A New Era in Modern E-Business: Enterprise Resource Planning (ERP) Systems

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Abstract

One of the most significant technological advances to emerge during the last decade is Enterprise Resource Planning (ERP) systems. ERP is the industry term for a broad set of activities supported by multi module application software that integrates all business processes and data into a single system and thus helps a business to better manage the important parts of its daily operation. As the knowledge economy and the knowledge worker have become as a significant event of the modern business world, the validity of such integrated technology systems as ERP also increases faster. No matter the size of the economy or the size of the firm, present day business society always looking forward to adopting ERP systems into their business process and become successful on it. This paper provides a basic insight about ERP system, ERP system implementation and the advantages and disadvantages of ERP and how ERP effects on organization's business performance.

Keywords: *Enterprise Resource Planning (ERP), Knowledge economy, Business performance*

Introduction

In today's global economy, organizations face a number of challenges. Such as fierce competition, greater market intensity, and more demand customer expectations. These challenges often lead organizations to implement a number of precautionary policies or practices designed to lower total costs, shorten lead times, increase and diversity dates and superior customer service enhance quality and professionally organize global demand, supply and production (Umble, 2003). Rapid changes in social, economic and political

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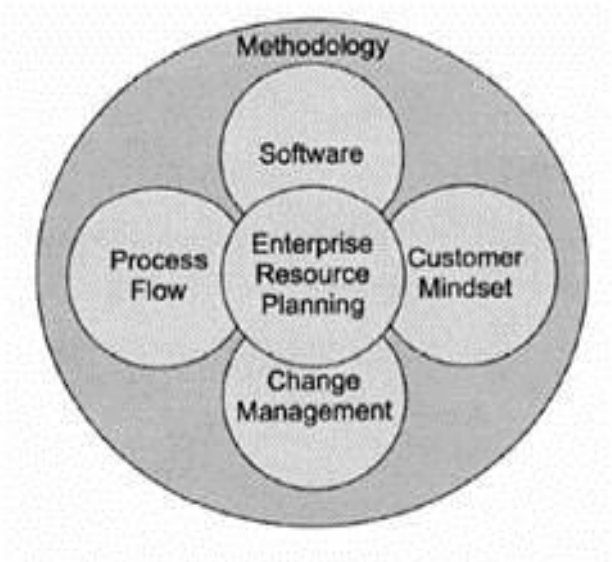
forces – coupled with daily advances in technology are making business market even more intensively competitive, which fact is having a profound influence on the way business are managed. In this environment, it becomes increasingly imperative that managers create new and different strategies to maintain market position and meet customer needs.

In light of these challenges more and more organizations are seeking technologies that have the ability, essentially, to manage every aspect of their business and at the same time, make their internal processes more efficient and professional. One of the most significant of the technological advances to emerge during the last decade is Enterprise Resource Planning (ERP) systems (Chung et al, 2008). ERP systems-also called simply Enterprise Systems (ES) provide organizations with a set of incorporating application modules that cover most business functions. According to Davenport (2000) and Heralded. al. (2007), during the last decade the adoption of ERP systems was clearly one of the most significant factors in organizational evolution, these days accounting for about thirty percent of all major evolution activities in organizations. Olson (2004) defined ERP as an industry term for a broad set of activities supported by multi module application software that helps a manufacturer or other business, managing the important parts of its daily operations, including product planning, purchasing parts, main training, inventories interacting with suppliers, providing customer service, and tracking orders. Waxer (2006) defined ERP as a broad term for any software application that integrates all business processes and data into a single system. According to Marnewick (2005) the ERP consists of four major components. Such as, Process Flow, Customer mindset, Change management, Software that are implemented through a methodology Figure 1 graphically illustrates the integration of four components mentioned above.

Figure:1 Four components of ERP



Source: Marnewick, 2005

The evolution of the ERP systems

According to Rasi and Tarn (2003), ERP system evolved from advanced manufacturing technologies deployed to increase productivity in tough market competition. In particularly the outgrowth of Material Requirement Planning (MRP) and control techniques, to Capacity Requirement Planning (CRP) system that were developed in the 1970's largely out of manufacturing concerns. They were initially designed for the time phased work order and purchase order release system for many companies, which eventually led to a reduction in inventory, improvement of customer service and better production efficiency. As these MRP systems evolved to Manufacture Resource Planning 2 (MRP 2), the organizations begun to incorporate financial control measures, master production scheduling and production capacity plans into MRP. The present ERP system inventory management resides as a sub module in the material master, purchasing, inventory transfer, physical inventory material requirement planning. The term "ERP" which describes systems that are designed to plan and schedule all internal resources of the firm,

was first used by the Gartner group of Stamford, Connecticut, U.S.A. However, both the term MRP 2 and ERP were used during the period 1988 to 1994 interchangeably. In years later, with the development of the information technology, ERP provides an integrated transaction processing and access to information that spans out from multiple strategic business units and multiple business transactions. A critical database used to record the information generated from business units through the business transactions.

Milestones in ERP development

The ERP systems have developed to a great plain of achievement from the 1960's to the present (2007). The milestones of the ERP systems developments discussed below for the full knowledge and better understanding the current context.

1960-1970 : The usage of Information technological capacities; control Inventory on hand, to avoid material shortage, to plan material requirements and to enhance the productivity by reducing the process time, in a production planning system called Material Requirement Planning (MRP 2).

1970-1980 : The development of MRP 2 by integrating accounting system and human resource management system with MRP system to control inventory movement, costing and financial management to achieve greater reduction in operating costs.

1980-1990 : The development of Enterprise Resource Planning (ERP) by focusing the enterprises that mainly engaged in manufacturing ventures by facilitating real time Management Information System (MIS) to control assets, order process management and financial management.

1990-2000 : Introducing of Critical Success Factors (CSF) into the ERP system to avoid high failure rate of ERP implementation, and integrating the solution for year 2000 (Y2K millennium)[2] problem.

ERP Implementation

As ERPs evolved, they have become more sophisticated in terms, integrating a series of modules in different business functions such as finance and accounting, human resource management, IT, sales and marketing, manufacturing, and logistics. The implementation of ERP has been credited, among other things, with reducing procurement charges, creating highly efficient sales strategies, lowering administration rates, and decreasing direct and indirect labor expenses (Hunton et al., 2003). ERPs produce effective and efficient decision-making because of their facility by providing "real time information" in report formats that enable organizations to enhance specific management functions and procedures

Initially, ERP system implementation implied a massive re-engineering of business processes and the use of innovative software to maintain those new processes. In the 1990s ERPs were commonly implemented by only very large organizations as an alternative for "legacy" information systems. By 2003, however, an estimated 30,000 organizations worldwide planned to implement the system (Mabert et al., 2003). By then, it was noted that many medium-sized companies and even some small-sized ones had begun to embrace the concept (Jacobs and Bendoly, 2003).

Why organizations invest in ERP?

The ERP system brings in a lot of advantages to the organization. Though the process or implementation is time consuming, tedious and involves lot of money, it is extremely worth to have the system because of the benefits that it brings in. The ERP system brings the

[2]Y2K was a great problem in down of first day of year 2000 due to experts feared for unforeseen computer failures because millennium bug.

efficiency and improvement of business processes by facilitating the timely availability of information and resources. It ensures that the data is extremely safe and secured. It ensures high data security and also enables the organization in scaling up the processes in the form of expansion and helps the organization to enhance the customer satisfaction by providing the right feedback in time and also by facilitating the products and services within the specified time with great quality.

Not only that, but it also helps to utilize the resources optimally by conducting the analysis of the available resources and ensuring the resources are not wasted. As well as streamlining all the business functions into a unified system and facilitates easy and effective decision making by providing the right information at the right time in the right manner. One of the most important benefits we can see is ERP helps to optimize all the physical assets to the human resources and also improves the free functioning of supply chain management.

ERP software is designed to model and automate many of the basic processes of a company, from finance to shop floor, with the goal of integrating information across the company and eliminating complex, expensive links between computer systems that were never meant to talk to each other. ERP software is the mirror image of the major business processes of an organization, such as customer order fulfillment & manufacturing. Its success depends upon reach-a circumscribed ERP system isn't much better than the legacy system it replaces. In many cases, it is worse, because the old code at least was written specifically for the company & the task.

ERP Failures

Implementing an ERP system can be quite an undertaking. Business process needs to be uncovered, explored, talked about and debated. This aspect often leads companies to question whether certain business processes are actually best practices or if they can be improved upon further the implementation of ERP system into an enterprise cost large sum of money, time and effort of the management support teams (staff).

However, it reported in the global business, that some of the prestigious business enterprises have gone bankrupt, although they have implemented and utilized ERP system in their enterprises for better prospects of managing. FoxMeyer Drug [3]argues that its system helped it into bankruptcy. They sued both SAP[4] and Accenture Consulting [5]for United States Dollars five hundred million (USD 500000000) each, claiming that ERP system that modeled by SAP and Accenture led to its bankruptcy. In considering the above facts the success of the ERP implementation is vital to any organization.

Conclusion

It is apparent that ERP system solution is a vital organizational tool for a company to remain in the competitive business world. The most important thing in managerial aspect is to understand the capabilities and weaknesses of their organizations and apply the best solution giving ERP package which matches their budget. After implementing the ERP package, the re-engineering and restructuring of the organizational overall process will lead the organization to the winning path. Also the management must keep in mind there are many ERP failures in the business world as well as the success stories of ERP. Therefore, it is important to implement the most suitable ERP package which matches the organizations business flow. If the right implementation will be selected, every organization can get enormous victories in their business scopes and expand their business capabilities.

[3]FoxMeyer, a large distributor of prescription drugs to hospitals and pharmacies in USA.
[4]SAP is well established proprietary ERP software solution provider having largest global market share in the industry.
[5]Accenture Consulting is contract agent (local support provider and trade dealer) who consults and implements the SAP system at the client premises.

Bibliography

Alexis, L. (2000). *ERP Demystified; ERP Introduction. ERP Implementation. Business Modules. ERP Market and Present & Future*. Noida: Tata McGraw Hill Publishing Company Limited.

Chung, B.Y. et al. (2008). Analyzing enterprise resource planning system implementation success factors in the engineering - construction industry. *Journal of Computing in Civil Engineering*. 373 – 382.

Davenport, T. H. (2000). *Mission Critical*. Boston: Harvard Business School Press.

Herold, D.M., Fedor, D. B., & Caldwell, S.D. (2007). Beyond change management: A multi-level investigation of contextual and personal influences on employees' commitment to change. *Journal of Applied Psycholog*, 92(4), 942-951.

Hunton, J.E., Lippincott, B., & Reck, J. L., (2003). Enterprise Resource Planning Systems: Comparing firm performance of adopters and non-adopters. *International Journal of Accounting Information System*, 4(3), 165–184.

Jacobs, F., & Bendoly, E. (2003). Enterprise Resource Planning: Developments and directions for operations management research. *European Journal of Operational Research*, 146 (2), 233–240.

Marnwic, C., & Labuschagne, L. (n.d.) A conceptual model for Enterprise Resource Planning (ERP). *Information Management and computer security*, 13(2), 144-155.

Mabert, V.A., Soni, A. & Venkataramanan, M. A. (2003). The impact of organization size on enterprise resource planning (ERP) implementations in the U.S. manufacturing sector. *Omega*, 31(3), 235–246.

Olson, D.L. (2004). *Managerial Issues of Enterprise Resource Planning Systems*. New York: McGraw-Hill/Irwin.

Rasi, M.A. & Tarn, F.M. (2003). An applied model for improving inventory management in ERP systems. *Logistics information management*, 16, 114-124.

Waxer, C. (2006). *Your business in a tiny box*. Fortune Small Business. 16 (10).

Umble, E. J., Haft, R. R., & Umble, M. M., (2003). Enterprise resource planning: Implementation procedures and critical success factors. *European Journal of Operational Research*, 146, 241–257.