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**Emerging Issues in Supply Chain Management with a Focus on Supply Chain Technologies and how they Affect Business Organizations Today; A Case of Unilever Kenya Limited**

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# Emerging Issues in Supply Chain Management with a Focus on Supply Chain Technologies and how they Affect Business Organizations Today; A Case of Unilever Kenya Limited

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## Abstract

The fundamentals of supply chain management provide for many players to be involved from the source of raw materials to the end user. Supply Chain Management presents a company with the opportunity to mobilize goods and services, finances and information. The process that ensures a product reaches the consumer involves the collected effort of many players within the chain that make important decisions. These decisions are often influenced by the emerging issues within the chain; specifically, technology represents one of these issues and all players in the chain have to understand how it affects the process. The impact of supply chain technologies on business decisions cannot be understated, since it is the most dynamic aspect of business today; in this regard, managers within the supply chain know that it is not only a tool, but a paramount driver in the chain. The objective of the study was to determine the effects of emerging issues in supply chain management with a focus on supply chain technologies and how they affect business organizations today. The researcher used questionnaires to collect data. This study adopted descriptive research designs a case study of Unilever Kenya that generated both quantitative and qualitative data. The target population of this study was 60 employees of Unilever Kenya. Collected data was checked for completeness and consistencies. Content analysis was used to analyze qualitative data. The collected data was edited, coded and entered for analysis using the computer statistical package tool SPSS. Analyzed data was presented in tables. The findings the

study concluded there were many types of supply chain technologies available. It was therefore the task of a company to choose a particular supply chain technology that would suit its needs. Further, the study concluded that supply chain technologies had helped cut down supply chain related costs and increase service deliveries.

**Keywords:** *Supply Chain Management, Supply Chain Technologies, Business Organizations & Unilever Kenya Limited.*

## **1.0 Introduction**

### **1.1 Background of the study**

Evidently, the constant progression of technology continues to influence multiple aspects of business, as it has become one of the most notable emerging issues in supply chain management. Today, almost every business has to consider the impact of technology on its supply chain in order to manage it effectively. Failure to fully understand how technology can be used to improve the activities within the supply chain may have regressing effects, as competitors would gain an edge. The fundamentals of supply chain management provide for many players to be involved from the source of raw materials to the end user (Stadler & Kilger, 2015). Firms such as Unilever Kenya interact and conduct business with many companies within its supply chain. Supply Chain Management presents a company with the opportunity to mobilize goods and services, finances, and information (Stadler & Kilger, 2015). The process that ensures a product reaches the consumer involves the collected effort of many players within the chain that make important decisions. These decisions are often influenced by the emerging issues within the chain; specifically, technology represents one of these issues and all players in the chain have to understand how it affects the process.

One of the most notable elements of modern technology is the internet that has infinite possibilities; it can be used along the supply chain to connect all players and digitize transactions and other processes. Unilever is one of the largest manufacturer of multiple household goods consumed by over 2 billion people every day (Unilever.com, 2016). Being a multinational that owns about 400 different brands, the firm is responsible for supplying many people around the world with quality products that depend upon the its supply chain. With this in mind, the firm strives to apply potent Supply chain management strategies that will put it a step above competitors (Unilever.com, 2016). As aforementioned, such firms ought to understand the

impact of an issue such as technology in modern times in order to know how it will affect the firm and how the company can use it to its advantage.

To understand how technology affects the supply chain management of a company of the size of Unilever, it is necessary to understand its vast supply chain. Unilever's products range from cosmetics such as shampoos; food products such as ice cream; toiletries; and other house hold goods (Unilever.com, 2016). In its website, the firm asserts that around the world, 7 out of 10 households have at least one of its products (Unilever.com, 2016); this means that the company has an acceptable reputation among consumers. All its values are transcended through its branches worldwide, including Kenya which serves the East African population and other countries in the region. Unilever presents a perfect case study since it is one of, if not the biggest, manufacturer of multiple products, and it transacts with multiple suppliers that hail from different regions. Being a major player in the market, it is assumed to keep up with emerging supply chain technological trends that may affect its chain of supply.

The impact of supply chain technologies on business decisions cannot be understated, since it is the most dynamic aspect of business today; in this regard, managers within the supply chain know that it is not only a tool, but a paramount driver in the chain (Stadler & Kilger, 2015). In fact, the impact of technology is set to grow in the near future due to its rapid advancement and the need to satisfy consumers on a constant basis (Singh, 2003). Recent developments in technologies have brought about inventions and innovations that are considered by most to be influential in supply chain management. Some of the technology developments include Radio Frequency Identification (RFID), Bar Code Scanners, Enterprise Resource Planning, Electronic data interchange (EDI), Quick response code (QR), Internet and Intranet, Electronic point of sale (EPOS). Other supply chain technologies used to yield result in this area include; Track and Trace, Vendor Managed Inventories (VMI), and Standard Operating Procedures (SOP)

## **1.2 Statement of the Problem**

As businesses grow, they need to ensure that the supply chain is reliable enough to ensure further growth; however, to realize this growth, firm have to be aware of emerging issues within the chain such as technological elements. Today, all business around the globe have to consider the impact of technology since its advancement, coupled with globalization has made the world a smaller place where business is conducted in a short time. In this regard, multinationals that

dwelling on traditional supply chain methods and models will find it difficult to penetrate the market, maintain their market share, or worse, deliver complete orders on time and satisfy consumers.

Modern technology involves the consumption, managing, processing and storing of data and those that turn raw data into usable information and knowledge are constantly changing how business organizations operate (Singh, 2003). On its part, Africa is making considerable steps to stay in touch with technology; however, businesses seem to be adopting technological changes at a much slower rate. While this might not be entirely of their doing, they are in competition with other international organizations that do their due diligence to constantly improve. Firms such as Unilever Kenya have moved to the continent and they look to improve their own supply chain technologies at the same rate at which the parent firm adopts them. If they find it difficult to adopt to certain supply chain technologies in Africa due to factors such as government policies or the lack of resources to do so, then they risk falling behind in their quest to conquer the African and global markets.

In the same way, while Kenya consumes a significant percentage of the data consumed in Africa, business organizations still lag behind in implementing emerging technologies that affect their supply chains (Meeker, 2014). What results from this, is a stagnation of businesses since they cannot compete with others in the region or foreign firms that penetrate local markets. For example, the internet of things (IoT), which is one of the emerging technologies where everything within the supply chain is connected by internet or otherwise, demands that all countries have systems that will support the technology such as internet connectivity in almost all areas. For a country such as Kenya, internet is only available in the major cities, and this may affect such a technology for a firm such as Unilever Kenya. In view of this, the firm will have to adjust to a different technology that will address the negatives that might come with the lack of internet connectivity. Alternatively, the firm could find other sources of internet connectivity that will ensure it works efficiently to reduce any disruptions in the supply chain.

These issues point to the need for studying the emerging supply chain technologies and how they can be implemented by firms that want to cope with competition and remain leaders in their respective markets. Unilever Kenya presents a perfect case study since it is a leader in multiple markets and it has a complex supply chain where it conducts business with different suppliers

from different parts of the region. In addition, its complexity is also defined by the numerous products it deals with and its involvement in agriculture and other sectors in the region. Evidently, Unilever Kenya's complex supply chain needs the firm to incorporate modern supply chain technologies in order to perform the way it does or better.

### **1.3 Objectives of the study**

The specific objectives of the study were;

- i. Establish supply chain technologies used in Unilever Kenya.
- ii. Investigate the effects of these emerging supply chain technologies in Unilever.
- iii. Discuss supply chain technological challenges faced by Unilever Kenya.

## **2.0 Literature Review**

### **2.1 Theoretical Review: Game Theory**

Game theory, originally developed by von Neumann and Morgenstern (1944), argues that many economic decisions involving more than one actor (e.g. a buyer and a supplier) take the form of a sequential, strategic game involving anticipation by one player of the other player's actions. Games such as the Prisoner's Dilemma have been used to show how co-operative behavior becomes more likely if two actors interact with one another on a repeated basis. This is because repeated interactions enable them to get to know each other, to build trust and to overcome the lack of information available in a one-off interaction about the other party's likely behavior. In a one-off interaction, where the other party's intentions are unknown, the model suggests that both actors will behave competitively to try to maximize their individual utility. Based on this theoretical provenance, the underlying assumptions of the integrated SCM approach are that actors are rational, but may face information problems; and that actors are self-interested utility maximizers, but will co-operate through repeated interactions where greater net gains can be had from doing so. The integrated SCM literature has applied this reasoning to develop an understanding of how buyers and suppliers can be encouraged to co-operate on a long-term basis and innovate to create a larger pool of value rather than competing over a static pool of value (Macbeth, 1944). A crucial aspect of this approach is the idea that buyers and suppliers should be trusting and transparent with one another, sharing information through mechanisms such as open book costing to signal their commitment and future intentions (Lamming, 2001).

## **2.2 Empirical review**

Nair, Raju and Anbuudayashankar (2009) conducted a study on the overview of Information Technology tools for Supply Chain Management. Critical IT demonstrations and implementations in SCM are discussed. Fundamental changes have occurred in today's economy. These changes alter the relationship we have with our customers, our suppliers, our business partners and our colleagues. Reflection on the evolving and emerging Information Technology trends like Software Agents, RFID, Web Services, Virtual Supply Chains, Electronic Commerce and Decision Support Systems further highlights the importance of IT in the context of increasingly global competition. The rapid adoption of the Internet for communication with all stake-holders seems to reflect the potential of the new-age communication media.

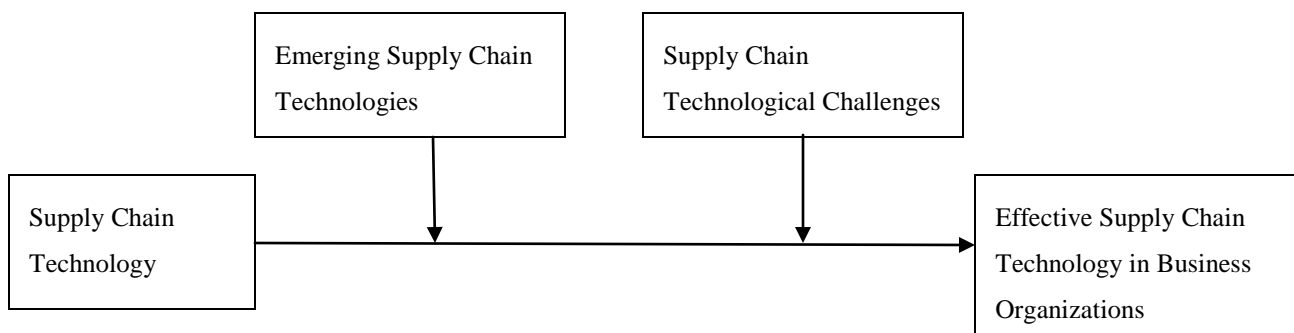
Holten, Dreiling, zur Muehlen and Becker (2002) conducted a study on enabling technologies for supply chain process management. While the operational and strategic aspects of supply chain management have been researched to some extent, one of the questions for enterprises is the management and controlling of supply chain operations on a tactical level. We discuss the activities on this level and show the impact of information availability on the operational management of the supply chain. Using the framework of the Balanced Scorecard, we introduce the Supply Chain Scorecard as a suitable tool for the controlling of supply chain operations on a higher level of abstraction.

Ross (2016) conducted a study on Introduction to supply chain management technologies. The study established various supply chain technologies to influence supply management. Bhandari (2014) conducted a study on the impact of the technology on logistics and supply chain management. The author mainly focuses on the secondary data for collecting data relating to various technology used in logistics and supply chain management. The author draws conclusion that Technology is a vehicle to enhance supply chain competitiveness and performance by enhancing the overall effectiveness and efficiency of logistics system. Moreover various innovations in technology have made the task easier and faster besides being less laborious. Awad and Nassar (2010) conducted a study a Broader view of the Supply Chain Integration Challenges. Supply chain management (SCM) executives face unique challenges, with respect to integrating supply chain-specific strategies with the overall corporate business strategy. The

challenges established include business micro environment challenges, business macro environment and technical challenges.

Li, Ragu-Nathan, Ragu-Nathan and Rao (2006) conducted a study on the impact of supply chain management practices on competitive advantage and organizational performance. Data for the Study were collected from 196 organizations and the relationships proposed in the framework were tested using structural equation modeling. The results indicate that higher levels of SCM practice can lead to enhanced competitive advantage and improved organizational performance. Also, competitive advantage can have a direct, positive impact on organizational performance.

### 2.3 Conceptual framework



**Figure 1: Conceptual framework**

### 3.0 Research methodology

According to Mugenda and Mugenda (2012), research design specifies the methods and procedures for collecting and analyzing the needed information. It indicates a framework or blueprint for the research as well as the research methods chosen to determine the information needed. It defines the sampling method, sample size, measurement and data analysis processes (Blumberg, Cooper & Schindler, 2014).

This study adopted descriptive research designs that generated both quantitative and qualitative data. A descriptive research designs was adopted because of its ability to consolidate both qualitative and quantitative data. A descriptive research design provides a valid and accurate representation of factors and variables, which pertain to the research questions. A population is defined as the set of individuals, objects, or data from where a statistical sample can be drawn (Sanders *et al.*, 2015). Population is the entire group of individuals, events or objects having a common observable characteristic (Blumberg *et al.*, 2014). Blumberg, Cooper and Schindler



further added that a population is the total sum of collected units from which the researcher draws conclusions of the study. The target population of this study was 60 employees of Unilever Kenya.

According to Nachmias and Nachmias (1996) a sample is any subset of sampling units from a population. The purpose of sampling is to gain an understanding about some features or attributes of the whole population, based on the characteristics of the sample (Lucy, 1996). The target respondents for this study constituted the supply chain, finance, and operations departments, for this study, Sample-Population table were used to determine the sample size. The Sample-Population table is attached on Appendix II for reference purposes. Therefore the sample size of this study was 52 employees. The study used structured questionnaires to collect the required data from the respondents. Orodho (2004) defines a questionnaire as an instrument used to gather data, which allows a measurement for or against a particular viewpoint. Orodho (2004) emphasizes that a questionnaire has ability to collect a large amount of data in a reasonably quick space of time. Questionnaires were delivered to the respondents and have them filled in their presence to ensure better understanding of the questions and enhanced reliability. Collected data was checked for completeness and consistencies. Content analysis was used to analyze qualitative data; Quantitative data was analyzed using descriptive statistics. Quantitative data was analyzed using SPSS software.

## 4.0 Results and findings

### 4.1 Descriptive Statistics on Supply chain technologies

The respondents were asked to indicate the type of supply chain technologies. The result findings were presented in table 1

**Table 1: Supply chain technologies**

<b>Supply chain technologies</b>	<b>Frequency</b>	<b>Percent</b>
Automatic identification	14	29.2
Radio frequency Identification (RFID)	4	8.3
Electronic Data Interchange (EDI)	7	14.6
Enterprise Resource Planning	7	14.6
Distribution Requirement Planning	10	20.8
Vendor Managed Inventory	6	12.5
<b>Total</b>	<b>48</b>	<b>100</b>

The results in table 1 showed that 29.2% of the respondents indicated automatic identification supply chain technologies, 20.8% indicated Distribution Requirement Planning, and 14.6% indicated Electronic Data Interchange (EDI). Further, results showed that 14.6% indicated Enterprise Resource Planning, 12.5% indicated Vendor Managed Inventory while 8.3% indicated Radio frequency Identification (RFID).

#### 4.2 Descriptive Statistics on Effects of emerging supply chain technologies

The study sought to establish the effects of emerging supply chain technologies on the performance Unilever Kenya. The respondents were asked to respond on statements relating to improved performance. The result findings were shown in table 2.

**Table 2: Effects of these emerging supply chain technologies in Unilever**

<b>Effects of these emerging supply chain technologies in Unilever</b>	<b>strongly disagree</b>	<b>disagree</b>	<b>neutral</b>	<b>agree</b>	<b>strongly agree</b>	<b>Mean</b>	<b>SD</b>
Improved Employee Productivity	2.1%	18.8%	10.4%	50.0%	18.8%	3.6	1.1
Increased Revenue Turnout	10.4%	20.8%	6.2%	33.3%	29.2%	3.5	1.4
Timely supply delivery	2.1%	25.0%	8.3%	35.4%	29.2%	3.6	1.2
Improved customer service	6.2%	22.9%	2.1%	37.5%	31.2%	3.6	1.3
Decreased cost	8.3%	18.8%	4.2%	39.6%	29.2%	3.6	1.3
Fast product cycle time	12.5%	10.4%	12.5%	27.1%	37.5%	3.7	1.4
Smooth Flow of Information	8.3%	10.4%	18.8%	29.2%	33.3%	3.7	1.3
<b>Average</b>						<b>3.6</b>	<b>1.3</b>

Results in table 2 revealed that majority of the respondents who were 64.7% agreed that there was improved employee productivity. The results also showed that majority of the respondents who were 62.5% of the respondents agreed that there was increased revenue turnout. The results also showed that majority of the respondents who were 64.6% of the respondents agreed that timely supply delivery was achieved. Further, result findings indicated that majority 68.7% of the respondents agreed that there was improved customer service, 68.8% acknowledged that cost of production decreased, 64.6% of the respondents indicated that there was fast product cycle time. Finally, 62.5% of the respondents agreed that there was smooth flow of information. On a five point scale, the average mean of the responses was 3.6 which means that majority of the

respondents were agreeing to the statements in the questionnaire. The standard deviation was 1.3 meaning that the responses were clustered around the mean response.

### 4.3 Descriptive Statistics on Technological challenges in Unilever Kenya

The study sought to identify challenges affecting adoption of supply chain technologies in Unilever Kenya. The respondents were asked to respond on statements relating to Technological challenges in Unilever Kenya. The result findings were shown in table 3.

**Table 3: Technological challenges in Unilever Kenya**

Technological challenges	strongly disagree	disagree	neutral	agree	strongly agree	Mean	SD
Technological Complexity	8.3%	18.8%	14.6%	29.2%	29.2%	3.5	1.3
Inadequate Technological Knowledge	4.2%	20.8%	10.4%	31.2%	33.3%	3.7	1.3
Technological Dynamics (Changes)	8.3%	14.6%	10.4%	27.1%	39.6%	3.8	1.3
High Cost Of Purchasing and Maintaining Technology	10.4%	16.7%	10.4%	20.8%	41.7%	3.7	1.4
Cyber-Crime Issues	12.5%	8.3%	10.4%	22.9%	45.8%	3.8	1.4
Lack of relevant technological Infrastructure	4.2%	14.6%	14.6%	35.4%	31.2%	3.8	1.2
Lack of relevant Technological Policies	6.2%	16.7%	16.7%	25.0%	35.4%	3.7	1.3
<b>Average</b>						<b>3.7</b>	<b>1.3</b>

Results in table 3 revealed that majority of the respondents who were 43.8% agreed that technological complexity challenges affected adoption of supply chain technologies in Kenya. The results also showed that majority of the respondents who were 64.5% of the respondents agreed inadequate technological knowledge affected adoption of supply chain technologies in Kenya. The results also showed that majority of the respondents who were 66.7% of the respondents agreed that Technological Dynamics (Changes) affected adoption of supply chain technologies in Kenya. Further, result findings indicated that majority 62.5% of the respondents agreed that High Cost of Purchasing and Maintaining Technology affected adoption of supply chain technologies in Kenya, 68.7% acknowledged that Cyber-Crime Issues adoption of supply chain technologies, 66.6% of the respondents agreed that Lack of relevant technological Infrastructure affected adoption of supply chain technologies in Kenya. Finally, 60.4% of the

respondents agreed that lack of relevant technological policies affected adoption of supply chain technologies in Kenya. On a five point scale, the average mean of the responses was 3.7 which means that majority of the respondents were agreeing to the statements in the questionnaire. The standard deviation was 1.3 meaning that the responses were clustered around the mean response.

#### **4.4 Qualitative analysis**

Content analysis was carried out using an interview guide that was subjected to the principals and bursars. Qualitative data were generated which was presented in prose form. The respondents were asked to lists other supply chain technologies used at Unilever Kenya Limited. The other supply chain technologies were enterprise resource planning (ERP), supply chain planning (SCP)systems, manufacturing execution systems (MES), warehouse management systems (WMS), transportation management systems, customer relationship management, automated quality control systems, computer-aided design systems, geo-coded tracking systems (GCTS), bar-coding technology, e-commerce technologies, supply chain event management (SCE), demand forecasting management (DFM), ERP and Supply chain planning systems(SCPs). They indicated that supply chain technologies have helped improve performance of Unilever by cutting down logistic costs, improving service delivery and output production. They were further asked to indicate other challenges facing adoption of supply chain technologies. The respondents indicated that employee resistance to learn new aspects of supply chain technologies was a challenge. However, they said that they were organizing training programs to train its employees

#### **5.0 Conclusions**

The conclusions of this study were informed by the findings based on each study objective and also findings of other similar studies. Each objective was reviewed and a conclusion provided which covers both theory and practice. The purpose of this study was to explore emerging issues supply chain management with a focus on supply chain technologies and how they affect business organizations today. Based on the findings the study concluded there were many types of supply chain technologies available. It was therefore the task of a company to choose a particular supply chain technology that would suit its needs. Further, the study concluded that supply chain technologies had helped cut down supply chain related costs and increase service

deliveries. Finally, the study concluded that employee resistance to learn new aspects of supply chain technologies was a challenge. There were also high costs to acquire these technologies.

## 6.0 Recommendations

The firm should train its employees on the use of new supply chain technologies and also consider to purchase supply chain technologies that suit their needs and demands. These will enable it to reduce supply chain related costs and increase output. The company should identify ways to reduce/mitigate challenges facing quicker adoption of supply chain technologies. Emerging technologies, especially in the information technology sector have been known to be susceptible to cyber-crime, as more people have made an effort to study and understand information technology systems. This calls for strong and tight cybercrime measures. A slight interference in the network has the potential to put a lot of processes on hold which could have a negative impact on the chain. The study recommends on a continuous supply of fast and reliable network. The study also recommends on use of technology that is adaptable in the future to avoid replacing technology every now and then.

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