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Integrated Supply Chain Management

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ABSTRACT

This research paper will be used to synthesize published articles into a literature review detailing some of the changes in recent years to retail markets and their supply chains. This paper will examine some of the tools retailers can implement including the use of cloud based software to track and manage their inventory in real time. The research presented in this thesis concludes that retailers have seen a shift towards digital purchases that are shipped from central warehouse facilities directly to end users. Based on these findings, retailers will need to continue adapting their supply chains at the corporate level in order to create more visibility while establishing a dynamic fulfillment management process in order to improve their overall operations. In order to adapt, the way in which information travels between retailers and their supply teams should be treated as a single strategic activity that enhances supply chain performance.

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I. Introduction

Statement of the Problem

Having worked for multiple large retailers over the last few years as a logistics manager, I have witnessed some of the changes that have shaped the retail market that we see today. Due to these evolving circumstances, retailers have had to make large adjustments to their entire supply chains. A firm's supply chain is an important component in any retail organization, which allows for the timely delivery of products and services to their customers. Brick and mortar retailers have faced many challenges in recent years with the birth of E-Commerce including online retailers and have had to make changes in order to stay competitive. This has forced retailers to look at the way they manage their supply chains while incorporating new and emerging technologies in order to meet the demands of their customer base.

Purpose of the Paper

This purpose of this paper will be to synthesize published articles into a literature review detailing some of the changes in recent years to retail markets and their supply chains. This paper will help to provide insights into the different strategies brick and mortar stores can approach to implement new emerging technologies into their current e-commerce business platforms and the advantages of doing so. It will examine some of these new technologies used to drive sales including customer relationship management (CRM) systems. This research paper will be used to examine some of the tools retailers can implement including the use of cloud based software to track and manage their inventory in real time.

Over the past few decades, retailers have seen dramatic changes in the sales market. The rise of the Internet has created changes in the retail landscape that are unprecedented in size. This has led to the creation of multi-channel retailers which in turn has allowed returning

customers to utilize different channels for a wide variety of reasons. Many of these retailers have begun shifting from simply selling products to engaging their customers with the use of CRM resources in order to create a great customer experience within their stores (Sorescu, A., 2011).

Significance and Implications of the Study

The significance of this research will tie directly around its ability to demonstrate the importance of retailers using the best technology available in order to stay competitive with online competitors. This study will help identify some of the new technologies used by retailers in order to improve their supply chains while ensuring that they continue to drive profitable sales. This research will divulge some of the implications that online retail sales have had on brick and mortar locations and identify some of the environments in which certain strategies will not work.

It will also be used to identify some of the supply chain management strategies firms are using within retail locations. It will discuss and examine the importance of source tagging and the use of RFID to keep track of inventory and stock levels. As well as the benefits of a Business-to-Business e-procurement network while showing the benefits of syncing their marketing and supply chain teams. The modern-day retail industry must now be able to successfully manage relationships with millions of customers, compared to those in the business-to-business industry that might have to manage a few dozen. Collett, S. (2004). One strategy that retailers have taken is to use advancements in technology to streamline their supply chains with the overall goal of aligning product variation with the changes in seasonal trends. This has resulted in the creation of new and innovative customer interfaces such as automated kiosks. Sorescu, A. (2011).

Research Contributions

This seminar paper will provide contributions to the field of supply chain management and how business retailers can compete in today's evolving markets. This paper will also provide techniques retailers can use to create a more dynamic and agile supply chain through each of their respective business channels. Retailers that utilize effective supply chain management techniques will be able to see improvement in product quality, inventory levels, and expenses to name a few. Retailers have also seen a shift in the global market as opportunities to reach untapped markets, such as the needs of consumers at the "bottom of the pyramid", has created major opportunities in the retail sector. Sorescu, A. (2011). Through the progression of globalization, retail supply chains will have to be able to function while conducting business with other countries and will include an understanding of tariff and trade laws as well as international relationships.

Outcome Anticipated

The desired outcome anticipated is for this research paper to serve as an educational resource for future students and educators. It is also anticipated that the research discussed will be used to further benefit retail managers in an ever-changing retail market. As consumers shopping habits change, retailers have seen a shift towards digital purchases that are shipped from central warehouse facilities directly to the end user. Retailers must understand the need to adapt their supply chains at the corporate level in order to create more visibility while establishing a dynamic fulfillment management process in order to improve overall operations.

II. Review of Literature

The Current State of the Retail Industry

Over the past 30 years, the retail industry has experienced a radical transformation. The current developments in retail market trends began to take shape around the 1990's and continue to this day. This shift has led to a much more complex and challenging retail industry driven by a number of factors. Some of these factors include higher costs, shorter innovation cycles, increased customers' expectations and the shift towards globalization. Nikolicic, S. (2015). Today's retail industry has also been altered by aggressive competition, shorter product life cycles, increasing cost pressures and the rise of customized demand with high product variants. Wamba, S. (2008). The degree of economic development, demographic characteristics, consumer purchasing habits, are just a few of the many factors that influence modelling and development of the retail market. Nikolicic, S. (2015). One of the current shifts has been a resurgence of the urban shopping market segment. These new urban stores are normally part of mixed use of developments, including residential and offices space with a variety of retail formats. Many retailers, including those who grew substantially during the "Big Box" era, are rethinking their traditional store formats and opting for a combination of box sizes, layouts and product offerings in order to be better suited for the changes in retailing today. Kuzeljevich, J. (2014).

The current retail format that arose from the ashes of industrialization is what we define as the urban department store. This new format was successful, in part, to its ability to offer a wide range of products and services within one centralized location. Kuzeljevich, J. (2014). Over the past twenty years, changes at the store level have occurred including the use of customer service, the retail space and the specialization of assortment. Nikolicic, S. (2015). The traditional

corner store evolved into multiple forms and configurations including supermarkets, discount stores, convenience stores, specialty retailers, gas station stores and virtual stores. Wamba, S. (2008). At the company level, the process of retail consolidation took place, followed by vertical integration of retail and wholesale retail chains. Nikolicic, S. (2015). These changes have had a large impact on the size of most retail locations leading to an increase in daily sales transactions. Wamba, S. (2008).

The Retail Supply Chain

Supply Chain Management (SCM) is considered to be “an integrating approach to manage the overall flow of products, information and finance from the supplier’s supplier to the customer’s customer”. Wamba, S. (2008). The current trends in consumer purchasing habits, such as the increase in internet-based sales, has created a wide array of retail footprints. This has led to an increase in the use of technology in all phases of the retail supply chain while changing the requirements needed to be globally connected. These changes have required firms to rethink the role logistics and supply chain plays in their corporate strategy. Kuzeljevich, J. (2014). As a result, it has become pivotal to any firm’s success in the context of e-commerce to exchange and share information within their organization as well as with their external stakeholders. This thought process holds true for the retail industry, as retail supply chains have seen many changes over the last few decades, which have had long term effects on logistics processes. Nikolicic, S. (2015)

This is evident as shown by the steady increase in use of technology in all aspects of the supply chain and there will continue to be even more technological advancements. This has been observed by the recent acquisition of Kiva System (a fulfillment robotics firm) by Amazon for \$775 Million. Kuzeljevich, J. (2014). The use of new and exciting technology within logistics

itself as well as modern technical and technological achievements have allowed retailers to develop new strategies for managing logistics processes in their supply chains. This includes strategies such as Vendor Managed Inventory (VMI), Efficient Consumer Response (ECR), and Continuous Replenishment (CR). Nikolicic, S. (2015). The strategic purpose these programs hope to achieve is by promoting the removal of unnecessary costs from the supply chain while improving inventory turnover. Despite the uptick in the use of these strategies, many retailers continue to weigh the costs of investing in their supply chains including things such as Just-in-Time inventory and requiring vendors to play a larger role in managing inventory. As companies continue to shift towards dual channel- or in-store and online sales- the pressures of utilizing strategies such as just-in-time and vendor managed inventory will continue to grow. Kuzeljevich, J. (2014)

In recent years, there has been a general shift towards involving logistics and supply chain teams earlier and more directly in developing and setting corporate strategy. It is suggested that greater numbers of external suppliers within logistics and supply-chain related resources - from real estate, to transportation, to packaging – have been directly involved in assisting retailers create their business strategy. This is in large contrast to previous directives in which external sources played virtually no role in decision making strategies within a firm.

Kuzeljevich, J. (2014). In the retail sector, there are wide ranging benefits associated with this approach as it helps to create strong competition between both retailers and manufacturers. It also leads to much wider range of available options within the retail space while helping to reduce the overall costs of those goods as most consumers purchase goods with more regard to quality and price. The logistical challenges that retailers face today are numerous with many focused on finding the appropriate balance between the demands for product availability in a

given sales area at the lowest possible cost. Although firms have made great strides in taking on a collaborative approach to their supply chains, e-commerce continues to be a major challenge to retailers. The sudden shift towards consumer spending through dot.com channels has led many to believe that there would be a restructuring of the business to consumer model. In order to meet this challenge, logistics within retailing must be viewed as a process or series of individual actions with the overall goal retaining customers while remaining profitable. Nikolicic, S. (2015).

Improving Performance at Retail Brick-and-Mortar Locations

Improving retail supply chain performance has become critical to sustaining a competitive advantage and firms continue to adjust the way they measure overall performance as well. Improving performance has shifted over the last few decades from an accounting and budgeting system to utilizing non-financial measures such as competitors, suppliers, and their customers. The availability of performance measurements has increased drastically over the last decade, with most performance models being designed to measure, control, evaluate and benchmarks against industry standards and according to the firm's objectives. Vlachos, I. (2014). There are a few distinct areas that have led to drastic improvements within retail brick and mortar locations including the use of customer relationship management (CRM), radio frequency identification (RFID) technology, and E-Commerce.

Customer Relationship Management (CRM)

In research conducted by The Market Case Study, they defined CRM as: "the retention of customers to create a base of loyal customers, with no acquisition costs for existing and loyal customers, costs are reduced and revenues increased. Customer relationship management differs

to other marketing strategies which focus on the product to achieve a high market share; instead, it has shifted focus to achieving a higher share of customers to sell a wide range of products to. For it to succeed, three key elements need to work in harmony: people, processes and technology.” Market. (2014). The advancement of CRM technology has led to a shift in how retailers create their marketing strategies. The journal *Management Today* described CRM as “a more forensic and scientific approach to marketing. It is measurable. This is especially true for purely web-based companies, such as Google and Amazon, which make virtually no use of conventional marketing channels in building market awareness.” Up Close., (2005). The current growth of CRM across industry sectors is being enabled by technology, but many in the retail industry demonstrate differences in the amount they spend between technology and organizational culture. Kenyon, J., (2003).

Instead of prioritizing product development in order to achieve a high market share, retailers have begun focusing on retaining more of their customers for longer periods in order to market products more on an individual basis. Implementing CRM has allowed retailers to achieve this by retaining their customer’s personal information and purchase history in order to market related products or services. This has resulted to the uptick in cross-selling which is considered a desired outcome of a good CRM strategy. Market Line, (2014). Due to these changes, retailers have begun to explore a wide variety of activities as they expand the boundaries of specific markets and develop new ways to interact with their customers. Another strategy that retailers have taken is to use these advancements in technology to streamline their supply chains with the overall goal of aligning product variation with the changes in seasonal trends. This has resulted in the creation of new and innovative customer interfaces such as automated kiosks. Sorescu, A. (2011).

Some of the barriers to CRM implementation have been related to financial limitations and technological failures within companies while others have pointed to organizational change, people, and culture as the problem. Kenyon, J., & Vakola, M. (Fall 2003). Other barriers include increased competition, increased customer expectations, technology advances and political and legislative factors. Kenyon, J. (2003). Some analysts have pointed out that one cause of CRM failure is by the unintended consequences of management's reaction to growth and change. Although upper leadership decisions are usually driven by good intentions, the impacts of growth can sometimes cause them to put up "walls" in an attempt to standardize operating policies and procedures. O'Reilly (2012). These "walls" may sometimes be put in place through employees and technology in an attempt to control or standardize the services being offered in order to alter the customer experience. This is considered to be a very reactive and inwardly focused approach which can disregard the customers' needs which would ultimately result in poor service levels based on the type of interaction occurring. O'Reilly (2012).

Retaining customers and establishing customer loyalty are some of the main objectives of CRM applications. Market Line (2014). Many loyalty programs used by retailers today utilize what is known as passive technology. This form of technology only requires a customer to simply swipe a card to collect their points, which is then retained within servers to offer further promotions based on purchase history. With these advancements in technology, retailers must take ownership to ensure that these platforms are well designed and easy to use. They must also ensure that customers who are not familiar with the technological advancements of today's loyalty programs are reliable and easy to use. Market. (2014). Retailers use these loyalty programs to collect customer data, trends, and patterns which are then tracked using data

analytics. This allows retailers to identify potential customers who can receive offers and special promotions in order to develop a loyal customer base. Market. (2014).

While these firms attempt to continue following the age-old rule of “retail is detail”, many retailers; specifically, those at the forefront of innovation; understand that attention to details may no longer be enough. This is in part due to the fact that many specialized firms can offer a unique retail experience to their core customers without compromising the bottom line. Sorescu, A. (2011). This has forced retailers to look past the standard operating areas of procurement or inventory stocking and begin exploring business models.

Radio Frequency Identification (RFID)

Radio Frequency Identification (RFID) is an identification method used to transmit information from a tag to a reader device. In most cases, the tag is usually a microchip which contains an antenna that transmits data to a reader. The reader is an electronic device used to wirelessly transmit information from the tag to a back-end database. Similar to biometrics, bar codes, and magnetic stripes, RFID technology belongs to a broader class of Automatic Identification and Data Capture (AIDC) technologies. Even though there are wide variety of technologies that belong to the AIDC grouping, RFID has superior operational performance. This is primarily due to the fact that RFID technology uses radio frequency signals to read or write information on a product equipped with a tag. Wamba, S. (2008). RFID is an automatic object identification technology that identifies items within a specific radio frequency range through radio waves without the need for human intervention or data entry. Vlachos, I. (2014). RFID has continued to see strong growth within the retail supply chain and has garnered the attention of companies in the U.S., Europe and Asia. Nikolicic, S. (2015).

There are considerable advantages to utilizing RFID such as the unique identification of products, intelligent communications and real-time data transfers. This has a dramatic effect on all departments within the supply chain such including transportation management, production scheduling, warehouse management, inventory management and asset management. RFID has also led to faster and more reliable tracking, shipping, checkout and counting as the technology provides precise and timely data for managing the flow of information. This has led to improvements in the flow of materials and inventory management offering a wealth of logistics related data and information that can be used in improving the planning and control of supply chain operations. Vlachos, I. (2014).

Many retailers utilize RFID tagging at the item level, allowing them to manage their equipment through the use of asset tracking by avoiding tedious manual entry tasks. This allows retailers to create a self-checkout process for consumers by utilizing what is known as Electronic Article Surveillance. By doing so, RFID tagging leads to automatic identification that retailers can then use in conjunction with their inventory systems. In most regards, RFID technology is considered to be the next big thing for management and the next revolution in supply chains. It is argued that RFID has helped to streamline supply chains and there has been growing interest within the industrial and academic communities as well as the retail industry. Wamba, S. (2008).

Despite the advantages, there continues to be a limited understanding of the business value of RFID technology in retail supply chains. RFID can be used by retailers to identify the location and quantity of products at various stages within the supply chain while reducing the time required for audits to measure inventory availability across various supply chain locations. Its implementation has also led to savings within the labor force while increasing the number of fulfillment orders leading to increased inventory turnover. It has also led to greater product

quality, lower levels of safety stock, reductions in out-of-stocks, and a reduction in material handling and human error. Nikolicic, S. (2015). It has been noted that the use of RFID has also improved product availability, thereby improving overall profitability and store performance. This in turn has led to firms being able generate accurate demand forecast increases in order to improve their bottom line. Vlachos, I. (2014).

E-Commerce

Over the past few years E-tailers such as Amazon have been applying significant pressure to traditional retailers. Lapide, L. (2016). Traditional brick and mortar retailers have seen huge growth from other sales channels such as mail order and the internet. Kenyon, J. (2003). The recent surge in online sales has forced many retailers to shift their focus to niche markets that wouldn't have been accessible before. Some of these retailers have been able to take advantage of the reduction in costs that the internet has created such as the efficient use of centralized warehousing. Others took a more innovative approach with respect to their business models by altering their "underlying governance mechanisms." This concept has been embraced by both start-ups and multi-channel retailers with a wide variety of industries including food and apparel retailing. Sorescu, A. (2011).

Online retailing has not only changed the way customers shop but it has forced retailers to take a different approach to their customer support at their brick and mortar locations. The increase in online sales has also helped to redefine and widen the variation of product assortments which is also called customer co-creation. In most cases, the retail industry has attempted to increase customer loyalty by offering their products in multiple locations and greater customer support. The rise of online services has further enhanced the shopping experience by reducing search costs while allowing them to purchase products that may not have

been accessible due to previous logistical constraints. The Dot.Com age has not only allowed retailers to sell through multiple channels, such as brick and mortar and online platforms, it has also allowed firms to sell across different channels. Examples of this include allowing customers to purchase online and pick up at in store options, or providing larger selections of products through their websites. Sorescu, A. (2011).

III. Discussion

The research presented in this thesis concludes that retailers have seen a shift towards digital purchases that are shipped from central warehouse facilities directly to end users. Based on these findings, retailers will need to continue adapting their supply chains at the corporate level in order to create more visibility while establishing a dynamic fulfillment management process in order to improve their overall operations. In order to adapt, the way in which information travels between retailers and their supply teams should be treated as a single strategic activity that enhances supply chain performance. This strategy could be used in multiple platforms within the retail industry and involves many activities including sharing information about production, capacity, and performance between different departments and supply chain partners. This information, which is used to improve supply chain performance, will continue to be a critical component to achieving competitive advantage and improving the bottom line. In order to be effective, this information must be integrated within upper management level and is a key indicator of how efficient retailers supply chains will may be.

Many of the logistical constraints that retailers face today are considered to be primarily related to a lack of communication along the supply chain. By further opening lines of communication along the supply chain, retailers would have greater overall visibility which can help lead to improvements such as a reduction in inventory levels while responding to their customer changing needs faster. As brick and mortar retailers continue to move towards a multi-chain platform that incorporates online retailing into their business strategy, firms must continue adapt new strategies and technologies in response to varying customer demand. Retailers who can incorporate some of the resources discussed in this thesis including CRM, RFID, and E-Commerce technologies can be used to streamline communication along the chain thereby

further enhancing supply chain coordination. By doing so, retailers will be able to improve their bottom line and customer satisfaction while reducing inefficiencies along the chain.

In order to successfully adapt to the changing retail market, retailers must be able to create both an efficient and responsive supply chain within their organization. This supply chain strategy could help to create low unit cost while still being able to adapt quickly to market demand. In order to accomplish this, firms must continue to incorporate technology such as RFID into their stores and supply chains. Although RFID is not the newest form of technology available, some argue that it is still superior to that of older industry standards as bar codes. Rather than support this claim, I believe an argument can be made that RFID technology should be used in conjunction with bar coding rather than a substitute or replacement to it.

The research found in this thesis evaluated the impact of RFID practices on retail supply chain performance and examined eight variables for RFID applications. These applications included supplier warehouses, retailer central warehouses, retailer local warehouses, retailer owned stores, standards, transportation, pallet level, and specialized software. What became abundantly clear was that there is no single RFID application that contributes significantly to supply chain performance. There was an exception for however, for when the eight RFID applications were combined together into a single application, they provided strong and extensive results for a number of performance factors. These supply chain performance factors included supplier, inventory, distribution, planning, sales, and forecasting performance amongst others.

There are a wide variety of industries that could benefit from the use of RFID technology. RFID tags utilized in the form of commerce could include advertising, access control, and promotional tracking. It could also be used in various applications for logistics and

transportation through the use of intelligent transportation systems as well as public transportation. It has also been incorporated in a wide variety of institutions including hospitals, museums, libraries, and universities. It has also seen applications in the sports industry, animal identification, and passport technology.

Although there are a wide variety of application that can utilize this technology, there are areas of concern in which it could be more counterproductive if implemented. This is due to the fact the RFID tags generate a substantial quantity of data that may not be useful for overseeing certain applications or managing inventory. Another area of concern is that the specific radio frequencies that are currently used for UHF RFID tags in North America are not used in Europe or certain Asian markets. Unlike the barcode, there is still no universally accepted standard for RFID tags and global retailers will need to use a tag that is functional through all international frequency domains. Another argument could be made that unlike RFID tags, barcodes can be dispersed electronically through mobile devices such as phones for printing and other tasks.

Although there are numerous benefits to implementing RFID technology, it does come with some costs. It would be difficult for retailers to justify completely removing barcode technology due in part to the higher costs associated with RFID implementation. The storage of data associated with tracking inventory uses multiple terabytes of data storage requiring the potential need to upgrade a firms IT infrastructure which can be very expensive. One of the biggest concerns that firms have with RFID technology is security. This is due in part to the possibility of unauthorized tracking of RFID tags. These tags can be read through multiple platforms which poses a potential security concern for location, corporate, and military privacy. Privacy watch dog groups have expressed their concerns related to an ongoing effort to

incorporate RFID tags in consumer products since legal business transactions with readers can be spied on from short distance.

Retail managers who wish to sell RFID technology as an investment within their organization should consider multiple factors including the financial costs. They must also show how this technology would benefit the organizations bottom line while improving sales within an extremely competitive retail industry. Rather than justifying replacing industry standard technologies such as barcodes, management must be able to show how RFID technology can be used in conjunction with each other in order to improve their supply chain.

By implementing RFID into their supply chain model, retailers are able to acquire accurate and detailed information regarding inventory levels as well as historical data such as supply and demand. This would allow retailers to utilize more accurate performance indicators through the use of RFID technology enabling them to make timely decisions that could may create a reduction in lead times along the chain. As the development of RFID technology continues to be a widely viewed topic, the hope is that the findings of this research may one day help retailers pursue a further understanding of other related topics including third party logistics provider as well as smaller and medium sized suppliers. Given the strong impact that RFID technology has had on retailers supply chain performance indicators and metrics, implementing it can help establish a source of sustainable competitive advantage.

IV. Conclusion

A firm's supply chain is an important and integral component in any retail organization, which allows for the timely delivery of products and services to their customers. The purpose of this research paper was to demonstrate the importance of retailers using the best technology available in order to stay competitive with online competitors. This study identified some of those new technologies used by retailers today in order to improve their supply chains while ensuring that they continue to drive profitable sales. This research also helped to divulge some of the implications that online retail sales have had on brick and mortar locations and identify some of the environments in which certain strategies will not work

One of the key takeaways from these findings is that brick and mortar retailers have faced many challenges in recent years with the birth of E-Commerce including online retailers and have had to make drastic changes in order to stay competitive. The incorporation of technological advancements discussed in this paper including CRM and RFID can have a substantial impact on retailers and their supply chains. RFID was found to have a vast affect multiple areas of retailers supply chains including warehouse management, transportation management, production scheduling, and order management. Many retail operations can be improved including tracking, shipping, checkout and counting through the use of RFID technology allowing for faster, accurate, and timely collection of data.

The other technological advancement discussed in this paper, CRM, addressed how today's retailers must be able to successfully manage relationships with millions of customers and their supply chains. One of the strategies that retailers have taken is to use advancements in technology to streamline their supply chains with the overall goal of aligning product variation with the changes in seasonal trends. With all the changes made through the internet, retailers can

now efficiently manage their operations through CRM in order to improve their overall brand image. This allows them to establish a customer base by entering markets that were originally underserved by mass manufacturers. Based on these findings, it is clear that CRM and RFID technologies have helped drive loyalty and build profitability by investing in a firm's supply chain. Retailers must continue to ensure that the right technology is in place to help drive processes while providing the highest quality service possible to their customers in order to stay competitive in the ever shifting retail landscape.

Many would consider RFID technology to be an outdated form of technology. I believe that despite its longstanding use in certain markets, RFID technology coupled with universally accepted standards such as bar codes will continue to improve business to consumer channels. As RFID technology becomes universally accepted worldwide, I believe that in the future it can help lead to new advancements in essential institutions such as universities and the healthcare industry.

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