INFORMATION TECHNOLOGY IN SUPPLY CHAIN MANGAMENT

Deven Girase[*1], Ashish Lohidas[*2], Prof. Vaishali Shah[*3]

[*1,2]Student, MBA-Operations (4th Semester) Faculty Of Management Studies,

Parul University, Gujarat, India.

[*3]Guide, Parul Institute Of Management & Research, Parul University, Gujarat, India.

ABSTRACT

In today's fastest growing world, in order to survive and beat competitors, one has to deal with information technology and keep it up-to-date. A huge advantage in IT is already happening in all industries including changes in logistics and supply chain. Rapid data transfer is the result of IT in supply chain management, leading to increased collaboration. IT helps restructure the entire distribution setup to achieve higher levels of service and lower inventory and lower supply chain costs. Globalization and reduction of trade barriers have really boosted up the growth of Logistics industry. In addition to that, the advancement of technology in transaction, communication and product development has been beneficial for the market. The use of e-commerce and GPS has helped the companies to improve upon their outreach.However, the companies should be weary of the regulations of the state in which they are operating. These policies are led by the government to protect the domestic businesses which might be an obstruction in the growth of the international market.

I.   INTRODUCTION

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➢ **Electronic Records Management**

Paperless business transactions through enterprise resource planning (ERP), automatic identification (Auto ID), and electronic data interchange (EDI) systems are collectively known as electronic records management (ERM). The goal of ERM implementation in SCM is to ensure accountability for process flow, which is fruitful for reducing cybercrime risks (e-risks) that arise during electronic communication.

➢ **Barcode and scanner**

Barcodes consist of a ladder orientation (line widths in horizontal order) or picket fence orientation (line widths in vertical order) where data is stored in magnetic or optical form as part of a communication system. Information Technology in Supply Chain Management 37 organizations use it in supply chain networks to automate the tracing and tracking of products and services in each process flow. It also provides the necessary accuracy and timeliness of information, which is useful for reducing errors (Ellrametal.,1999) because it is a representation of a number or code in a machine-readable form. A bullwhip effect commonly experienced by the consumer goods industry, leading to tremendous inefficiencies such as overinvestment in inventory, poor customer service, lost revenue, misguided capacity plans, inefficient transportation, and missed production schedules, where barcodes and scanners were developed and used in parts of the supply chain to eliminate inaccuracies. Wal-Mart achieved a significant result by introducing this technology to its sales and distribution data in 1983 and later in 1987 by implementing satellite communications for real-time inventory data. This enables FedEx to provide its customers with detailed real-time tracking information. This is commonly used to identify products, speed up data entry, increase data accuracy, minimize inventory, improve customer service, reduce product recalls, verify orders upon receipt and shipment, reduce in-process downtime, monitor and manage business. floor activity, improves shop floor layout, optimizes floor space, improves product yield/reduces rejects, attendance records, ATM cards, debit and credit cards in banking organizations. Barcoding helps us reduce supply chain risk that accrues due to manual oversight or fraudulent data entry by insiders. Duplication of barcodes in the process generates risks that can be eliminated by applying biometric authenticity and authorization. However, there is a risk of data manipulation which is done by unauthorized data modifications before or adding fraudulent data during entry or changing/omission of required input data or incorrect transaction posting, making changes or additions to master file records, partial transaction posting, destruction of output and substitution of forged the output or recording of a virus that alters data, a program,

database or application, the exchange of valid disks and tapes with modified substitutes into a computer or computer system by anyone involved in the process of creating, recording, encoding, examining, reviewing, converting and transmitting data to computers.

➢ **Enterprise Resource Planning (ERP) systems (e.g. SAP, Oracle, PeopleSoft)**

Enterprise Resource Planning (ERP) is an organizational planning system that works around the core activities of a business and has all the logical interfaces to achieve a seamless flow of information through an entity in a supply chain context, often linked to external systems. It is not a 'system but a framework that includes administrative (finance, accounting), human resources (payroll, benefits) and manufacturing resource planning (MRP) (procurement, production planning) and is a common term for co-operation software, which manages and coordinates a large part of a company's resources, assets and activities (Boyle, 2004), an ERP system is a business information system designed to integrate and optimize business processes and transactions in a corporation (Moon, 2007). ERP systems help organizations automate and integrate their supply chain and business management. Basically, they enable hands-free data collection for the entire enterprise into a single software package from raw materials to customers with the entire flow of information. Benefits that ERP systems could bring include cost reduction in internal operations, increased supply chain efficiency, better customer service, and network relationships (Davenport & Brooks, 2004). The development and pervasive use of ERP systems provides the critical infrastructure necessary to effectively evolve the assurance function from a recurring event to an ongoing process through the integration of continuous audit applications (Kuhn et al., 2010). ERP development has taken continuous improvement for integration and planning with creative thinking. The ERP milestones are: ⬜ Material Requirements Planning (MRP) 1960s Material Requirements Planning (MRP) is a computerized production and inventory control system whose inputs are bills of materials (BOM), master items, requirements, and outputs are master production plans (MPS). It plays an important role in manufacturing organizations. It is the heart of MRPII (Manufacturing Resource Planning). ⬜ Closed Loop MRP 1970s In the changing conditions of the manufacturing environment, priority planning and capacity planning were tied to MRP to adjust to variations in demand and supply using feedback from tactical plans and execution levels. This closed structure is called closed loop MRP. ⬜ 1980s Manufacturing Resource Planning (MRP II) Manufacturing Resource Planning (MRP-II) is a production planning system that converts master production plans (MPS) into planned order releases. In MRP, MPS is considered as input information, but in MRP II, MPS would be considered as part of the system and considered as a decision variable. ⬜ New generation ERP In the new generation ERP, the entire concept of supply chain management is incorporated, which extends the planning concept to business partners, where full visibility is possible within the entire enterprise and the virtual enterprise concept is supported by e-commerce. This will have implications in terms of Just in Time (JIT), Business Process Reengineering (BPR), changes in organizational structure, people and change management. The issue of security within ERP is a challenge for every organization. IBM designs various controls within ERP for any organization as shown in Fig. 1. Fig. 1: Source IBM Global Business Services SAP, Oracle, Baan and People Soft are market players in a suite of ERP systems with a high level of integration. leveraging a single data model, creating a common understanding of what shared data is, and creating a set of data access rules. These ERP packages play a vital role.

➢ **e- Procurement**

E-procurement is expected to be integrated into the wider purchase and payment (P2P) value chain with a trend towards computerized supply chain management. E-Procurement is performed using a software application that includes vendor management and end-to-end auction functions with a value chain consisting of Indent Management, e-Tendering, e-Auctioning, Vendor Management, 40 Journal of Supply Chain Management Systems Volume 3 Issue 3 July 2014 Catalog management and contract management. Forms of e-procurement are web-based ERP (Enterprise Resource Planning): creating and approving purchase requisitions, entering purchase orders and receiving goods and services using a software system based on Internet technology; e-MRO (maintenance, repair and overhaul): same as web-based ERP except that the goods and services ordered are non-product MRO supplies; e-sourcing: identification of new suppliers for a specific category of purchase requirements using Internet technology; e-tendering: sending requests for information and prices to suppliers and receiving supplier responses using Internet technology; e-reverse auction: using Internet technology to

purchase goods and services from a number of known or unknown suppliers; and electronic information: the collection and distribution of purchasing information from and to both internal and external parties using Internet technology. In 1998, Intel launched a global online ordering system that achieved a record $1 billion in product orders in its first month of operation. Today, Intel generates more than 85 percent of its revenue from online orders, and virtually all of Intel's customers do business with Intel over the Internet. Intel is aggressively moving toward paperless purchase orders, shipment notification, and deployment processes.

➢ **Electronic commerce (e-commerce)**

Electronic commerce (e-commerce) means tools and techniques for managing business in a paperless environment. Electronic commerce includes electronic data interchange (EDI), e-mail, electronic funds transfers, electronic publishing, image processing, electronic bulletin boards, shared databases, and magnetic/optical data capture (such as barcodes), the Internet, and websites in the form of B2B (Business to Business) like Covenant, B2C (Business to Customer) like Amazon.com, Wal-mart.com, C2B (Customer to Business) like priceline.com, C2C (Customer to Customer) like e-Bay auction, P2P (Peer to Peer) and Mobile, or m-Commerce. In 1995, Intel created the Internet Marketing and E-Commerce Group (IM&E) to centralize online marketing efforts. In 2013, Filpkart became a net Rs. 1200 crores in the single largest funding for an e-commerce company in India. Therefore, it plays a major role for integrated supply chain management (SCM) and changing business dynamics by following

➢ **Distribution Requirements Planning (DRP)**

Distribution Requirements Planning (DRP) is a management process that provides a link between warehouse operations (store, distribution center, or warehouse that carries product for sale) and transportation requirements, ensuring that sources of supply (third-party supplier, regional distribution point , or factory), which are able to satisfy the demand. DRP applies time logic to replenishment in multi-function warehouse systems. DRP-II expands DRP to include planning of key resources in the distribution system – warehouse space, workforce levels, transportation capacity and financial flows.

II.   OBJECTIVE OF STUDY

The aim of the study is to understand how IT streamlines and streamlines logistics and supply chain processes. Computer information systems are used to collect information, process it, and streamline and streamline the management process. IT has helped harness information and use it to coordinate the various stages of transportation and supply chain management, making the process much more efficient. The paper information system, which is much slower and inefficient, is being replaced by IT in logistics Supply chain management is an art and science that focuses on how your business acquires the raw materials it needs to create a product or service, manufactures that product or service, and delivers it to customers. The primary goal of SCM is to keep the business running and ultimately lead it to success. Other SCM goals include improving efficiency and quality, reducing costs, optimizing delivery and distribution, and providing the best possible experience for your customers. In fact, supply chain management is the backbone of any business.as we accept the future IT gadgets in SCM have made a huge impact on effective on cost and decision making.

III.   RESEARCH METHODOLOGY

As my research methodology depends on the research papers I referred and took an example of IT in logistics to explain all the process that I have gathered from the research papers. The data and the methods are descriptive as if all the data were available on the internet and the research papers.

Research Design

1. Considering the aim of my Project
2. Choosing the Type of research design (Descriptive method) (Primary & Secondary data)
3. Choosing the Data collection Method which are collected from the Research papers and articles & Questioner.
4. Keying out all the data mentioned on various research paper and articles and also the official websites of the company
5. And preparing the outline of the Project

6. Preparing the project

Sources of Data:

There two sources of data

A. Primary data: In my research I have use primary data has obtain through Questioner filled out by employee's working in supply chain and through google form.

B. Secondary data:

1. Collection of Journals
2. Going through different articles and News
3. The surveys of the companies work
4. And Hypothesis paper created by different authors
5. The data present on the internet.

Sample and Sampling Design

- The descriptive research design is adopted for the sampling.
- Sampling Method: Non-probability sampling
- Sampling Unit: Employees of different companies working in supply chain.
- Sampling Technique: Simple random sampling
- Sampling Size: 100 Respondents.

IV.   FINDINGS

- The survey we have taken in that, Most of the employees work in Retail industry, Cement industry, Packaging and Pharmaceuticals, remaining are from other industry.
- The companies started using the IT in their supply chain mostly from 2013 and thise may increase in 2015 and highest growth came in 2019.
- The most of the companies using
- ✓ Epicore Kinetic :59%
- ✓ Oracle : 55%
- ✓ SAP : 38%
- ✓ These 3 software for their supply chain management.
- The IT in supply vhain management help with, Increase control over production, Enhance inventory management, and help in efficient tracking and delivery system.
- The above graph shows that all the response are saying that IT helps to conduct business smoothly.
- The above graph shows that all the response are saying that IT creates an positive impact on supply chain.
- The major responses says that IT help in reducing the cost.
- Considering the highest responses we can say that   helps to increase productivity.
- Considering the highest responses we can say that IT helps in decision making.
- By considering highest response we can say that IT has future scope in supply chain management.

V.   CONCLUSION

This research report aims to the study to understand how IT streamlines and streamlines logistics and supply chain processes. Computer information systems are used to collect information, process it, and streamline and streamline the management process. IT has helped harness information and use it to coordinate the various stages of transportation and supply chain management, making the process much more efficient. The paper information system, which is much slower and inefficient, is being replaced by IT in logistics Supply chain management is an art and science that focuses on how your business acquires the raw materials it needs to create a product or service, manufactures that product or service, and delivers it to customers. The analysis was done based on information collected in the form of questioner from the employees.

- All companies are using IT software and tools for supply chain management.
- The IT increase the productivity and also helping in reducing the cost.
- IT helps to track delivery.
- Communication becomes more streamlined, thus simplifying management functions.

- Glitches can be recognized easily and solutions can be devised and implemented.
- IT magnifies the control of the customer over the shipping process, thus increasing customer satisfaction.
- Data collected by IT can be analysed to improve service and also to predict trends and fluctuations.

VI. REFERENCES

Research papers / Articles

[1] Importance Of Information Technology For Effective Supply Chain Management by Prof. Himanshu S. Moharana, DR. J. S. Murty, DR. S. K. Senapati, Prof. K. Khuntia.

[2] Information Technology In Supply Chain Management by T. N. Varma & D. A. Khan..

[3] Big Data Analytics In Logistics And Supply Chain Management: Certain Investigations For Research And Applications by Gang Wanga, Angappa Gunasekarana, Eric WT Ngaib, Thanos Papadopoulosc.

[4] An Integrated View On The Future Of Logistics And Information Technology by Paul Grefen, Wout Hofman , Remco Dijkman, Albert Veenstra, Sander Peters.

Websites

[5] www.google.com

[6] http://scholar.google.com

[7] www.researchgate.net