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PRODUCT TRACEABILITY AND PERFORMANCE OF FOOD AND BEVERAGE MANUFACTURING FIRMS IN NAIROBI CITY COUNTY, KENYA

[*]DR. NOOR ISMAIL SHALE

[*] Senior Lecturer in Procurement and Supply Chain Management, Jomo Kenyatta University of Agriculture.

ABSTRACT

Product traceability has emerged as a critical supply chain component in almost all sectors and is used extensively in different contexts which efficiently lower the incidences of contamination in the food industries value chain by monitoring all the activities in the supply chain and indicating where quality control problem has transpired. Thus, thus, there need to have assessed traceability models that could be suitable across the whole food industry worldwide. Therefore, determine the effect of product traceability on performance of food and beverage manufacturing firms in Nairobi City County. The study was informed by contingency theory. This adopts descriptive survey research design. The population for the study constituted 204 HODs in the inspection, quality and technical departments from the sixty eighty (68) food and beverage manufacturing firms in Kenya. Simple random sampling was used to select a sample of 102 respondents from 34 food and beverage manufacturing firms. This study used structured questionnaires to collect data relevant to the study. Descriptive analysis was used to delineate the demographic pattern of target respondents in frequency, while inferential statistics was used to find causal effect relationship. The findings revealed that product traceability positively and significantly influenced the performance of foods and beverage manufacturing firms. The study recommended for firms to fully adopt product traceability measures within the supply chain to easily trace the movement of their products right from raw goods to finished products

Key Words: Supply Chain Component, Product Traceability, Performance, Food and Beverage Manufacturing Firms

Background of the Study

Product traceability has emerged as a critical supply chain component in almost all sectors and is used extensively in different contexts (Goswami, 2014; Guercini and Runfola, 2009; Kumar et al., 2017a; Machado et al., 2018). It has become one of the reliable solutions for organizations looking for a mechanism to track and trace products, manufacturing activities, and collect related information in order to manage business activities and comply with government regulations. Adding a component of sustainability in this widely accepted ISO definition, the United Nations (UN) Global Compact and Business for Social Responsibility(BSR) (2014) propose a more comprehensive definition of traceability: he ability to identify and trace the history, distribution, location, and application of products, parts, and materials (ISO, 1994), to ensure the reliability of sustainability claims, in the areas of human rights, labor (including health and safety), the environment and anti-corruption.

However, traceability applications vary according to the sectors and types of the supply chain (Shamsuzzoha and Helo, 2011). For instance, in logistic companies, traceability is more about tracking and tracing the consignments using unique traceability codes, when they traverse the supply chain (Bujak and Zając, 2013), while, in the case of food and beverage sectors (which directly impact consumer health), in addition to product tracking and tracing, traceability also facilitates record keeping and maintenance of information to comply with government regulations (Charlebois et al., 2014).

Similarly, in the food and beverage sectors manufacturing firms, traceability is still a voluntary measure with brands using it to project a positive image and convey a sustainable aspect of the product to customers (EgelsZandén et al., 2015). Regardless of its numerous applications, the core idea of traceability remains the same and is defined by Olsen and Borit (2013) as, the ability to access any or all information relating to that which is under consideration, throughout its entire lifecycle, by means of recorded identifications.

Nowadays, sustainability has become a new management principle for firms to steadily compete in the market. On the public side, food crisis has increased consumers' awareness of safety on their consumption. Based on this awareness, governments of many countries have legislated firms in the food supply chains to implement the traceability system in order to identify sources of deficiency and be able to withdraw hazardous products on the market precisely and efficiently. Firms in different industries have implemented traceability systems to increase supply chain performance. Nowadays, traceability in food industry has become mandatory for many countries around the world, for example, European Union countries, Japan, and the United States (Bechini et al., 2018).

Further to this enforcement, firms have to struggle with increasing cost to apply traceability system (Pettitt, 2014; Regattieri et al., 2017). However, many academic researchers have proved that traceability does not always increase costs (Hobbs et al., 2015; Decker et al., 2019; Roth et al., 2018). Furthermore, it provides many benefits, for instance, clear ability assignment, higher customer satisfaction, less recall, etc. In some other industries, for example, automobile, traceability is known as a system to help actors in a supply chain increase their operational performance rather than cost burdens (Robinson and Malhotra, 2015).

Previous studies have shown that information about food products and production processes can be lost internally within companies, as well as between companies in supply chains (Bertolini, Bevilacqua, & Massini, 2016; Donnelly, Karlsen, & Dreyer, 2012; Randrup et al., 2018). According to Frederiksen (2002), more detailed studies of each step in the supply chains are needed to better document each process. Such studies are important to improve the traceability of food. Jansen-Vullers, Van Dorp, and Beulens (2003) concluded that traceability requirements appear to be similar across the industries studied, but Ringsberg and Jönson

(2010) found that no shared consensus regarding traceability exists and performance of food and beverage manufacturing firms.

Firm performance is the focal point of any business and just through performance are firms ready to develop and advance (Gavrea *et al*., 2011) point out that. Similarly, the survival of a business is to accomplish set goals and objectives (Muduenyi *et al*., 2015). Yazdanfar (2013) indicates that one of the vital pre-condition for long-term firm survival and achievement is firm productivity. The degree to which an association is fruitful in the present aggressive business condition is enormously controlled by the ability to capably and decidedly deal with its associations with both inside and outer partners, for example, suppliers (Dries *et al*., 2014).

However, as established by many studies, achievement in the creation and management of these traceability within food and beverage manufacturing (Abdullateef *et al*., 2013). Additionally, the mechanisms through which buyer-supplier relationship enhances performance are not well understood (Zablah *et al*., 2004). Consequently, firm managers have minimal direction on where to concentrate their traceability in supply chain efforts. Thus, this research provides comprehensive knowledge to firms, especially in food industry, to help them gain the understanding on traceability in supply chain affect their performance.

Statement of the Problem

The food and beverage industry plays a unique role in expanding economic opportunities because it is universal to life and health (Krishnaswamy, 2017). However, the industry's performance is below bar in Nairobi and is facing intense competition from the imported food stuffs from their traceability (Okello et al., 2014). To tackle these challenges the food and beverage industry needs to evaluate their traceability. The criticality of process, product, and input and measurement traceability is evident from its impact on firm performance and, more specifically, on final product attributes such as cost, design, manufacturability, quality, and so forth (Handfield et al., 2019). Manufacturing companies in Kenya have been experiencing problems in the performance of their production and operations management (KAM Directory, 2015). The food and beverage supply chain has particularly ceaselessly been attracting attention for inconsistencies in supply chain process exemplified by shortages, safety scares of the products and other disruptions that the sub-sector can afford to do away with (Awino, 2011). This is despite the fact that the sector is responsible for up to 2.8% of GDP (KAM, 2015). In particular, lack of traceability has resulted to sales drop of 7 %, as well as a drop of ROA by 35% (Hendricks & Singhal, 2016).

New research shows that traceability with suppliers on environmental practices improves manufacturing performance (Regattieri et al., 2017). However, research on Product traceability practices has attracted little attention especially on their effect on performance of food and beverage manufacturing firms. In addition, previous review shows that various investigations have proposed different approaches to implement traceability in supply chains (Goswami, 2014; Guercini and Runfola, 2019; Kumar et al., 2017a; Machado et al., 2018). There have been far less research on identifying the consistency to Product traceability and how their influence performance, particularly in food and beverage manufacturing industry. Very few studies have been carried out in developing countries like Kenya on Product traceability practices.

This study examined the problem of effects of Product traceability on performance of food and manufacturing firms in the Kenyan context and this was in line with the findings of (Sun et al, 2017:Charlier and Valceschini 2008), who had done research on Product traceability and recommended a further studies on other sectors of manufacturing firms. Despite the afore-mentioned findings, the studies available had only focused on general traceability aspects but

none of them touched on the effects of Product traceability on performance of food and beverage manufacturing firms in Nairobi City County

Specific Objective

To determine the effect of product traceability on performance of food and beverage manufacturing firms in Nairobi City Count, Kenya

Research Question

What is the effect of product traceability on performance of food and beverage manufacturing firms in Nairobi City County, Kenya?

LITERATURE REVIEW

Contingency theory

Contingency theory considers the impact of environmental factors on an organizational structure, strategic decision making, and efficiency and effectiveness-driven performance criteria (Donaldson, 2001; Ruekert et al., 1985). The theory further suggests that firms will focus internal resources and competencies in order to develop a strategic contingent response to the changing environmental variables in order to remain competitive (Germain et al., 2011; Luthans & Stewart, 1977). The turbulent and uncertain nature of today's global business environment motivates managers to develop a contingent response in the form of strategies which change supply chain structures in order to "fit" with the external environment to remain, or become, competitive (Germain et al., 2011).The contingency approach explains that managers consider the interrelationships among environmental, management, and performance variables (Luthans & Stewart, 1977).

Following on from this structural contingency theory indicates there should be a fit between the organisational processes and the environment (Flynn, Huo & Zhao 2010).). Structural contingency theory posits that company structures that match the environmental requirements should perform more successfully than those that do not and predicts under-performing companies will adopt a new business model that better fits the environment.

while the input consists of contextual internal and external issues, 'process' means organizational responses to theses inputs, such as strategies and actions. The outputs refer to the results of these processes, aiming at finding the best way for an organization to cope with its contextual features by using the right processes. Usually, these outputs refer to performance indicators. In our case, we postulate the desirability of proactive SCRM and thus describe it as the pursued outcome. Therefore, contingency theory forms a natural theoretical basis for explaining the circumstances under which proactive SCRM evolves

Structural contingency theory outlines how organizational processes should be structured to suit the environment in which they operate (Burns & Stalker 1961; Lawrence & Lorsch 1967). Configurations that match the environment will perform better than those that don't and will help an organization achieve top performance. When applying structural contingency theory to SCM, individual parts of the supply chain should be aligned and organized in such a way that achieves the best performance. A group of individual companies can be formed to make the supply chain an extension of the organization, and structured in such a way to suit a particular environment. If an ideal model can be established for the group of companies there is potential to improve performance of the entire supply chain. Applying supply chain integration and structural contingency theory to the problem: in order for prefabricated timber systems to be

effective in the nonresidential market the organizations along the supply chain need to be organized in a way that best 'fits' the clients' needs and expectations in the environment.

In the context of traceability, firms implement a contingent response to products demands on the firm from the external environment (e.g. stakeholder concerns, competitive environment, industry characteristics), the internal environment (e.g. top management directives), with the overall strategy of improving product competitiveness of the firm (Thompson, 1967; Luthans & Stewart, 1977). In line with this thinking, Barratt et al. (2007) explain that implementation of traceability initiatives for product can enable firms to create unique resources that others may not be able to imitate and differentiate firms from their competitors.

Conceptual framework

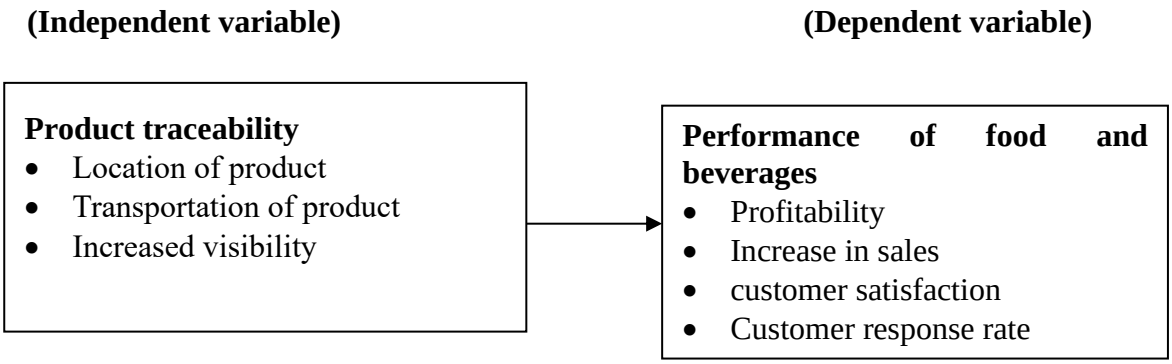

Figure 2.1: Conceptual Framework

Product Traceability

Product traceability ascertains the location of a product. According to Moe (2018) process traceability is the ability to track a product batch and its history through the whole, or part, of a production chain from harvest through transport, storage, processing, distribution and sales or internally in one of the steps in the chain. Brofman Epelbaum and Garcia Martinez (2014) studied the application of product traceability based on the Resource Based View (RBV) shows the physical and human resource positively related to sustainable performance of supply chain. The effective communication across the supply chain is the key area for the traceability implication which needs to address the common system implementation to track and trace the product across the supply chain (Kher et al. 2010). Hence the requirement to have Technical, Financial and the Human resource (Bosona and Gebresenbet 2013) to implement higher level of traceability is an important aspect.

An effective product traceability system allows a company to: reduce logistics and production costs of recalling defective products; provide evidence in the event of product liability claim, according to current legislation; improve quality of products and efficiency of production processes. Indeed, according to ISO 9001, implementation of a traceability system is a requirement for quality certification (ISO, 2008); improve product marketing through certification of product origin. This is particularly true of companies with relevant product safety issues, such as agro-food companies (Wilson and Clarke, 2018); increase visibility on processes carried out in any phase of the supply-chain (Florence and Querée, 2013)

Performance of food and beverage manufacturing firms.

For decades Performance of food and beverage manufacturing firms has been drawing bigger attention from specialists because of poor performance consequential from lack of adherence

to procedures and processes. The purchasing operation has not been given the acknowledgment it deserves in emerging countries, in most public organization, irrespective of the energy by the associates like the international World Bank. This could be deliberate or total lack of knowledge on the worth the supply chain operation could give to any firm (Vernimmen et al., 2008). Whereas operations like Finance and Human Resource (HR) can have their performance evaluated, but with the procurement function is not the same. The lack of success to identify performance of the supply chain operation at the Food and beverage manufacturing has led to uneven and prejudiced choices that have expensive result to every organization (Musa, 2011).

Axsater, (2013), recommended that performance of food and beverage manufacturing firms begins from procuring effectiveness in the procurement operations so as to alter from being reactive to being proactive to achieve expected performance heights in an organization. Cheng and Wu, (2015) suggested that procuring performance is well-thought-out to be the outcome of two basics; purchasing effectiveness and efficiency. For a firm to alter its attention and become more competitive performance is a main motivation to enhancing quality facilities whereas its absenteeism or use of unsuitable means can acts as an obstacle to alter and may supplier flexibility to worsening of the purchasing operation (Datta et al, 2017).

The supplier positioning ideal is a way that firms rank their bases of supplies centered on the money used with the contractor and the level of exposure a business has if that contractor be unsuccessful. According to (Sinha and Sarmah, 2007), it is a practice of assessing spend or profit effect via volume procured, percentage of overall expense and effect on product quality or firm development by supply uncertainty. Numerous big firms identify which contractors are to be used by their first-tier classification, mostly because specific critical constituents have to march with other critical constituents (Van der Vaart, & van Donk, 2008). Because the procuring and supply plans have to back up the entire business strategy that emphases on the demands and requirements of the main client, organizations are forced to go in into associations (Eroglu & Hofer, 2011).

The four kinds of associations strategies are: Acquirement which means numerous contractors, buyers dictates (Holmes, 2013), Emphasis on supply chain maximization, well-organized purchasing processes and getting bids from numerous contractors. Profit positioning needs Lots of contractors, but large influence on a firm if supply is interrupted; so, think through target pricing strategies and protect contracts with chosen contractors. Security: Little contractors, but not a lot of financial uncertainty from supplier unsuccessful; so, think through volume insurance agreements, keeping up buffer stock, and continually be on guard for substitute contractors (Arshinder et al, 2011). Critical: The Company depends on the suppliers. The company will look for performance-based partnerships, with market and technology supplier flexibility ers, owning specific know-how. The position can result to strategic alliances, building close relationships, even vertical integration (Christopher & Peck. 2004).

Empirical reviews

Furtado and Zisman (2015) focus on how product traceability can help organizations transition to the agile paradigm. In particular, they argue that traceability can help to mitigate the typical lack of understanding of a project's "high-level scope" or issues with control by management. Trace links between artifacts created following the plan-driven paradigm and artifacts created following the agile paradigm can help to address these challenges.

A study by Narsimhalua et al (2015) on influence of product traceability Factors on Australian Food Supply Chain Performance The objective of the study is to understand the interrelationship between the level of traceability (breadth, depth and quality of information) and the resources required (technology, financial and human) in achieving the given level of

product traceability and contribution of supplier-buyer relationship on the Product traceability performance using a case study based approach. The study shows as the dairy products are split into individual unit for the retail stores and not associating the batch number to the product movement from the distribution center to the retailers would create the critical traceability point where the product's flow of information could be lost. The other important finding shows that the effective uniform tracking and tracing system would help in efficiency gain by reducing the product receiving time from 4hours to 20 minutes, which can reduce in humanly efforts at this stage and may help inachieving huge cost savings.

A study by Khan et al (2017) on Implementing product Traceability Systems in Specific Supply Chain Management (SCM) through Critical Success Factors (CSFs). The primary result indicates towards; that improving the HSCM with the higher level of Halal awareness. Assuring HI will enhance the consumer satisfaction which leads to a competitive advantage for the organization. Academic researchers, industrial practitioners and Supply Chain executives can understand the complex interrelationship of CSFs by visualizing the TISM. It can help the management, lobbies and government to develop the policies regarding the implementation.

Bonetti and Pasotti (2014) presented and discussed the main results of an empirical survey among 69 Italian metallurgical companies, aimed at: a) quantifying material and information flows normally processed by companies; b) analysing suitability of current traceability systems to an effective traceability process; c) identifying major criticalities of current traceability processes; d) investigating influence of company size, phase of the supply-chain and suitability of traceability system on the extent of such criticalities. Briefly, results indicate that products specialization affects material flows along the supply-chain. Moreover, traceability systems adopted by the sample are mainly suitable to an effective traceability process. However, some criticalities of current traceability processes do not depend on company size, phase of the supply-chain or suitability of traceability system

RESEARCH METHODOLOGY

The study adopted a descriptive survey research design. The population for the study constituted 204 HODs in the inspection, quality and technical departments from the sixty eighty (68) food and beverage manufacturing firms in Kenya. These food and beverage manufacturing firms in Kenya were chosen due to their major contribution to the economy in terms of food safety. A sample size of 102 respondents sixty eight (68) respondents thus 50 % of the total population (204) was drawn for quantitative data from 34 food and beverage manufacturing firms in Kenya based on Mugenda and Mugenda (2003), who affirm that a sample size should be at least 10 % of the population or be made of at least 30 respondents. The sample size comprised thirty four (34) respondents from procurement department and another thirty four (34) were senior managers from sampled food and beverages firms in Kenya. According to Koul, (1984) a sample size therefore, offered the overall description of the whole population or subject under study. Census was used for senior managers while purposive sampling was used to draw respondents from the procurement department.

This study used structured questionnaires to collect data. Quantitative data collected was analysed using descriptive statistical techniques which were frequencies, mean, standard deviation. The correlation analysis identified beta coefficients between the four predictor variables and criterion variable which were all measured and operationalized using five-item Likert scales. The regression coefficients indicated the relative significance of the independent variables in the forecast of the dependent variable while the coefficient of multiple determinations (R square) provided the measurement of how well a predictor of the equation of multiple linear regressions were likely to be.

RESEARCH FINDINGS AND DISCUSSION

Out of the 102 questionnaires administered, 98 questionnaires were retrieved making a response rate of 96.08%. According to Sekaran & Uma (2013) response rate of 30% is acceptable for surveys and therefore response rate for this study is sufficient for further analysis.

Product traceability

Product traceability ascertains the location of a product. As such, the study sought to establish the effect of product traceability on performance of food and beverage manufacturing firms in Nairobi City County. Table 1 illustrates the results. Findings in the table revealed, that 56 (57.1%) and 32 (32.7%) of the respondents agreed and strongly agreed respectively that they identify location product as it moves along the supply chain from raw goods to finished products, while 3(3.1%), 4 (4.1%) and 3 (3.1%) of the respondents strongly disagreed, disagreed and were not sure respectively giving a mean response of 4.12(SD = 0.89) indicating agreement by majority of the respondents.

Furthermore, 52(53.1%) and 30(30.6%) of the respondents agreed and strongly agreed respectively that they track the transportation of a product as it moves along the supply chain from raw goods to finished products, while 3 (3.1%) and 3 (13.3%) of the respondents strongly disagreed and were not sure of this respectively thus giving a mean response of 4.08 (SD = 0.85) indicating agreement by majority of the respondents.

Also, the findings revealed, that 26 (26.5%) and 55 (56.1%) of the respondents agreed and strongly agreed respectively that they trace component or ingredient used in our product, while 3(3.1%), 1 (1%) and 13 (13.3%) of the respondents strongly disagreed, disagreed and were not sure respectively giving a mean response of 4.32(SD = 0.96) indicating agreement by majority of the respondents.

Finally, 38 (38.8%) and 25 (25.5%) of the respondents agreed and strongly agreed respectively that they trace the packaging of product from the supplier to customers, while 12 (12.2%) and 23 (23.5%) of the respondents disagreed and were not sure respectively giving a mean response of 3.78(SD = 0.97) indicating agreement by majority of the respondents. The overall mean response was 4.08 (SD = 0.92) which showed agreement by majority of the respondents on Product traceability.

Table 1: Product traceability

		SD	D	N	A	SA	Mean	Std. Dev
We identify location product as it moves along the supply chain from raw goods to finished products	Freq.	3	4	3	56	32	4.12	0.89
	%	3.1	4.1	3.1	57.1	32.7		
We track the transportation of a product as it moves along the supply chain from raw goods to finished products	Freq.	3	0	13	52	30	4.08	0.85
	%	3.1	0	13.3	53.1	30.6		
We trace component or ingredient used in our product	Freq.	3	1	13	26	55	4.32	0.96
	%	3.1	1	13.3	26.5	56.1		
We trace the packaging of product from the supply to customers	Freq.	0	12	23	38	25	3.78	0.97
	%	0	12.2	23.5	38	25.5		
Product traceability							**4.08**	**0.92**

Performance of food and beverage firms

This section of the analysis highlights the results on performance of food and beverage manufacturing firms in Nairobi City County. Table 2 illustrates the results. From the results in the table, that 38 (38.8%) and 41 (41.8%) of the respondents agreed and strongly agreed respectively that the company has preserved a high market share in the past two years, while 4(4.1%) and 15 (15.3%) of the respondents disagreed and were not sure respectively giving a mean response of 4.18(SD = 0.84) indicating agreement by majority of the respondents.

Furthermore, results showed that 42(42.9%) and 28(28.6%) of the respondents agreed and strongly agreed respectively that the company has experienced high growth sales in the past two years , while 28 (28.6%) of the respondents were not sure of this respectively thus giving a mean response of 4.00 (SD = 0.76) indicating agreement by majority of the respondents.

Also, 23 (23.5%) and 34 (34.7%) of the respondents agreed and strongly agreed respectively that the company has been able to retain most of our customers in the past two years, while 15(15.3%),7 (7.1%) and 19 (19.4%) of the respondents strongly disagreed, disagreed and were not sure respectively giving a mean response of 3.55(SD = 1.42) indicating agreement by majority of the respondents.

Additionally, revealed that 25 (25.5%) and 25 (25.5%) of the respondents agreed and strongly agreed respectively that the company has been able to retain most of our customers in the past two years, while 6(6.1%), 14 (14.3%) and 28 (28.6%) of the respondents strongly disagreed, disagreed and were not sure respectively giving a mean response of 3.50(SD = 1.20) indicating agreement by majority of the respondents.

Moreover, 29 (29.6%) of the respondents agreed that the company has increased our market size in new markets in relation to our competitors, while 3(3.1%), 41(41.8%) and 29(29.6%)

of the respondents strongly disagreed, disagreed and were not sure respectively giving a mean response of 3.78(SD = 0.87) indicating disagreement by majority of the respondents.

Finally, the results also revealed that 38 (38.8%) and 37(37.8) of the respondents agreed and strongly agreed that the company has increased perception of customer satisfaction, while 2(2%) and 21(21.4%) of the respondents disagreed and were not sure respectively giving a mean response of 4.10(SD = 0.88) indicating agreement by majority of the respondents. The overall mean response was 3.85 (SD = 0.99) which showed agreement by majority of the respondents.

Table 2: Performance of food and beverage firms

	SD	D	N	A	SA	Mean	Std. Dev.
The company has preserved a high market share in the past two years	0	4	15	38	41	4.18	0.84
The company has experienced high growth sales in the past two years	0	0	28	42	28	4.00	0.76
The company has been able to retain most of our customers in the past two years	15	7	19	23	34	3.55	1.42
The company has been able to retain most of our customers in the past two years	6	14	28	25	25	3.50	1.20
The company has increased our market size in new markets in relation to our competitors	3	41	29	25	0	3.78	0.87
The company has increased perception of customer satisfaction	2	0	21	38	37	4.10	0.88
Performance						**3.85**	**0.99**

Correlation Results

The study used Pearson Product Moment correlation analysis to assess the nature of the relationship between the independent variables and the dependent variable as well as the relationships among the independent variables (Wong &Hiew, 2005; Jahangir & Begum 2008). Wong and Hiew (2005) further posit that the correlation coefficient value (*r*) ranging from 0.10 to 0.29 is considered weak; from 0.30 to 0.49 is considered medium, and from 0.50 to 1.0 is considered strong. There was a strong relationship between product traceability and performance of food and beverage manufacturing firms in Nairobi City County ($r = 0.681$, p-value < .01).

Table 3: Correlation

		Performance	Product traceability
Performance	Pearson Correlation Sig. (2-tailed)	1	
Product traceability	Pearson Correlation Sig. (2-tailed)	.681** 0.00	1

Regression Analysis

The objective of the study sought to determine the effect of product traceability on performance of food and beverage manufacturing firms in Nairobi City County. Research findings confirmed that product traceability have a significant effect on performance of food and

beverage manufacturing firms basing on β_1= 0.322 (p-value = 0.001 which is less than α = 0.05) implying that product traceability have a significant effect on performance of food and beverage firms. In line with the results, Brofman Epelbaum and Garcia Martinez (2014) confirmed that the application of product traceability positively related to sustainable performance of supply chain.

Table 4: Coefficients of Estimate

	Unstandardized Coefficients			Standardized Coefficients	
	B	**Std. Error**	**Beta**	**T**	**Sig.**
(Constant)	0.223	0.298		0.747	0.457
Product traceability	0.320	0.097	0.322	3.309	0.001

The following equation was derived from the regression coefficients in the matrix.

$$Y = 0.22+0.32X_1$$

Conclusion

There is overwhelming evidence of a positive link between product traceability and the performance of food and beverage manufacturing firms. The implication is that there is a holistic approach concerning the handling of products along the supply chain. In so doing, it is easier for the firms to ensure that the products are of the right quality and quality. Besides, there is a likelihood of shorter lead time between the ordering of a product and its delivery to clients. The reason for this is that the movement of the product is tracked right from raw goods to finished products. The eventual outcome is enhanced performance of the food and beverage manufacturing firms

Recommendations

The study has indicated that product traceability positively influences the performance of food and beverage manufacturing firms. It is, therefore, crucial for firms to fully adopt product traceability measures within the supply chain to easily trace the movement of their products right from raw goods to finished products. Besides, for food safety purposes, product traceability is of utmost significance because of the ability to trace the ingredients used in a product. As such, with implantation of product traceability, it will be much easier for the firms to meet the required food safety and quality standards

Areas for Further Research

Based on this research and literature review, it is still perceived that product traceability influence the performance of food and beverage manufacturing firms. Since the current research was limited to food and beverage manufacturing firms in Nairobi City County, Kenya, there was a limited sample available from the population. A larger sample and a more specific instrument might be desirable and might validate the study findings. Finally, future research could expand to other industries and contexts since Product traceability varies from one sector to the other.

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