

A Proposed Model for Integration of ERP, CRM, SRM and Supply Chain Management

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Abstract—In this promising competitive environment, the ultimate success of the organization will depend on management's ability to integrate the company's diverse network of business relationships. Successful supply chain management (SCM) entails cross-functional integration within the firm and across the network of firms that encompass the supply chain. We focused on relationship management and the improvements in performance that result from better management of key supply chain partners. In this research, the five processes that need to be managed and integrated for successful supply chain management are identified. Achieving cross-functional and cross-firm involvement using the supply chain management processes is addressed and also the essential linkages needed to facilitate the integration of supply chain members, the customer relationship management (CRM), the enterprise resource planning (ERP) and supplier relationship management (SRM) processes. The remaining two processes customer service management (CSM) and manufacturing flow management (MFM) coordinated through the CRM and SRM linkages.

Keywords: SCM, ERP, CRM, SRM, CSM, MFM

1. INTRODUCTION

There is an immense deal of confusion concerning exactly what supply chain management (SCM) involves. In fact, several people using the term supply chain management treat it as a synonym for logistics or as logistics that includes customers and suppliers. Others view of supply chain management as the new name for purchasing or operations, or the combination of purchasing, operations and logistics. However, increasingly SCM is being recognized as the management of relationships across the supply chain channel. The supply chain is not a chain of businesses, but a network of businesses and relationships. SCM offers the opportunity to capture the full potential of with-in and between firm integration and management. In that sense, SCM deals with business process excellence and represents a new way of managing the trade and relationships with other channel members of the supply chain.

We are to embrace a far more moderate view of the supply chain. In effect, the supply chain is an arrangement of processes, relationships, functions, and activities along which products, services, information, and financial transactions move with-in and between organizations. It also involves all movement of these from original producer to end-user or consumer, and everyone in the organization is involved in making this happen.

At the end, supply chain management is about relationship management. A supply chain is managed; link-by-link, relationship-by-relationship, and the organizations that handle these relationships best will win. The links in the chain are formed by the customer relationship management (CRM) process of the seller organization and the supplier relationship management process of the buyer organization. We focus in this paper will be on the five supply chain management processes, how CRM, enterprise resource planning (ERP) and supplier relationship management (SRM) form the linkages for integrating companies in the supply chain, and how these tools can be used to structure relationships with key customers and suppliers with the help of customer service management (CSM) and manufacturing flow management (MFM).

In this paper, we will therefore identify CRM goals, CRM functions, SRM goals and competitive advantages of SRM. CRM processes are exploded like mushrooms after the rain and it is rather difficult to keep track of all products. But it is important for the definition of the SRM that we can identify the main functionalities of these processes so that we can understand what they are addressing and trying to resolve. This approach is provoked by the strong believe that SRM and CRM are addressing the same problems but from an opposite perception, i.e. buyer vs. seller.

2. LITERATURE REVIEW

“Reference [1] suggested that organizations need to focus on three types of knowledge in CRM processes. Firstly, they need to understand the necessities of customers in order to address them. Secondly, the information needs of the customers in their interaction with the organization require knowledge for customers. Thirdly, customers possess knowledge about the products and services they use as well as about how they distinguish the

offerings they purchased. This knowledge from customers is valuable as it feeds into measures to enhance products and services”.

According to [2] in the era of economic globalization and E-commerce, Enterprises are struggling with ERP, SRM, SCM and CRM application, aiming to maintain the competitive edge, access to the global trading environment. However, some organizations have many difficulties in integrating all kinds of their internal and external activities. They are not capable to take on exchanges of customer information streams, internal resources streams, and supply streams both internally and externally.

“Reference [3] have examined that the integration of CRM and SRM to facilitate SCM in the areas of supplier selection using a help desk approach has become a promising solution for manufacturers to identify appropriate suppliers and trading partners to form a supply network on which they depend for products, services, and distribution”.

“Reference [4] provided that with the quick change of business competitive environment, enterprise resource integration and innovative issues of business operation have gradually become the most important issues for businesses. Furthermore, many enterprises have implemented innovative IT and developing the innovative e-business applications systems such as ERP, CRM and SCM to enhance their competitive advantages. CRM systems can help enterprises to gain the potential new customers, promote the existing customers’ purchase, maintain good relationship with customers as well as to enhance the customer value, thus can improve the enterprise images”.

“Reference [5] shows that e-CRM ties CRM with e-business. Very often, e-CRM is interfaced with other information systems to form a seamless integration and exchange of information both inside and outside an organization in a work flow management system. This integration of business enterprises, suppliers, and customers is essential in this global competitive market environment. An effective infrastructure and hence an appropriate framework are required to provide the information exchange and data analysis between e-CRM and work flow management”.

“Reference [6] have investigated that the key results contradict the claims of ERPS (enterprise resource planning systems) vendors in so far as no significant performance differences were found between ERPS adopters and non-adopters, either at the business process level, or at the overall firm level. While it could be confirmed that the longer the experience of firms with ERPS, the higher their overall performance, no evidence was found of a similar effect on business process (supply chain) performance”.

“Reference [7] have investigated that ERP systems offer distinct advantages in this new business environment as they lower operating costs, reduce cycle times and increase customer satisfaction. They examined that why companies choose to adopt ERP systems, their impact on management process including implementation problems encountered”.

“Reference [8] have identified that the transaction based integrated ERP software provides different tools that can support supply chain integration but at the same time it has several features that obstructs the integration with business partners”.

“Reference [9] have investigated that CRM systems provide the infrastructure that facilitates long-term relationship building with customers. Some examples of the functionality of CRM systems are sales force automation, data warehousing, data mining, decision support and reporting tools”.

“Reference [10] have identified that another benefit of ERP systems is that all enterprise data is collected once during the initial transaction, stored centrally, and updated in real time. This ensures that all levels of planning are based on these data and that the resulting plans practically reflect the existing operating conditions of the firm.

“Reference [11] have investigated that the primary benefit of SCM systems is better operational and business planning. The MRP II and ERP systems before two decades usually included only rough-cut capacity planning logic, with basic finite capacity planning functionality limited to key work centers”.

“Reference [12] have identified that there were major differences between ERP adoption in Greek companies and companies in other countries. The adoption, implementation and integration of ERP systems were fragmented in Greek companies. These fragmentations demonstrated that the internal enterprise’s culture, resources available, skills of employees and the way ERP systems are perceived, treated and integrated within the business and in the supply chain, play critical roles in determining the success/failure of ERP systems adoption. A warehouse management system was adopted by some Greek enterprises to cope with uncertainty”.

“Reference [13] have investigated that in increasingly competitive markets, customer satisfaction is a vital corporate objective. Key elements to increasing customer satisfaction include producing consistently high-quality products and providing high-quality customer service. Also, SRM contributes to the supplier selection and increases the competitive advantage of manufacturers. SRM can enhance customer satisfaction and increase market share. Thus the development of a customer SRM system in the areas of outsourcing is essential for a company to remain competitive”.

“Reference [14] have investigated that an ERP system is divided into four major components, namely, the software, the customer mindset, change management, and the flow of processes within it. A fifth component, methodology encircles these four components to ensure that they are integrated and implemented in an organized manner. ERP is more than just software. Unless a clear understanding exists of the different components and their integration, ERP projects will continue to be plagued by failure. This model is applicable to any ERP system as it is generic and vendor-independent and helps in determining the scope of an ERP project”.

“Reference [15] have investigated that when customer relationship management becomes critical to business success, CRM applications are viewed by organizations as a key vehicle to building long-term customer relationships and achieving competitive advantages. They also focus on discussing the role of CRM with respect to e-business, ERP and SCM systems”.

“Reference [16] **have identified that** the effect of investments in ERP, SCM and CRM systems on a firm's long-term stock price performance and profitability measures such as return on assets and return on sales. Their analysis of the financial benefits of these implementations yields mixed results. In the case of ERP systems, we observe some evidence of improvements in profitability but not in stock returns. The results for improvements in profitability are stronger in the case of early adopters of ERP systems. On average, adopters of SCM system experience positive stock returns as well as improvements in profitability. There is no evidence of improvements in stock returns or profitability for firms that have invested in CRM”.

3. PROPOSED RESEARCH MODEL

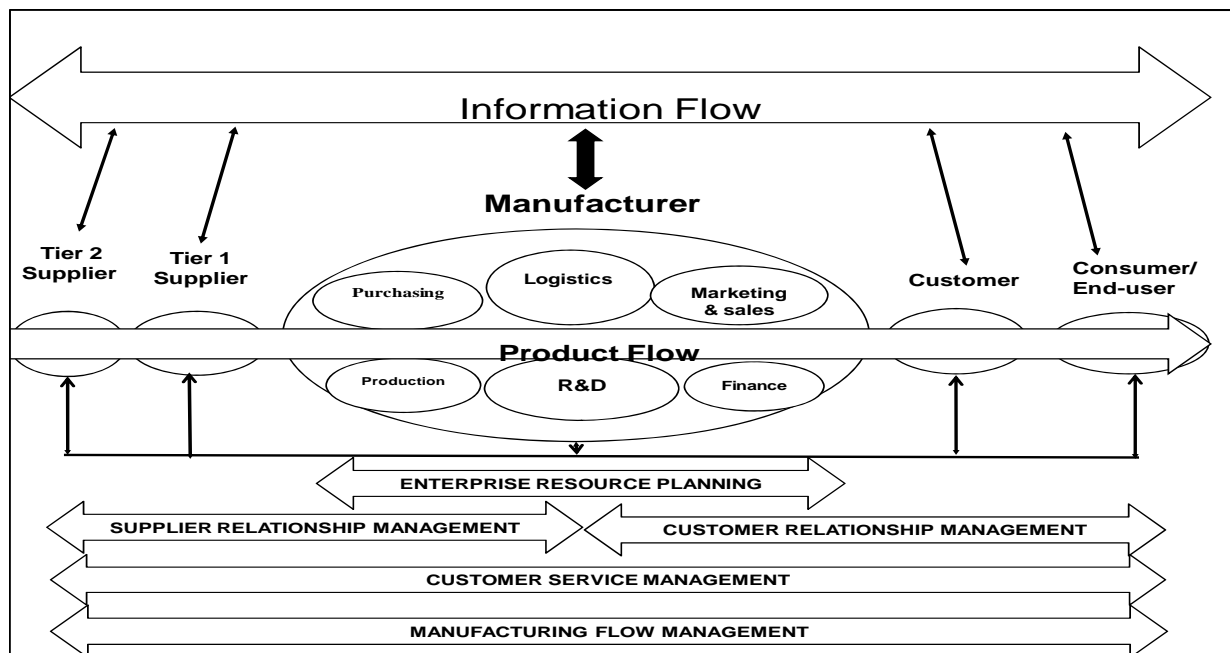


Fig. 1: Proposed model for Integrating Processes Across the Supply Chain

SCM is the integration of key business processes from consumer through primary suppliers that provides products, services, and information that add value for customers. Fig. - 1 shows a simplified supply chain network construction of a manufacturer with two tiers of customers and two tiers of suppliers, the information and product flows, and the SCM processes that must be implemented within firms across the supply chain. All of the processes are with-in firm and between-firm in nature. Successful management of the supply chain requires the involvement of all of the business functions.

A. *Supply Chain Management Processes*

In many major organizations, management has reached the conclusion that optimizing the product flows cannot be accomplished without implementing a process approach to the business. The worth of having standard business processes is that managers from firms across the supply chain can use a common language and can link-up their firm's processes with other members of the supply chain. The supply chain management processes classified into five types and shown in Fig. - 1 are: ERP, CRM, SRM, CSM and MFM.

SCM helps businesses better understand the activities that provide component level material for their finished product. For example, in the retail sector, wholesaler relationships are key, and in the automotive industry, part supplier relationships can affect the manufacturer's ability to build a car on time. By focusing on SCM, firms can improve operational efficiency. SCM seeks to help businesses control costs by uncovering the difficulties in their key relationships with internal suppliers and external vendors.

B. *ERP Systems*

ERP is a business management system that integrates all aspects of the business, including planning, manufacturing, sales and marketing. ERP systems are originated to provide the information needs of manufacturing firms. Over time though, they developed to serve other industries, including financial services, SCM and human resource sector.

Another benefit of ERP systems is that all data of organization is collected once during the initial transaction, stored centrally, and updated in real time. This ensures that all levels of planning are based on the same data and that the resulting plans practically reflect the prevailing operating conditions of the organization. It is very useful tool for supply chain integration with in the organization. Now a days manufactures are using this tools for integrating data with in the organization.

ERP system would consolidate all business operations into a uniform and enterprise-wide system environment. Now a days, with ERP, a manufacturer can successfully in one system control and manage the customer relationship management, manufacturing, supply chain management, financials, project management, human resources, data services and access control.

Implementing an ERP system is a huge task that requires major change in processes and organizational culture. Many industries should not expect external consultants to define business processes for them. Their best people must be assigned to work on the implementation teams. This can be a major challenge, as internal employees are often opposed to to change and prefer to use the legacy systems.

C. *Customer Relationship Management (CRM)*

CRM is not a product, not even a group of products, but a business philosophy that feels upon many independent parts of the enterprise. To speed customer acquisition, increase customer satisfaction and retention, and the company profit, it is necessary to develop a customer centric business model around the three pillars that are Sales, Marketing and Services.

CRM process provides the structure for how the associations with customers will be developed and maintained. Management identifies key customers and customer groups to be targeted as part of the firm's business task. These decisions are made by the leadership team of the enterprise at the strategic level. The objective is to segment customers based on their value over time and increase customer loyalty of target customers by providing customized products and services. Cross- functional customer teams alter product and service agreements to meet the needs of key accounts and for segments of other customers.

Successful management of the customer experience certainly begins with Sales, but includes touch points throughout the order cycle. Manufacturers can improve pre and post-sales processes as well as the entire customer experience by integrating all of these functions. The CRM process provides the structure for how the relationships with customers will be developed and maintained.

CRM is a customer-focused business approach designed to optimize profitability, revenue and customer reliability. CRM gives the most value to customers by integrating their sales, marketing and support efforts. CRM's main objective is to give the entire organization with a complete view of the customer, no matter where the information resides or where the customer touch-point occurs. CRM manages every point of contact with the customer to ensure that each customer gets the best level of service and that no sales opportunities are vanished. By implementing a CRM strategy, an enterprise can improve the business processes and technology solutions around selling, marketing and servicing functions across all customer touch-points.

TABLE 1: LIST OF VARIOUS GOALS AND FUNCTIONS OF CRM

• CRM Goals	• CRM functions
<ul style="list-style-type: none"> • Achieve higher revenues per customer by knowing and serving your customers better. • Increase customer satisfaction and retention by integrating information from multiple channels stored in disparate systems. • Lower costs to acquire and service customers by using technology to automate, manage, and analyze processes and data. 	<ul style="list-style-type: none"> • Lead Management • Sales Process Management • Quote and Order Entry • Contract Management • Order Status • Shipment Tracking • Customer Service • Field Service / Performance Tracking • Returns/Exchanges/Warranty Service

D. Supplier Relationship Management (SRM)

SRM process provides the structure for how relationships with suppliers will be developed and maintained. As the name suggests, this is a parallel image of customer relationship management. Just as a company needs to develop relationships with its customers, it also needs to promote relationships with its suppliers. Secure relationships are developed with a small subset of suppliers based on the value that they provide to the organization over time, and more traditional relationships are maintained with the others. Supplier teams negotiate product and service agreements specify with each key supplier that defines the terms of the relationship. For each segment of less critical suppliers, a standard product and service agreements is provided and it is not negotiable. Supplier relationship management is about defining and managing these products and service agreements specifies.

By opposition to CRM, SRM's goal is to help the company to be a better purchaser by supporting and developing its understanding of suppliers. Some services can help the supplier directly or support its relationship with its own suppliers. Therefore, a SRM solution, at its first stage, doesn't need integration with the outside. To develop the supplier equity of the company, it needs to collect all internal departments like sales, marketing, product development, production and procurement. This becomes especially true in a very competitive market where suppliers are often changed and information is difficult to keep updated.

TABLE 2: LIST OF VARIOUS GOALS AND COMPETITIVE ADVANTAGES OF SRM

• SRM Goals	• Competitive Advantages of SRM
<ul style="list-style-type: none"> • Attract new economical suppliers where goods can be produced anywhere around the world, finding the best supplier is becoming a complex task. • Acquire new suppliers by doing dealing with them. • Suppliers development and retention: retaining the best suppliers is the best assurance to maintain a competitive edge. 	<ul style="list-style-type: none"> • Increase satisfaction of goods and services purchased and speed up product development by promoting a mutual knowledge of suppliers and alternative technologies. • Increase supplier's satisfaction to attract and retain in most competitive ways. • Lower prices for purchase and maintenance of goods and services by enhancing business processes across the supply chain.

E. Customer Service Management (CSM)

CSM is the supply chain management process that deals with the administration of the product and service agreements developed by customer teams as part of the CRM process. Customer service managers monitor the product and service agreements and proactively intervene on the customer's behalf if there is going to be a problem delivering on promises that have been made. The goal is to solve problems before they influence the customer. Customer service managers will interface with other process teams to ensure that promises made in the product and service agreements specifies are delivered as planned.

The emerging markets force service providers to think in terms of services, quality of service parameters and service level agreements, when talking to customers rather than of network devices or end systems. Consequently, network and system management platforms have become an indispensable prerequisite for service provisioning, but, as a sole means, are no longer sufficient: The paradigm-shift towards service management forces the installation of service management facilities that allow for the monitoring and controlling of quality of service parameters and service level agreements. CSM enables customers to monitor and control up to date, meaningful and adequate information about customer and service specific quality of service parameters and offers a competitive advantage to providers.

The information provided has to be important, up-to-date and adequate. Thus it has to reflect the service level agreements and the quality of service parameter that have been negotiated. The information has to be useful especially in situations where problems and/or failures affect the quality of the service. In this case, the CSM service must help to detect the source of the problem disregarding organizational and management domains as well

as areas of responsibilities. The information has to be presented by means of adequate visualization techniques, and it must be possible to integrate the information into the management platforms of the customer.

F. Manufacturing Flow Management (MFM)

Manufacturing flow management is the supply chain management process that includes all activities necessary to obtain, execute and manage manufacturing flexibility in the supply chain and to move products into, through and out of the plants. Manufacturing flexibility imitates the ability to make a wide range of products in a timely manner at the lowest possible cost. To achieve the desired level of manufacturing flexibility, planning and execution must extend beyond the walls of the manufacturer to other channel members of the supply chain.

This part of the system facilitates the manufacturer to reduce material, inventory and labor costs through demand-driven procurement, lean scheduling opportunities and increased real-time visibility throughout the production cycle. Typical MFM processes are shown in fig.-2. As the core of the enterprise, an integrated MFM can provide real-time visibility and enhance strategic and tactical decision making.

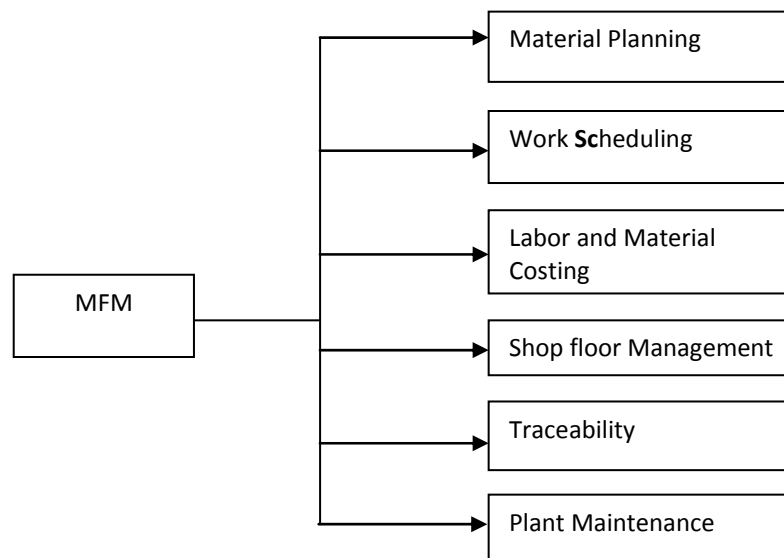


Fig. 2: Typical MFM Processes

4. CONCLUSION

This research has led to the conclusion that “the structure of activities within and between organizations is a critical cornerstone of creating better supply chain performance”. In this research, executives believed that competitiveness and profitability could increase if key internal activities and business processes are linked and managed across multiple companies. Thus successful organization requires a change from managing individual functions to integrating activities into supply chain management processes. Executives are becoming aware of the emerging paradigm of internet work competition, and that the successful integration of the supply chain management processes across members of the supply chain will determine the ultimate success of the single enterprise.

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