



**Identification &
Evaluation of barriers
during ERP
Implementation**

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ABSTRACT

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- The purpose of this study is to investigate and determine factors and barriers that organizations have encountered during the implementation of Enterprise Resource Planning (ERP) systems.

KEYWORDS

- ERP
- Integarted System

Problem Statement - There are numerous factors affecting successful implementation of an ERP system in an organization that have not yet been fully identified and described. The intent of this study was to identify, analyze, and investigate the factors affecting the implementation of an ERP system. Consequently, results of the data collection and analysis resulted in recommendations that can help companies make better decisions about future ERP systems implementation.

Significance of the Study -To help organizations to gain a better understanding of ERP and the factors that could prevent successful implementation of an ERP system. Organizations can benefit from this study by learning from other businesses' past barriers to successful installation and not repeating these same mistakes themselves.

Research Questions-The following research questions were framed that affect the implementation of ERP-

1. What problems and issues have companies encountered while implementing an ERP system?
2. What has been top management's involvement with the ERP implementation Process?
3. What kind of, and how much, training have the employees been given on an ERP system?

Research objectives -A Survey of the NSE/BSE100 companies was the research methodology for this study. This survey was designed to complete three objectives. The first objective of the survey was to identify important issues, problems, and factors encountered by companies during the ERP implementation process. The second

objective of the survey was to determine what involvement top management had with the implementation. Finally, the third objective of the survey was to determine what kind of training, if any, employees received for operating the ERP system before the "Go Live" date.

Research Assumption-First, the researcher assumed that organizations of different financial and physical sizes would respond equally to the questions, since the ERP process and ERP implementation is similar for all organizations. Second, the researcher also assumed that each participant in the sample would answer the questionnaire honestly. Third, the researchers assumed that the study findings would be truly representative of the organizations selected.

Design / Methodology -The population for this study was the 676 senior executives of BSE/NSE top 100 companies belongs to service and manufacturing industry. Of these, 131 respondents with a return rate of 19.4%. The standard deviation and analysis of the variance (ANOVA) were the statistical tests used to analyze the data.

Research Limitations-The barriers this study found were lack of top management involvement, improper training of employees, monitoring the information received in developing the application management strategy, application errors, and outage repairs of an application management. Since this study is limited to few companies based on BSE/ NSE enlisting (as on 15th April 2007), it is possible that the results are not generalized and only apply to these companies. Perhaps the survey instrument used for this study was not sufficient since it did not cover all the issues and barriers related in the literature review.

Research Implications-With the response rate of 19.4%, about 58% were in the manufacturing sector (the reason behind is the evolution of MRP II from manufacturing setup). All the respondents had implemented at least one of the ERP modules, 67% had implemented at least two modules, 30% had implemented at least three modules and 20% had implemented four modules.

Since most of the organization is already implemented an ERP system, recommendations and guidelines can be obtained which can be used to assist other companies in overcoming barriers to successful implementation.

Review of Literature

The current global business dynamics which is characterized by customer-driven markets, shorter product life cycles, and narrow e-niches generates the need for all organization to work together (Blue ocean Strategy) to

gain the competitive benefits. To meet international competition, One performance enhancing tool is advanced technologies implementation (Kremers & Van Dissel, 2000).

As much as technology has enabled improvements such as higher productivity, it has also made the business process more complex because of many different computer software systems used within all the different functions of an organization (Honig, 1999).

Competition is now based on delivery, lead time, flexibility, greater integration with the customers and suppliers, and higher levels of product differentiation. ERP can help with this make-to-order environment (Honig, 1999).

ERP system evolved to help organizations manage information throughout the company, from the plant to the back office, and now the front office (Oliver, 1999). Demand for expand functionality led to the current ERP system (Appleton, 1997; Kapp, Latham & Ford Latham, 2000; Markus, Tanis & Fenema, 2000).

MRP is computerized methodology to the scheduling of materials purchase for assembly. It has usually been associated with distinct manufacturing operations and is not compatible to continuous process industries. MRP rotates about the Bill of Materials (BOM) and the Master Production Schedule (MPS) (Kapp, Latham, & Ford-Latham, 2000). In the BOM, every product is broken down into progressively lower levels until reaching a raw material or brought kept (Kapp, Latham, & Ford-Latham, 2000). The MPS is a spreadsheet that forecasts demand for each product of organization over time. The core of MRP starts with a Bill of Materials Processor (BOMP). This helps plan the necessities of each part, materials and assembly (Kapp, Latham & Ford- Latham, 2000).

There are many benefits to be realized to be realized with the implementation of an ERP system, and this is the reason they are becoming so significant to business (Shanks,2000). Some of the benefits are :

1. ERP allows integrated information system, which lead to more efficient business processes that cost less than unintegrated systems.
2. ERP facilitates easier global integration. Barriers such as currency exchange rates, languages and cultural differences can be bridged automatically, allowing data to be more easily integrated.
3. ERP integrates people and data, and eliminates updating and repairing of many separate computer systems.
4. ERP allows management to manage operations, not just monitor them. When the system is implemented properly, these benefits can help the company achieve increased profitability and productivity.

5. ERP allows employees to share information, query data, and run reports. This eliminates the need to store duplicate information in more than one place and reduces the amount of work necessary to gather and analyze information.

6. ERP systems increase efficiency by freeing employees from performing time consuming, manual work. For example, legacy systems often require hours or days to run reports. With ERP, reports can be produced in seconds. These efficiencies allow employees to spend time on other tasks, reducing operating expenses (Shanks, 2000).

There exist two approaches for ERP Implementation – Incremental deployment or Big Bang Approach.

The Big bang Approach is not the best technique for every organization to use (Songini, 2000). There exist some critical point that requires top management’s involvement is critical, communication with the employees is vital, and extensive training of staff is essential.

There is lot many of research on Survival strategies for an effective ERP implementation. According to Vowler (2000), ERP has spread like a “purple tide” across corporate businesses. Survival tricks identified by Shupe Consulting (2001) that are required during ERP Implementation.

Research Methodology

A Survey Instrument (Appendix A) was selected for NSE/BSE Enlisted top 100 companies. One objective of the survey was to determine if the companies had implemented an ERP system. Another objective of the survey was to identify issues, problems and factors that encountered with the implementation process. Aside to this the survey also asked if and how top level management has involved with the ERP project (through open ended comments (Appendix B).

Data Collection

We e-mailed 676 survey instruments with 30 questions in two sets. The questionnaire was mailed to BSE enlisted top 50 companies, as on 15th April 2007. The next set of questionnaire was sent to 176 senior executives of NSE (Nifty- fifty and Junior Nifty) enlisted top 50 companies, as on 15th April 2007.

Data Analysis

We used the statistical package for social Sciences (SPSS) software to analyze the data from the survey.

Method of Data Analysis

The Statistical techniques used to compare different variables were the mean, standard deviation, and analysis of variance (ANOVA). When the mean and standard deviation were too close in numerical value to make a determination of which factor had the largest impact on the ERP implementation, the ANOVA was used to make the decision. Frequencies and percentages were also used to analyze some of the survey questions. After frequencies were calculated they were converted to percentages. The purpose of this was to determine which responses received the most replies and what impact they have on ERP Implementation.

A total of three categories were analyzed and compared by means of the ANOVA: (1) The effectiveness of the information received in developing application management strategy, (2) labor hours spent on repairs to ERP Applications, and (3) Percentage of application errors. The factors in these groups were analyzed and compared to determine which factor within each group had the largest impact on an ERP Implementation.

SPSS was used to analyze the data from the survey instrument for the calculation of the mean, standard derivation, and ANOVA.

Survey Information

A Self administered questionnaire was mailed to 676 top executives at the NSE/BSE top 100 companies. When Mailing the survey instrument to the exchange enlisted companies, duplicate companies (those on both lists) were eliminated, since they had previously been surveyed. Examples of the survey instrument, cover letter, and follow-up letter can be viewed in Appendix A. Each survey question had a different number of responses. The initial mailings and subsequent follow-ups resulted in 131 responses, a response rate of 19.4%. This was an acceptable response rate given that the individuals in the targeted organizations were extremely busy top executives with high-level responsibilities.

Demographics of the Respondents

Respondent’s Job Title- The respondents reported their job titles as follows- CIO numbered 71(54%), CTO’s numbered 38 (29%), Director, Manager, Supervision of IS numbered 14 (11%), and the category of “other” numbered eight (6%).

Functional Area- The respondents’ functional areas were reported as follows: Application development numbered

12 (9%), system integration numbered three(2%), IT senior management numbered 76 (58%), application implementation numbered four (3%), and Enterprise Management numbered 38 (28%).

Number of employees - The number of employees in the respondents' organization were as follows: 500 or fewer numbered two (1.5%), 501-1000 numbered three (2.3%), 1001-2500 numbered four (3%), 2501- 5000 numbered nine (6.8%), 5001- 7500 numbered 10 (7.6%), 7501-10,000 numbered four (3.1%), 10,001- 20,000 numbered 31 (23.7%), and over 20,000 numbered 68 (52%).

Organization's Business Activities- The Business activities of the respondents' organizations were as follows-

Conclusions

With globalization being one of the main buzzwords for the new millennium, there will be numerous changes in technology. One of these technological changes has been the implementation of an ERP system. According to Schneider (2000), "doing the homework" on the implementation of an ERP system is one of the best ways to prevent problems and overcome the barriers to and issues of successful installation. A strong infrastructure is the key to successfully completing the ERP system installation process.

One of the barriers organizations experiences dealt with top management's involvement with the ERP system's

Recommendation

The following are study-based recommendations that should be considered before deciding to implement an ERP system.

1. Appoint a project team with a strong leader that can help employees understand the options offered by an ERP system.
2. Implement a "Train the Trainer" program. This program trains a person, the trainer, on the ERP system by the ERP software vendor. The trainer would then be responsible for training the employees.
3. Educate the project team and allocate an employee training budget. A dedicated training room is essential for employee
4. Identify the business goal and objectives of the company.
5. Establish a clear vision
6. Understanding all the functions of an ERP system. Extensive planning and understanding of the concepts of an ERP system saves time.

7. Choose the ERP features that the organization needs, and do not install the whole ERP system if it is not needed.

Future Research

We are highly

1. The correlation between ERP failure and non-use of Total Quality Management (TQM) principles in ERP system design and development.
2. Integrating ERP in the business school curriculum.
3. The cost and benefits of system implementation.
4. The impact of ERP system on the accounting and auditing profession.
5. Determination of how top management can help with the change management resulting from an ERP implementation.
6. Determination of the proper amount of training employees need before the "go-live" date.
7. Determination of additional barriers to successful implementation that the study did not uncover.

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