which 70 questionnaires were completed, in which respondents were asked to indicate their level of importance for each of the construct items (critical failure factors) using their response on a five point scale. The raw data was captured in a spread sheet software package. The spread sheet was then transported to software statistical package (SPSS).

Exploratory factor analysis (EFA) was used to summarize the 20 variables into smaller sets of linear composites that preserved most of the information in the original data set. A three factor solution best described the data. The resulting three factors namely Strategic, Tactical and operational are shown in Table 1**.** The component covariance matrix further shows that the three factors are not related to each further confirming the results of factor analysis Table 2.

Table 1. Results of exploratory factor analysis

Factor 1 Strategic	Factor Score	Factor 2 Tactical	Factor Score	Factor 3 Operational	Factor score
Lack of top management commitment	.953	inadequate functional requirements	.726	Inadequate training and education	.866
Poor middle management commitment	.875	Poor ERP product selection	.746	Users' resistance to change	.805
Treated as an IT project.	.904	Over-reliance on heavy customization	.937	High Attrition rate of project team members	.707
		Inaccurate data	.912	Inadequate resources	.835
		Poor quality of testing	.895	Poor User involvement	.714
		Inappropriate Timing of go live	.933		
		Poor project management effectiveness	.895		
		Poor consultant effectiveness	.953		
		Unrealistic expectations	.734		
		Too tight project schedule	.837		
		Poor knowledge transfer	.823		
		Poor IT infrastructure	.824		

Table 2. Component Score Covariance Matrix

Component	1	2	3
1	1.000	.000	.000
2	.000	1.000	.000
3	.000	.000	1.000

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

After three factors (dimensions) were extracted from conducting the EFA procedure, we interpreted the results by assigning labels to the factors. The underlying factors were labeled as follows:

- Factor 1- strategic: It includes 3 items that are related to top/middle management in implementation of ERP in retail organization.
- Factor 2- Tactical: This consists of 11 items that deals with various project managements & selection criteria related issues of ERP product.
- Factor 3- Operational: This consists of 5 items that deals with the user training and involvement.

Results and Implications for Retail Organizations

This study has identified the critical failure factor (CFF) of ERP implementation in retail sector of India. These CFFs are classified into the following three dimensions: Strategic, Tactical and operational. Each dimension is described as follows:

Strategic

If top management is not strongly committed to the ERP system, does not foresee and plan for the profound changes necessitated by ERP, or does not actively participate in the implementation, the implementation has a high likelihood of failure. The implementation of ERP must be viewed by top management as a transformation in the way the company does business. They should assure the employees about their jobs, clear any doubts and explain why the ERP system is a necessity for the organization. The CEO or some senior level manager should sponsor the ERP project in order to demonstrate the management commitment. Apart from top-level commitment, Mid-level management commitment is also required for the implementation. Middle levels of management must participate when determining the detailed implementation plans. This will ensure that everyone's interests and concerns are considered before final decisions are made. Mid-level managers should have hands-on responsibility and authority for the detailed aspects of the implementation. The lack of top/middle management commitment will inevitably lead to failure. If the ERP implementation is treated as simply an IT project, the ERP system will never realize its full capabilities. In such cases, it is similar that the technology is deployed in a vacuum, business processes will not be properly reengineered and aligned with the software requirements, and staff will resist using it and indirectly it would lead to failure.

Tactical

Inadequate definition of functional requirements accounts for ERP implementation failures. This is simply a matter of not comprehensively and systematically developing a quality set of functional requirements definitions. This leads to the second greatest cause of ERP implementation failures: poor product selection. Poor package selection occurs when a company has inadequately developed functional requirements definitions. It also occurs when staff members assigned to ERP projects do not take the time to run the screens of the new system, as they would during their daily work tasks, to find out if the software package features are adequate for their needs as a result ERP software was found to be ill-fitting with the business requirements. A significant mismatch between the ERP product and business processes of the organization will generate widespread chaos. In order to cope with existing business processes, Project teams relied on heavy customization for solving the problems. Customizing an ERP package can be unexpectedly expensive and complicated, and tends to delay delivery of the obvious benefits of an integrated system. Customizing the ERP to fit with business processes might lead to sacrificing "best practices" embedded in the ERP system.

Accurate data is an absolute requirement for an ERP system to function properly. If inaccurate data is entered into the common database, the erroneous data may have a negative impact throughout the enterprise. Inaccurate data can lead to errors in market planning, production planning, material management, and financial planning. If a company with inaccurate data just forges ahead under the assumption that data errors will be corrected when they are spotted, the ERP will lose credibility. This encourages people to ignore the new system and continue to run the company under the old system.

Not giving due importance to dry runs and testing of processes suggested by the ERP vendors also let entrepreneurs fail in implementing ERP. Prior to the “go-live” date; sufficient unit and integrated and stress testing should be conducted to ensure the organization (such as business processes, users’ ERP knowledge, data quality, capability of H/W and S/W and ERP systems) is ready prior to the “go-live” date. This may help to minimize the risk of ERP implementation failure. The busiest season of the year is not the time to take the system live. During less busy periods of the year, project teams normally have more time to fix problems before the rush of transactions from the busy season. Inappropriate Timing of go live could lead to failure.

Sometime due to limited ERP knowledge, capability and poor project management and poor consultant effectiveness, Managers are often surprised by the scope, size, and complexity of an ERP implementation. As a result, management sometimes does not initiate the necessary level of detailed project management planning and control.

Another significant cause for ERP implementation failure is the unrealistic expectation of benefits and return on investment. Initially product providers are overstating the benefits in terms of ROI, when the total costs of the project have been understated. They often left out of the some hidden costs like costs of planning, consulting fees, training, testing, data conversions, documentation, replacement staffing, and the learning curve performance drop. When this happens, a company doesn't stand a chance of achieving the ROI as it was anticipated.

Entrepreneurs also fail due to lack of time and manpower required for implementation. Many a times companies over burden their employees with their regular work and implementation responsibility. This works against the company itself and forces the staff to overlook some important details and requirements which causes serious issues later to let the effort go in vain. To avoid such reasons of failure, proper time schedule shall be worked out for the implementation process and working hours of the employees, directly involved at all the levels, shall be redesigned so that they may contribute as per their ability in the process.

Consultants were found to be inexperienced in the use of the ERP system (as they tried to practice during training sessions), and they could not deliver professional ERP training to the users. Their training material and user documentation were found to be too brief and unhelpful by the users. Project team members mentioned that the knowledge transfer process was ineffective, and the project team members and project manager could not acquire sufficient knowledge or skills to use, maintain and support the ERP system. Consultants were found to be inexperienced in the use of the ERP system (as they tried to practice during training sessions), and they could not deliver professional ERP training to the users. Their training material and user documentation were found to be too brief and unhelpful by the users. Project team members mentioned that the knowledge transfer process was ineffective, and the project team members and project manager could not acquire sufficient knowledge or skills to use maintain and support the ERP system.

Due to top management's insufficient financial resource provided for the implementation budget, a low performance IT infrastructure hardware was proposed by the consultants and project manager so as to reduce the costs of ERP implementation. The poor IT infrastructure contributed to the slow processing capability of the ERP system.

Operational

ERP implementation is not an IT project but it is a people project. The biggest challenge for ERP implementation is related to people. At every stage, companies must work harder to manage change, retain, communicate with and educate their employees. If the employees are not educated and informed about the benefits of the ERP system and assured about the security of their jobs by the top management, they will start believing in the rumors that float around and will either resist or sabotage the ERP implementation. All users of the ERP system should be trained properly in using the system to its fullest. Different groups of people in the company will have different training needs. Managers need more focus on the decision-making and analysis features of the system, while the clerical staff need more focus on how to perform their daily operational jobs (data entry etc). But all the users must be trained in the ERP basics, overview of the system and its working, how an action by an employee triggers a host of events through the organization, how automation will help, what processes are changed and so on. All users must be trained to take full advantage of the system's capabilities. When the employees do not understand what the new system is and what it is supposed to do and how to operate it, they will not use it or use it incorrectly as a result it could lead to failure of the system.

An ERP implementation project is really another name for change, one that should be embraced as an excellent opportunity for implementing cultural transformation and for turning your organization into an enterprise that is professionally managed. Analyses of several failed

ERP implementation projects show that, general resistance to any type of change and specific end-user resistance to the ERP implementation efforts are some of the most significant roadblocks that are encountered in the road to success.

Sometimes due to tremendous workload or any other market opportunity with better compensation some members resigned from their jobs. This could turn to the insufficient ERP knowledge and skill transfer among project team members during the ERP implementation life cycle.

ERP implementation is a costly, complex and lengthy project. The last greatest reason for ERP implementation failures is inadequate resources, poor user involvement of user on ERP project and high attrition rate of project team members. Ignorance of above mentioned operational factors could lead to the failure of ERP implementation.

Conclusion

This study is valuable to researchers and practitioners interested in implementing Enterprise Resource Planning systems in retail organization. The EFA provides very interesting results by identifying the factors that actually have an impact on the failure of ERP implementation in retail organization.

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