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## Benefits of ERP System and its Use in Supply Chain Management

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**ABSTRACT:** In order to survive and stay ahead in today's competitive world companies are expanded to their limits in search for organizational skills and technologies. Out of those Supply Chain Management and Enterprise Resource Planning are the two most primarily used terms. The utmost important factors here are to improve the speed of production with least cost and with more efficiency in order to stay and survive in the competition in the present globalized economic scenario. There is a serious need for integration of information across the supply chains and proper planning of enterprises' resources. One hand the supply chains will enhance the efficiency of movement of various inputs and on the other hand the ERP will improve the overall efficiency of the resources to bring down the cost of production and operations. Once a firm is able to achieve the best quality output with least cost, it could attract more consumers towards its production. This research paper throws light on how the integration of ERP (Enterprise Resource Planning) and SCM (Supply Chain Management) would be beneficial to the company to achieve greater Competitive Advantage.

**KEYWORDS:** Enterprise Resource Planning, Supply Chain Management, Firm Performance, Competitive Advantage

### I. INTRODUCTION

Previously businesses have been functioning as an organizational structure which had separated the functional fields, therefore each functional field has separated the departments. In this way, every department is completely isolated from other departments. For instance, marketing and sales might be separated from supply chain management. Thus, we might conclude that what happens in one department is not closely related to other departments. These departments are interdependent, each requiring data and information from others.

Enterprise Resource Planning (ERP) is one of the latest technologies that many organizations have undertaken. ERP system is an enterprise-wide package that integrates all necessary business functions into a single system with a shared database. These software packages can be customized up to a certain limit to the specific needs of each organization. ERP was characterized as the most important development in the corporate use of technology in the 1990s. A Supply Chain can be managed quite effectively using a ERP solution and hence, the focus of the paper.

### II. RELATED WORK

The integration of Supply chain management and ERP allows manufacturing and distribution businesses the ability to gain greater visibility into all operations while increasing speed, efficiency and overall customer satisfaction. A growing number of businesses recognize the many potential benefits of Enterprise Resource Planning (ERP) when it comes to managing business information, integrating various systems and working processes, and ensuring optimal operational efficiency. When it comes to Supply Chain Management (SCM), businesses need to interact with

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numerous suppliers and partners in order to obtain the raw materials and resources needed to bring finished goods to market. ERP plays a vital role in combating inefficiency; reducing waste and ensuring that workers are better able direct their efforts. A holistic ERP system can replace multiple databases with a single and centralized data source, with information relating to products, services, customers and suppliers accessible by anyone in a company. These interconnected and robust systems can be powerful, integrating internal and external management information across an entire organization. ERP systems have more advantages in information quality and the integration of business processes and operations, but it does not decrease the information technology costs [17]. Based on Shang and Seddon [17], ERP systems have several benefits, which can be attained by organization. These benefits are differed into five major benefits, include operational benefit, managerial benefit; strategic benefit, IT infrastructure, and organizational benefit. The research contribution from Shang and Seddon is comparable to Garg and Venkitakrishnan [18], who identified the intangible benefits of ERP system implementation, include better customer satisfaction, improve vendor performance, increase flexibility, reduce quality costs, improve resource utility, improve information accuracy, and improved decision making capability. Olhager and Selldin [19] identified tangible benefits of ERP system, include reduction of leadtime, on-time shipments, double business, increase of inventory turns to over, cycle time, and work in progress. Even though the previous researches defined and categorized the ERP benefits, there is still less research that categorizes these benefits into each of business functions and decisional area.

## III. NEED FOR INTEGRATING ERP AND SCM

The web is having a significant impact on how firms interact with each other and their customers. Past stumbling blocks for supply chain integration such as high transaction costs between partners, poor information availability, and the challenges of managing complex interfaces between functional organizations are all dissolving on the web. Since suppliers are located all over the world, it is essential to integrate the activities both inside and outside of an organization. This requires an enterprise-wide information system for sharing information on various value adding activities along the supply chain. Though the relationship between ERP and SCM has been studied to some extent, still considerable amount of research needs to be conducted in order to facilitate the client companies and software vendors to assist in developing an integrated Supply Chain.

ERP is a system that effectively integrates all information required by the operating process functions including finance, accounting, human resources, production, material management, quality management, allocation and distribution, and sales by organization or process reengineering and information technology. ERP is an integrated information system that integrates enterprise internal function working processes, standardizes internal data processing procedures, and combines the operational data generated by different functions.

Future ERP will integrate Supply Chain Management (SCM) to provide enterprise management more accurate information. SCM is a concept which looks at a business as a chain of interconnected entities and thus providing a see through perspective of the entire business. The supply chain can be modelled to reduce inventory, lead times and cost at each link under the given constraints. The challenge for organizations today is to understand the factors that play a critical role in utilizing ERP systems capabilities and their implications on Supply Chain Integration to enable them to compete successfully and using their outcomes to improve the firm's performance. Successful deployment of ERP applications requires smooth integration of a number of factors. The ERP system and Supply Chain Management can be integrated as shown in the following image:

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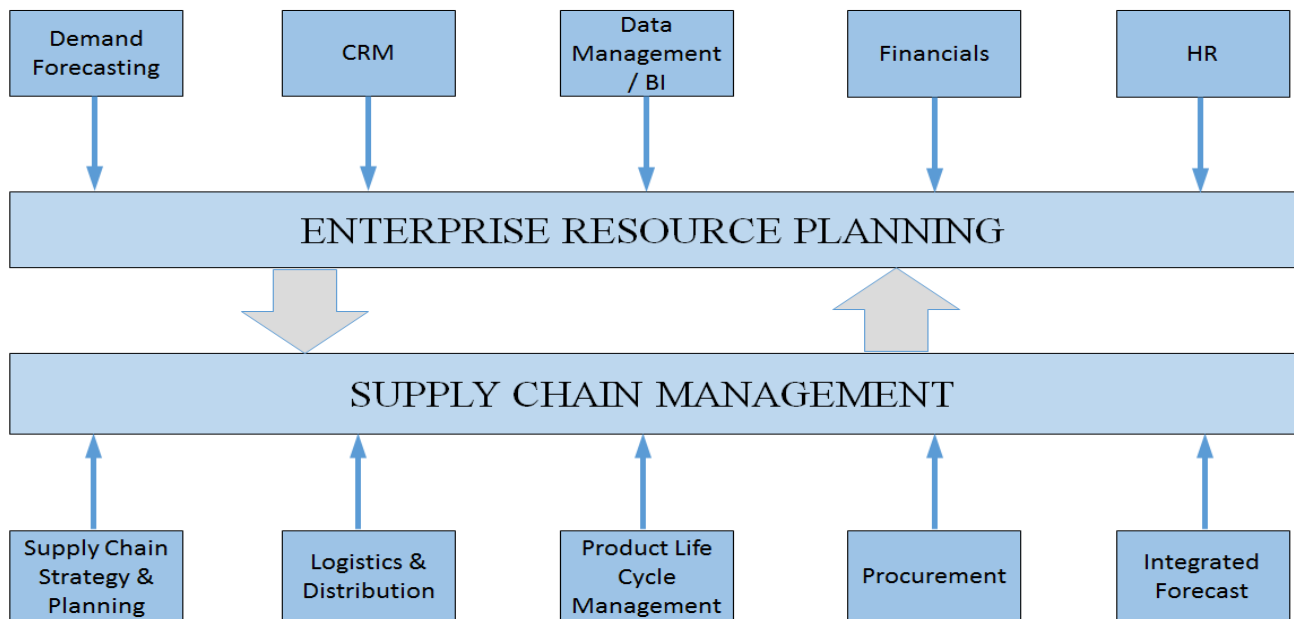


Fig 1. Integration of ERP and SCM

The benefits as shown in the above figure help to identify, quantify and integrate ERP and SCM implementation process and scalable transformation. Thus, this integration helps the company to improve business responsiveness and communications, lower costs (operational and IT infrastructure), employ state-of-the-art supply chain planning methods, improve logistics planning, improve decision-making and strategy, achieve strategic procurement solutions, achieve transformation and operations expertise and integrate all the enterprise solutions. We need to understand that the integration of the supply chain refers to the internal and external integration in the sense that internal business processes are to be integrated and better organizational processes are to be incorporated. This integration of the internal chain explains the adaptation of intra-organizational activities such as purchase, warehousing, material management, transport and production. Even if intra-organizational processes are thoroughly integrated, the competitive advantages of an organization may not persist independent of external integration and cooperation with partners. Information integration within an organization takes place through supporting core processes by the same system and database. Information integration in the supply chain is a higher-order sharing of information because while it is likely to share information using any communication device, information integration often denotes systematic methods of information exchange.

## IV. SUPPLY CHAIN MANAGEMENT (SCM)

### A. Background:

Supply chain management (SCM) emerged in the early 1980s as a result of the rapidly changing and challenging business environments in many industries. SCM is a consequence of the increased necessity for holistic considerations in, between and across companies' business activities and resources in and between marketing channels, in order to improve the overall performance towards the ultimate consumer in the marketplace. SCM's generic theoretical foundations are derived from time-, functional-, and relationship-dependencies in, between and across companies' business activities in marketing channels. There are major similarities and minor differences in the theoretical boundaries between SCM and Alderson's interpretation of a functionalist theory of marketing. The author argues that the theoretical origin of SCM is derived from, and underpinned by, a part of this functionalist theory of marketing. Furthermore, there is a need for a generic re-definition and expansion of the theoretical boundaries of SCM towards the

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incorporation of horizontal dependencies between marketing channels in the marketplace. The old way of delivering product was to develop relatively inaccurate projections of demand, then manufacture the product and fill up warehouses with finished goods. The old ways are fading fast as management across all industries has come to accept that collaboration with customers and suppliers in the planning and replenishment process can and must be made to work very effectively. As customers and suppliers band together in mutually beneficial partnerships, the need for better supply chain management processes and systems is more evident and becomes a very high business priority.

For many companies, it has become clear that a supply chain that has the best information and material flow can be a significant differentiator. Improving supply chain management is getting lots of attention because forward-thinking management knows it is the best strategy to increase and maintain market share, reduce costs, minimize inventories and, of course, improve profits. In many industries, market share will be won and lost based on supply chain performance.

## **B. What is Supply Chain Management (SCM)?**

Effectively integrating the information and material flows within the demand and supply process is what supply chain management is all about. In most companies, however, two major and very interdependent issues must be simultaneously addressed. The first deals with delivering products with customer-acceptable quality, with very short lead times, at a customer-acceptable cost, while keeping inventories throughout the supply chain at a minimum. The second issue, which tends to be less understood and accepted, is the need for high-quality, relevant and timely information that is provided when it needs to be known.

As always, the challenge for top management is setting the right priorities, allocating appropriate resources and, of course, achieving the required results. Complicating the challenge is the enormous risk of not keeping pace in the marketplace, which can result in driving customers into the waiting, open arms of more aggressive competitors. Regardless of the industry and customer base, more effective supply chain management will be a prerequisite to the future success. In fact, effective supply chain management must become an integral part of the competitive and survival strategy. But, before meaningful action plans can be implemented, it is necessary to assess the circumstances and develop a strategy that is appropriately aimed at what the customers want, need and value.

## **C. Why is SCM required?**

Effective supply chain management enables the company to make informed decisions along the entire supply chain, from acquiring raw material to manufacturing products to distributing finished goods to consumers. Fast and effective flow of both information and materials is essential for improving the supply chain. As the supply chain encompasses all activities associated with the flow and transformation of goods from the raw materials stage, through to the end user as well as the associated information flows, supply chain management is the integration of these activities through improved supply chain relationships, to achieve a competitive advantage.

## **V. ENTERPRISE RESOURCE PLANNING (ERP)**

### **A. Background:**

The history of ERP goes back more than 100 years. In 1913, engineer Ford Whitman Harris developed what became known as the Economic Order Quantity (EOQ) model, a paper-based manufacturing system for production scheduling. For decades, EOQ was the standard for manufacturing. Toolmaker Black and Decker changed the game in 1964 when it was the first company to adopt a Material Requirements Planning (MRP) solution that combined EOQ concepts with a mainframe computer.

MRP remained the manufacturing standard until manufacturing resource planning (called MRP II) was developed in 1983. MRP II featured modules as a key software architectural component and integrated core manufacturing components including purchasing, bill of materials, scheduling, and contract management. For the first time, different manufacturing tasks were integrated into a common system. MRP II also provided a compelling vision of how

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organizations could leverage software to share and integrate enterprise data and boost operational efficiency with better production planning, reduced inventory, and less waste.

As computer technology evolved through the 1970s and 1980s, concepts similar to MRP II were developed to handle business activities beyond manufacturing, incorporating finance, customer relationship management, and human resources data. By 1990, technology analysts had a name for this new category of business management software - Enterprise Resource Planning.

## B. What is ERP?

The acronym ERP stands for enterprise resource planning. It refers to the systems and software packages used by organizations to manage day-to-day business activities, such as accounting, procurement, project management and manufacturing. ERP systems tie together and define a plethora of business processes and enable the flow of data between them. By collecting an organization's shared transactional data from multiple sources, ERP systems eliminate data duplication and provide data integrity with a "single source of truth". Today, ERP systems are critical for managing thousands of businesses of all sizes and in all industries. To these companies, ERP is as indispensable as the electricity that keeps the lights on.

## C. Why is ERP required?

ERP systems are designed around a common, defined data structure that usually has a common database. ERP systems provide access to enterprise data from multiple activities using common constructs and definitions and common user experiences. A key ERP principle is the central collection of data for wide distribution. Instead of several standalone databases with an endless inventory of disconnected spreadsheets, ERP systems bring order to the chaos so that all users—from the CEO to accounts payable clerks—create, store, and use the same data derived through common processes. With a secure and centralized data repository, everyone in the organization can be confident that data is correct, up to date, and complete. Data integrity is assured for every task performed throughout the organization, from a quarterly financial statement to a single outstanding receivables report, without deploying error-prone spreadsheets. It's impossible to ignore the impact of ERP in today's business world. As enterprise data and processes are corralled into ERP systems, businesses are able to align separate departments and improve workflow, resulting in significant bottom-line savings.

## D. Benefits of ERP:

1. **Competition:** ERP software requires a major investment, but there's also an even bigger cost in not making the investment. While some manufacturers choose to stick to the tried and true methods of the past, others seek technology solutions. Manufacturers cannot afford to put off an ERP implementation while their competition invests in ERP and starts reaping benefits.
2. **Efficiency:** An ERP solution eliminates repetitive processes and greatly reduces the need to manually enter information. The system will also streamline business processes and make it easier and more efficient for companies to collect data, no matter what department they're working in.
3. **Forecasting:** Enterprise resource planning software gives your users, and especially managers, the tools they need to create more accurate forecasts. Since the information within ERP is as accurate as possible, businesses can make realistic estimates and more effective forecasts.
4. **Collaboration:** Nobody wants to run an isolated business with each department functioning separate from the other. Collaboration between departments is a crucial and often necessary part of the business. With the data entered into ERP systems being centralized and consistent, there's no reason why departments can't work together. The software also touches on almost every aspect of a business, thus naturally encouraging collaborative, interdepartmental efforts.
5. **Scalability:** An ERP system is easily scalable. That means adding new functionality to the system as the business needs change is easy. Structured ERP systems allow the addition of new users and functions to grow the initially

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implemented solution over time. When your business is ready to grow or needs more resources, enterprise resource planning software should be able to facilitate that growth.

6. **Integrated Information:** There won't be any more issues with data spread across separate databases; all information will be housed in a single location. This means you can integrate platforms like your CRM software with the ERP system, keeping data consistent, accurate, and unique. Know the customer, their orders, and self-inventory, all in one place.
7. **Cost Savings:** With one source of accurate, real-time information, ERP software reduces administrative and operations costs. It allows manufacturers to proactively manage operations, prevents disruptions and delays, breaks up information logjams and helps users make decisions more quickly.
8. **Streamlined Processes:** As manufacturers grow, their operations become more and more complex. Manufacturing software automates business operations cross-departmentally, providing accurate, real-time information to everyone utilizing the solution. ERP increases efficiency and productivity by helping users navigate complex processes, preventing data re-entry, and improving functions such as production, order completion and delivery. Streamlined, efficient processes throughout.
9. **Mobility:** An advantage of ERP is having access to a centralized database from anywhere. Home, office, wherever, through mobile-friendly solution and application.
10. **Reporting:** Much of the inefficiency in operational work stems from improper reporting. ERP software helps make reporting easier and more customizable. With improved reporting capabilities, a company can respond to complex data requests more easily. Users can also run their own reports without relying on help from IT, saving the user's time to use towards other projects.
11. **Productivity:** An ERP system optimizes process management, thus increases the productivity of employees. Eliminating duplicate work, redundant information is eliminated or processes are automated. By doing this, users have more time to work on other pressing projects and tasks. They'll also be able to work easier since the solution was designed for ease-of-use.
12. **Regulatory Compliance:** A benefit of ERP software which sometimes goes unnoticed is how it ties well into regulatory compliance in the manufacturing industry. Powerful ERP solutions will keep track of regulations within the industry and monitor changes in compliance.
13. **Flexibility:** Modern ERP software systems are robust, flexible, and configurable. They are not a one-size-fits-all proposition but can be tailored to the unique needs of a business. ERP systems also can adapt to the ever-changing needs of a growing business, ensuring you won't have to buy a new solution once your needs change or your business grows.
14. **Customer Service:** It's easier to provide high-quality customer service using an enterprise solution. Sales and customer service people can interact with customers better and improve relationships with them through faster, more accurate access to customers' information and history.
15. **Security:** Data security isn't a worry when you have an enterprise resource planning solution in place. A new system will improve the accuracy, consistency, and security of data, all through built-in resources and firewalls. Restrictions to data can also be enhanced by managers of the solution, so you can make your own software as secure as required.
16. **Better supply chain:** Having the right ERP system in place means improved procurement, inventory, demand forecasting, etc., essentially improving the entire supply chain and making it more responsive.

### VI. CONCLUSION

Every company requires to keep a track of its resources and inventory. Hence, it is necessary to monitor the Supply Chain correctly to ensure good profits. Supply Chain Management becomes a key factor to ensure proper and timely

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functioning of a firm. In this paper, we can see how ERP can be integrated in SCM to manage the supply chain. An ERP software is an IT solution which automates the tasks in a supply chain. Effective management of a supply chain can be done using an ERP software which provides all the firm's data in a defragmented database. Thus, an ERP software has capabilities to bridge the gaps between companies and customers.

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