

Dell Corporation Strategy in Supply Chain Management in order to Avoid Bullwhip Effect

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Accepted: 15 February 2021 | Published: 1 March 2021

Abstract: *A company will grow and must keep up with the changing times. In a company, one thing that needs to be considered in the design of Supply Chain Management (SCM) or what can be called the supply chain. In this case, we will discuss the Dell electronics company which has a special strategy in owned SCM by using internet technology to simplify the SCM design that is carried out. This strategy is not only suitable for companies and customers but also helps companies to reduce the bullwhip effect that can occur in the SCM process. With the internet, Dell can perform the initial process of entering customer requests until the goods arrive at the customer in a faster time and less cost with less risk.*

Keywords: supply chain, internet, globalization, bullwhip

1. Introduction

The more a company develops, there will be an increase in market share, growing profits for the company, and getting strategic profits. To run some of these things, a company needs various strategies. One of the most important is that supply chain competence must be placed at the core of the company's business model. Companies will realize that market competition will be driven by customer demands. Thus, effective supply chain management (SCM) can offer customers a wide range of high-quality products and services at low prices. (Chou, Tan, & Yen, 2004).

Supply chain management is a series of process approaches used to efficiently integrate suppliers, manufacturers, storage, and customers or buyers. To minimize system wide cost, the product is produced and distributed in the right quantity, to the right location, and at the right time (Davis, 2010). Apart from meeting service requirements, the supply chain of goods is a logical step in increasing profit and market share. Four main areas need to be considered in the supply chain of goods, namely: location, production, inventory, and transportation or also known as distribution. There are several key principles of SCM, namely, SCM as a function of management, SCM involves key stakeholders such as suppliers, manufacturers, service providers, and customers, the third is SCM strives to meet the requirements of its customers, and the last is SCM involves the relationship between chain partners different supplies to achieve customer satisfaction (Sillanpaa & Sillanpaa, 2014). Therefore, supply chain integration is not just a tactical decision but must be part of a company's strategy.

The single definition of SCM is supply chain management which is defined as a system or strategic coordination of traditional business functions within a company and across businesses in the supply chain, intending to improve the long-term performance of each company and the

supply chain as a whole. Besides, SCM involves multiple companies, several business activities, and coordination of these activities across functions and/or companies in their supply chain processes. Effective SCM can help lower production and distribution costs through seamless cooperation between business partners in a company's supply chain. Meanwhile, supply chain performance can also affect customer satisfaction. Therefore, SCM can be seen as a source of competitive advantage and deep improvement *margin* the advantage. There are several objectives of SCM, namely, to reduce inventory costs by matching production with the number of requests, reduce overall production costs by minimizing the flow of products in the production process, and increasing the flow of information between business partners and the last is to increase customer satisfaction by offering increased delivery speed. and flexibility through seamless cooperation between companies and *distributors* and *vendors*.

Supply chain partners need to collaborate and integrate their activity and operations to qualify the supply chain integration. The degree of integration, however, depends on the complexity of the supply chain (Davis, 2010). Mentzer identifies three levels of supply chain complexity, the first is the direct supply chain, namely the company, its suppliers, and customers who are involved in upstream and downstream supply chain activities; the second extended supply chain namely the company, suppliers from the initial supplier, and customers from the initial customer; and lastly is the main supply chain i.e. the company, the extended supply chain, and all other organizations involved in operations within the company. Effective supply chain integration occurs when partnerships based on trust exist between members of the supply chain (Kopczak & Johnson, 2003).

The geographical placement of production facilities, *stocking point*, and *sourcing point* is the first step in creating a supply chain. This is because the location of the facility involves resources for long-term plans (Azhagan, 2015). Once the location is determined, it is necessary to define a pathway that will allow the product to flow to the last customer. This is very important because it will have a large impact on revenues, costs, and service levels.

2. Literature Review

Historically, a company couldn't have a supplier or customer as a partner. In many industries, each company will be a supplier to each other so that they get a cheaper price, they do not need a special supplier which increases the selling price. However, the post-World War II supply chain is a series of linear, individual processes that link producers, warehouses, wholesalers, retailers, and consumers together to form a supply chain. From the 1960s to the 1970s, companies began to view themselves as a function that could be closely related to a common goal of serving their customers. So that material requirements planning develops along with the development of SCM. Companies that successfully integrate these functions can improve their performance. However, in some constraints such as unresponsive customer attitudes or suppliers which sometimes hamper delivery, these constraints make the company more responsive to market changes.

Since the early 1990s, the use of internet technology and technology *the web* is increasingly widespread and increasingly promising in all countries and requires lower costs to tie up companies and business partners needed by companies to create a supply chain design. Information technology contributes greatly to world economic growth. In a network economy, business and management applications must embrace the internet to survive in the era of *e-Commerce*. The internet has directly changed the way companies do business. A permanent company in transition from an industrial economy to a network economy (Veronneau & Roy,

2008). SCM has turned into an integrated computer and communication technology. The change that has resulted from the internet is the emergence of ubiquitous low-cost connectivity enabling small and medium-sized companies to make good use of SCM designs. Besides, fast network transmission can help businesses by realizing smooth and direct communication and transactions.

Another effect that appears with the internet can be said as follows: the internet can transfer power to buyers, or in other words, the internet can transfer power from sellers to buyers permanently. The search power by buyers is increasingly limitless so that suppliers can provide product and service information through the website they have. Not only do consumers enjoy the benefits of the transfer of energy caused by the internet, but purchasing agents in the business to the government also enjoy this service. Besides the internet can facilitate global connectivity, the internet not only provides companies and customers with ease and flexibility in transactions and communications but also brings market competition into the global area. The Internet facilitates companies to do business on a global scale. Another effect is that it allows trading partners to coordinate and collaborate more easily. The Internet enables trading partners in the supply chain to better coordinate and collaborate so that they can benefit each other. The technology that is owned by the internet can enable seamless integration between business partners. However, the internet also has negative effects such as changing the old paradigm of boundaries between companies. The Internet is changing the way supply chains are managed, planned, and even controlled. Information and decisions related to SCM are integrated into the web, thus changing the old paradigm of the company. By implementing an SCM based *on* the web, the company can virtually remove boundaries between business partners to form an increasingly large company. Overall, the internet offers a variety of opportunities and challenges for companies and business partners. Any company that is willing to adopt internet technology and business models at the right time and well will get a competitive advantage over companies that do not use internet technology properly.

The more developing the 21st century, the more visible the sizeable expansion of the supply chain to international locations, especially the car industry, computers, to apparel. This growth in globalization poses additional management challenges faced by companies. There are several supply chain designs used by companies today. An example is an alternative product design for global supply chains, which shows manufacturing activities for the final product and the various levels of components. The supply chain is regulated as much as possible, from the production stage and the output from one level to the next. For example, a factory in a clothing supply chain that produces plastic ships to the factory then uses the same material to produce a zipper which is then sent to a factory that assembles jackets.

Supply chain design issues consist of decisions regarding the number and location of production facilities, the amount of capacity at each facility, the assignment of each market area to one or more locations, and the selection of suppliers for sub-assemblies, components, and materials. (Vidal & Goetschalckx, 2001) . Global supply chain design expands the existing definition as the selection of facilities at an international location and the specific globalization factors involved. Design decisions can be decentralized so that managers of each facility can make decisions, or they can be centralized so that decisions across facilities can be coordinated. Ideally, managers are making consistent choices that fit into the company's supply chain strategy.

Choosing the right supply chain design to use in a company is not easy. There will be problems arising in the design of the selected supply chain. Global supply chains will be much more

difficult to manage than domestic supply chains. The geographic distance that exists in the global situation not only increases transportation costs but also complicates cost decisions, due to increased waiting times in the supply chain. Differences in culture, language, and local practices can also reduce the effectiveness of business processes such as forecasting demand and material planning. Likewise, the definition of infrastructure in developing countries in transport and communications, as well as the possibility of inadequate worker skills, an insufficient supply of suppliers, unsuitable quality of suppliers, different equipment and technology pose additional challenges not normally experienced in other countries. - developed countries. Not only that, global supply chains present unique risks that can affect performance, including currency exchange rate variability and uncertainty, economic and political instability, and changes in the environment. Currency exchange rates affect the price paid for goods purchased in the supplier's currency and can therefore also influence the timing and volume of purchases and the finances of the supply chain. It is therefore advisable to factor in these risks in making decisions when designing global supply chains.

Another problem that arises is when *outsourcing* overseas manufacturing and supplier locations have evolved in recent years so that managers are increasingly designing supply chains that are not only focused on facilities but must also focus on suppliers. Supplier selection decisions in global supply chain design are critical. Suppliers are usually selected based on buyer's perceptions of the supplier's ability to meet the quality, quantity, delivery, price, and service needs of the company. After finding the right supplier, the supplier contract also influences the structure of the design problem with additional factors such as minimum order quantity, quantity limitation vendor, geographic preferences, and supplier capacity limits.

The second problem that arises is when the integration of the entire supply chain, integrating business processes is a best practice in supply chain management which can involve coordination decisions of various facilities and actions. Companies that implement a planning system advanced can integrate production decisions across the supply chain by incorporating supply and capacity constraints of suppliers into their scheduling to seek to prevent supply problems before they occur. A well-integrated and well-coordinated global supply chain will be difficult to duplicate so that it plays an important role in a competitive strategy.

Until recently, much of the emphasis in supply chain management was on reducing costs, but performance in the supply chain consists of many things. Performance can be measured in terms of reliability, responsiveness, flexibility, cost, and assets. Also, the five benefits for companies with global coverage are being able to improve quality, meet schedule requirements, reduce costs, access new technologies, and expand supply coverage. (Meixell & Gargeya, 2005) . Delivery performance and quality of goods or products are important things that need to be considered in the global supply chain. Managers designing global supply chains need to align the decisions they choose with the mission, goals, and strategies of their company, which is broader in scope due to the scope of global companies.

While the use of web-based SCM has great potential to cut costs and promote efficiency, the process also raises some cultural and technical issues that raise some concerns. To have full collaboration, all trading partners must achieve a Common vision of the SCM strategy. Also, companies need to overcome natural resistance by disclosing business interests to their partners. Besides that, there were technical concerns about web-based SCM, one of which was internet insecurity. Due to the open standards of internet technology, websites are vulnerable to attacks. Therefore, data security is a high priority for web-based SCM implementations.

Owned application integration is the next technical problem because the application will continue to develop so that it must be able to keep up with the latest available technology.

In implementing SCM when the manufacture and sale of goods often involve some different companies operating within a predetermined timeline, with a typical arrangement, suppliers provide raw materials to producers who supply finished goods to wholesalers, who combine products with other goods and then sell them to retailers. which then sells the product to the consumer (Lee, Padmanabhan, & Whang, 2004). When customer demand increases, there will be a problem called the bullwhip effect, or in other words, the amplification of demand variability from downstream to upstream that has been observed or identified in the industry for a long time. Historically, the bullwhip effect has been accepted as a normal occurrence and rationalized as an inevitable outcome of the rural-to-delivery systems that characterize production and distribution systems (Metters, 1996). Actions or reactions to the flow of information, materials, and money between interested parties in the supply chain, one day will cause delays and reinforcement in the flow of information and physical goods with the applied supply chain. In other words, supply chain designers make mistakes in understanding the environment in which they operate, resulting in time delays and other issues.

In this case, I will explain about SCM from *Dell*, *Dell* is a corporate organization founded on November 8, 1984. *Dell* is an American multinational data innovation company based in Round Rock, Texas, United States, that creates, offers, and supports OC and its related accessories and administration. This organization is one of the largest innovative companies leveraging more than 100,000 individuals worldwide. The founder name of *Dell* is Michael Dell. He is one of the youngest CEOs to steer his company into a Fortune 500 position. This causes it to generate revenues of USD 63.07 billion per year. The company produces desktop computers, notebook computers, network servers, storage products, and the customization of each product with suppliers being Microsoft for Windows, Intel for microprocessors, Nvidia for graphics chips, and Sony for monitors.

Research Questions

How the strategy is used by *Dell* in supply chain management to avoid *Bullwhip Effects*?

Thesis Statement

Dell has a fairly different strategy compared to other corporations. With the strategy they have, *Dell* can meet customer demand directly and no need to keep stock. Customers can order as they needed via the internet and *Dell* can produce in a short time and reach the customer in a few days. *Dell's* supply chain design can make it easier for customers to order goods as desired, there is no need to bother looking for items needed at retail stores owned by *Dell*, but with the development of technology, *Dell* emphasizes that the web is made in such a way as to make it easier for customers and make it easier for their company to continuously monitor customer needs. Besides, the convenience provided by the internet, and *Dell's* fast production techniques, can avoid the Bullwhip effect. You don't have a lot of stock, but *Dell* makes products to order. The bullwhip effect usually occurs when there is an inequality between existing stock and customer demand, or inequality of customer demand with existing stock, causing the company to lose.

3. Discussion

Dell computers were invented by Michael Dell in 1984 with a very simple concept, focusing on selling computer systems directly to customers, so that *Dell* could understand customer

needs efficiently and could provide the most effective solutions to meet those needs. This kind of business model will indirectly eliminate retailers because it can distribute computers faster than the slower moving indirect distribution channels. *Dell* achieved considerable innovation in SCM by adopting a direct selling model, namely a demand-based supply chain using a demand-based approach *build-to-stock* traditionally replaced by models *build-to-order*. New models are used *Dell* able to reduce inventory and cut costs and reduce production cycles. *Dell* has expanded supply chain design practices from the company to the entire supply chain as suppliers have been integrated into operations, *Dell*. Well managed supply chain from *build-to-order* model, so that *Dell* creating efficiency through its material management process. They fulfill customer order demands by building custom systems promptly. *Dell* has also improved its procurement process which has resulted in nearly 90 percent of the company's procurement being conducted on an on-basis online and leaving only two hours of inventory at the factory.

The thing that needs to be done to help them do better in various areas of marketing is a good connection with a provider or supplier. They also need to concentrate their innovative capacity to support segment initiatives given that there is a rapid change in innovation, thus influencing research and development costs for companies to maintain a monopoly in their segment. One of *Dell*'s advances is that *Dell* has always focused on researching its customers and using that research to help its suppliers and companies. One of the ways that they can maintain their speed in supplying goods is by building a web page where suppliers can view order details and can plan how much and when to provide products to work based on actual consumer demand, in addition to reducing *the bullwhip effect*.

Model *build-to-order Dell* makes use of the internet very well. The Internet provides more than just a direct sales channel for *Dell* but also great opportunities for *Dell* in managing the existing supply chain. By launching *e-Commerce*, www.dell.com in 1994 and added capabilities *e-Commerce* in 1996. Within the site *Dell*, customers can review, configure, and price computer systems across the entire product line *Dell*; ordering computer systems online, and track orders from manufacturing to delivery. *Dell*'s additional web initiatives add value to enabling SCM *Dell* to meet customer demand. At the end of 1999, the site *the web Dell* making \$ 35 million every day. Not only that, *Dell* continues to enhance its collaboration with global suppliers, with an internet portal that provides a channel for real-time information exchange between *Dell* and its suppliers. Through these channels, *Dell* can send estimates to its suppliers and get feedback on their ability to support from a supply or demand perspective. *Dell* also adds a powerful software application to *platform* internet-based, to realize a better flow of materials and improvements in many other ways. Also, the program can make it possible for *Dell* to apply next-generation thinking about inbound and outbound logistics and sustainability of supply.

Dell has multiple web services initiatives, initially directly towards materials management and inventory management, which have had a significant impact on the bottom line. However, *Dell* began closely linking the fabricator operations with a network of logistics providers operating distribution centers for direct materials. Before using the internet network, *Dell* must-have supplies *substantial* in the supply chain to ensure on-time delivery of products to its customers. To ensure there is no lack in the main components, suppliers must maintain *buffer* 10-day inventory on networks managed by *the vendor*, and *Dell* itself has to defend *buffer* 26 to 30 hours at the assembly plant. Each week, *Dell* distributes a new 52 weeks of distributable demand forecast to all suppliers. Now, however, *Dell* can create new production schedules for each of its factories every two hours that reflect actual orders received, and publish schedules as a service. *the web*. The main purpose of *Dell* is to eliminate excess inventory throughout the supply chain, but not just to push inventory from producers to suppliers. By using the service,

Dell can send inquiries about the order status to the supplier, and then the supplier system will automatically send back a response. *Dell* hopes the system will reduce inventory by as much as 40%, while simultaneously increasing gross margins by matching supply and demand.

Dell prioritizing sales via the internet, because this can make it easier to increase revenue by offering a wide variety of products *desktop*, *notebook*, and computers. All of its products are displayed on the site *the web* companies and customers can buy directly from them. Even customers can order from anywhere and anytime. The price applied to the sale *online* cheaper compared to sales *offline*. This is one of the tactics to make it easier for SCM because they can directly check customer requests around the world. *Dell* continuously improves technology's ability to compete and enjoy sustainable leadership. Special web pages are designed to encourage suppliers to meet customer demands by reducing lead times, lot sizes, and inventory. One of the other advantages of *Dell* is, they use direct marketing techniques when the product is produced, marketing is done directly on the company web. In contrast to competing companies that produce products first and then introduce their products after reaching a retail store for sale.

The internet appears to be an additional distribution channel for *Dell*. Internet technology and *the web* can support the entire supply chain operations. Internet-based supply chain operations will be faster and cheaper. Apart from that, it will also benefit the customer as they will be able to instantly check the status of their order with just one touch from *the gadget* they have. The managers or executives of the company will easily have real-time access to the company's inventory levels, as well as their suppliers and distributors. In particular, technology *the web* made several contributions to SCM such as, developing applications *e-Commerce* thus web technologies offer a wide range of support for the communications and transactions that can be carried out online. Procurement *online* is an example of a business transaction that fulfills the application *e-Commerce*. This procurement can result in cost savings and improved performance for both the procurement company and supplier; Online data-based information exchange, electronic data exchange plays an important role in the evolution of SCM. Trading partners use electronic data exchange to exchange information such as sending requisitions and receiving purchase orders. However, electronic data exchange has several obstacles because it is more difficult to implement and costs more. An XML-based internet system (*Extensible Mark-up Language*) can allow companies to exchange data on a transaction-by-transaction basis. XML files provide document definitions and semantics for business transactions, because EMS documents are text-based, they can be transmitted over the HTTP protocol. The use of XML is easier to obtain than the use of electronic data exchange due to lower costs so that small and medium enterprises are easier to achieve.

Another contribution of the internet to SCM is the integration of applications that are owned by information technology that can create or even modify interactions between related applications and include other software. Web services can use software vendors; products to address current integration needs such as IBM and Microsoft; The partner collaboration provided by the internet can help SCM benefit greatly by providing a flexible and efficient distribution. Web technologies increase supply chain visibility by providing more real-time data of all supply chain links resulting in greater collaboration among trading partners.

Supply chain design owned by *Dell* also focuses on supply chain functions in general, namely the first function as a demand planner that can determine how many products a company should do or fulfill with consumer demand. The second function is as an inventory planner that includes requirements for re-production and ensures that product stock is at a safe point and an

appropriate level. The third function is the scheduling of manufacture which can make clear the availability of resources and prepare a production schedule based on real demand. The last function is as a transportation planner, which can determine the best part with the most cost-effective method for warehousing and shipping.

The Dell company has designed its manufacturing and assembly processes in such a way that products are produced in minutes. In this way, the previous production can be postponed and a new product can be produced according to the order received, and once a new product has been produced, delayed production can be restarted. That *Dell* does not sell their products through retailers and wholesalers, so they can carry out the technique of delaying production and still be running smoothly. When shipping, *Dell* bear high shipping costs, then sell their products to retailers and wholesalers or directly to customers. Direct sales system and assemble products to order used by *Dell* to help *Supply Chain Management*, by synchronizing the process from start to finish. *Dell* produces products based on their customer orders and executes them upon receipt of payment. So that no product is produced before the customer order enters and will be created based on when the purchase order begins. A model like this is great for reducing uptime and can also increase cash flow. No stock is kept and orders are executed at the customer's choice. The selling price and product orders are received by the company, at the same time, customers also receive the products they expect in a short period. However, this direct selling model also has some disadvantages, such as the large shipping costs and customer support service costs that the company must bear after the sale is completed. *Dell* bears the cost of direct delivery because dealing directly with customers and retailers has no role. Other companies produce and ship products in bulk compared to *Dell*, which sends small orders individually to customers.

Another strategy adopted by *Dell* to compete with retailers who already have stock is to provide low prices to customers. It also allows customers to customize what product they need, with a wide variety of choices on the internet, whereas in-store options are limited. So that *Dell* can produce the product within a few hours of the order entry, and arrive in the buyer within a few days later. The supply chain must be consistent to avoid the effects of *Bullwhip* to meet demand accurately and on time with accurate demand forecasts.

The driving force for *Dell's* SCM is the global popularity that the company has. With the competition based on time and quality, so that the contribution of each company in the environment is greater. As the Dell company gets bigger and more global, the more connected it will be with global suppliers, making it easier to find effective materials for the manufacturing process. In today's market, the main competition is in the factor of time and quality. Delivering products that are in good condition or without defects and promptly are a key requirement in SCM in the market. To meet these requirements, good coordination with suppliers and distributors is required. With the wider distribution with free competition and combined with the advancement of technology and the rapidly changing economic conditions, all things will be needed to properly contribute to market uncertainty. The existing uncertainties require greater flexibility on the part of the company and distribution channels which in turn will require more flexibility in the business relationship.

4. Conclusion

With the development of the times, *Dell* as a sizeable electronics company, has slightly different sales techniques but is very well managed and provides the advantage and convenience of providing products to customers. By prioritizing the internet and fast

manufacturing processes, Dell was able to meet customer demands in no time. The internet is Dell's main key to carrying out its SCM, because, with the convenience provided by the internet, Dell reduces a lot of costs and makes it easier to get orders directly from customers. Besides, customers are also made easy to choose the items they need. With the internet too, Dell was able to overcome the effects of *bullwhip* which is common in a company's SCM. Dell's supply chain design uses the build-to-order principle, which is making products immediately when an order comes in and not producing many items and storing them in the warehouse. Make products according to orders so that the effect *bullwhip* which usually occurs because the needs of the customer demand are not the same as the number of products produced or vice versa will be greatly resolved by *Dell's* current SCM design.

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