

INFLUENCE OF SUPPLY CHAIN MANAGEMENT PRACTICES IN COMBATING COUNTERFEITS IN KENYA: CASE OF PHARMACEUTICAL COMPANIES IN NAIROBI COUNTY

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ABSTRACT

Counterfeits have more than doubled around the globe. This phenomenon has developed in leaps and bounds in spite of the great strides made in the professionalization of the supply chain management practices over a decade ago. The Kenyan government, the manufacturers, companies and private businesses have lost billions of dollars each year to counterfeits. A report by the pharmacy and poisons board (PPB) and the National Quality Control Laboratories (NQCL) in 2005 showed that 30% of multinational pharmaceutical medicines sold in Kenya were counterfeit, representing 40% of the drugs sold in the country. According to the Kenya Association of Pharmaceuticals Industry (KAPI), counterfeit medicines accounted for approximately Kenya Shs.9 billion in sales annually in the year 2011 which corresponded to between 20 -25 % of the total legal commercial pharmaceutical market. The general objective of this study was to evaluate the influence of supply chain management practices in combating counterfeits in Kenya with reference to pharmaceutical companies in Nairobi County. The guiding specific objectives were to assess the contribution of the supply chain management practices such as; Tracking of product movement, Consumer demand, Predatory pricing and Regulatory oversight and enforcement in combating pharmaceutical counterfeits in Nairobi County. The study adopted a descriptive research design. The target population was 500 pharmaceutical companies within Nairobi County with a sample size of 151. The study utilized questionnaires as the research instruments for data collection, SPSS Version 20 computer program used for data analysis. Quantitative data is presented in frequencies, pie charts, bar graphs, percentages and tables while qualitative data is organized into themes/categories according to the objectives of the study. The major findings were that Tracking of product movement, Consumer demand, Predatory pricing and regulatory oversight and enforcement

contributed significantly to the efforts of combating counterfeits to a percentage point of 78 which is quite impressive given the enormity of the problem.

Key Words: *Counterfeits, Supply chain management practices, Information Technology, Supply Chain Management, Parallel Trading, Influence, Consumer demand, Tracking of product movement, Predatory pricing, Regulation and oversight*

Introduction

The Globalization of the international economy has led to the integration of international businesses, economic and financial activities which is due to electronic works, liberalization of cross-border markets and the emergence of several new countries on the global market (Chitembwe, 2012). As the global markets and regional businesses increase, counterfeit products have at the same time increased. Counterfeits and pirated goods can be found in almost every country of the world and in virtually all sectors of the global economy (Chitembwe et al 2012). The Economic Organization for Cooperation and Development estimated that counterfeits which were approximately \$5.5 billion in 1982 snowballed into an estimated total worth of \$250 billion in 2009.

A few countries are badly affected by counterfeiting than others because of the different regulations and taxation regimes that govern the mode of business (Stumpf&Chaudhry, 2010). Counterfeiting infests the entire supply chain causing monetary loss, lost sales, lower profits and loss of brand trust and value. For governments, there are lower tax revenues and higher expenditure on welfare, health services and crime prevention. Consumers receive poor quality products that are unregulated and unsafe. As businesses suffer income loss and damaged brands, they are forced to cut jobs and reduce investments leading to lower economic growth. Pharmaceutical products which are produced and sold with the intent to deceptively represent its origin, authenticity or effectiveness are generally counterfeit medications. This definition is collaborated with the World Health Organization's (WHO) definition that a counterfeit medicine is one which is deliberately and fraudulently mislabeled with respect to identity and/or source.

Statement of the Problem

From the detailed Statistics from the Kenya Association of Manufacturers (KAM), the East Africa region loses about US\$ 500 million per annum on counterfeit goods, and more than 30% of medicines sold in Kenya are fake (KAM 2013). Kenyan manufacturers incur an annual net loss of over Shs30 billion due to counterfeit products while the government loses Kenya Shs 6 billion in potential tax revenue due to counterfeit products alone (KAM 2013). The extent of the counterfeit trade is such that in 2009, the International Chamber of Commerce estimated that the annual loss to businesses as a result of counterfeiting was in the range of \$750 billion and the figure keeps on increasing. An increase in the level of counterfeiting slows and reduces economic growth. The government therefore needs to worry about the achievement of vision 2030 if this trend continues unabated. A report by the pharmacy and poisons board (PPB) and the

National Quality Control Laboratories (NQCL) in 2005 showed that 30% of multinational pharmaceutical medicines sold in Kenya were counterfeit, representing 40% of the drugs sold in the country.

According to the Kenya Association of Pharmaceutical Industry (KAPI), counterfeit medicines accounted for approximately Kenya Shs.9 billion in sales annually in the year 2011 which corresponded to between 20 -25 % of the total legal commercial pharmaceutical market. According to Transparency Market Research, Kenyatta National Hospital spent 1.2 billion USD in the year 2012 on just one type of anti-counterfeiting tracking system. The signing of the Anti-Counterfeiting Trade Agreement in 2011 shows that governments and pharmaceutical companies are serious about limiting counterfeits in the interest of protecting property rights. The researcher acknowledges the studies done to unearth this problem but however, to the best of the researcher's knowledge, no study has ever been done with regard to the influence of supply chain management practices in combating counterfeits in Kenya. This study therefore was intended to fill in this research gap with reference to Pharmaceutical companies in Nairobi County.

General Objective of the Study

The general objective of this study was to evaluate the influence of supply chain management practices on combating counterfeits in Kenya with reference to pharmaceutical companies in Nairobi County.

Specific Objectives

1. To find out if tracking of product movement influences combating of pharmaceutical counterfeits in Pharmaceutical companies in Nairobi County.
2. To investigate the influence of consumer demand in combating of pharmaceutical counterfeits in pharmaceutical Companies in Nairobi County
3. To determine the influence of predatory pricing in combating of pharmaceutical counterfeits in Pharmaceutical Companies in Nairobi County.
4. To determine whether regulatory oversight and enforcement influences combating of pharmaceutical counterfeits in pharmaceutical companies in Nairobi County.

Theoretical Review

Neoclassical theory of Consumer Demand

According to Weber (2001), demand is the willingness and ability to purchase a range of quantities at a range of prices. Consumers purchase goods that satisfy wants and needs that generate utility. Those goods that generate more utility are more valuable to consumers and thus buyers are willing to pay a higher price (Bentham, 2005). Bentham used the word "utility" in reference to the satisfaction of wants and needs. He developed the notion that people are motivated by the desire to maximize utility. The ability of consumers to pick one unit of one type of differentiated commodity is important to determine the situations in which discrete change in prices leads to some consumers switching brand or mode, while others change the magnitude of

their consumption. If each additional unit of a good is less satisfying, then a buyer is willing to pay less, as such the demand price declines. This inverse law of demand relation between demand price and quantity demanded is a direct implication of the law of diminishing marginal utility.

According to Jevons (2005), the rule of consumer equilibrium, consumers purchase goods such that the ratio of marginal utilities is equal to the ratio of their prices. This law is particularly important for insight into the market demand and the law of demand (McFadden, 1977). When the prices increase, the willingness and ability of sellers to offer goods increase (Jevons, 2005). Jevons further explained that a small increase in the prices of a commodity purchased by an agent leads to some consumers switching from consumption of a commodity whose price was raised to a similar commodity (Mandler, 1999).

This theory was consistent with this study in that as demand for pharmaceutical products increases, the counterfeiters bring more of their products into the market. This is true to the fact that the prices for original branded products are deemed to be high thus encouraging counterfeiting (Jevons, 2005).

Predatory pricing theory

According to Shughart (1990), predatory pricing is a practice that allegedly causes “primary line injury” by attempting to put competitors out of business. In the case of predatory pricing, the offending firm allegedly sets price and output at levels where price is less than the marginal cost (Kaserman and Mayo, 1995). Predatory pricing is said to occur when a firm reduces its price below the short run profit in order to drive its competitors from the market so that following their exit, price can be raised above the level that could otherwise be sustained (Kaserman and Mayo, 1995).

By charging prices that are sufficiently low to inflict losses on rival firms, the predator effectively purchases a market structure that is more conducive to monopoly pricing (Williamson, 1977). Williamson argues that if a dominant firm increases its output as a response to entry by another firm, then it should be viewed as predatory, since the effect of increasing output will be to drive down prices (Scherer, 1976). Shughart (1990), proposed that if a firm lowers prices to gain monopoly power it should be prohibited from expanding its own output in the aftermath. Predatory pricing can be a successful strategy only if the firm engaging in the practice is able to raise prices after its actions (Baumal, 1979). This theory was in accordance to this study since counterfeiters tend to apply price reduction strategies in a free market so as to gain a greater market share than the brand owners. According to Areeda and Turner (1975), below average variable cost pricing model permits easier detection of illegal predatory pricing. According to the Sherman Antitrust Act of 1890, it is illegal for firms to engage in practices that would enable them to monopolize a market.

Theory of supply chain intermediation

According to Spulber (1996), an intermediary is a fundamental building block of economic activity. He proposes the intermediation theory as an exchange between a group of suppliers and customers. A firm is created when the gains from intermediated exchange exceeds the gains from direct exchange between the supplier and the customer. He suggested that the very existence of firms is due to the need for intermediation. According to Whinston, (1997) and Bollier, (1996), disintermediation occur when an intermediary is removed from a transaction. The theory offers powerful explanation for why intermediaries exist, their advantage over direct exchange, and their roles in price setting, transaction costs, and competition (Spulber, 1996).

Normative stakeholders' theory

According to Evan and Freeman (1990), stakeholders are “Those groups who are vital to the survival and success of any corporation”. It means customers, employees, suppliers, communities, shareholders and managers. His other definitions of stakeholders include: “Group of people who can affect or can be affected by the achievement of the organization’s objectives” (Freeman,1984) or “Those groups who are vital to the survival of the organization” (Freeman,2004). According to Donaldson and Preston (1995), stakeholder interests has an intrinsic worth not directly linked to the company interests. One pillar of the normative stakeholder theory is that the company decisions affect stakeholders. In this kind of situation, when the action of an agent affects another agent, the company has to build ethical principles. Decisions made without any consideration of their impact are usually thought to be unethical. The firms should build principles or “rules of the game” on how the company should operate with stakeholders (Donaldson and Preston 1995).

According to Clarkson (1995) stakeholders have a legitimate interest in the companies concerned and their interests have an intrinsic value. The relations between firms and its stakeholders can be valuable for the company as a reflection of its values and principles. Each company would define fundamental moral principles, and use these principles as a basis for decision making (Freeman and Evan,1990). This theory was important to this study since the main players, their role and importance of each is identified as key to the success of the organisation. The theory shows that whether an organization is dealing with counterfeits or not, it be must done with the full knowledge of its stake holders who protect their interests rather than that of the end consumers and this may pose as a barrier to accessing any company’s information

Normative Theory of Market-Failure

The normative theory of market-failure predicts that regulation will be instituted to improve economic efficiency and protect social values by correcting market imperfections. Research into the markets is at the center of economic sociology (Fligstein 2001, White 1981 and Zelizer 1979). Over the past three decades sociologists have investigated almost every type of market using a variety of theoretical premises. All this research however, starts from an assumption of the legality of the market exchange. Public institutions such as the United Nations Office on Drugs and Crime (UNODC) have tried to assess the size of illegal markets. It generally believed

that the drug market is the largest illegal market. The UNODC estimated its worldwide revenue to be \$322 billion in 2003 at the retail level.

Awareness Theory

Awareness theory describes peoples' perception and cognitive reaction to a condition or event. Awareness may be focused on an internal state, such as an instinctive feeling, or on external events such as sensory perception. Marton and Booth (1997) gave good examples of awareness; People have earlier experience of a certain situation and are aware of that, people are aware of who they are, the background to the circumstances, what time of year it is and what day it is, and also what to do the rest of the day. Although there is awareness of everything at the same time, the intensity varies and generally what is referred to as awareness is the sum of an individual's experience. It is possible to do one thing while still being aware of many other things. Brand awareness is the capacity of consumers to recognize or remember a brand, and there is a linkage between the brand and the product class, but the link does not have to be strong. Brand awareness is a process where the brand is just known to a level where the consumers have put the brand on a higher rank, the brand has just become at the "top of his mind" (Aaker, 1991).

Conceptual Framework

The conceptual framework of the study examined the relationships between dependent and independent variables shown below:

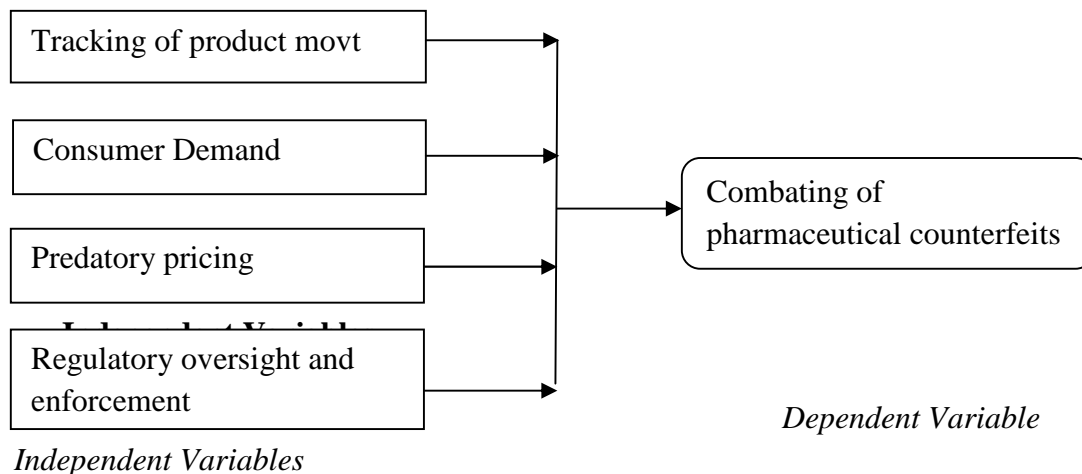


Figure 1: Conceptual Framework

Methodology

Research Design

This study adopted a descriptive survey design. Survey method was useful as it helped the researcher to collect data on phenomena that cannot be observed directly (the influence of supply chain management practices on combating counterfeits in Kenya with reference to pharmaceutical companies in Nairobi County). The advantage of this method was that, it allowed

collection of large amounts of data from pharmaceutical companies in Nairobi County in a highly effective, easily and in an economical way.

Study Population

The study was confined to the pharmaceutical Companies in Nairobi where most of the about 10,000 pharmaceutical products registered for sale are sold and where about 700 registered wholesale and 1,300 retail dealers are headquartered and manned by registered pharmacists and pharmaceutical technologists (PPB 2013).

Data Collection instruments

This study collected both primary and secondary data. The primary data was collected through a questionnaire which was administered by the researcher to facilitate inquiry into the area of study. Primary sources of data involved the use of questionnaires, interview schedules and observation checklists. This was administered by the researcher and respondents were drawn from pharmaceutical companies in Nairobi County. Secondary sources of data involved the analysis of reports and other accessible written documents from pharmaceutical Companies; journals, books, and government policy documents on the topic under study. The secondary data included any publication written by an author who is not a direct participant in this study.

Data Analysis

The questionnaires were checked for completeness and consistency of information at the end of every field data collection day and before storage. The data from the completed questionnaires was cleaned, re-coded and entered into the computer using the statistical packages for social sciences (SPSS) for Windows for analysis. The SPSS computer program was commanded to produce frequency tables, graphs, pie charts and the necessary measures of variances for interpretation. Descriptive statistics (that is frequency analysis) was computed for presenting and analyzing the data. Descriptive statistics enabled the researcher to describe the aggregation of raw data in numerical terms (Neuman 2000). Correlation was used to analyze the degree of relationship between the variables in the study. A regression analysis between combating pharmaceutical counterfeits and four determining variables was performed by estimating a linear regression;

$$Y = \alpha + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \epsilon$$

Where Y = Dependent variable (Combating of pharmaceutical counterfeits)

α = Constant (intercept of the model)

β = Coefficient of the X variables (independent variables)

X1 = Tracking of product movement

X2 = Consumer Demand

X3 = Predatory Pricing

X4 = Regulatory oversight and enforcement

€ = Error Term

The coefficient of correlation (r), determines the degree (strength) of relationship and its value is between -1 and 1. Regression was used to determine the type of relationship. Further, factor analysis was undertaken in order to obtain a detailed perceptual and attitudinal aspects of the data collected.

Research Findings

Demographics

The study sought to find out the respondents level of education in order to ascertain whether academic and professional qualifications influences the extent to which supply chain management practices are applied in combating counterfeits. Majority (38%) were diploma holders while 31% of the respondents indicated that they had attained university degrees in their respective areas of specialization. This high number of respondents with at least college education may be attributed to the fact that the studies targeted the supply chain officers and pharmaceutical personnel. The persons who hold the mentioned portfolios are required to have a minimum of a college certificate. The study further indicated that 26% of the respondents were certificate holders while minority (5%) had attained postgraduate qualifications which included masters and postgraduate diplomas.

The findings of the study concurs with Ngulube and Tafor (2006) who observed that each state corporation has its own management organization structure with a matching head count budget to support the business and the persons assigned various duties should possess requisite professional and academic qualifications. From the findings, majority of the respondents had attained academic qualifications commensurate with their job designation.

The study found it paramount to determine the respondents' gender in order to ascertain whether gender parity existed in the sample. According to the analysis it was evident that majority of the respondents were male which represented 57.89% while 41.13% were female. Acker (2006) observed that gender equality is a very important trait as it can be used to improve performance of all the staff involved. He argued that it fosters teamwork and also creates a sense of unity and an aspect of working together for a common goal with every individual's effort whether male or female being important to the attainment of the overall objectives of the organization. A gender sensitive firm provides a conducive working environment where a staff is supposed to interact with other colleagues of the opposite gender in pursuit of excellence and achievement of set targets for the organization.

From the findings the male dominated the females but however given that the difference was very small it can be inferred that pharmaceutical companies in Nairobi County is a gender sensitive environment that provides equal opportunity to both male and female employees.

The respondents were required to indicate their age and the study findings indicated that majority (44%) had their age bracket between 31 and 40 years. Analysis of findings also indicated that 28% of the respondents were between 26 and 30 years of age. The findings further indicated that 19% were above 40 years of age while 9% were less than 25 years of age. Jenster and Hussey (2001) in their study of Determining Strategic Capability in organizations associated age with employee efficiency in service delivery where they indicated that there is a positive correlation between age and employee performance. They argued that the older an employee is, the higher the performance up to a certain age where performance would start declining. They therefore presented this relationship using a sigmoid curve. The findings therefore implied that the respondents were old enough to provide valuable responses that pertain to the influence of supply chain management practices in combating counterfeits in Nairobi County. This fact is further reinforced by the fact that some of the respondents had stayed in the company for long hence conversant with supply chain management practices.

The study found it necessary to find out the respondents years in service as staff members in the companies they served so as to find out the relationship between work experience and knowledge of combating counterfeits in Kenya with a keen interest on the contributions of supply chain management practices in dealing with the pharmaceutical counterfeits. Based on the findings, majority (49%) of the respondents had over 10 years' experience while 37% had between 5-10 years. 14% of the respondents had an experience not exceeding 5 years. From the findings therefore, majority of the respondents were experienced in supply chain and conversant with pharmaceutical counterfeits that are rampant in Kenya and hence were highly informative on issues that relate to supply chain management practices. Given that majority of the respondents had substantial work experience, it is the researchers hope that the information given by these kind of respondents would shed the light on the influence of supply chain management practices on combating counterfeits in Nairobi County.

Correlation analysis

Regression analysis was utilized to investigate the relationship between variables, these including an error term, whereby the dependent variable was expressed as a combination of independent variables, and the unknown parameters in the model estimated using observed values of the dependent and independent variables.

Table 1: Correlation Analysis between tracking of product movement, consumer demand, predatory pricing, regulatory oversight and enforcement and Combating pharmaceutical counterfeits in Nairobi County

	Tracking of product movement	Consumer demand	Predatory pricing	Regulatory oversight	Combating of pharmaceutical counterfeits
Tracking of product movement	1				
Consumer demand	0.953	1			
Predatory pricing	0.554	0.853	1		
Regulatory Oversight	0.853	0.452	0.418	1	
Combating of pharmaceutical counterfeits	0.965	0.917	0.965	0.871	1

*. Correlation is significant at the 0.05 level (1-tailed).

The regression equation, representing the relationship between Combating pharmaceutical counterfeits as a linear function of the independent variables (Tracking of product movement, Consumer demand, Predatory pricing and Regulatory oversight and enforcement), with ϵ representing the error term as shown below:

$$Y_i = \alpha + \beta_1(\text{TPM}) + \beta_2(\text{CD}) + \beta_3(\text{PP}) + \beta_4(\text{ROE}) + \epsilon . \text{ When } \beta_5=0$$

(Equation 1: Regression Equation)

Where: Y_i =Combating of pharmaceutical counterfeits

TPM= Tracking of product movement

CD= Consumer demand

PP= Predatory pricing

ROE=Regulatory oversight and enforcement

$$Y_i = \alpha + 0.365 (\text{TPM}) + 0.96 (\text{CD}) + 0.97 (\text{PP}) + 0.787 (\text{ROE})$$

(Equation 2: Regression Equation with Beta Values)

The β s in the above equation represented the estimated parameters.

Table 2: Regression Model Summary Results of; Tracking of product movement, Consumer demand, Predatory pricing and Regulatory oversight and enforcement in combating pharmaceutical counterfeits in Nairobi County.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.887401	0.787481	0.754786	0.8143

Predictors: (Constant), Tracking of product movement, Consumer demand, Predatory pricing and Regulatory oversight and enforcement.

From the results shown in table 2, the model showed a goodness of fit as indicated by the coefficient of determination (R^2) with a value of 0.7875. This implied that the independent variables; Tracking of product movement, Consumer demand, Predatory pricing and Regulatory oversight and enforcement explains 78 percent of the variations of the influence of supply chain management practices in combating pharmaceutical counterfeits in Nairobi County.

Table 3: Regression Results of the Relationship between Tracking of product movement, Consumer demand, Predatory pricing, Regulatory oversight and enforcement and combating pharmaceutical counterfeits in Nairobi.

	Unstandardized Coefficients	Significance
	Beta	
(Constant)	5.492	0.37
Tracking of product movement	1.32	0.286
Consumer demand	1.86	0.03
Predatory pricing	1.82	0.024
Regulatory oversight	1.5	0.031

From Table 3, the variables; Tracking of product movement, Consumer demand, Predatory pricing and Regulatory oversight and enforcement t are all statistically significant with 0.286, 0.03, 0.024, 0.031 which are all below the 0.5 or the 5% significance percentage point ,implying that all the variables are statistically significant to an over 95% contribution..

Conclusions

Based on the findings, it can be concluded that tracking of product movement is a major contributor to the efforts of combating counterfeits in Kenya. According to the analysis of findings, tracking of product movement has not been prompt; however, in areas where adoption of modern technology has been implemented, service delivery has been good, with efficiencies recorded in quality control, seamless coordination between trading partners and traceability which has been the greatest challenge in combating counterfeits. Similarly, investment in tracking of product movement has enabled pharmaceutical Companies to influence supply chain operations. Vilanga, (2010) viewed tracking of product movement systems as a means of providing a competitive edge and hence becoming part of an organizational strategy. Tracking of product movement systems have reduced transaction costs, altered the nature of operations in organizations, enabled firms to develop closer relationships with their clients and created new opportunities for organizations and law enforcement agencies.

As far as regulatory oversight and enforcement is concerned, the study concluded that the conditions of regulatory oversight and enforcement is generally average owing to the lack of the moral will, the political will, the supply chain managers' inadequate understanding of their role in contributing to the fight against counterfeits, the lack of proper strategies and incorporation of supply chain practitioners to fight counterfeits. The regulatory oversight and enforcement agencies fall below expectation and hence a major factor in the spread of these counterfeits. Due to the poor regulatory oversight and enforcement framework, pharmaceutical Companies face numerous challenges in trying to curb the influx of counterfeits in the industry.

Recommendations

The study recommends that pharmaceutical companies in Nairobi County to fully implement the tracking of product movement along the supply chain as a means to aid the fight against counterfeits. The greatest potential of tracking of product movement is the ability of supply chain managers to take the leading role in doing it and advocating for the same in order to gain increased control over their supply chain operations and fight out the menace of counterfeits. Tracking not only make it possible to trace the actual culprits but also improve efficiency in supply chain management processes.

Consumer demand is a supply chain management function and therefore the study recommends that there is a need for supply chain managers to take their leading role to make sure that infiltration of counterfeits be edged out through an efficient management of customer demand and sealing the loopholes for the demand of these products. Adeyemi and Salami (2010) found that consumer demand was vital in the fight against counterfeits. The study further recommends that an appropriate regulatory oversight and enforcement body with sufficient teeth to fight counterfeits be established and empowered to deal with this problem head on. The study recommends that supply chain managers and practitioners be incorporated to fight this problem. The study recommends that the supply chain should fight back and preserve itself against any

infiltration of counterfeits in all sectors of the economy and for the future realization of the vision 2030.

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