

INFLUENCE OF ELECTRONIC COMMERCE ON SUPPLY CHAIN BEHAVIOR

Abdulaziz T. Almaktoom

Department of Operations and Information Management, Effat University
PO Box 34689, Jeddah 21478, Kingdom of Saudi Arabia

ABSTRACT: *With the evolving and the advancing of technology in the world, many companies are trying to find new ways to expand their business opportunities and strategies in order to stay in the lead. Therefore, electronic commerce had started to be implemented and used in many types of business including the supply chain. E- Commerce had caused the supply chain to become more flexible and efficient. In addition, businesses are now able to easily collect information on the needs and wants, sell online, reach a wide range of customers, and deliver the products quickly at a low cost. This had led to a better operation strategy, product quality and customer satisfaction. A qualitative study was conducted with the use of different sources in order to construct and explore the changes on the behavior of supply chain because of e-commerce implementations.*

KEYWORDS: Electronic Commerce, E-Commerce, Supply Chain

INTRODUCTION

With the high rate of competition and technological evolution, businesses should be able to implement and use strategies, tools, transactions and techniques that are unique and channels of distributions that are not complicated. Therefore, integrating e-commerce and with supply chain activities, a company can be able to receive raw materials and components then manufacture and distribute the goods to retailers or customers on time and at the right place without defections. This will lowers the cost and increases customers' satisfaction. Moreover, using e-commerce makes it easy for businesses to directly reach wide range of customers by selling products and providing services over the internet. Therefore, integrating the e-commerce in the supply chain will cause the elimination of the retailers in the channel of distribution which allows the business to directly sell and deliver the products to the customers. This leads to faster transactions.

Technology, knowledge and transportation had been advanced and improved over the past decade. These changes had affected the way businesses interact and deal with their suppliers or retailers /customers, the competition and service level, the quality and the life cycle of the product, and customer's expectations. However, as stated by Patil, Shrotri, & Dandekar (2013), uncertainty propagates throughout the network leads to inefficient processing and non-value adding activities. With the implementation of electronic commerce, businesses could be able to reduce the impact of uncertainties. E-commerce is making SC more flexible and efficient because of the improvements of supply chain coordination's which help to eliminate unwanted information. As a result, businesses might find it more beneficial to change the supply chain cooperation strategy into an electronic cooperation to achieve their SC competitive advantage.

According to Ninlawan, Seksan, Tossapol, & Pilada (2010), supply chain management is the coordination and management of a complex network of activities involved in delivering a finished product to the end-user or customer. The supply chain connects many different parties

and groups together as shown in figure 1.1 (JIFNET, 2012). These groups can be businesses, retailers, financial/information flows, and customers. Managing these groups and activities requires an approach that can effectively and efficiently link the interactions among the entities in order to provide high quality service/goods especially when businesses use resources from different parts of the world. Having a lot of parties contributing and helping in the production causes the supply chain to be longer.



Figure 1: Typical Supply Chain

Involvement of E-commerce in Supply Chain

E-commerce is playing an important role in reducing the cost of the supply chain. If the manager /management models were not effective, this may lead to an increase in the failure chances. Electronic commerce or the implementation of technology will reduce the time between each node in the supply chain, which makes it more effective and efficient. Also, there will be an increase in the rate of information availability and delivery in and out the supply chain with other cooperation. Moreover, a reduction in the distribution, transactions costs, and time intervals will occur in addition to fast product development. This will add a value to the supply chain which attracts more suppliers and customers to the organization and gain a competitive advantage (Nikakhthar& Jianzheng, 2012).

According to Nikakhtar & Jianzheng (2012), e-commerce allows the business to facilitate any inter-organizational communications and reduces time intervals with further cooperation. Therefore, a business can easily communicate with different departments or with other companies immediately which will not cause a delay in the production chain. As said by Cheng & Xiong (2015), there is a growing amount of literature on the Internet channel management strategies in electronic commerce era. Most concentrates on the competitive pricing decisions and channel coordination problem, in which the manufacturer sells products through physical stores and its Internet store. This is called dual-channel supply chain. Having an Internet store allows businesses to sell their products anytime of the day, spend less money on operational costs which leads to better service/goods quality, no need to have a physical company, and

customers can compare the prices of the business's goods to another business (Nanehkaran, 2013). With the use of Internet, businesses can reach and sell to a wide range of customers in different parts of the world by just allowing the customer to perform transactions such as purchase a product, pay and then receive a receipt online. This makes customers eager to buy.

Impact of Electronic Commerce on Supply Chain Behavior

Businesses that are implementing and shifting to electronic commerce have been positively affected in terms of success and profitability. This shift has opened the door for new technologies and payment methods which businesses started to take advantage of. With the years, the development and improvement in the technology from electronic credit card processing machines to pay-by-phone systems, had made it easier for consumers to use credit to buy what they want or need. Between 2010 and 2013, global online sales has doubled from \$680 billion to \$1.25 trillion. Having online retailers and using e-commerce had caused the purchases that were previously made in person, to be now made online using credit instead of cash. Therefore, this caused the credit cards company to benefit a lot from this transaction. In addition, customers can now fill out an application on a website and be able to pre-order products or have pre-approved car loans without the need to interact or be face to face to a human being. Due to this, a high number of customers started to favor purchasing online and companies to make use of this in order to gain a competitive advantage. Therefore, electronic commerce has made customers more eager to use credit and provided greater opportunities for businesses in addition to a large market share.

Electronic commerce is a method that enhances and improves the company's performance. It is used in every aspect within the organization whether it was externally or internally. Therefore, if companies implement technology in the supply chain, the relationship that they will have with the suppliers and customers will be positively affected in many different ways. Maria (2011) acknowledged that e-commerce improves customer service and the accuracy of the data, speeds up the business cycles, and reduces the costs by exchanging documents electronically through the internet. Also, it allows the exchange of information without the investment and the loss of money and time. Moreover, businesses become more flexible in managing the information that goes between them, the suppliers and customers in addition to the movement of the products. This will lead to a better customer service and low operating costs. With the use of e-commerce, customers can purchase products, track delivery orders and shipments, and pay for the product immediately. It also allows companies to record details of each pallet, parcel, and item that is being shipped. Electronic commerce can help companies in receiving and knowing what is needed to be ordered or packed ahead of time. The implementation of technology in the supply chain will reduce the need for manual intervention and paperwork which leads to high efficiency.



Figure 2: Supply Chain while adopting E-commerce

The invention and widespread of the Internet was the greatest technological development made since the industrial age. With e-commerce, the supply chain will involve customers, shipping, warehouse, transporters, and the business. As a result, there will be an elimination of the retailers in delivering the good as shown in figure 2. In every stage, there are functions such as receiving and filling customer's request, operations, distribution, finance, and customer service being dealt with and be made over the Internet (Rell, 2013).

Case studies

This is a qualitative and an archival case studies of non-experimental design that consists of the use of various resources in the field of e-commerce and supply chain. In addition, this research will show how the e-commerce can impact businesses, customers and the supply chain.

Case study 1:

This case study focuses on Dell's Experience with Electronic Commerce in Supply Chain. Dell is one of the many businesses that got affected by e-commerce. According to the research that was made by Harsono's (2014), introducing Internet and websites had allowed Dell to start selling PCs, printers, and other devices online and through the Internet which had caused Dell to gain a competitive advantage and become the number one in PC shipments. This had led the sales to increase to \$50 million per day. With electronic commerce, Dell was able to turn its inventory over every five days and drive all the inventories out of the supply chain by replacing them with information.

Internet Retailer (2015) estimates that in 2014, Dell had sold \$3.65 billion to online consumers compared to \$4.83 billion in 2008 while the remainder is a revenue from selling to businesses and other organizations. Dell had reported a total revenue of \$56.94 billion for the end of February 2013 which was less by 8.3% from \$62.07 billion in the prior year. In December 2013, Dell replaced its mobile site with one that's responsive and adapts to consumers' devices so it displays on Smartphone, tablets and desktops quickly. This had caused a 50% increase in conversion rate from mobile devices, and a 70% increase in

customer satisfaction. Moreover, Dell is ranked number 12 in the Internet Retailer 2015 Top 500 Guide.

Case Study 2

This case study focuses on Worldwide E-commerce Sales. As shown in figure 3, which is taken from eMarketer (2014), purchasing products on the internet will be 5.9% of the total retail market sales in 2014 (\$1.316 trillion). However, by 2018, that total retail sales will increase up to 8.8% (\$2.5 trillion).



Figure 3: Worldwide E-commerce Sales

China E-commerce Sales

Results showed that, China's retail e-commerce sales are \$672 billion in 2015 and are expected to reach \$1,568 billion in 2018 as shown in figure 4, according to the latest data from eMarketer (2015).

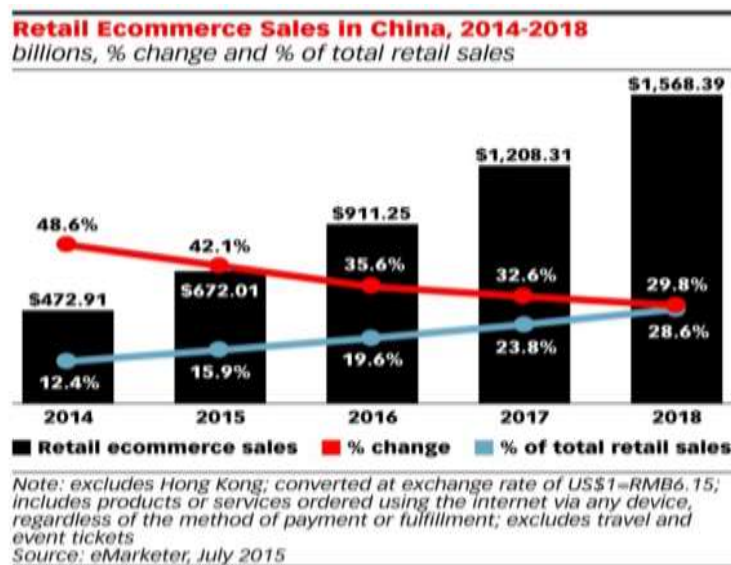


Figure 4: China E-commerce Sales

United States E-commerce Sales

As eMarketer (2014) stated, in 2014 the US retail e-commerce sales is \$304 billion and is predicted to increase up to \$491 billion as shown in figure 5.

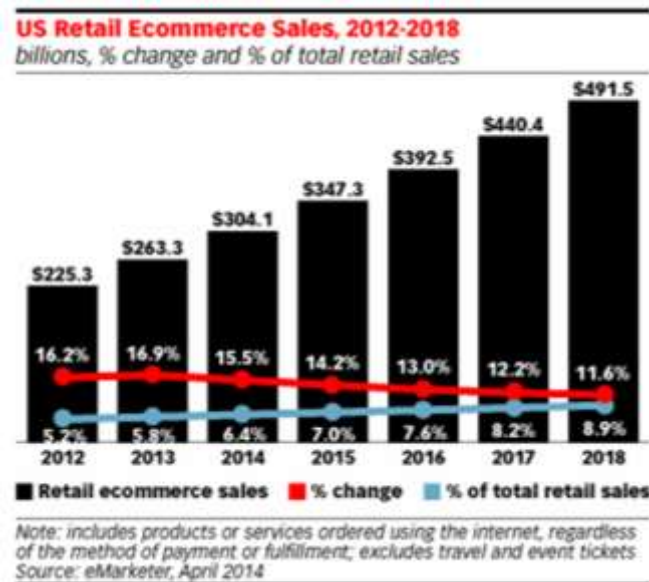


Figure 5: United States E-commerce Sales

United Kingdom E-commerce Sales

UK retail e-commerce sales are expected to reach £60 billion in 2015. From a global perspective, UK will remain the world leader when it comes to retail e-commerce's share of total retail sales, with its share increasing from 14.5% in 2015 to 19.3% in 2019 as shown in figure 6 (eMarketer 2015).

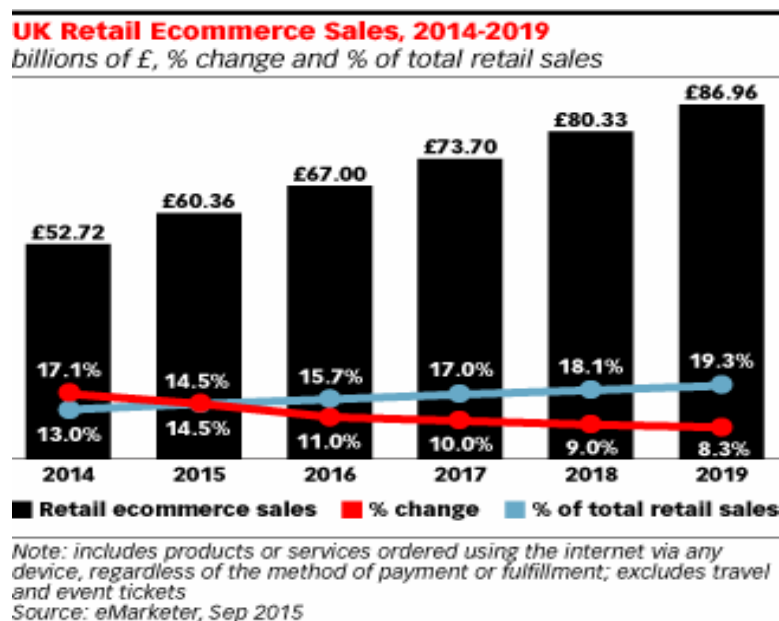


Figure 6: United Kingdom E-commerce Sales

DISCUSSION

The implementation of electronic commerce in the supply chain has been one of the successful strategies used by companies. As a result, the supply chain has been improved, controlled and easily tracked which had helped businesses to become more competitive, efficient, and effective. In addition, the supply chain parties can now easily collaborate and share information between one another. Moreover, there is flexibility in production and the design of the supply chain which reduced the costs and money wasted. Therefore, when it comes to the top three markets and worldwide retail e-commerce sales, there is a huge increase in sales that is predicted to happen. This shows that electronic commerce is widely used and beneficial. For Dell, selling online had caused the revenue to increase up to \$56.94 billion which means customers are now encouraged to purchase products through the Internet using a Smartphone or PC rather than a retailer shop. By removing the intermediate, Dell had also improved and enhanced customer satisfaction by 70% due to having a direct contact with the end user. IBM's Digital Analytics Benchmark survey recently showed that online shopping in holidays and occasions such as in Thanksgiving, was up over 14 percent versus 2011, with 24 percent of consumers using a mobile device to visit a retailer's site. With the Smartphone and tablet markets continuing to grow, each business must have an application and a website that works from both a Smartphone and a PC. In addition, a recent report presented by comScore found that digital coupons were seen as the number one method of savings for consumers. It also showed that 35 percent of respondents found that digital coupons had helped with new ideas. Over one-third of those surveyed indicated that they actually prefer receiving coupons online versus any other format (Forbes, 2013).

CONCLUSION

Electronic commerce and supply chain have become an important part of today's world and an important element of success. Without a clear structure of the supply chain, companies will face a lot of delays, breakdowns, or mistakes in the delivery. However, with the implementation of e-commerce, businesses can easily track the flow of the shipment and delivery, reach a wide range of customers and markets, and gather information. This had created a lot of opportunities for companies and developed new type of business. to illustrates, with the wide use and implementation of electronic commerce, some companies had started providing solutions that helps all the parties involved in the chain to perform the tasks faster and better. Example of these companies are Globalware Solutions, Inc. and Jda Software Group, Inc.. . Globalware Solutions Inc. provides a full-service provider of supply chain management solutions that provides software development and applications that is related to e-commerce. This helps the suppliers with digital printing, product documentation, distribution, data management products, tracking inventory, sales, and shipping information. While Jda Software Group Inc. Provides services that help retailers to ensure that the products or items had arrived to the store at the right time. In addition, the company provides a cloud databases software for integrated supply chain planning and helps companies in managing everything from raw materials to delivery of the finished products.

REFERENCES

- Cheng, Y., & Xiong, Z. (2015). Strategic Conditions for Opening an Internet Store and Pricing Policies in a Retailer-Dominant Supply Chain. *Mathematical Problems in Engineering*, 2015.
- China's ecommerce spending to blast past \$1 trillion in 2017 (2015). Retrieved from: <https://www.techinasia.com/china-ecommerce-spending-to-blast-past-1-trillion-in-2017/>.
- Dell banks on a global e-commerce platform overhaul. Retrieved from: <https://www.internetretailer.com/2015/06/16/dell-banks-global-e-commerce-platform-overhaul>.
- Ecommerce growth statistics - UK and Worldwide (2015). Retrieved from: <http://www.smartinsights.com/digital-marketing-strategy/online-retail-sales-growth>.
- Globalware solutions, inc. (2015). Austin: Dun and Bradstreet, Inc. Retrieved from: <http://search.proquest.com/docview/230541814?accountid=1305>.
- Gold, S., Seuring, S., & Beske, P. (2010). Sustainable supply chain management and inter-organizational resources: a literature review. *Corporate social responsibility and environmental management*, 17(4), 230-245.
- Harsono, A. The Impact of E-commerce in Supply Chain Management at Dell Inc. *Journal of Multidisciplinary Engineering Science and Technology* Vol. 1 Issue 3, October - 2014
- Jda software group, inc. (2015). Austin: Dun and Bradstreet, Inc. Retrieved from: <http://search.proquest.com/docview/230577949?accountid=13057>.
- JIFNET Integrated Logistics LTD. (2012) Supply Chain Management. Retrieved from: <http://www.jifnet.com/content/index.php/services/supply-chain-management/>.
- Nanehkaran, Y. A. (2013). An Introduction To Electronic Commerce. *International Journal of Scientific and Technology Research*, 2(4), 190-193.
- Nikakhtar, N., & Jianzheng, Y. (2012). Role of e-commerce in supply chain management to minimize costs. *African Journal of Business Management*, 6(17), 5671-5683.
- Ninlawan, C., Seksan, P., Tossapol, K., & Pilada, W. (2010). The implementation of green supply chain management practices in electronics industry. In *Proceedings of the international multiconference of engineers and computer scientists* (Vol. 3, pp. 17-19).
- Patil, D. P., Shrotri, A. P., & Dandekar, A. R. (2013). Management of uncertainty in supply chain. *International Journal of Emerging Technology and Advanced Engineering*, 2(5), 303-308.
- Retail Sales Worldwide Will Top \$22 Trillion This Year (2014). Retrieved from: <http://www.emarketer.com/Article/Retail-Sales-Worldwide-Will-Top-22-Trillion-This-Year/1011765>.
- Snyder, R. (2013). E-Commerce and Supply Chain Management. *American Society of Business and Behavioral Sciences*, 20(1), 237-242.
- Total US Retail Sales Top \$4.5 Trillion in 2013, Outpace GDP Growth (2014). Retrieved from <http://www.emarketer.com/Article/Total-US-Retail-Sales-Top-3645-Trillion-2013-Outpace-GDP-Growth/1010756>.
- UK Retail Ecommerce Sales to Reach £60 Billion (2015). Retrieved from: <http://www.emarketer.com/Article/UK-Retail-Ecommerce-Sales-Reach-60-Billion-This-Year/1012963>.