Why Logistics and Supply Chain Analytics is known for key of Supply Chain Success

Vijay Kumar Paswan[1]

M.tech Student, Department of Industrial Engineering and Management, GITAM UNIVERSITY, Visakhapatanam, Andhra Pradesh, India[1]

ABSTRACT: Supply Chain Management is a large field dealing with the movement of product from raw to final state involving the partnership of various nodes coming in between i.e, from Supplier to Customer and creating different cycles during this period. Supply chain management needs proper logistics and supply chain analytics to complete those cycles successfully. Therefore, the two main sectors of the supply chain are to deliver the commodity to the customer at the least cost and in a short period of time, and the other is to evaluate Supply Chain Management data for the enhancement of current and future production through logistics and supply chain analytics. Hence an organization cannot loose customers so for positive image of the organization all the factors are taken into consideration in a optimized manner.

KEYWORDS: Logistics, Supply Chain Analytics, Supply Chain Management, Supply Chain Success

I.   INTRODUCTION

With new ideas and innovations technology is advancing day by day, which can be applied to get profits by anyone, but when its comes to applying it for a firm or organization many important factors are taken into account in the supply chain field so that consumers are satisfied and the company also faces minimal losses. Two main systems, i.e. Logistics and Supply Chain Analytics, are applied for the proper development of the business and the effective Supply Chain Management system. The planning and plotting of the organization and execution of all processes in a perfect order and manner is the first important aspect in any organization and after completion of the process, studying the outcomes of processes to improve the future supply chain techniques.

Logistics takes care of all the organization's management part like flow of information, Packaging, Material Handling, Transportation, Inventory Managment, Warehousing, and Security. Whereas Supply Chain Analytics handles the datas that we get from different levels of management who are working in an organization like Operational, Tactical and Top level, these datas which we get from Past and Present and use it for the improvement of Future processes and for the overall performance that can reduce the cost and improve the service levels and which leads to good Decision making for an organization.

II.   ROLE OF LOGISTICS IN THE ORGANISATION

During the late 1940s the complexity, working environment and impact of logistics grew very rapidly. At that time Military was the only agency that used logistics in the 1950s, and 60s. It was a saying in the 1950s and 60s that those with strong logistics ideas would improve their chances of winning. Then after this time the scope of logictics increased beyond the army. Logistics was recognized as the important tool for devlopment of an organisation.

Logistics provides an platform with a mechanism to deliver the desired goods to the consumer as effectively as possible without any losses to the business.

As time went by the Logistics sector became the reason for the company's rise in mass production. In early days Production processes and distribution processes are used to operate in a sequential order here the logistics aim was to ensure the availability of all the materials required to continue for the processes listed. Logistics also provides a smooth functioning area for every involved process. Logistics is referred as the system approach. It always works with various supply chain nodes providing the appropriate environment for organizational ease. And eventually make an optimal route for supply chain nodes to deliver the finished product to customers in order to meet their demand and get good feedback for the organization. Coordinations between departments are required for the proper flow organization. In earliest times suppliers' works in distribution sectors were seen to spread activities in allover the structure , resulting overlapping and colliding in activities. But every

organization, nowadays, operates according to logistics. Logictics helps the company work in a structured and formal way. (Rawkery, 2018)

III. THE DISTINCT ROLES OF LOGISTICS

1.   Processing of Order: One of the most critical and initial phases in logistics that basically deals with the transfer of information from the end of the customer to the suppliers that requires the paperwork and plenty of time. Many of the steps involved in order processing are terms and conditions, product quantity, distribution procedures, inventory testing, stock quality, storage details and location, and schedule production.

2.   Inventory Management and Inventory Planning: Inventory is the main commodity in logistics and supply chain. With proper inventory management , an organization can achieve the optimal inventory level, its market use, the need for that inventory in the market, and data to manage future use inventory.

3.   Goods Warehousing: Warehousing offers a place to store the goods until they are shipped to customers. This stage is also the critical stage, because if there is inappropriate management in the warehouse or any disturbing factors will cause the host many problems.

4.   Transportation: In this stage there is physical movement of the finished goods. Goods are transported with the aid of different modes of transport as can be by air , water, road etc.

5.   Packaging of Goods: Packaging of the items is performed on the goods for publicity and protection. Packing also affects product effectiveness.

IV. THREE MAIN PHASES OF LOGISTICS

1.   Inbound Logistics: These are the transportation operations that involve the movement of raw materials and other components required for the processes of production. Inbound Logistics also assists in the flow of information between nodes such as supply chain information, warehousing, etc.

2.   Process Logistics: Process Logistics is responsible for the production and activities involved in the manufacturing region. Process Logistics takes care of all things such as moving the raw materials, processing, storaging etc.

3.   Outbound Logistics: The outbound process begins with the order of the consumer, then the ordered product moves from various segments untill it reaches to the consumer.

V. FUTURE OF LOGISTICS

Each and every organisation adapts the best optimized methods to increase profits after evoluation in any process. Adapting common methods in every company competition is also increasing day by day, now profits are based only on customer feedback, which makes it very difficult for the company on the market to manage and survive. Because of this scenario the main centre point of compition shifts to the product and the supply chain process.

Logistics Management in today's time is fully based on systems perspective and expenses needed to perform different operations it can be warehousing, storage of goods, handling materials, inventory management and order management these are the important aspects that are given special care so the company can get the good customer feedback. Managing all these fields increases the level of customer support and also enhances the supply chain operation. Growth in the country depends entirely on the logistics activities. How much time it takes for the Logistics network to transfer the goods from one location to another using various modes of transport. So improving the organizational logistics system can increase the growth of Country in each and every field.

VI. CUSTOMER SATISFACTION AND LOGISTICS

Customers are the only priority in each and every operation within the supply chain networks. In the supply chain the role of customers is to provide the company with appropriate feedback. And at the end of the process the company wants the desired goods to be delivered to the consumer at the least cost and in a very short time. The goods are assembled according to consumer needs. Logistics provides the company with the route to maximize consumer value for its clients.

In today 's period customers are very specific and demanding about their preferred goods even with good quality and higher product longevity. With this in mind , the company seeks to meet the needs and also aims to achieve customer interest, efficiency, responsiveness.In other words, customer support is a blend of different tasks with aid to bring more qualities to the consumer.Customers varying demands are rising day by day, as these companies have to plan for the upcoming competitions and market life. Proper preparation and standardized organizational execution within an company will contribute to ultimate target i.e. customer satisfaction.

The key goal that comes out of offering good offers to consumers is to please clients, and also helps draw more consumers by advertising and various means of communication, leading to corporate growth and improved revenues. (Brown, 2016)

VII.   EFFECTIVE LOGISTICS MANAGEMENT IN SUPPLY CHAIN

Supply Chain performance can be improved with several factors. Efficient logistics management is one of the most important factors that is counted everytime. Good logistics management helps to boost supply chain productivity which can be Automation, Structured Co-ordination, Good Planning, etc. If the orgnsization sees high profits and growth, the company needs to find the numerous ways to streamline processes of logistics planning in order to achieve successful efficiency.

Figure 1: Effective Logistics Management (robertson, 2020)

Some of the important points are explained below covering all the important aspects of effective logistics management in supply chain.

1.   Regular Planning: The first phase in executing or completing the tasks at any operation. Regular planning involves the sourcing of goods, their storage facilities, protection and how to deliver the goods in an exact time and place in effective logistics management.In the supply chain, the supply chain leader will be able to send the whole supply chain flow. The main aim of implementing daily planning in a supply chain is to achieve in a very short time the maximum amount of work. Regular planning, on the other hand, would seek to maximize the organisation 's income.

2.   Adaptation of Automation: Evolution is happening day by day and according to that organizations are also adapting the the Automation facilities. In the field of Automation technology and new innovations plays a very important role to increase and outputs and efficiency of the organization. Within an enterprise the key goal for implementing Automation is to automate the processes. Different forms of high cost and useful tools that can be used to get optimized route for logistics processes are used by that organization.

For instance, the owner can get updates of the products from time to time before it hits the end user. It helps the worker stop various manual work procedures. Applying different technology in a similar manner will help the company improve productivity.

3.   Value Relations: To run any company you need a group of people who are experienced in different fields with experience to do any given job and who are qualified. Such members groups can perform any task assigned to them, and can function as a team. This is a very critical aspect of an organization whether it is the labor of the organizational division or the senior manager, to run an enterprise they need to operate as a team.

4.   Warehouse Management: Logistics is incomplete if their not a warehousing facility in the supply chain system because logistics deals with the enormous amount of goods in each supply chain cycle, the organization also has to hold certain goods in a place for various activities such as packaging, inspection and testing, etc. For all the mentioned activities good needs space and warehousing is also a part of effective logistics system. In addition, the warehousing depends on the type of goods being carried in a supply chain.

5.   Transportation Facility: Supply Chain is basically a network where the raw materials are converted into desired finished products. The transportation sector takes charge of the movement of goods from raw materials to finished products. Transportation can be through Air , Land and Water. The organization selects the best route and cost-effective for the transportation. (PASWAN, 2020)

Transportation in a supply chain also takes care of important factors to identify the best efficient route and the most cost-effective activities during transportation as more revenue can be taken out in the form of income with less input from the organization hand. (sankriyaiimr, 2013)

6.   Measurement and Improvisation: Logistics is a compilation of networks connected to a single supply chain. At the end of each supply chain cycle an organization needs to analyze and measure the specific supply chain so that the organization can obtain the cycle information where they need to work and which section needs to be improved. After obtaining all the information of the cycle organization goes for improvisation. For example, the feedbacks from the customer side can help the organization to improvise. (sankriyaiimr, 2013)

VIII.   WHAT IS SUPPLY CHAIN ANALYTICS ? AND HOW IT IS RELATED TO SUPPLY CHAIN SUCCESS

Supply Chain Analytics is the consistent and organized computational representation of data, similarly analytics of the supply chain provides meaningful observation, representation of the organizations data. Later these data are modified or manipulated for advancing supply chain processes based on the requirements.

The datas which are driven from the supply chain cycle can be converted into the form of charts, graphs or any other means of representation of data. This analytics reveals all the hidden patterns and lagging behind sections of supply chain cycle which is needs improvement.

Supply Chain Analytics also helps the organization to learn the patterns from the past datas to make better decisions for the organization profits. The insights of the organization is divided into 3 main phases which are described below :

 i.   **Data Analytics:** Data Analytics in the process of examining the data using different softwares and informations are drawn out from the analysis of data.

 ii. **Studing the Data:** After analyzing the datas, Data Visualization comes into picture for knowing the trends and patterns and correlations of the data.

iii. **Technology Selection:** In order to increase the organisation's infrastructure, it is necessary to adapt the latest technology available in the market for proper and rapid processing. Technologies which can manage the enormous amount of data perfectly with the data collection , analysis and storage is to be selected as a platform.

IX. TYPES OF ANALYTICS USED IN SUPPLY CHAIN FOR DECISION MAKING

Descriptive
Explains what happened.

Diagnostic
Explains why it happened.

Predictive
Forecasts what might happen.

Prescriptive
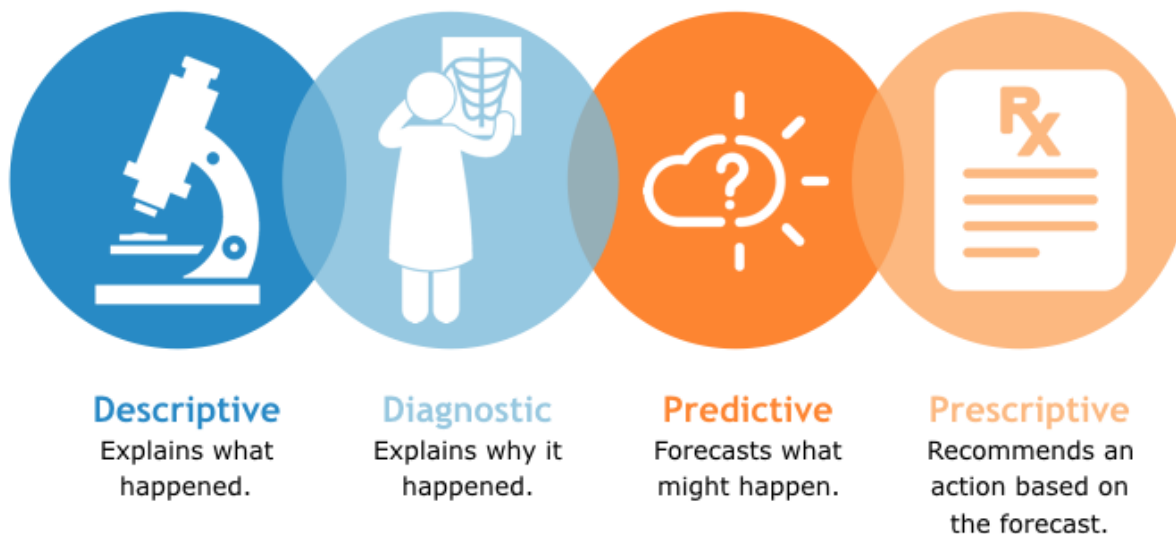Recommends an action based on the forecast.

Figure 2: Types of Analytics (Mehta, 2017)

I. **Descriptive Analytics:** This is the summarized way of representing data using the supply chain's past and present data, and applying the driven data to improve the cycle. Descriptive Analytics also gives a transparent way throughout the supply chain processes which can be the internal or external system for the visibility of the faults occuring in an organization and to rectify it.

II. **Predictive Analytics:** One of the most advanced analytical methods deals with the compiled data taken from the Descriptive Analytics and uses it to predict potential outcomes. It is also called the Forecasting Analytics. These analytics techniques can be used in any field. For example, predicting the natural calamity for a specific region can be known from the past ans present datas.

III. **Prescriptive Analytics:** This analytics discusses the optimal ways by evaluating the data that are used in the supply chain process. This analytics also helps the organization attain maximum market values. Time management and collaboration is also improved by refining the paths within the company by prescriptive analytics.

IV. **Diagonostic Analytics:** It's the type of intensified analytics in which content and data are analyzed to answer some questions, "why did it happen? ". The issues are divided into numerous sectors such as computing data,data processing, data mining, correlations etc. (Bekker, 2017)

X. What do you mean by Good Analytics ?

To gain the profits and maximum insights the analytics accesses the datas from all the sections and stages of supply chain. Valuable information can be taken out from the organization is analysis is done on a single system of the organization. Similarly using analytics we get multiple data sets from multiple systems, so combining these data sets in a single unit is called data blending.

Data Blending is a rapid action method in analytics. Direct extraction of the data is done in this process using multiple data sets. Studing these datas will provide information about the view of the area from which the data is extracted like it will inform the organization about the status of the ongoing progress of a process. This allows the organization to enhance the performance of that particular section of supply chain.Those datas which are useful and helpful for the organization is reffered as the good data and the whole analysis is called as Good Analytics. (hoey, 2018)

XI. STRATEGIC GOALS OF GOOD ANALYTICS IN A SUPPLY CHAIN

The organizations decisions are made according to the top management levels personels. They always look forward for the continuous growth of the organization. The only way to gain profits for the organization is to make some Strategic Goals for different areas in the organization. The strategic decisions are applied on the focused areas of the company that can be R&D, selecting new locations, risk management, accountancy, etc. Some of the most important Strategic Goals for an orgnization are described below:

I. **Growth in Profitability:** If a company wants to increase the profitability, there are many ways to do. The company can go for more sales and decrease the cost of the products to get growth in profit margin. And the other way to grow the profit in a business is to use the proper supply chain analytics without missing any sector of supply chain management.

II. **Acuracy of Forecasting:** Using the analytics and studing the datas the actions can be forecasted like it can be planning, demand in the market, financial support, about customers and shareholders. After selecting the prediction methods for the activities involved in the supply chain the acuracy of the forecasting is evaluated to know how accurate and precise the data are and helpful for the organization.

III. **Working for Capital Growth:** After all the hardwork done by the company at the end the company needs money, money for future use and for personal use. To enhance the capital growth organization plans for the improved cash flow methods which are related to Inventory, Stock, and nodes which are interconnected with eachother and these are the only areas in a supply chain which deals with the huge amount of money. So combining and managing these areas of inventory, sales and stock the orgnization can get good amount of capital.

IV. **Risk Management:** In every business there is risk it can be of anything, it can natural risk or human made risks but the company has to look for the future aspects where the company can avoid the risks. By ignoring all the points which can effect the company as a potential risk, risks can be reduced in the company. Risks and losses can be the cause of downfall for any company, so to avoid these situations proper precautions and preventions has to be made by the company.

XII.　DISCUSSION

So far we have gone through two main topics and how much important it is for Supply Chain success. We have learnt the main aspects of Logistics its phases and the future scope in the market, and how it affects the supply chain cycle. Besides the importance of logistics in supply chain management , supply chain analytics also plays a very important role in optimizing the supply chain cycle with advance resources and technologies.

XIII.　CONCLUSION

This paper analyzes the two key fields critical for the continuous growth of the supply chain of organization and these two sectors are Logistics and Supply Chain Analytics. This paper discusses briefly the importance of analytics in logistics and supply chain. For the effectiveness of an organization's supply chain, products should be properly prepared, processed, protected, and transported, and on the other hand organizations should also work on the manual procedure that analyses the data collected from various activities and analyzes it to know the areas where changes can be made. With the support of manual as well as technological aspects ie. The organisation's logistics and supply chain analytics will note the rapid development in the supply chain and contribute to the supply chain process performance. In future work on logistics , supply chain, and supply chain analytics, the results from this paper will also be of benefited to the researchers.

REFERENCES

[1].　Bekker, A. (2017, July 11). *4 Types of Data Analytics to Improve Decision-Making*. Retrieved July 10, 2020, from SCIENCE SOFT PROFESSIONAL SOFTWARE DEVELOPMENT: https://www.scnsoft.com/blog/4-types-of-data-analytics

[2].　Brown, R. (2016, DECEMBER 07). *Customer Satisfaction Begins and Ends with Your Supply Chain*. Retrieved JUNE 29, 2020, from MH&L - MATERIAL HANDLING AND LOGISTICS: https://www.mhlnews.com/global-supply-chain/article/22052586/customer-satisfaction-begins-and-ends-with-your-supply-chain

[3].　hoey, b. (2018, november 6). *5 key benefits of suppply chain analytics*. Retrieved june 30, 2020, from flexis: https://blog.flexis.com/5-key-benefits-of-supply-chain-analytics

[4].　Mehta, A. (2017, October 13). *FOUR TYPES OF BUSINESS ANALYTICS TO KNOW*. Retrieved July 11, 2020, from Analytics Insight: https://www.analyticsinsight.net/four-types-of-business-analytics-to-know/

[5].　PASWAN, V. K. (2020). PRODUCTIVE IMPLEMENTATION OF SUPPLY CHAIN MANAGEMENT WITH TOTAL QUALITY MANAGEMENT. *International Journal of Innovative Research in Science, Engineering and Technology* , 4684-4689.

[6].　Rawkery. (2018, June 28). *Role of Logistics in Supply Chain Management | Rawkery Insights*. Retrieved june 12, 2020, from MEDIUM: https://medium.com/@rawkerysocial/role-of-logistics-in-supply-chain-management-10d6d895bfcc

[7].　robertson, s. (2020, January 13). *How Does a Logistics Company Work?* Retrieved july 11, 2020, from ASIANA USA: https://www.asianausa.com/how-does-a-logistics-company-work/

[8].　sankriyaiimr. (2013, September 27). *Supply chain & Logistics management in INDIAN ARMY*. Retrieved July 11, 2020, from Operations and General Management Club of IIM Ranchi: https://opsclubiimr.wordpress.com/2013/09/27/supply-chain-logistics-management-in-indian-army/

Author

The author is currently persuing Masters in Industrial Engineering and Management from GITAM University, Visakhapatnam, Andhra Pradesh. He has a quintesstinal way of problem solving through research and development. He never believes in mundane and old ideas for development of our society, a firm believer and moreover a doer who counts research as the modus operandi towards a impeccable future rather than a mere conjecture.

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