

Need and Implementation of SAP in Pharmaceutical Industry

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Abstract--SAP system allows a company to share common data and practices across the enterprise and produce and access information in a real time environment and encourages for a competitive business. SAP systems are designed to solve the fragmentation of information in large business organizations and integrate the processes within a company to help managers in making efficient decisions. It is encouraged to use an advanced technology like SAP software solutions for success, to gain both the domestic and international market share. Pharmaceutical industry depends heavily on Patents for generation of revenue with focus on Research & Development and less effort in lean management due to resistant to change, lack of system thinking and poor execution [1]. The most commonly used measurement of leanness is Inventory Turnover.

Keywords-- erp, implementation, organization, pharma, sap.

I. INTRODUCTION

Rapid advancements in information technology in hardware, software and in particular SAP AG's umbrella of solutions provider has an extreme influence on the way enterprises view, access and manage their data. SAP played a pivotal role to transform the application oriented industry and embraced the best of world solution providers as it is still evolving in meeting its customers' and stakeholders' needs.

SAP customers have to put custom project plans, implementation schedules, management justifications, and identification of consultants. Risk on the business side is high that there is little room for risk in the technical implementation. Organizational changes that accompany an SAP implementation will drive sweeping changes across business applications of the enterprise. Meeting the project ROI, focused goals in a timely fashion will impact from planning, to developing the solution, to testing, to implementation. SAP will necessitate a tight partnership between the business and IT. Information sharing and partnership trust within the organization and between the organizations and its partnering companies is vital [2].

Configuring the customers' business applications with various new, redeployed or best of breed hardware and software components into a solution, regardless of the different technology vendors and partners involved.

Only reason a company would implement or upgrade SAP in the first place is purely on business reasons like increase competitiveness, Reduce Costs, Integrated Data, Quality Service to Customers, Enhanced Decision Making Capabilities, Normalize Resource Planning and Efficient Application Processing.

II. LEGAL SYSTEM

Legacy System is referred to existing computer systems to distinguish them from the design and implementation of new systems. Legacy was often heard during a conversion process, for example, when moving data from the old system to a new database. Legacy system is out of date and may continue to serve the purpose of the user needs on variety of reasons. In addition, the decision to move from an existing to the new system is influenced by economic reasons such as Quality Deliverables, Technological Improvements, Effective Competitiveness, Efficient Change Management, Functional Improvements, Handle Multiple Flat forms, Speed and Accurate Processers, Micro Functional capabilities and Industry Standard Compatibilities.

Even if a legacy system is not used, it may still continue to impact the organization due to its historical role. It is an obsolete system and may include procedures or terminology which are no longer relevant in the current context and may differ in the type of the technology used.

III. BUSINESS PROCESS REENGINEERING – BPR

Organizations survival in competitive business environments have to employ continuous change in their business processes. Change management efforts include a strong commitment from management to use the system for achieving business objectives [3], Current trends in the marketplace gave impetus for the consumer oriented product expansion, competitive sales push, assured global distribution networks, better customers participation and business centric towards satisfying needs and wants of the customer. Management progressive with innovative and creative approaches play a pivotal role in the organizations sustenance and survival on a long run. Technology is one instrument that is to be utilized for improving efficient business processes.

Business Process Reengineering BPR is an organizational method of redesigning of its existing business processes in order to achieve higher efficiency, better quality and competitive production [4]. BPR has become popular in organizational management, creating new ways of doing business [5]. Information technology enables organizations to equip with redesigned processes that help business processes to have efficient exchange of communications between persons [6]. Many leading organizations have conducted BPR in order to improve productivity and to gain a competitive advantage.

Strictly pursuing a process perspective, businesses are restructured across functional and hierarchical boundaries and indirectly Organizations within also need to be restructured around these new business processes [7].

IV. ENTERPRISE RESOURCE PLANNING - ERP

ERP systems automate and integrate the core functionalities of an organization. ERP facilitates the flow of required information among the different functions of an enterprise, while also permitting information sharing across organizational units and geographical locations [8]. Despite the problems identified in ERP applications, the number of companies opted for ERP systems have grown tremendously in 3 directions [8].

- A. ERP vendors integrated their solutions supporting e-business and workflow management
- B. ERP applications upgraded to target additional functional niches like CRM, SCM, APS etc.,
- C. ERP solutions have simplified to target hundreds and thousands of midsize and small companies.

V. FRAMEWORK FOR BPR & ERP INTEGRATION

IT plays key role as an enabler in business process renovation and there exists a strong correlation between the quality of information systems within an organization to the improvement of an overall corporate culture and the organization's strategies [9]. The contributions of IT in BPR could be categorized in two different ways [10]. Firstly, IT contributes heavily as facilitator to the process of reengineering and secondly, IT contributes in the reengineering process as an enabler to master the new process in the most effective way.

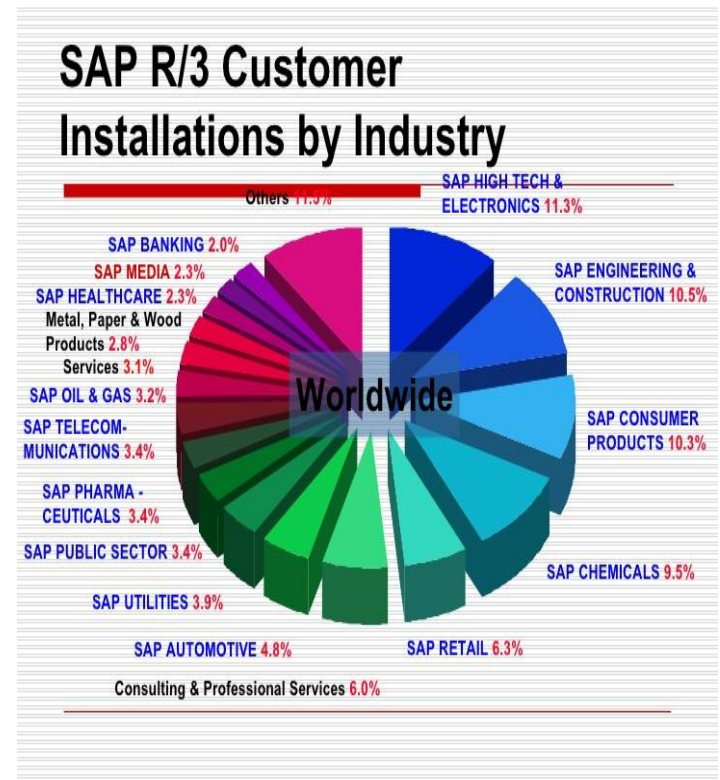
VI. SAP

Generally enterprises that undertaken ERP project implementation incur huge expenditure, which often outgrow the allocated initial budgets significantly [11].

Few cases, ERP's seem to have failed the cost reduction that it promised companies to embark on extensive replacements of their existing information technology (IT) applications [12]. Though ERP packages has high requirements for computing capacity, hardware expenses and management costs are relatively insignificant to costs involved in implementation activities, which has proved complex and slower than originally forecasted [13].

SAP offers company a comprehensive solution for managing Financials, Human Resources, Materials and Procurement Management, Production Planning, Sales & Distribution and many Corporate Services. It integrates all departments and functions across a company on single database that can serve the departments' requirements accessing and sharing common data by all functionalities.

SAP will work in conjunction with the mission of the Organization and satisfy all stakeholders. The effective implementation of SAP system can bring out many benefits, beginning with the most general, such as enterprise management and information flow enhancement. Consequently, improvement of economic indicator is achievable, which finally leads to an increase in enterprise profitability [14].



A Measure related to amount of work involved in Implementation depends on the Complexity of Transactions, Interfaces, Reports, Data involved in Conversion.

6.1 SAP Implementation

SAP system implementation process requires human resources from both the client and consulting companies. Client resources are the key users of the business processes who provide functional knowledge to the consultants and acquire the knowhow needed to manage the system after the implementation of the SAP System. SAP system resources are divided into functional, Technical and System Administrators. There will be multiple operating teams, which takes responsibility for as many implemented SAP modules. The team should be cross-functional with business and technical knowledge. Knowledge of the business functions and products is needed so that they know what needs to be done to support major business processes [15]. Functional and Programmers work along with the Consulting teams. The project is co-managed by a client and a consulting executive and the team should as well have a mix of consultants and internal staff so that the internal staff can develop the necessary technical skills for design and implementation [16]. The implementation effort for the whole project is calculated as the total man months for the project management, operating teams and functional units [17]. Project organizational structure is formally constituted at the beginning of the implementation phase and exists till the completion. Objectives and accomplishments of different teams and functional units along with individual tasks are recorded over time within the project's documentation.

A Measure that indicates Business areas are People, Processes, Technology and Return on Investment (ROI)

6.2 SAP Customization

Company seeking to adopt an ERP system can customize and use the system as required to the business processes and generic solution to the company's specific needs, this facility is provided by the ERP vendor through tools and utilities which will allow the firm's in house IT personnel or independent consulting firms manipulate the software [18]. The degree of functional fit of the out of box features determines the amount of customization needed of the adopted ERP. The higher the fit, the lower are the implementation and customization costs and the faster is the implementation time [19].

Distinguished [20] between two levels of customization:

High level customization: High level customization is carried out by manipulating and editing readable and understandable data instead of intervening at the level of the written code. Functional users with knowledge of the business and no programming experience should be able to customize the system. This shortens the learning path and therefore accelerates the implementation and gives more freedom to the company to continuously adapt the system to the processes and the business needs.

Low level customization: Low level customization involves developers modifying the code. This allows more flexibility of the ERP systems provision for custom operations at the software architecture.

VII. PHARMACEUTICAL INDUSTRY

Indian Pharmaceutical industry has a wide range of capabilities in the complex field of drug manufacture and a highly organized sector. Vast ranges of medicines are manufactured from simple pills to sophisticated antibiotics and complex cardiac compounds and every type of medicine is now made in India. It is a highly fragmented sector with severe price competition and government price control [21]. India Pharma sector is front runner in wide range of specialties in complex drug manufacture, development and technology. Following are advantages and challenges encountered in the India Pharma Industry.

Sno	Advantages	Challenges
1	Competent Workforce	Effects of new Patent Products
2	Cost Effective Chemical Synthesis	Drug Price Control
3	Legal and Financial Framework	Regulatory Reforms
4	Information and Technology	Infrastructure Development
5	Globalization	Quality Management
6	Consolidation	Conformance to Global Standards

7.1 SAP Pharmacy

The Indian Pharmaceutical industry is undergoing huge growth. It has touched double digit growth in 2014 with more than 10,000 manufacturing units and close to 3000 Pharmaceutical companies. The Indian Pharmaceutical industry is among the top six producers in the globe. In Pharma industry when patents get expired, generic drug producers can easily reverse engineer and sell them at much lower price.

Branded manufacturers have to focus on cost reduction on those drugs with expiring patents in order to compete with generic drugs or invent more new drugs [22]. Another challenge the Pharmaceutical industry has to face is the demand for drug projected to increase at a much faster pace than capacity.

Indian Pharmaceutical export is getting closer to \$ 25 Billion and even the national government is taking several steps to enhance the exports in near future, at the same time the lack of technology implementation is hindrance to the growth of the Pharma market globally. It is visualized the success to gain international market share is immediate usage of advanced technology, though several software providers are available in market with new and innovative solutions, SAP is the best solution to keep up with the time to excel in the market and thrive.

Many Pharma's have implemented a state of the art SAP based pharmaceutical manufacturing solution incorporating electronic signatures and intrinsically safe RF computers for quality approvals & production confirmations.

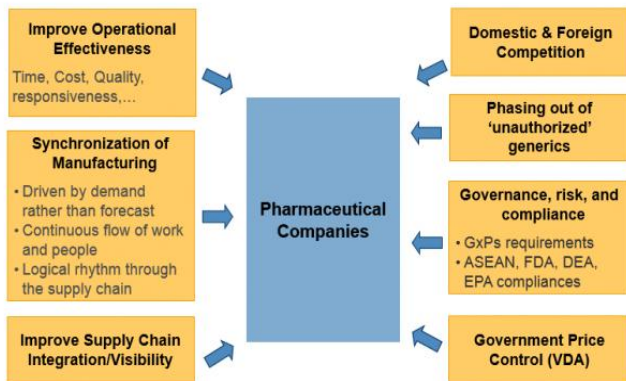
Once a production schedule is generated a BOM is developed for Vendors to provide material for production. The schedule does not contain the Production sequence whereas the Production Planner minimize the changeover cost and produce a detail schedule with Production Sequence called a Planning driven Planning Process. The Production Department will produce based on the detailed schedule. Once the Production Process is finished, product will either be stored or ship out for replenishments. API will be supplied to each production site based on BOM generated through SAP.

Problem with the cost driven Planning Process is that the production varies from month to month and since the consistency is the foundation to the lean management. Without the Consistency, Continuous Improvement Techniques the best schedule SAP APO can only produce optimal schedule in a suboptimal process. To overcome this situation Simplified Planning and Production Process is required to create a consistent production environment.

Production Wheel is used to simplify the Planning and Production Process and the Production Managers know exactly what is to be produced in the next production cycle. At component level, KPI, Delivery Performance, Supply Chain Responsiveness and Cost can be used as benchmark when comparing different systems. Most commonly used KPI's for delivery performance are fill rate, number of stock outs, cycle time and forecast measurements.

Supply chain responsiveness describes about the ability of the supply chain to deal with the unexpected changes in raw material supply, production capacity and market demand. The supply chain cost has to be measured [23], suggests supply chain performance is the sum of order cost, management cost, material acquisition cost, planning cost, inventory cost, IT cost, return management cost and cost of goods sold. Assets and Inventory of a supply chain is another important measurement, in accounting common measurements for Assets and Inventory includes Asset Utilization, Inventory Turnover, Average Inventory Value and Average Inventory Level.

Opportunities and Challenges for Pharmaceutical Companies



SAP Production Planning has inputs in Sales Forecast and Sales Database. Sales Forecast information will be sent to Demand Forecast which in turn will utilize Sales Database to generate a Statistical Forecast and will be compared with the Sales Forecast to determine the Demand Forecast. This info is entered in APO (Advanced Planning & Optimizer) which will conduct mix integer optimization using capacity and other resources constraints to determine the Production Schedule. APO will provide the Production Planner information such as what, when and how to produce. This schedule will define production divisions to produce the products in specific quantity at specific production cycle.

VIII. CONCLUSION

SAP ERP is the concept of building business applications which are tightly integrated, that automates many of the routine functions in running a company successfully taking into considerations of the highly competitive market nature. Organizations implement SAP systems in an effort to consolidate their data and information flow into a unified database.

Most important factor for ERP success is “Function”, which can increase both perceived usefulness and the quality of the system significantly, and eventually lead to having ERP benefits from successful implementation. “Function” was defined as the functionality of ERP software and its capability of matching with the company’s necessary business functions. Most ERP vendors advised that minimal customization of the implemented software is to gain full benefits of ERP systems for the company insisting on modifying the company’s business processes. However, most companies expect to keep their business processes with minimal changes and allow the ERP vendor to customize its software.

REFERENCES

- [1] Billy Hou, Lean Supply Chain in Pharmaceutical Industry, modeling and simulation of a SAP environment <http://www.slideshare.net/BillyHou1/lean-supply-chain-in-pharma-industry>
- [2] Stefanou, C.J. (1999) Supply Chain Management (SCM) and Organizational Key Factors for Successful Implementation of Enterprise Resource Planning (ERP) Systems. Proceedings of the Americas Conference on Information Systems (AMCIS), pp. 800.
- [3] Ahamd Aldammas & Abdullah S. Al-Mudimigh Critical Success and Failure Factors of ERP Implementations: two cases from kingdom of Saudi Arabia, Publication of Little Lion Scientific R&D, Islamabad Pakistan Journal of Theoretical and Applied Information Technology 30th June 2011. Vol. 28 No.2
- [4] M. Hammer, J. Champy, Reengineering the corporation: a manifesto for business evolution, Harper Collins Publishers, 1993.
- [5] K. Tumay, Business Process Simulation. Presented at the Proceedings of the 1995 Winter Simulation Conference, 1995 Washington DC.
- [6] M. A. Ould, Business Processes: Modeling and Analysis for Reengineering and Improvement, Willey, 1995.
- [7] V. Grover, M. Malorha, Business process reengineering: a tutorial on the concept, evolution, Method, technology and application, Journal of Operations Management, Vol. 15 1997, pp. 192–213.
- [8] M. Markus, C. Tanis, P. Fenema, Multisite ERP Implementation, Communication of the ACM, Vol. 43, No. 4 2000, pp. 42–46.
- [9] Vesna Bosilj Vuksic and Mario Spremic, ERP System Implementation and Business Process Change: Case Study of a Pharmaceutical Company.
- [10] L. Lederer, V. Sethi, Key Prescriptions for Strategic Information Systems Planning, Journal of MIS, Vol. 13, No 1. 1996, pp. 35–62. 27.
- [11] S. L. Chang, Information technology in business processes, Business Process Management Journal, Vol. 6, No 3 2000, pp. 224–237.
- [12] J. Saunders, (1999) Beware of costs lurking in ERP. Computing Canada, 25(10), 19–21.
- [13] D. Wagle, (1998) Making the case for an ERP system. Corporate Finance, December, 6–8
- [14] T.H. Davenport, (2000) In search of ERP paybacks. Computerworld, 34(8), 42–3.
- [15] P. Soja, “Success factors in ERP systems implementations: lessons from practice,” vol. 19, no. 6, pp. 646 - 661, 2006.
- [16] Rosario, J.G. (2000) On the Leading Edge: Critical Success Factors in ERP, Implementation Projects, BusinessWorld, Philippines.
- [17] Sumner, M. (1999) Critical Success Factors in Enterprise Wide Information Management Systems Projects. Proceedings of the Americas Conference on Information Systems (AMCIS), pp. 232-4.
- [18] Determining the ERP Package-Selecting Criteria’, Business Process Management Journal, Vol. 11, No. 1, 2005, p. 75-86, B. Baki & K. Cakar, ‘
- [19] A Study of Open Source ERP Systems by Vittorio Gianni Fougatsaro and Prof. Klaus Solberg Soilen in Thesis for the Master’s degree in Business Administration Spring 2009
- [20] Herzog T., A Comparison of Open Source ERP Systems , master’s thesis, Vienna, University of Technology, 2006, Vienna, Austria
- [21] C. Francalanci, Predicting the implementation effort of ERP projects: empirical evidence on SAP/R3
- [22] Sateesh Kulkarni, CCI. A brief report of Pharmaceutical Industry in India, 2015.
- [23] Peter Bolstorff, (2003). "Measuring the Impact of Supply Chain Performance", Chief Logistics Officer