



# INTERNATIONAL JOURNAL OF ADVANCE RESEARCH, IDEAS AND INNOVATIONS IN TECHNOLOGY

ISSN: 2454-132X

Impact factor: 4.295

(Volume 5, Issue 4)

Available online at: [www.ijariit.com](http://www.ijariit.com)

## Influence of supply chain management on operational efficiency with an example of Walmart's supply chain

Vaishnavi Jhanwar

[vaishnavi.jhanwar@bba.christuniversity.in](mailto:vaishnavi.jhanwar@bba.christuniversity.in)

Christ (Deemed to be University),  
Bangalore, Karnataka

Chandrama Datta

[chandrama.datta@bba.christuniversity.in](mailto:chandrama.datta@bba.christuniversity.in)

Christ (Deemed to be University),  
Bangalore, Karnataka

Vidisha Agarwal

[vidisha.agarwal@bba.christuniversity.in](mailto:vidisha.agarwal@bba.christuniversity.in)

Christ (Deemed to be University),  
Bangalore, Karnataka

### ABSTRACT

*This paper examines the influence of Supply Chain Management on the operational efficiency of the organization with a specific example of Walmart's Supply Chain. Various aspects are been looked upon like 3PL, lean manufacturing, bullwhip effect, Just in Time, training workforce, technological aspects, perfect order measurement, reliable inputs, and strategic supplier partnership and how they bolstered the concept of operational efficiency in the supply chain.*

**Keywords**— Supply chain, Efficiency, Walmart, Effectiveness, Operational

### 1. INTRODUCTION

Today's environment is a very competitive environment and thus to survive in such an environment needs a very strong strategic management and effective Supply Chain Management. If the operational performance of an organization is effective, the company can see its sustainability in the market. This study intends to focus on 3PL, lean manufacturing, bull whip effect, Just in Time, training workforce, technological aspects, perfect order measurement, reliable inputs, and strategic supplier partnership as very few studies have talked about their effects on supply chain. Mostly researchers have seen the financial, production and manufacturing aspects.

### 2. LITERATURE REVIEW

Supply chain management is important for growing managerial effectiveness, increasing competitiveness, customer satisfaction, and profitability. Essentially, the lean and green viewpoints have been adopted in the SCM situation. The planned performance measures mean to assess the practices influenced on environmental, operational and economic supply chain's enactment.

To understand the performance management system you need to understand the impact key performance indicators and SC performance Management.

Hence, it is important to understand the supply chain, performance management, profitability, and customer satisfaction to increase efficiency and effectiveness.

WALMART has best quality goods for their consumers at a low price than their competitors. It has inculcated technology like RFID to safeguard its products and have a customer database.

### 3. 3PL (3<sup>RD</sup> PARTY LOGISTICS)

When a company uses 3PL services in its supply chain, it helps the company in successful and efficient operations in distributing or transportation of various goods domestically or globally. The weaknesses of 1 company can be compensated by strength of other company and they can together come up in the market with best services.

3PL can help the company in certain domains like transportation, distribution, reverse logistics, and inventory velocity to make the supply chain run effectively, efficiently and smoothly. Also, company would be able to focus more on their core competencies. After analysing secondary data taken from the 'Armstrong and Associates report, 2018' it was found that 89% companies of domestic Fortune 500 use 3PLs for logistics and supply chain functions, which straightaway shows how 3PL helped companies in burgeoning and making high profits and recognition in the market. 3PL companies who already created their goodwill in the market have done huge amount of investments for transportation purposes and in warehouse management systems which bolsters in providing real-time visibility covering all aspects of supply chain. (1)

It is usually observed that 3PL services are very cost-efficient and expeditious to add capabilities through third-party logistics than to invest in in-house expansion to provide these similar capabilities. (2) This helps the company in saving their capital and utilizing it in a more efficient manner

Although things are not as smooth as they are visible, there are certain fall downs and a negative side too. There is generally a lack of oversight directly into the logistics, as the company doesn't play a direct role in managing its operations. Companies have to rely on the 3PL company to consistently deliver the optimal and promised services and have to maintain that mark throughout. This dearth of direct control signifies that client companies are responsible and have to face the issues or any kind of problems the 3PL company faces. There is a chance of huge losses to the company if the 3PL company fails in providing timely delivery to the consumer and it will have a huge impact on Client Company's goodwill in the market. Also 3PL companies advertise themselves as they will provide the services at the lowest price possible but as there is lack of direct insight in the operations there can be a possible fare chance in which if the company used its own logistics it might have cost cheaper than they are paying to 3PL companies. Additionally, there are times when company have a high dependency on 3PL company has a large commitment. To cope up with this issue reliable structure in the organization is very crucial, as in this case for the company to avoid large amounts of lost productive efficiency and revenue in its operations. Conclusively, researches prove that a business which is dissatisfied with its 3PL service could always find alternative to it, or try to create and maintain its own logistical with high class efficiency, although the reality is not so smooth. Switching from one type of logistical support to a different kind can result in huge amount of cost to the company. When businesses look for joining hands with 3PL services, simultaneously dependency is created. This dependency on 3PL Company drags the client company in agonizing situations, if pricing models, operational efficiency and services attested from the 3PL service is not working as presumed by the client company.

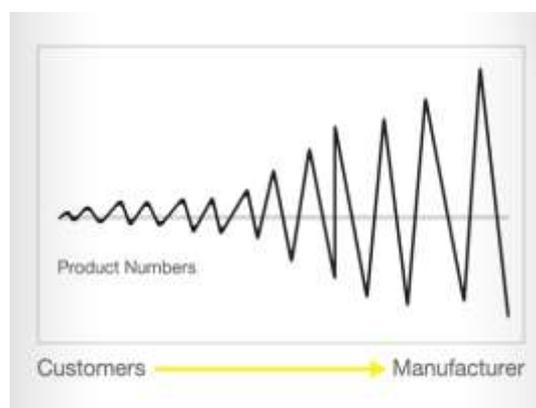
#### **4. PERFECT ORDER MEASUREMENT**

By compassing the extended supply chain, it is accompaniment in maintaining perfect order rate management as through real-time forewarning to conditions that may be a repercussion in a somewhat less than perfect order to unveiling orders at risk of out-of-stocks, companies can perpetuate performance levels by being alert on issues as they occur.

Alerting through technology advancements gadgets like dashboards and mobile devices drives speedily the ability to discourse issues that could have a contravening impact on perfect order rates.

There are certain solutions to accommodate the continuously changing demands of the supply chain in this world of fluctuations. As companies continuously focus on refining their perfect order rate goals, visibility of applications can quickly adapt and help in maintaining perfect order improvements. (3) This visibility of applications in supply chain can help in accelerating perfect order rates without increased costs. It helps in doing this efficient process in the budget. Although, attaining a balance between the improvement cost occurred and of and the cost occurred which is related to imperfect orders can be a challenging task to the company.

#### **5. BULLWHIP EFFECT AND ITS RELATION WITH OPERATIONAL EFFICIENCY**



**Fig. 1: Bullwhip effect**

The bullwhip effect is an occurrence unearths by the efficient supply chain, where orders when sent to the manufacturer, the supplier creates a larger variance than the actual sales to the end customer. These kinds of unscrupulous orders in the initial part of the supply chain develop to be better defined in the later stages of the supply chain. This kind of discrepancy can interrupt the smoothness of the supply chain process as at different levels in the supply chain will either overestimate or underestimate the product demand resulting in amplified fluctuations. (4)

## **6. LEAN MANUFACTURING**

Lean Manufacturing/ production are invented from Japanese business. It is reducing the unwanted waste from manufacturing and still keeping the efficiency the same. In simple words minimize unnecessary activities which can't do any addition to value creation. Lean is created through extra burden and unevenness in work hence; you need to reduce the extra waste to improve consumer value. Lean means tools that help in the identification of waste and stable eradication of waste. The point is as waste is removed with production, cost and time reduction and quality being better (5)

Waste is due to more inventories, more production, useless motion, transportation, defective production, over-processing, etc. As said the main motto is to provide better quality products/ services to the end consumers by removing/ reducing waste. Lean was started for manufacturing process but now it's for eliminating as much waste as possible so that efficiency is been maintained. Every company can identify and eradicate waste.

One of the most important principles of lean manufacturing is a continuous improvement that is, for achieving what you want you need to constantly have a positive change/ improvement. There is Kaizen approach which frequently ensures trial and error practice for knowledge and enhancement. It is basically problem-solving with learning. Other principles are respecting people, quality built, JIT, Level zed production, etc. (6)

## **7. JUST IN TIME**

It is meeting the demand as per the requirement at the correct time that is supplier sending the raw materials at Economic Order (optimum level) and goods being produced and the customer being satisfied. It is very risky in a country like India hence, we prefer to have pre-order than Just in time due to lack of proper facilities and trust. It is what the final consumer wants should be provided on time to them to retain them with this you also need to reduce the cost of production by just in time production/ manufacturing. Different methods of JIT are supplier's network, housekeeping, pull system, cellular manufacturing, etc. We should try and incorporate JIT as it gives reduction in inventory cost, warehousing, planning, lead time, etc. (7)

## **8. LEAN MANUFACTURING WITH SUPPLY CHAIN**

It is when you reduce your supply chain cost by removing unwanted/ unnecessary waste like cost, inventory, production, logistics, etc. For continuous improvement of the product/ services it is very important to not only remove waste but also improve six sigma's that is, you remove defects by the amount of variation in process reduction. Hence, businesses are using lean six sigmas for efficiency in supply chain management. The different ways are reducing/ optimizing the order, waste removal, removing your errors, alert supply chain, etc. (8)

## **9. TECHNOLOGY INNOVATION TRANSFORM SUPPLY CHAIN**

The internet of things helps supply chain run smoothly by censoring the date so that human interaction doesn't happen with the data; hence, the supply chain network becoming stronger with big data and intelligence. This big data can be kept with less human interaction and more of artificial intelligence that is, robots doing the work rather than humans. 3D Printing can possibly change supply chains by rebalancing the exchange off between minimal cost workforces, stock holding and transportation costs. Upstream supply chains can be localized because production formerly out-sourced to suppliers is carried back home.

Digital logistics marketplace is done to identify the mismatch between supply and demand and according to transport the goods. There are other technological innovations like automation, anonymous vehicle, block-chain, on-demand and crowd shipping, etc. The technology innovation in supply chain will reduce labor cost, increase value creation and long sustainability. Hence, supply chain managers are always trying to adopt new technology. (9)

## **10. TRAINING WORKFORCE AND SUPPLY CHAIN MANAGEMENT**

Training and development for your workforce are very important so that productivity and efficiency are maintained. Hence we can say that the key to success is training and managing labor. In supply chain you need to manage the freight services- training in new technologies help in maintaining efficiency and reducing cost. (11) You can reduce cost in supply chain by selecting the correct transportation, having inventory control and proper warehouse facilities and to select the most suitable form you need to have proper skilled and trained workforce.

Most important of all is customer satisfaction which can happen with proper supply chain training i.e, employees should be trained to make a proper customer relationship. Effective supply chain training can improve the organisation's efficiency by decreasing the cost, engaging the employees, customer services, etc. Hence, to have more operational margin and have competitive advantage it is necessary to have a strong supply chain. (12)(13)

## **11. WALMART'S SUPPLY CHAIN**

Walmart is an American multinational retail chain company and it's the world's largest corporation by revenue. Walmart over years has been successful in providing products to customers in perfect quality, quantity and at any place and any time. It is only possible because it is able to maintain an effective and efficient supply chain. Walmart cuts down its production cost by producing goods efficiently and providing their customers with everyday low pricing. Walmart directly works with the producers of the goods, this helps in cutting down the cost of operations and increases the operational efficiency. (14)

Walmart has paved its way from regional retail Chain Corporation to successful global MNC retail Chain Company with the help of efficient supply chain management. Walmart's cost-effective structure has given Walmart a position of supreme leadership in the market and given its competitive advantage over others. Walmart has been constantly exploiting the market by constantly innovating production and management techniques. (15). Following are the techniques which helped Walmart manage supply chain effectively:

### **11.1 Walmart has increased efficiency by decreasing the number of links in its supply chain**

Walmart's supply chain is much optimized as it has innovated its supply chain by reducing the number of complex links in the supply chain. They started procuring products directly in bulk from the manufacturers and transferring it to stores and kept no further link in between. Thus Walmart is successful in meeting customer orders on time. This innovation has helped Walmart in achieving success at a fast rate by keeping distribution cost at an exceptionally low rate. Reducing the number of links has helped in making the products reach customers on time, in perfect form and quality (reducing the impact of the environment on the products).

### **11.2 Reliable inputs and strategic supplier partnership**

Walmart has always strategically maintained partnership and relationship with trustworthy suppliers who can supply products as and when the demand arises. They have maintained long term relationship with the vendors and promised them to purchase large amount of products from them in return of low prices for their products. In this way Walmart ensured reliable inputs and they can meet the demand of the customers despite slight fluctuations in demand forecasting. Walmart's vendor management is long-lasting because there is a win-win situation which ensures both the supplier and the buyer benefits. Regular communication and on-time sharing of information with their vendors is a major key to success of Walmart. Walmart has collaborated successfully with its suppliers over years and ensured demand fulfilment timely. (16)

### **11.3 Cross-docking "a great strategic decision"**

Keeping the low cost of operations helps Walmart in keeping the cost of products low and its benefits for the customers as they have to pay low prices for everyday products. Cross-docking helps Walmart in keeping fewer inventories in stock and spending less cost on warehousing. Directly transferring goods from inbound or outbound trucks or rails and loading them into incoming truck rails and sending them to the stores, eliminating the need for warehousing. This decision leads to bringing down transportation cost, timing, warehousing cost, excess inventory and increases efficiency of the supply chain and inventory management.

### **11.4 Technology innovation**

Walmart reached its pinnacle of success by constantly innovating its operations and mechanisms of performing day to day activities. Technology is used by Walmart to predict accurate demand rate of consumers, efficient customer relationship management, keeping a track of the flow of goods along the supply chain, predicting inventory level and correcting and minimizing its errors. Walmart has strategically implemented technology in everyday operations and inventory management. This helps to cut down operating expenses and increase its profit over years. The main technologies used by Walmart to maintain its supply chain management cost-effectively are as follows:

**11.4.1 Use of Universal Product Code:** It brought about a massive change in retail Chain Corporation. These barcodes help to collect and interpret the store level information immediately. This helped in conducting proper operations of business. This helps in keeping track of inventory in the store and process customer demands as well. It added value to Walmart because now the need for manual data entry is eliminated. (18)

**11.4.2 Retail Link:** helped Walmart to connect the demand forecasting analysts to the vendor network as well to the center of Walmart's distribution sites. This is extremely helpful to all the producers and vendors to accurately forecast the consumer's demand pattern according to historical data which are already and accurately perform the order fulfilment activities via the satellite network.

**11.4.3 RFID (Radio Frequency Identification Tags):** After the recent developments that took place in the field of technology, Walmart adopted the use of RFID. Now both the vendors and Walmart can supervise inventory management. This has facilitated the tracking of the flow of goods along the supply chain from distance very easy. It is better than the Bar Codes as it is capable of storing more data than it. RFID and smart tags make the operations of Walmart very efficient as timely transfer of information about the stocks in the store track is done and it ensures that none of shelves will be empty and products are provided to customers as and when needed by them. Because of it none of the products go out of stock in any store of Walmart. This helps in bringing down the bullwhip effect and moreover it does not incur the cost of excess inventory. There has been a reduction. (19)(20)

## **12. CONCLUSION**

It can be concluded after having the contextual information regarding 3PL, perfect order measurement and bullwhip effect that companies can save a huge amount of costs and have the better operational efficiency but they have to take care of the factors mentioned in the paper. It's observed that vendor relationship management also has an impact on increasing operational efficiency. The companies should try to get the best quality of products at a low price from their vendors. And the companies should also ensure that they select only those vendors who will be able to supply goods as and when demand changes or needed to replenish the stock. Over the years Walmart has used efficient transport channels to supply their goods to the stores; this, in turn, reduces time and cost of transport as well.

Lean Manufacturing/ production in simple words minimize unnecessary activities which can't do any addition to value creation. JIT means meeting the demand as per the requirement at the correct time that is, supplier sending the raw materials at Economic Order (optimum level) and goods being produced and the customer is satisfied. For continuous improvement of the product/ services it is very important to not only remove waste but also improve six sigma that is you remove defects by the amount of variation in process reduction. The technology innovation in supply chain will reduce labour cost, increase value creation and long sustainability. Hence, supply chain managers are always trying to adopt new technology. Effective supply chain training can improve organizations efficiency by decreasing the cost, engaging the employees, customer services, etc. Hence, to have more operational margin and have competitive advantage it is necessary to have a strong supply chain.

Wal-Mart has to improve its operational activity and constantly collaborate with technological developments to reduce their operating expenses and increase operational efficiency. Walmart's efficient supply chain management and the cost-effective structure help it increase its operational efficiency and have a competitive position over others. Walmart thus enjoys a supreme leadership position in the market. Walmart achieved success and a leadership position because of its innovation strategy, investment in Information technology and collaboration. (21)

### 13. SUGGESTIONS

- A company should do the in-depth analysis whether to take the 3PL services as shifting afterward can lead to high costs.
- The company should go for trusted 3PL companies as there are cases when client companies have incurred huge losses due to inefficient performance of 3PL service.
- The company should minimize waste generation as much as they can and train the workforce for the proper functioning of their supply chain
- Walmart should put more emphasis on customer relationship management and come up with better strategies to improve and build better and stronger relationship with their customers.
- Walmart should now try to expand its retail chain to many aspiring countries in Asia like India etc. (22)
- Employees are the building block of any organization, thus Walmart should use more time to solve problems of employees and develop their lives.
- Walmart should try to innovate its technology regularly in performing its activities.
- Walmart should improve its processes of performing its operational activities.

### 14. REFERENCES

- [1] (2018, March 16). The Evolution of 3PL: How It Solves Supply Chain Challenges. Retrieved from <https://legacyscs.com/evolution-of-3pl-supply-chain-challenges/>
- [2] McDunnigan, M. (2019, February 11). Advantages and Disadvantages of Third Party Logistics. Retrieved from <https://bizfluent.com/info-8161315-disadvantages-thirdparty-logistics.html>
- [3] Dwyer, Kari. "Perfect Order Fulfillment: Getting It All Right." Perfect Order Fulfillment: Getting It All Right - Inbound Logistics, <https://www.inboundlogistics.com/cms/article/perfect-order-fulfillment-getting-it-all-right/>.
- [4] Logistics and Materials Handling Blog. Retrieved from [https://www.aalhysterforklifts.com.au/index.php/about/blog-post/what\\_is\\_the\\_bullwhip\\_effect\\_understanding\\_the\\_concept\\_definition](https://www.aalhysterforklifts.com.au/index.php/about/blog-post/what_is_the_bullwhip_effect_understanding_the_concept_definition)
- [5] (2019, August 15). Lean manufacturing. Retrieved from [https://en.wikipedia.org/wiki/Lean\\_manufacturing](https://en.wikipedia.org/wiki/Lean_manufacturing)
- [6] Lean Manufacturing Principles. Retrieved from <https://www.lean-manufacturing-junction.com/lean-manufacturing-principles/>
- [7] (2019, May 18). Just-in-time manufacturing. Retrieved from [https://en.wikipedia.org/wiki/Just-in-time\\_manufacturing](https://en.wikipedia.org/wiki/Just-in-time_manufacturing)
- [8] Retrieved from <https://www.sixsigmadaily.com/lean-six-sigma-for-your-supply-chain/>
- [9] Kogan Page. 8 Key Innovations That Will Transform the Supply Chain and Logistics Ind. Retrieved from <https://www.koganpage.com/article/8-key-innovations-that-will-transform-the-supply-chain-logistics-industry>
- [10] (2017, January 27). The importance of Supply Chain training to improve your business' bottom line. Retrieved from <https://www.procurement-academy.com/importance-supply-chain-training-improve-business-bottom-line/>
- [11] Remigio, Helena, and Azevedo, Susana and Cruz-Machado, Virgilio. (2010). Supply Chain Performance Management: Lean and Green Paradigms. IJBPSM. 2. 304-333. 10.1504/IJBPSM.2010.036204.
- [12] Tripathi, Shubhamand Gupta, Manish. (2019). A Current Review of Supply Chain Performance Measurement Systems.10.1007/978-981-13-6412-9\_4.
- [13] (2014). Hassan Natto. Retrieved from <https://www.ijser.org/researchpaper/Wal-Mart-Supply-Chain-Management.pdf>
- [14] Lu, C. Walmart's successful supply chain management. Retrieved from <https://www.tradegecko.com/blog/supply-chain-management/incredibly-successful-supply-chain-management-walmart>
- [15] Team, C. M. A. T. Why Walmart's supply chain is one of the world's best. Retrieved from <http://blog.cemat.com.au/walmarts-supply-chain>
- [16] Mrunal. (1970, January 1). Walmart's approach to Strategic Sourcing. Retrieved from <https://cmuscm.blogspot.com/2014/09/walmarts-approach-to-strategic-sourcing.html>
- [17] Lu, C. Walmart's successful supply chain management. Retrieved from <https://www.tradegecko.com/blog/supply-chain-management/incredibly-successful-supply-chain-management-walmart>
- [18] "U" - ShopifyEncyclopedia. Retrieved from <https://www.shopify.com/encyclopedia/u>
- [19] RFID Technology. Retrieved from <https://walmartsupplychain.weebly.com/rfid-technology.html> (20) Lu, C. Walmart's successful supply chain management. Retrieved from <https://www.tradegecko.com/blog/supply-chain-management/incredibly-successful-supply-chain-management-walmart>
- [20] Team, C. M. A. T. Why Walmart's supply chain is one of the world's best. Retrieved from <http://blog.cemat.com.au/walmarts-supply-chain>
- [21] Supply Chain in Retail Wal Mart Management Essay. Retrieved from <https://www.ukessays.com/essays/management/supply-chain-in-retail-wal-mart-management-essay.php>