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Information Technology in Supply Chain Management

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Abstract: Supply Chain Management can be defined as the management of flow of products and services, which begins from the origin of products and ends at the product's consumption. It also comprises movement and storage of raw materials that are involved in work in progress, inventory and fully furnished goods. The main objective of supply chain management is to monitor and relate production, distribution, and shipment of products and services. This can be done by companies with a very good and tight hold over internal inventories, production, distribution, internal productions and sales. Today, supply chain management, is one of the most important usable ways by modern companies to earn competitive benefit. Information technology has had very important effect on its development. Also, supply chain, is one of the management substructure bases in electronic business. Supply chain management basically merges the supply and demand management. It uses different strategies and approaches to view the entire chain and work efficiently at each and every step involved in the chain. Every unit that participates in the process must aim to minimize the costs and help the companies to improve their long term performance, while also creating value for its stakeholders and customers. This process can also minimize the rates by eradicating the unnecessary expenses, movements and handling. Since supply chains may be long, complicated and including a lot of foreigner, partners are faced with problems that carelessness to them will cause dissatisfaction of customers and losing sale. This management widely is supported by information technology. After a brief discussion on different parts of supply chain management, this paper tries to turn existing problems in this chain and presents a classification of the different ways in which companies use IT in SCM (Supply Chain Management) and usage of information technology in it.

Keywords: Supply Chain Management, movement and storage of raw materials that are involved in work in progress, inventory and fully furnished goods**,** IT in SCM (Supply Chain Management), minimize the costs and help the companies to improve their long-term performance, the unnecessary expenses, movements and handling.

I. INTRODUCTION

In our previous paper we had made a case study of Six Sigma processes. Six Sigma is a quality-control methodology developed in 1986 by Motorola, Inc. The method uses a data-driven review to limit mistakes or defects in and process. Six Sigma emphasizes cycle-time improvement while at the same time reducing manufacturing defects to a level of not more than 3.4 occurrences per million units or events. In other words, the system is a method to work faster with fewer mistakes. True believers and practitioners in the Six Sigma method follow an approach called DMAIC which stands for **D**efine, **M**easure, **A**nalyse, **I**mprove and **C**ontrol.

It is a statistically driven methodology that companies implement as a mental framework for business process improvement. The ideology behind DMAIC is that a business may solve any seemingly unsolvable problem by following the DMAIC steps. [3] [4] In this paper we stress on the supply chain management system using IT. With developing information technology and economic competitions merely limit among companies. But in today world competition is between sets of companies and their supply chain [1].

This is supply management that directly determines whether company can obtain it, with new definition of competitive benefit in today world or not. It means that achievement to such benefit is directly related to harmony among all various parts of supply chain and source solidarity. Also, harmony among all various parts of supply chain, such as usage of source completely depends on information interchange. Without existence of information technology, the manager of supply chain cannot be successful just with reliance on his/her information. On the other hand, by computerizing of supply chain, competition in this arena get more intensive and information technology in supply chain earn become a matter of importance.

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II. ADVANTAGES OF SCM

1. Develops better customer relationship and service.
2. Creates better delivery mechanisms for products and services in demand with minimum delay.
3. Improvises productivity and business functions.
4. Minimizes warehouse and transportation costs.
5. Minimizes direct and indirect costs.
6. Assists in achieving shipping of right products to the right place at the right time.
7. Enhances inventory management, supporting the successful execution of just-in time stock models.
8. Assists companies in adapting to the challenges of globalization, economic upheaval, expanding consumer expectations, and related differences.
9. Assists companies in minimizing waste, driving out costs, and achieving efficiencies throughout the supply chain process.

III. EXISTING OBSTACLES IN SCM

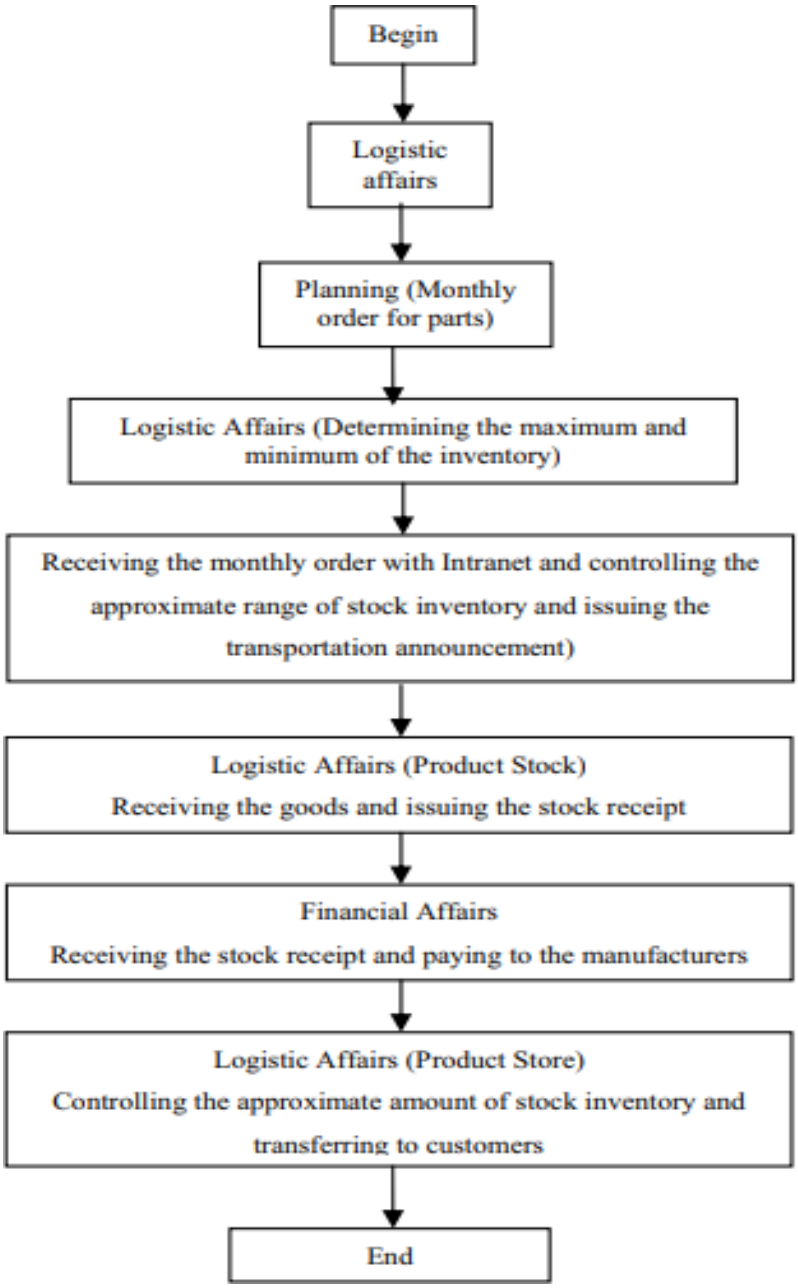

Figure 1 shows the order procedure.

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The extension of markets and products has considerably increased competitions among companies. Today, such competition causes aggravating this matter, because its efficiency and effectiveness is vital and important factor to obtain organizations competitive benefit. For becoming successful in this way, companies had to learn new concepts and also overcome the existing obstacles. Among these obstacles can point to the Bullwhip effect. The Bullwhip effect is applied to irregular changes in orders during supply chain. For the first time, this effect was seen and recognized by Procter & Gamble related to one of their products. In this concept however real sale in stores was relatively fixed and anticipatable but wholesaler and suppliers orders had sever fluctuations for manufacturer and followed productive production inventory problems. One research shows that distributors orders had irregular changes for the reason that demand poor anticipation, lack of harmony and confidence among supply chain partners, because every separate nature perform inventory orders and decision during supply chain with one view to its benefits upward of supply chain which result anticipations amount increased toward upward of chain and also additional inventories in all supply chain sections. In fact, more approach from beginning of chain (customer) to the ending of it (primary producer), demand changes effect get more and more and face to a kind of demand alteration and this act like a kind of Bullwhip which can have great affect [2]. Generally, 4 factors cause Bullwhip including demand according to the past events regardless of the present and future needs, storing orders, fluctuation in price and operation motives. Many of problem that exist in supply chain cause to become limited of its activities which is solved by information technology [2]. Information technology support from supply chain and systems integration is suitable solution for solving existing problems.

IV. IT IN SOLVING THE PROBLEM

Before 60s decade, information process among various levels was like sheet and was using from computer in this ground. In previous, companies were using from process establishment on the side of manufacturer to consumer to generate capital. Then processes and various communications were continuing to every two sides reach winning-winning transaction. Only when information technology creates and enters in supply chain this situation was changed. The most important of its effect was that allow supervising on supply chain completely effective. The usages of information technology are discussed as: Supply Chain Software Groups- For maintenance and development of information technology usage, an organization needs to have ware and software. The hard ware includes computer making output and input tools. While software include total of system and usage of programs such as decision soft ware use in supply chain and can be classified on the basis of various forms. Three kinds of software system can be imagined in supply chain, on the basis of part of chain: [2]

1- The software regarding ERP sources.
2- The software regarding OPT optimization. 3- The software regarding SCM management.

According to another kind of divisions, all informational systems use technology which has three main outputs:

1- Collecting data and communication.
2- Storing and recovering data.
3- Processing data and reporting various informational systems can involve different combinations from these abilities which are needed with due attention to kind of activity and are designed on the basis of it.

Figure 1 shows the order procedure with the aid of Information Technology. The steps involved are [5] [6]

- Planning
- Determining the maximum and minimum of the inventory
- Receiving order through internet
- Issuing the stock receipt
- Receiving the stock receipts and paying to the manufacturers
- Controlling stock and measurement

V. CONCLUSION

The benefits as the result of using information technology in supply chain are too much which some of them are pointed above. Furthermore, because of using information technology is directly in communication with changing process, many of its benefit have overlapping to each other. Therefore, the distinguishing source of these benefits is very difficult. With passing time, information technology easily converts to automatic force which produces high efficiency. Consequently, for using of information technology strategies is very important to attend to necessary time for changing. Today, supply chain management is propounded as one of the important factors in propounded companies. Attention to this factor can

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be effective in taking the lead companies from competitors and their success. The important factor in supply chain management is their information and management. The information technology can help in this connection. With use of this technology, remarkable progresses do in all parts of supply chain. In addition to accomplished operations facilitating in supply chain, use of information technology can remove many of problems which exist in this connection.

VI. LOGISTICS IN SCM (FUTURE CONSIDERATIONS)

Logistics is a part of SCM and with improved and fast Logistic Management Systems higher yield and profit can be achieved with lesser working capital. The role of logistics and considerations for improvement in SCM is mentioned below:

1. Minimization of enterprise expenses. The main role of logistics in supply chain management is primarily to increase the overall value of each delivery, which is identified by customer satisfaction. This means that the reduction and optimization of labour resources must be tied in with keeping up a certain level of quality customer service. This problem is solved both by reducing the total labor resources (primarily by eliminating unnecessary chain links), and by introducing automation solutions;
2. Consolidation of traffic volumes. Transportation costs are one of the largest expense categories in logistics management. In general, transportation costs increase depending on the distance, batch size, and product exposure to damage. On the other hand, the transportation cost per unit of weight decreases as the lot size increases on long runs. Thus, the maximum consolidation of transportation volumes can help reduce transportation costs. Enlargement can be achieved by combining small lots into a single large one, intended for a long run (i.e., for a longer distance);
3. Improving the quality of service. With regard to the quality of service, it is largely influenced by the speed of delivery of the goods to the end-user, as well as its transportation in proper conditions (for example, many products today are supplied with RFID tags so that both the manufacturer and the end customer could track whether all storage conditions are being observed during the transportation of the goods) and within the allowed time limits (this refers primarily to perishable goods);
4. Reduction of actual losses and reduction of possible risks. As you know, a business is profitable if the value it creates exceeds the costs associated with the implementation of activities. To achieve a competitive advantage, a company must either carry out these activities at lower costs or carry them out in a way that will lead to differentiation and price increment. The first thing to be done to effectively solve this problem is reducing the losses that are associated with the return of goods. It is very important to plan not only the routes on the way to the distributor or the end-user but also the routes by which the goods are delivered back to the warehouse or to the establishments for their disposal. The second factor affecting risk reduction is the correct planning of enterprise resources, which minimizes the likelihood of damage or loss of goods or manufacturing components on the way from the extraction of raw materials to delivery of the finished product/service to the end-user;
5. Minimization of the need for intermediary services. Intermediary services (transportation, storage, marketing, recycling, etc.) take up the lion's share of the cost of the implementation of supply chains. Experienced logisticians plan routes so as to minimize the need for involving third-party services for efficient logistics management;
6. Supporting goods with the necessary documentation. Insurance and support of documentation are two fundamental tasks of logistics, solving which helps to eliminate any problems associated with legal restrictions in the storage, transportation, and marketing of goods;
7. Timely response to changing market demands. Advanced logistics scenarios also help to quickly adapt to changing market requirements and, thereby, maintain top positions against the backdrop of competitors and remain in demand for the target audience.

VII. FUTURE ENHANCEMENTS

Now that the ordered shipment is over, what is the next step? The post sales service in supply chain tends to be an increasingly essential factor as businesses offer solution instead of products. The post sales services comprise selling spare parts, installing upgrades, performing inspection, maintenance and repairs, offering training and education and consulting. Presently, with the growing demands of the clients, a high volume of after sales service proves to be a profitable business. Here, the services are basically heterogeneous and the value-added services are different from those provided prior to sales service. Software solutions can assist in speeding up the returns management by supporting user profiles and workflows that state supply chain partners and processes, by labelling and documentation that tracks the material along with the web-based portals and by exception-based reporting to deliver information for timely reconciliation. These characteristics, when executed with the three pillars mentioned above, support a reliable and predictable returns process to count value across the company.

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REFERENCES

[1] Bazerman, M.H. "Conducting Influential Research: The Need for Prescriptive Implications," 2005.
[2] S.E. Fawcett, G.M. Magnan and M.W. McCarter. "Information Sharing in Supply Chain Management: A Two Dimensional Perspective," Working paper, University of Illinois Urbana-Champaign, 2005.
[3] T. Bendell, A review and comparison of Six Sigma and the lean organizations. TQM Mag. 18, 255 (2006)
[4] G. Byrne, Ensuring optimal success with Six Sigma implementations. J. Organ. Excell. 22, 43 (2003)
[5] H.J. Harrington, Poor-Quality Cost (CRC, Boca Raton, 1987)
[6] H. Ali et al., Classical model based analysis of cost of poor quality in a manufacturing organization. Afr. J. Bus. Manag. 6(2), 670– 680 (2012)