Using Enterprise Resource Planning To Gain A Global Competitive Advantage

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Abstract

Enterprise Resource Planning software solutions are becoming increasingly important for Indian firms trying to compete in the turbulent global business environment. Using India as a case study, the paper addresses characteristics of Enterprise Resource Planning systems, evaluation criteria for successful ERP software solutions, benefits to Indian firms of ERP implementation, and concerns associated with ERP tools. Several examples of successful implementation of Enterprise Resource Planning in India are discussed. The use of ERP in India is on the rise and the market for ERP products is growing at a rapid pace.

Introduction

In the past decade the business environment has changed dramatically. The world has become a small and dynamic marketplace. Organizations today confront new markets, new competition, and increasing customer expectations. Today, the global market place is no longer driven by the seller, but is driven by the buyer. These external changes have put a tremendous demand on manufactures to lower total costs in the entire supply chain, shorten throughput times, reduce inventory to a minimum, enlarge product assortment, and improve product quality. At the same time more reliable delivery dates and higher customer service are expected along with coordination of global demand, supply, and production.

Readers with comments or questions are encouraged to contact the authors via e-mail.

Today's manufacturing organizations are complex 'systems' that requires interaction between the various functions such as sales, marketing and distribution, manufacturing, materials, finance, and human resources. These functions have a common purpose of delivering customers maximum value at the optimum price. In order to accomplish these goals, these functions must be managed in a manner that will cause them to focus on their common purpose. Since most of these organizations have a 'Functional Structure,' each function/department tends to work towards their own goals and objectives rather than the organization's goals. This problem is further aggravated because information flow is restricted by functions, and even when other functions want to take a holistic view, they do not have the information to do so.

These issues can be resolved by 'Enterprise Resource Planning' software solutions pro-

viding a common, consistent system to capture data throughout the organization, with minimum redundancy. Enterprise Resource Planning represents a variety of software application packages, which integrates all transactions of the enterprise relating to all its resources, viz., men, material, machine, and money (Jayaraman, 1998).

Characteristics of Enterprise Resource Planning Systems

An Enterprise Resource Planning system should be sufficiently versatile to support different manufacturing environments like make-to-stock, assemble-to-order and engineer-to-order. For example, automakers have business spread over different manufacturing environments and are likely to see the same product migrate from one manufacturing environment to another during its product life cycle.

The systems should be complete enough to support both discrete as well as process manufacturing scenarios. The efficiency of an enterprise depends on the quick flow of information across the complete supply chain, i.e., from the customers to manufactures to suppliers. This places a demand on the Enterprise Resource Planning systems to have functionality across all areas such as sales, accounting information systems, engineering, planning, inventory management, quality management, production, and transportation. Electronic Data Interchange (EDI) is an important tool in speeding up communications with trading partners (Tuteja, 1998).

More and more companies are becoming global, focusing on downsizing, and decentralizing their business. For these companies to manage their business efficiently, Enterprise Resource Planning systems need to have extensive multi-site management capabilities. The complete financial accounting and management accounting requirements of the organization must be addressed. It is necessary to have centralized or de-centralized accounting functions with com-

plete flexibility to consolidate corporate information.

The purpose of this paper is to present how firms in India can use Enterprise Resource Planning to change the way they are doing business globally. The paper addresses characteristics of Enterprise Resource Planning systems, evaluation criteria for successful ERP software solutions, benefits to Indian firms of ERP implementation, and concerns associated with ERP tools. The authors provide examples of successful implementation of Enterprise Resource Planning in India. The successful Enterprise Resource Planning implementations will lead Indian organizations to gain a competitive advantage against developed countries such as the United States and Western Europe.

Enterprise Resource Planning in India

Four years ago, the number of Enterprise Resource Planning applications in India was small. Now, the Enterprise Resource Planning market in India is estimated at 200 crores rupees (approximately U.S. \$50 million) during 1998. This market is still in its infancy stage. Top Indian companies like ONGC, Haldia Petrochemicals, Essas and Mahindra and Mahindra are now implementing Enterprise Resource Planning solutions. Other prominent clients of Enterprise Resource Planning include the Ispat group, DCM, Crompton Greaves, and Bharat Forge (Sarkar, 1997).

The number of vendors also used to be scarce. The compounded annual growth rate of Enterprise Resource Planning vendors is projected to be around 35 percent in the next 5 years. Among the well known Enterprise Resource Planning vendors in India are SAP, Baan, R/3, Marshal, Oracle Financials, and MFG Pro. Most of these vendors support major computing platforms such as UNIX, Windows NT, AS/4000, and Netware (Anonymous, 1998; Sarker, 1997; Jayaraman, 1998).

In the past, most Indian organizations grew by managing the environment, rather than focusing on their internal efficiencies. The era of licensing, shortages, low consumer awareness is coming to an end. With the entry of most efficient foreign players in many of the markets, Indian industry needs to change the way it conducts business to remain competitive. Now, more than ever, Indian manufacturing organizations need to implement Enterprise Resource Planning systems to improve their efficiency and effectiveness in the market place.

Any Enterprise Resource Planning implementation is expensive and time consuming. As with any other organizational change initiative, it requires substantial involvement and commitment of the top management for it to succeed. A pragmatic approach could be to implement the Enterprise Resource Planning system in an evolutionary manner. This means that the entire implementation moves in cycles from the basic to the sophisticated, where the basic features of all the modules are implemented first, and the more sophisticated features are implemented in incremental steps. After the implementation is complete, the Indian organization would derive the following benefits:

- Workflow automation to reduce lead times;
- A consistent information base accessible across the organization;
- Event alerts to proactively handle possible crisis;
- Decision support tools to improve effectiveness;
- Performance monitoring tools to track key performance indicators, across all functions, and highlight variations from objectives; and
- Providing the infrastructure for facts and data based approach to management rather than a perception based approach.

Evaluation Criteria

Today, a customer has a wide variety of Enterprise Resource Planning solutions to choose

from. In evaluation, some of the critical parameters are as follows:

- While most Enterprise Resource Planning products offer a single set of features, there are variations in the way the features are designed, and the level of depth to which they are modeled. Many of the packages fail at the “nuts and bolts” level. These issues come out only when implementation starts. Often these problems lead to customization delays, and worse still, the customer has to make do with a convoluted ‘work around’. Since it is impossible to evaluate the features and functions of a product at this level of detail, the vendor’s track record and the success of the product in organizations similar to yours best evaluate the functionality.
- Some international products fail to cater to the unique statutory and business practice requirements in India. If the base transactions do not incorporate these regulations and requirements conveniently, the entire system is likely to fail. While some of the international business partners ‘localize’ the product, these changes are so fundamental that they take a long time. Therefore, this introduces issues of reliability of the software and rule out the quick availability of new versions and features which vendors may announce.
- Enterprise Resource Planning solutions should necessarily support the Indian regulatory framework such as excise, sales tax, MODVAT, and company law. They should also address specific manufacturing paradigms such as flexible, continuous, batch, and discrete.

Since Enterprise Resource Planning products need to adapt to the Indian regulatory and manufacturing environments, it is necessary to evaluate those Enterprise Resource Planning systems that have been successfully implemented in Indian organizations. The track record of Enterprise Resource Planning implementation

elsewhere in the world is not as useful as those successful implementations already present in India. Some important points to be kept in mind while evaluating Enterprise Resource Planning software include:

- Functional fit with the company's business processes.
- Degree of integration between the various components of the Enterprise Resource Planning system.
- Flexibility and scalability.
- Complexity user friendliness.
- Quick implementation.
- Ability to support multi-site planning and control.
- Technology; client/server capabilities; database independence, security.
- Availability of regular customization and hardware requirements.
- Adaptability to the cultural and social aspects of the Indian firms.
- Adaptability to regulatory requirements.

Last, but not the least, is the decision regarding Enterprise Resource Planning itself. Organizations have to evaluate Enterprise Resource Planning as a project. They must check and be satisfied that they are really handicapped without an Enterprise Resource Planning, and they must be convinced about the benefits that are certain to accrue by Enterprise Resource Planning implementation.

Concerns

With the advent of globalization, implementing Enterprise Resource Planning systems in an Indian enterprise is no longer a choice. It is an imperative. However, Enterprise Resource Planning solutions are expensive. A cost of 1 to 1.2 crores rupees (approximately U.S. \$250,000 to \$300,000) is considered reasonable for a 100-user version of Enterprise Resource Planning (Sarkar, 1997; Busse, 1998).

The fundamental mistake that is com-

mitted by an Indian organization is that they view Enterprise Resource Planning as an IT solution alone and not as a management tool. Therefore, there is little involvement of the Enterprise Resource Planning end users during the decision-making process. This lack of end user involvement results in many breaks in the implementation stages causing frustration, time delays, and unanticipated costs.

Also, an Enterprise Resource Planning implementation requires major efforts that often cost more than the combined cost of hardware and Enterprise Resource Planning software. Many Indian organizations are very concerned about managing the major changes arising out of implementing an Enterprise Resource Planning due to tight monetary resources. (Jayaraman, 1998).

The concern areas also include localization (to make the product comply with specific Indian laws such as Excise and MODVAT), the long turnaround time required by the Enterprise Resource Planning vendor for fixing bugs, and the lack of sufficient functional and product expertise in India including consultants.

Examples of Successful Implementation of Enterprise Resource Planning

ARVIND Mills Ltd. (AML) has implemented Enterprise Resource Planning in their manufacturing units. The SAP implementation is expected to considerably reduce AML's time of supply chain. It would also help the management keep close track of aspects such as delivery date and status of customer order. The areas covered under the Enterprise Resource Planning includes materials management, production planning, consolidation across various units and project configuration (Anonymous, 1998).

The awareness of the importance of implementing Enterprise Resource Planning solutions is high among top management in power generation companies, and there are several

companies such as the National Thermal Power Corporation and Power Grid Corporation that are considering implementing Enterprise Resource Planning solution to reduce total cost of ownership of IT infrastructure.

Several large companies such as Mahindra & Mahindra, Telco, and Essar Steel have implemented successful Enterprise Resource Planning solutions. These firms realized quickly in post liberalization that they needed to put in place a good IT infrastructure to take on global competition.

Conclusions

In the ever-changing global environment, companies find it necessary to implement systems, which will decrease duplication while increasing the data, availability to the organization at-large. Fortunately, with the advent of Enterprise Resource Planning systems, companies are able to accomplish various objectives that would strengthen their competitive position in the global market. Today, Enterprise Resource Planning is being implemented in almost all types of organizations irrespective of its mode and spread of operation. The implementation of Enterprise Resource Planning systems include aerospace and defense, automotive industry, healthcare, high-tech and electronics, and telecommunications.

In India, Enterprise Resource Planning implementation is picking up very fast. In the last few years, many products were introduced into the market, and the leading companies took initiatives to implement Enterprise Resource Planning. Although some companies have encountered difficulties, the experts are hopeful about the success Enterprise Resource Planning systems can bring to the Indian industries.

Indian firms and top management, in particular, must realize that Enterprise Resource Planning systems are beneficial to the organization. A firm implementing Enterprise Resource

Planning would experience several positive results. Once the firm has acknowledged that the organization will benefit from Enterprise Resource Planning, it must begin to evaluate the different Enterprise Resource Planning products being offered in the market. Selecting a reputable vendor is crucial because they are "the experts," and they are likely to assist the Indian firm in choosing an appropriate Enterprise Resource Planning system to meet the organizational needs. Therefore, Indian firms will need to select a vendor that they can rely on to assist them in purchasing an Enterprise Resource Planning system which can be modified to meet the organization's business practices and regulatory requirements.

Enterprise Resource Planning is not a magical tool. Enterprise Resource Planning will not transform everything overnight. A successful Enterprise Resource Planning implementation is a long journey towards enterprise excellence.

Suggestions for Future Research

Economies of most of the developed and developing nations have been thrust into the information age, forcing nations to cope with a deluge of new information relationships. This research study addresses how firms bolster their competitiveness in the global marketplace with the help of ERP software solutions.

However, further research is required to better understand the role of ERP to increase internal efficiencies and external competencies and in influencing corporate success measured in terms of cost reduction and increased profits. Thus, further research is required on impact of ERP on issues related to customer satisfaction such as cost reduction, increased in per capita productivity, quick response time, lower inventory levels, and better customer orientation.

Furthermore, research is recommended to better understand the impact of ERP practices on the types of industries and size of firms. Pre-

vious research studies have shown that ERP solutions initially tend to be accepted by large firms and multinational enterprises. Additional research is required to explore the ERP practices in small and medium size business enterprises. The studies in the past are revealed successful use of ERP in automotive, steel, consumer durables, textiles, engineering and petrochemical industries. Further research is needed to study the potential of ERP practices in other industries.

Studies have exhibited that implementation of ERP solutions is crucial in any industry. Therefore, we strongly recommend future research on factors affecting the process of ERP deployment in various industries such as the availability of a sufficient communications network, interference of governmental regulations and policies, and manpower needs and training. While ERP practices are on the rise and ERP solutions market is growing rapidly, it is with time and additional research that firms will understand and optimize the use of ERP solutions.

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