

EXTENDED ENTERPRISE APPLICATION SOFTWARE - AN INDIAN PERSPECTIVE - “ZEAL TO ZENITH”

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Abstract - ERP is essentially an integrated software system consisting of multi-module applications and a common database. ERP systems help an organization to manage crucial business processes such as planning, production, inventory, purchasing, sales, customer support, etc. The ultimate aim of ERP is to integrate the various departments within an organization based on the enterprise – wide data model. cERP is a cohesive framework to facilitate information exchange for doing business. It is applied across the extended enterprise using e-business solutions. ERP II enables businesses to compete by providing information online and by adding real value to businesses of all types and sizes. In India various enterprise are implementing this cross-functional system.

EAI is the set of technologies that allow the movement and exchange of information between various applications and business processes within and between the organizations. EAI products can be applied for integrating ERP with SCM and CRM.

All ERP implementations are not successful. Implementations succeed or fail due to a number of reasons. Depends upon the industry and company the success and failure will differ. The successive stories of many Indian Companies and the viewpoints of experts clearly codified that ERP implementation in India is already initiated, but the problem in it is sustainable development and uninterrupted involvement till to reach the peak or attain the zenith.

INTRODUCTION

ERP is essentially an integrated software system consisting of multi-module applications and a common database. Such software systems help coordinate business activities and facilitate the flow of information across an enterprise. ERP systems help an organization to manage crucial business processes such as planning, production, inventory, purchasing, sales, customer support, etc. ERP systems provide not only the core functionality that most large corporations depend on, but also a number of financial applications. The ultimate aim of ERP is to integrate the various departments within an organization based on the enterprise wide data model.[1]

BUSINESS INTEGRATION THROUGH ERP SYSTEM

ERP II is an application and development strategy that expands out of ERP functions to achieve the integration of an enterprise’s key, domain-specific internal and external collaborative,

operational, and financial processes. The extended components of ERP systems are composed of CRM, SCM, BI and e-Commerce applications.[14]

ERP II has led to the advent of Collaborative ERP (cERP). cERP is a cohesive framework to facilitate information exchange for doing business. It is applied across the extended enterprise using e-business solutions. The mission of cERP is to increase partnering between retailers and manufacturers, and manufacturers and their suppliers through co-managed processes and shared information.

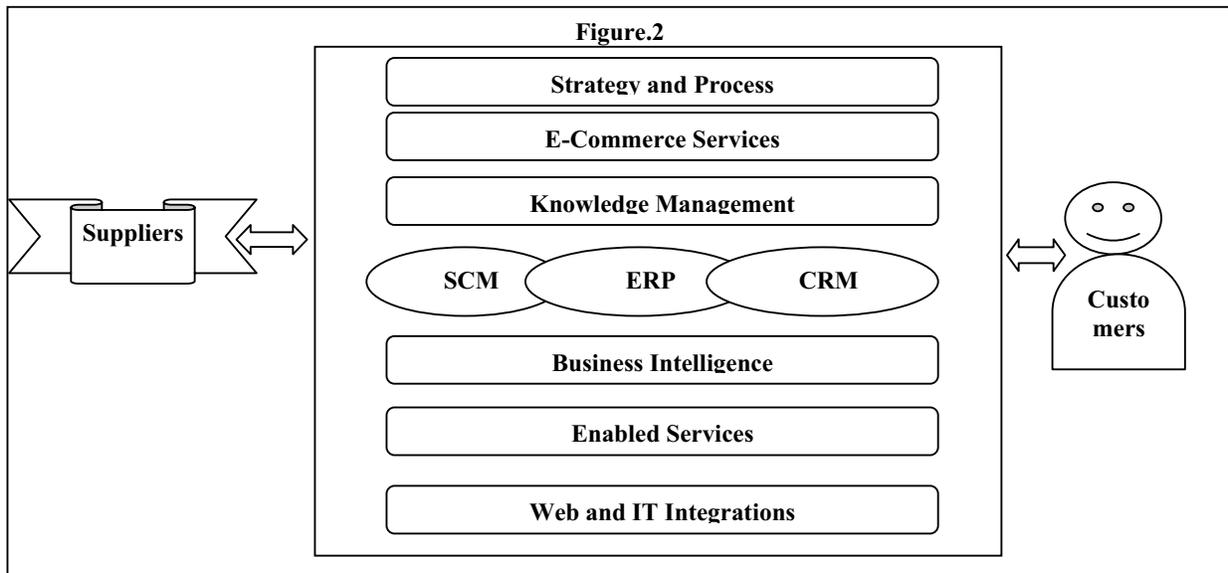
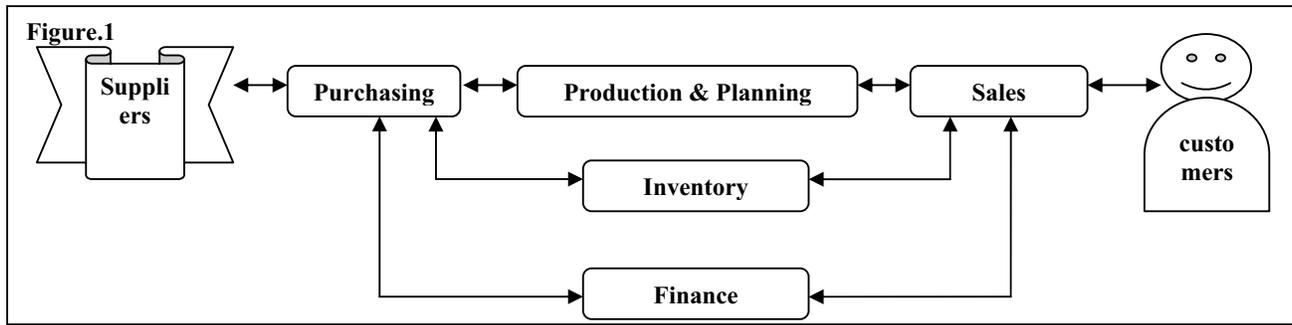
EXTENDED ERP

Lately ERP has evolved into Extended ERP or ERP II. It uses the internet to reach out to suppliers, customers and a wider range of employees. Applications such as Customer Relationships Management (CRM), Supply Chain Management (SCM), Business Intelligence (BI), and sell-side/buy-side e-Business provide the much needed functionality for ERP-II. Extended ERP applications have led to the advent of Collaborative Commerce (C-Commerce), C-Commerce is the electronic interaction of different businesses within the supply chain or other an industry.[15]

Over the past few years solutions such as CRM and SCM have leveraged the Internet to support these processes. ERP II incorporates all these processes (CRM, SCM, BI, e-Commerce and APS) in a single package. To be globally competent, an organization needs to open up and reach out to its collaborative partners.

ERP II enables businesses to compete by providing information online and by adding real value to businesses of all types and sizes. Various enterprise are implementing this cross - functional system. According to Gartner (2000), ERP II can be differentiated from ERP on the basis of six elements that touch business, application and technology strategy. These elements are: the role of ERP II, its business domain, the functions addressed within that domain, the processes required by those functions, the system architectures that can support those processes, and the way in which data is handled within those architectures.[2]

As the role of ERP is enterprise automation, ERP II automates and optimizes its entire value chain, comprising customers, suppliers and third party manufacturers.

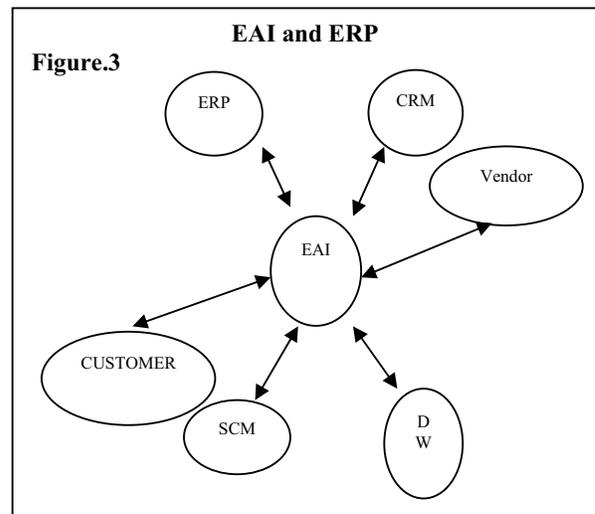


EAI AND ERP

EAI can be defined as application independent, business-oriented software that integrates the applications of an enterprise, or several enterprises. These are used to automate multi-enterprise business processes wherein the internet is the backbone of communication devices and departments. Thus EAI is the set of technologies that allow the movement and exchange of information between various applications and business processes within and between the organizations.

Messaging is the foundation of an EAI framework. This backbone transports messages between resources, reconciling network and protocol differences. It allows applications to share information with the outside world by sending and receiving messages. It adds quality -of-service options to message delivery, such as security and queuing.

EAI products can be applied for integrating ERP with SCM and CRM. EAI acts as glue between ERP, SCM, CRM and Data Warehouse both internally and externally. EAI sits between a wide range of applications in the enterprise brokers messages between them, and adds processing wherever required. [10]



An EAI solution is composed with services like Business Process Management, Application Connectivity, Translation and Formatting and Communication Middleware.

Generally, there are four types of EAI; data-level, application program interface-level, method-level, and user interface-level.

ERP AND BI

The rapid progress of BI applications, such as Data Warehouse and Data Mining, and IT in the last ten years has helped ERP systems to improve vastly and meet customer demands. Data Warehouse is a single, complete, and consistent store of data, obtained from a variety of different sources and made available to end users in a way that they can understand and use in a business context.

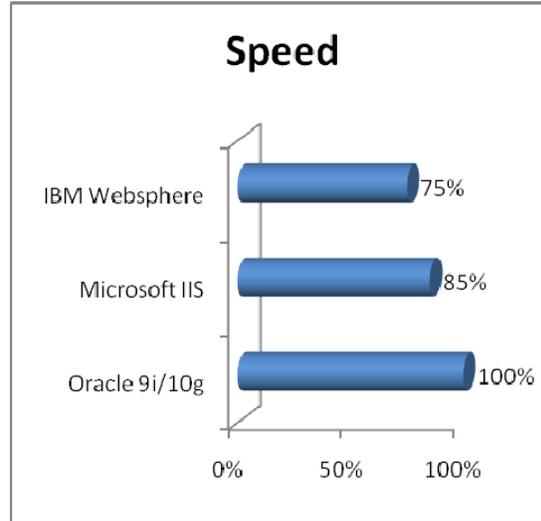
By integrating ERP with data warehousing, the company obtained the business benefits like ability to rapidly change and adopt new business structures, Increased profitability due to improved customer profiling and reporting, and Time and cost saving due to minimal training. So in this case was realized by updating ERP functions and integrating them into one of the big data warehousing vendors namely, Cognos.[11]

EAI VENDORS[12]

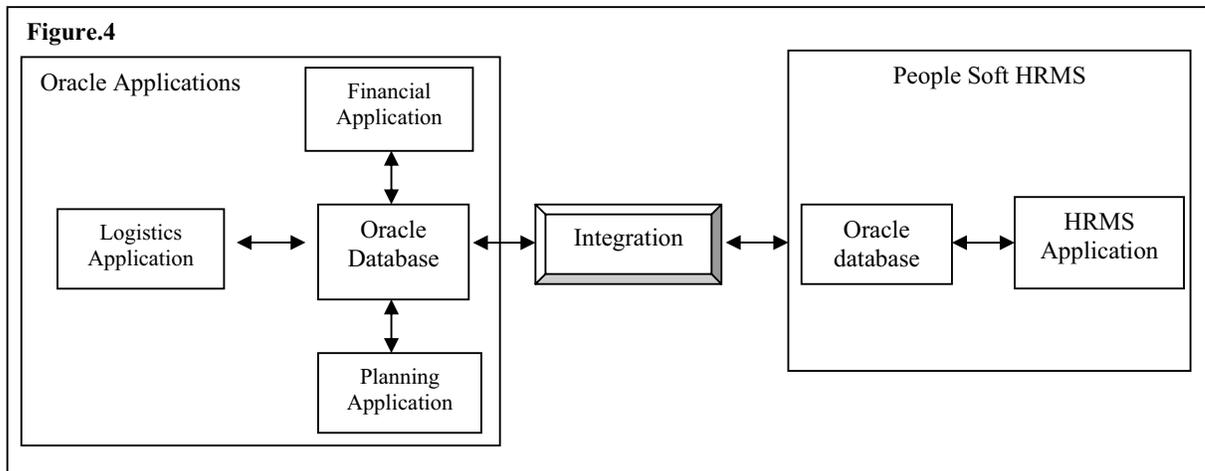
Some key EAI vendors, published in the EAI vendor guide with their respective market share, are; Table.1

EAI Vendors	Market Share (%)
IBM	12.0
Neon	10.8
Mercater	10.0
TIBCO	9.1
Sun	6.4
BEA Systems	5.1
STC	4.4
Vitria	3.9
Active	3.7
Extricity	3.0

support, Compatibility with other systems, Ease of customization, Market position of the vendor and domain knowledge, Cross module integration and fit with organization structure, Reference of the vendor, Implementation time, Consultancy, Methodology of the software and System reliability. But these factors are depends upon the industry and company will differ, so keen interest and careful selection must be made.



INTEGRATED ERP APPLICATIONS



ERP SELECTION CRITERIA:[8]

All ERP implementations are not successful. Implementations succeed or fail due to a number of reasons. The factors should consider before selecting the appropriate ERP software for our organization are Functionality, Technical criteria, Cost, Service and

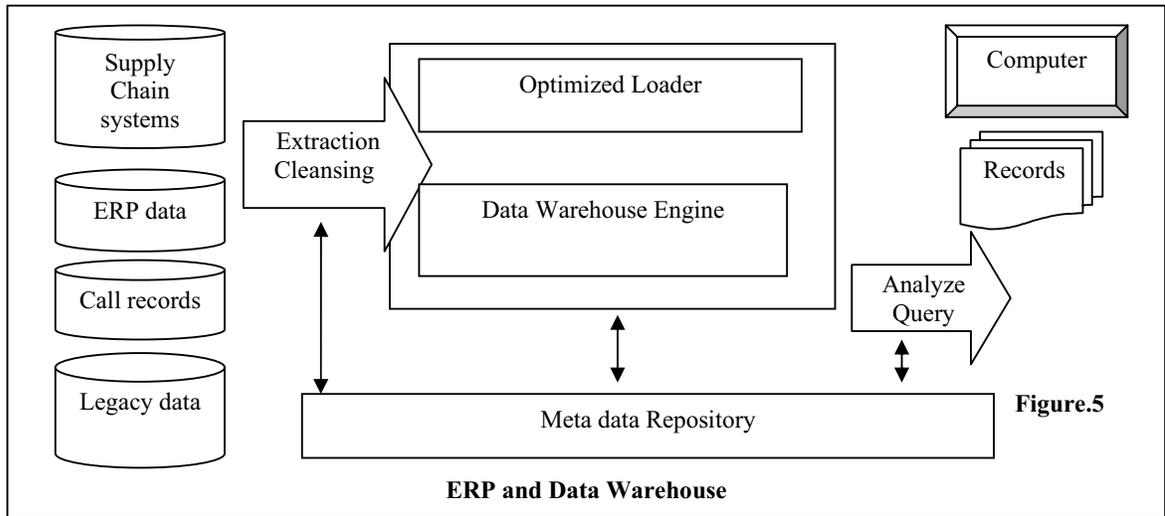


Figure.7[18]

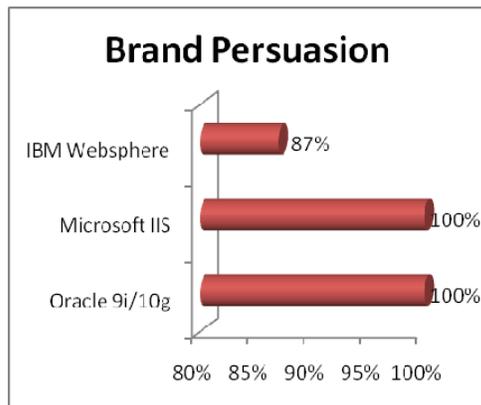


Figure.8 [18]

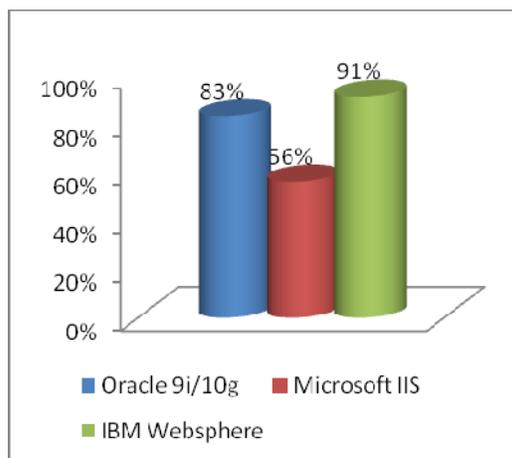
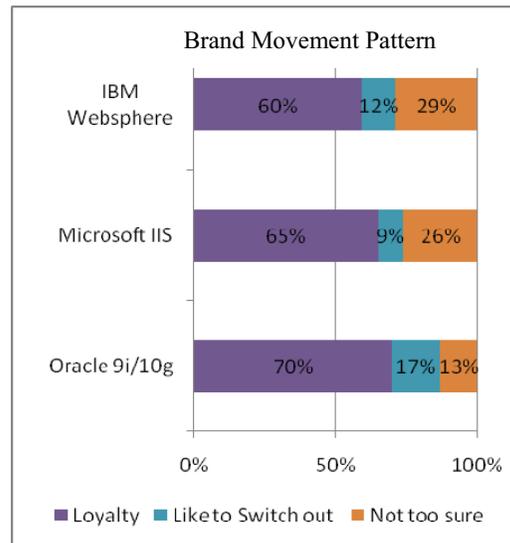


Figure .9 [18]



MOVEMENT OF APPLICATION SERVER VENDORS OF ERP SOFTWARE

The following are the notorious vendors are supplying the ERP Software viz., SAP AG, Oracle, People Soft, SSA Global, Sage Group Baan, Microsoft Dynamics. The later had released several versions like MS Dynamics CRM, MS Dynamics AX (Formerly, Axapta), MS Dynamics GP (Formerly, Great Plains), MS Dynamics NAV (Formerly, Navision), MS Dynamics SL (Formerly, Soloman), Microsoft Retail Management System (Formerly, Quicksell). Out of all the application servers out there, only three managed to get into the User's choice. Out of these, Oracle 9i/10g emerged as the most future ready application server, followed by Microsoft's IIS and IBM Websphere. [17]

Figure. 10 [17]

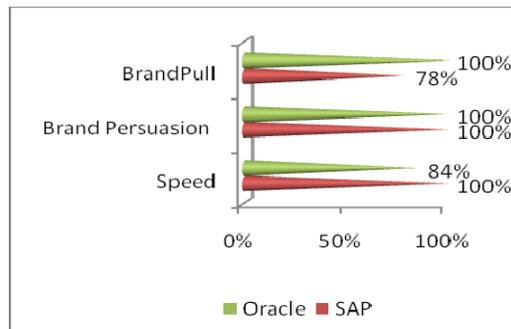
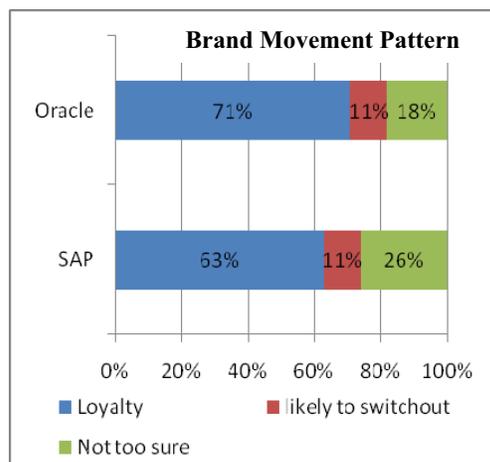


Figure. 11



ERP SOFTWARE VENDORS

Apart from application software ERP Software Sap leads a good career in Business Analytics, CRM, and Enterprise Messaging Solution. ERP software is yet another segment without any surprises, as it's largely dominated by two players – Sal and Oracle. Out of these, SAO continues its winning streak and remains the most future ready brand. Close on its heels is Oracle, with a relative speed of 84%. SAP's MySAP ERP continues to remain as the most future ready brand, with Oracle close on its heels with its multiple HRMA offerings from PeopleSoft, J.D.Edwards, and Oracle's own E-Business Suite. The situation hasn't changed much over last year, except for the entry of one more brand into the club-Automatic Data Processing Enterprise HRMS. MySAP enjoys the highest brand loyalty at 74%, with zero likely to switch outs. [16]

ERP IMPLEMENTATION IN INDIA

ERP systems are in place in many Indian Business houses. In fact, these systems are evolving day-by-day. There are several Indian enterprises that are running successful ERP systems.[10]

SAP IMPLEMENTATION AT BHEL[11]

BHEL (Bharat Heavy Electricals Limited) is the largest public-sector engineering and manufacturing enterprise in India in the energy related/infrastructure sector. BHEL manufactures over 180 products under 30 major product groups, and caters to core sectors of the Indian economy. It has so many core business which is located at various parts of India. In order to streamline information availability, BHEL decided on end-to-end implementation of the SAP solution. This meant that multiple legacy systems of different functions were to be integrated into a single system in SAP.

MAHINDRA & MAHINDRA MYSAP IMPLEMENTATION: [11]

Mahindra & Mahindra Limited (M&M) is a leading \$800 Million automobile manufacturer, employing an estimated 12,000 people. It is the flagship organization of the Mahindra group. The company has been the market leader in farm equipment and machinery in the highly competitive e Indian Market since 1986. On one hand, M7M wants to compete for more global business, and on the other hand, international competitors want a piece of the Indian business as well. So M7M implemented mySAP Supply Chain Management to link all its plants and to streamline the manufacturing process. The solution enables a pull-based replenishment system that optimized logistics and manufacturing operations, which helped M&M improve margins and reduce costs, while enabling it to respond quickly to consumer needs.

DABUR PHARMACEUTICALS LIMITED: [12]

Dabur Pharma Limited is a leading Indian Pharma company engaged in cancer research and manufacturing related products. It is an associate company of Dabur India Limited and was incorporated in March 2003.it operates in Europe and in some other markets of the world through its fully-owned subsidiary-Dabur Oncology Plc. The Dabur group of companies has a legacy of trust and excellence in the healthcare business. The organization implemented SAP ERP to help create, consolidate and maintain a database in real time to help the organization to make faster decisions, achieve cost cutting and maintain regulatory compliance. The implementation was take place phase by phase. Then, according to the business blueprint requirements, the actual SAP system was configured. This was followed by baseline demonstrations of each module to SAP Users.

HINDUSTAN PRODUCTS LIMITED (HPL) [3]

HPL is an FMCG based leading organization, which has a wide range of products from personal and household-care products to foods, beverages and many more. The organization owns over 110 manufacturing units and third party manufacturers. It

also has a wide distribution network consisting of over 110 warehouses. The organization operates through its own supply chain network, which had serious inventory problems. The organization, in 1977, implemented the Baan ERP package at over 250 sites, including manufacturing, sales and warehouse departments to integrate its manufacturing, financial and distribution processes. HPL's e-commerce initiatives used the ERP infrastructure to extend the organization through the Web, to its partners, suppliers, vendors, and customers. This integration of ERP and related SCM tools resulted in significant reduction in inventory levels, reduced stock levels, and lower working capital requirements, while improving the response time and customer-service levels.

**ADITYA BIRLA CARBON BLACK BUSINESS
MANUFACTURING LIMITED [3]**

Aditya Birla Group's Carbon Black business spans four companies in four countries namely Egypt, India, Thailand, and in China. With a total annual capacity of 7,90,000 mt, the group is the fourth largest producer of Carbon Black in the World. The group company was using different custom-developed applications at all its units. This meant lack of uniformity in business processes functions. This made consolidation of business level data difficult. Yet another problem was the high cost of maintaining and upgrading disparate systems. A single enterprise application across business units was required. Since the group company already using SAP across all its business, SAP R/3 was the preferred choice for its Carbon Black business.

DIGITAL SHOPPY-DIGITAL INTEGRATION [16]

One of India's fast growing consumer electronics, home appliances, computers and communication devices retailer, Digital Shoppy a part of the Pratyankara Electronics and has stores spread across 33 locations. Like any other retail chain, Digital Shoppy was also in an expansion mode but with the growth in the number of stores came the added pressure of managing store dependently without an integrated ERP.

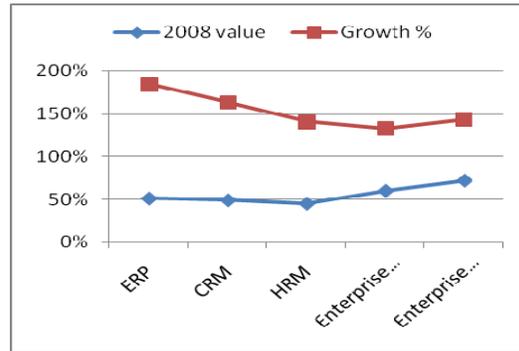
**SURVEY RESULT OF PC QUEST ABOUT INDIA'S
FAVORITE ENTERPRISE SOFTWARE BRANDS: [17]**

The number of CIOs who intend to purchase ERP software has increased by 134% as compared to last year, indicating that ERP will be a high growth area.

The integration of SAP with their own methods will bring the company "The Best IT Implementation Awards 2009" under various categories. Table.2

Brand Category	2007 Value	2008 Value	Growth %
ERP	22%	51%	134%
CRM	23%	49%	115%
HRM	23%	45%	96%
Enterprise Messaging	34%	60%	73%
Enterprise Connectivity	42%	72%	72%

Figure.12



BSES POWER [6]

Best IT Implementation of the year 2009 Awards won by the company for largest scale in core application. For an electricity distribution organization, the operations & Maintenance department requires data exchange and communication with related support functions like stores & Meter management. OMS (Outage Management System) is the main O&M Module (Operations and Maintenance) used for monitoring the electricity supply. Further it has automated SMS escalations of faults and breakdowns. The OMS has been seamlessly integrated with SAP R/3 to make the operations efficient. It brings the benefits like 304 offices connected across 950 sq km, 1500 stakeholders have access to unified data at any moment and 90% customer complaints attended less than 2 hours, finally power outages decreased by 98%.

ARTEMIS HEALTH INSTITUTE [7]

Artemis is a new hospital in Gurgaon which became operational in 2007 won the Best Automation Award in 2009. The hospital went for the latest Hospital Information System (HIS) package. The HIS caters to the front office operations however back office operations could not be carried out through the HIS and documents related to these processes existed in independent silos. To make these operations system enable and to ensure seamless integration with HIS, there was a need to implement an ERP package that catered to these functions. Since the group company Apollo Tyres was already using SAP for all its functions, they decided to implement the ERP for back-office functions of the hospital as well. Implementing SAP is a huge task keeping in mind the adoption of best practices available in SAP.

INDIAN OIL CORPORATION - AUTOMATED B2B PROCESS INTEGRATION [7]

The project was implemented by IOC, which is India's largest Public sector petroleum company and is 116th on Fortune Global 500 listing 2008. Keeping track of every transaction has always been difficult for them as it is spread across the country. To solve this issue, they have integrated their SAP implementations which are considered among the largest in the country.

ERP IMPLEMENTATION AT THE VIEWPOINT OF INDIAN EXPERTS [6]

- Rajendra B.Vattikuti, Group President, CSC India stated that "CSC's global practice dedicated to supporting SAP systems combines a wealth of skills and physical resources including world-class, full service outsourcing, consulting and systems integration teams".
- Swapan Bardhan, Assistant Manager, IT, Calcutta Medical Research Institute sharing the thoughts regarding ERP implementation that a few years back CMRI had implemented ERP based on the Microsoft platform. Previously, entire processes to run on ne server.
- Navtej Matharu, CTO, InfoVision Group stresses the importance of innovation in the company's line of work specialized in CRM services. He insisted that "... changes and innovation are thought through to ensure successful implementation and a regression path, should the need arise".
- Dinesh Kumar, Executive director, IT, NTPC is a man who thrives on challenges and he has never faced the difficulty of "running out of things to do". He has been instrumental in keeping the company at the leading edge of technology adoption, whether it be usage of satellite based communication in 1982 or ERP in 2003.
- Ray D'Souza, Director of Systems & Technology, Lowe Lintas is an ex-navy personnel heads the IT at advertising agency. He also has the distinction of making the company the first advertising agency in India which implemented an ERP System.
- P.Shyam Sunder, Vice President, Quality and Head of IT, Britannia Industries took over this role after handling several other responsibilities. As a matter of fact, Britannia is the first FMCG company in India to comprehensively outsource infrastructure solutions, SAP application services, and consulting, among others. He created an IT strategy at Britannia, and also oversaw the implementation of all modules of SAP- big bang, multi location networking in a record time of under a year, with no cost and time overrun.
- GS Ravikumar, CIO, GATI recalled by Gati 2000 for making a failed project successful, Ravikumar had a lot of expectations riding on his shoulders. Responsible for designing, developing and implementing customized ERP across 300 locations including some remote places, was a challenge and he succeeded.
- Sanjay Rawal, CIO, Coca Cola, India is beginning his career as a Programmer analyst and moved up with other directions. As bottling units are a critical business segment, Rawal is now involved with standardizing the bottling franchisees for bringing them on an ERP platform across locations and putting a common set of processes in place.
- Amit Mukherjee, group CIO, RPG Enterprise he is the technology face of his group, he ensured that all retail formats of RPG's business, runs smoothly providing a high degree of customer satisfaction. Apart from retail, he is also the one who spearheaded Saregama, becoming India's first media-entertainment company to implement SAP solutions for its intellectual Property Management.
- TG Dhandapani, Corporate CIO, TVS Group has helped the way IT is managed at TVS group. He was closely involved in eight successful SAP implementations in his organization with the in house team. He facilitated the in-house developed Dealer Management System, an ERP for TVS Motor dealers, and so far 325 dealers have adopted this system that enables seamless interaction with ERP and BI.
- Bihag Lalaji, VP (IT), Ambuja Cement working for the last 12 years and implemented SAP in a record time of 14 months for 2,500 users. "The challenge was to bring on eight different platforms on a single system; user training; and to switch from old to new system", Lalaji says.
- Shobhana Ravi, CIO, TAFE. Under her leadership, TAFE has developed its own data warehousing applications using SAP and Oracle databases. She not only redefined the IT set up in the company but has infused modern technologies that have enables the company to accrue more profitability in the competitive automotive space.

WHY DOES ERP FAILURES IN INDIA? [14]

Implementation risks occur throughout the ERP system life cycle, which ranges from go-no-go decision on ERP to the time the system has gone live, including training issues.

- Poor leadership and lack of top management's commitment
- Unrealistic user expectation
- Inadequate control of system
- Lack of project Management structure and methodologies
- Insufficient user training
- Ineffective communication of project objectives
- Lack of user participation

- Lack of required skill-set and skill-mix
- Lack of software design standards
- Business process re-engineering
- System migration and control risks
- Module specific risks

HOW TO MAKE AN ERP IMPLEMENTATION A SUCCESSFUL ONE? [16]

- Requiring appropriate business and it legacy systems
- Creating a business plan and vision
- Preparing for business process re-engineering
- Developing change management culture and programmes
- Designing proper communication
- Fixing ERP teamwork and composition
- Monitoring and evaluating the performance
- Appointing a project champion
- Instituting project management
- Developing software, testing and trouble-shooting
- Expecting top management's support

CONCLUSION

The ERP Implementation project posed the challenges like Multi-location, Multi-language, Multiple currency implementation, and Network availability from a single instance and Adopting change management methodology during all phases. The other benefits can be brought down by the ERP System to the company are Significant cost savings, Global consolidation, Support for concurrent access demands of the company, Better analysis of operations and faster decision making, and Improved responsiveness to changing global market scenario. The successive stories of many Indian Companies and the viewpoints of experts clearly codified that ERP implementation in India is already initiated, but the problem in it is sustainable development and uninterrupted involvement till to reach the peak or attain the zenith.

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BIOGRAPHY



I am Ms. **R. Seranmadevi** qualified with B.com in UG level and enriched knowledge in versatile fields viz., MBA, M.Com, and MCA and undergone the research program in Management and awarded with M.Phil degree. At present working for CMS College Engineering, Namakkal affiliated to Anna University, Coimbatore. Earned experience in different fields including industry and educational area for about eight years. My profile is constructed with many paper presentations in both national and international level seminars / conferences, which depicts my thrust of interest.



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