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GREEN SUPPLY CHAIN MANAGEMENT AND PERFORMANCE OF FOOD AND BEVERAGES MANUFACTURING FIRMS IN NAIROBI CITY COUNTY, KENYA

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ABSTRACT

This study explored the relationship between green supply chain and performance of food and beverages manufacturing firms in Nairobi City County, Kenya. The specific objective were: reverse logistics, and recycling on performance of food and beverages manufacturing firms City County, Kenya. This study was anchored on different theories relevant to the specific variables in this study. The research design was descriptive research design. The target population was 262 respondents from the entire food and beverage manufacturing firms. This study preferred a census survey meaning purposive sampling techniques was used. To establish the contribution of green supply chain on the performance of food and beverages in Nairobi city county. The research instruments were both open and closed ended questionnaire. The researcher's collected data by dropping questionnaire and picking the same after two weeks. 10 % of the respondents were pilot tested from the entire study. The collected data was analyzed with the help of Statistical Package for Social Science version 28 and the same is now presented in a form of tables and figures. After doing reliability and content validity test, the results were over 0.7 and 0.5 respectively. This confirmed the questionnaire's clarity and accuracy. The researcher concludes and recommends the implementation of this results towards better performance of food and beverages in Nairobi city county, Kenya. The study concludes and recommends that there was a strong relationship between the independent and dependent variable, hence performance of food and beverage manufacturing firms can improve if the findings of this research is implemented.

Key Words: Green Supply Chain, Performance, Food and Beverages Manufacturing Firms, Reverse Logistics, Recycling

Background of the Study

The supply chain management includes manufacturer, suppliers, transporters, warehouses, wholesalers, retailers, other intermediaries and even customers themselves. Any product traded on the consumer goods market, in its evolution from raw material to finished products, undergoes a series of successive transactions on the business-to-business market. For example, when a final consumer purchases a bottle of Coca Cola, he/she does not buy directly from Coca Cola, but from an intermediary (for example the hypermarket or neighborhood store) and the product goes through several transactions on the business-to-business market on the circuit Coca-Cola wholesaler; retailer and final consumer (Kalpande & Toke, 2021). This supply chain believes that "a supply chain consists of all parties involved, directly or indirectly, in fulfilling a customer request. Within each organization, such as a manufacturer, the supply chain includes all functions involved in receiving and filling a customer request. These functions include, but are not limited to, new product development, marketing, operations, distribution, finance, and customer service (Jo & Kwon, 2021).

Supply Chain Management (SCM) is the science that discusses suppliers and customers from upstream to downstream to get lower costs and superior value for customers. As defined by the supply chain council, supply chain is a network of organizations that work together, and are connected to control, manage, and improve the flow of materials, and information from suppliers to end customers. Supply Chain Management can also be defined as the strategic and systematic coordination of traditional business functions which facilitate the distribution network between customers, and the company's internal activities. Changes in the distribution of supply chains are very dynamic; the things that affect it include direct customers and also announcements of new regulations. From the statements that have been mentioned, the changes in the supply chain distribution are very dynamic, making the SCM topic will continue to evolve and continue to adapt as needed in an effort to provide better alternative solutions. For this reason, it is obligatory to know any new concepts in the discussion of SCM scientific concepts. Supply chain practices greatly influence company or organizational performance (Jiang, Han & Huo, 2020).

Competitive advantage shows that the supply chain is correct, because it includes supplier management, customer management, inventory management, distribution, development, and design of new products. SCM in manufacturing occupies a position that is widely studied by researchers compared to SCM in other fields. Of the 100 articles reviewed, 39% study SCM in manufacturing. However, it should also be noted that the facts show that in theory, SCM lags behind in developing its scientific base compared to other scientific disciplines. So that, a systematic review is needed to add theoretical shared insights in the field and sub-field of SCM science. Therefore, in this paper, we try to write down terms or theories from the scientific development of SCM (Jemai, Do Chung & Sarkar, 2020).

The field of logistics, introduced the concept of Supply Chain Management (SCM) in literature at the beginning of the 1980s. However, the research undergone in the field of integration and coordination of different functional units began long before the term SCM appeared. In literature, these research efforts could be identified in different fields such as logistics, marketing, organizational theory, management and operational research, through focused theoretical contributions, mentioned such as: channel sear location and control in production–distribution networks bullwhip effect" in production-distribution systems. Theorists' interest and practitioners' concern regarding supply chain management have steadily increased since the 1980s, when firms found that they can no longer compete effectively isolated from their suppliers or other entities in the supply chain and saw the benefits of collaborative relationships within and beyond their own organization (Jemai, Do Chung & Sarkar, 2020).

Applicability of SCM has been widely researched in numerous application domains during the last decade and a number of definitions of supply chain management have been proposed in the literature. Despite the popularity of SCM in academic and business environment, there remains considerable confusion regarding its meaning because, some authors defined SCM in operational terms involving the flow of raw materials and products, while some viewed it as a management philosophy and some others viewed it in terms of a management process or as integrated system. Author have even conceptualized SCM differently within the same article: on the one hand, as a management philosophy, and on the other as a form of integrated system (Iqbal, Kang & Jeon, 2020).

Statement of the Problem

There has been non-performance of food and beverage manufacturing firms, Kenya and the causes is attributed to be Green Supply Chain. According to Njiru (2008), the government of Kenya considers FBMF as a key pillar in implementation of vision 2030 which targets to transform this country into an industrialized nation. As a step to achieving this, the Government moved to set up Green Supply Chain. A full Green Supply Chain has been set up by the government to spearhead the FBMF change in the country which is a positive signal to Green Supply Chain (Obwocha and Osoro, 2023). Recently the ministry of Finance with the support of Public Procurement Oversight Authority through the PPAD Acts 2015 came up with a mandate of establishing Green Supply Chain alongside Integrated Financial Management Information Systems (IFMIS) in public sector. The government of Kenya is currently advocating for Green Supply Chain by all public procuring entities to enhance transparency, effectiveness, accountability and reduction in corruption. Further, it is argued that there is need to have a robust automated procurement system which is interlinked and this will lead to enhanced competitiveness and lowered costs (Al-khawaldah et al, 2022).

According to Obwocha and Osoro (2023), while public procurement is one of the cores functions of the government, it has been and continues to be neglected by academicians and researchers. This creates a knowledge gap making it a challenge for governmental entities, policy–makers, and public procurement professionals to make decisions relating to adoption of new technologies and emerging procurement trends. Green Supply Chain is one of the reforms that will be adopted by the government of Kenya to enhance public procurement operations. In ideal conditions, adoption of e-procurement is expected to bring sanity in the procurement operations, reduce costs and enhance efficiency. For many organizations, including public organizations, the objectives of adoption of e-procurement include: enhance efficiency; improved accountability, transparency and reduced costs (Obwocha & Osoro, 2023).

There have been efforts to ensure that government agencies implement e-procurement, Procurement Regulation (2013) and not long ago, initiatives of implementing Green Supply Chain by the government of Kenya were hailed as a success. The lack of transparency in the manual procurement process has made it impossible for the government and state corporations to realize their objectives leaving Green Supply Chain as the major alternative. Despite all this, procurement function in Kenya has been characterized by decline of performance of FBMF which have been attributed to poor handling of FBMF thus leading to excessive corruption. According to Novitasari, Alshebami and Sudrajat (2021), the devolved units in Kenya are now advocating for the suspension of the implementation of Green Supply Chain systems and Performance of FBMF citing its ineffectiveness in service delivery due to lack of the required infrastructure. Currently, the performance of the devolved units in delivering services to the stakeholders is minimal due to the numerous challenges they are facing and complaints on their procurement processes. In view of the foregoing, therefore designed to do a study in the Kenyan Context so as to bridge the existing gap through the new knowledge as result of this study findings.

Indeed, it is noted that Kenya ‘s population is clearly vulnerable to environmentally related diseases, where the total disease burden caused by environmentally related causes stand at 24 percent largely due to manufacturing activities (WHO, 2004). A study by Seman et al. (2012) amongst Malaysian manufacturing firms establishes that firms practicing sound environmental management practices within their supply chain scored 85 percent in technical efficiency with a very good financial and environmental performance compared to those without sound environmental management practices at 62 percent.

Objectives of the Study

General Objectives of the Study

The general objective was to establish the relationship between green supply chain management and performance of food and beverage manufacturing firms in Nairobi City County, Kenya

Specific Objectives

The specific objectives of this study were:

i. To examine the effect of reverse logistics on performance of food and beverage manufacturing firms in Nairobi City County, Kenya.
ii. To assesses the effect of recycling of waste on performance of food and beverage manufacturing firms in Nairobi City County, Kenya.

LITERATURE REVIEW

Green Theory

Green theory and climate change is the dominant environmental issue of our age, caused by our dangerous reliance on fossil fuels. Green theory helps us to understand this in terms of long-term ecological values, rather than short-term human interests (Barry, 1996). These interests are generally pursued by states through investments in technology, but there is no easy technical solution to human-induced climate change. From the perspective of green theory, this technical impasse requires a change in human values and behavior and therefore presents an opportunity for political innovation or even a transformative shift in global politics. IR theory can explain why climate change is a difficult problem for states to solve because of economic competition and disincentives to cooperation (Barney, 2007).

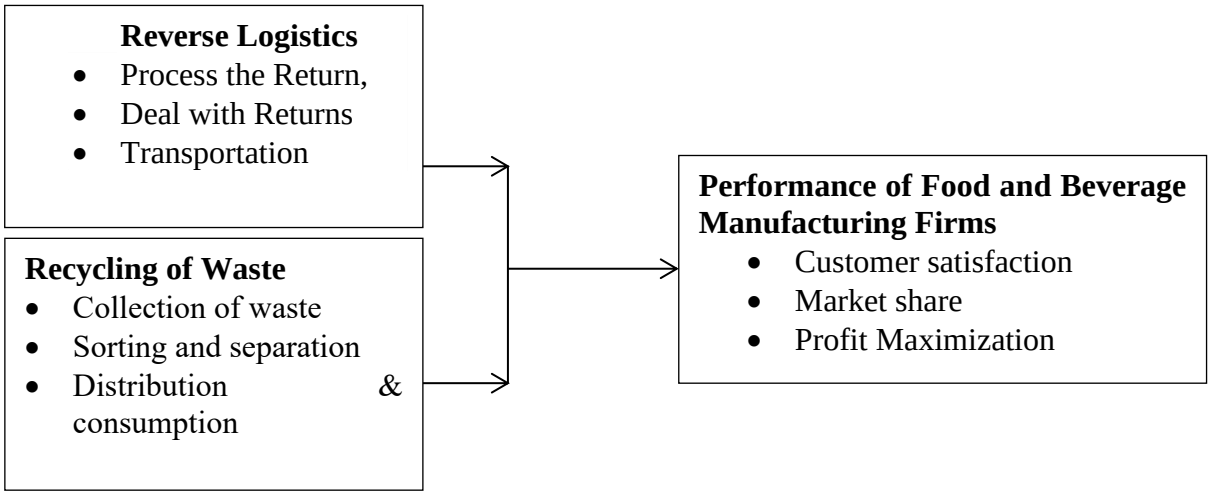
However, it cannot provide an alternative framework to explain how this might be addressed. IR remains overly focused on states and their national interests rather than other actors that may be more cooperative, such as cities and communities, or non-governmental organizations and green social movements (Barry, 1996). A green theory perspective on climate change understands it as a direct consequence of human collective choices. Specifically, these choices have led to historically anthropocentric economic practices of historically arbitrary political groups (states), who have exploited nature in their own short-term interests. Climate change presents a clear case of injustice to both present and future humans who are not responsible for causing it and to the ecosystem as a whole. Therefore, a solution requires an eco-centric theory of value and a more ethical than instrumental attitude to human relations in our common future. Green theory helps us to redefine issues such as climate change in terms of long-term ecological values rather than short-term political interests (Barney, 2007).

Green theory shares this opposition which is one of the main discourses of critical theory that explains why some scholars accept green theory inside the critical theory. In addition to being critical, green theory is considered as a post-positivist theory. Positivism assumes that man is separate from the rest of nature and must dominate nature, reducing nature to an object level by describing it as a tool for the development of humanity (Paterson, 2000). Positivism as the

dominant paradigm paves the way for the undue use of resources and the destruction of nature. From this point of view, it would not be wrong to say that the green political theory in international relations has a post-positivist nature. Green theory is also positioned as a sub-branch of International Political Economy due to shared assumptions and aims. One aim of the International Political Economy is to provide alternative solutions to global ecological problems. Green theory can also be considered among normative theories because of the importance it attaches to concepts such as environmental justice. However, it should be noted that, wherever green theory is positioned, all these approaches position the green theory under critical theory (Barney, 2007).

Conceptual Framework

A conceptual framework is an underrated methodological approach that should be paid attention to before embarking on a research journey in any field, be it science, finance, history and psychology. A conceptual framework sets forth the standards to define a research question and find appropriate, meaningful answers for the same (Yin, 2012). It connects the theories, assumptions, beliefs, and project behind your research and presents them in a pictorial, graphical, or narrative format. Your conceptual framework establishes a link between the dependent and independent variables, factors, and other ideologies affecting the structure of your research.



Independent Variables **Dependent Variable**

Reverse Logistics

Reverse logistics is the reverse of the standard supply chain flow, where goods move from manufacturer to end consumer. Reverse logistics includes activities like returns management, refurbishment, recycling, and disposal. It's an important part of supply chain management, often involving the return of products due to damage, seasonal inventory, restock, salvage, recalls, or excess inventory (Obwocha & Osoro, 2023). Reverse logistics is a type of supply chain management that moves goods from customers back to the sellers or manufacturers. Once a customer receives a product, processes such as returns or recycling require reverse logistics. Reverse logistics start at the end consumer, moving backward through the supply chain to the distributor or from the distributor to the manufacturer. Reverse logistics can also include processes where the end consumer is responsible for the final disposal of the product, including recycling, refurbishing or resale (Ali & Shoaib, 2023).

Organizations use reverse logistics when goods move from their destination back through the supply chain to the seller and potentially back to the suppliers. The goal is to regain value from the product or dispose of it. Worldwide, returns are worth almost a trillion dollars annually and

have become increasingly common with the growth of e-commerce (Obwocha & Osoro, 2023). The objectives of reverse logistics are to recoup value and ensure repeat customers. Less than 10% of in-store purchases are returned, compared to at least 30 % of items ordered online. Savvy companies use reverse logistics to build customer loyalty and repeat business and to minimize losses related to returns. Traditional product flow starts with suppliers and moves on to a factory or distributor. From there, the goods go to retailers and customers. Reverse logistics management starts at the consumer and, moving in the opposite direction, returns products to any point along the supply chain. Well-designed supply chains are responsive to changes and can handle some reverse logistics requirements. This reverse process can return products one step back in the chain or to the original supplier. They can even send returned products back to regular sales or discount channels (Ali & Shoaib, 2023).

The reverse logistics process involves managing returns and buying surplus goods and materials. The process is also responsible for dealing with any leases or refurbishments. Reverse logistics vary across different industries, and there are different economic incentives for improving reverse logistics management. For example, in the beverage industry, the reverse logistics process uses empty tap containers. Beverage production companies want to recapture the value of their containers by reusing them. This requires planning transportation, managing shipping loads and cleaning the containers (Obwocha & Osoro, 2023). In the construction industry, reverse logistics moves and recycles salvaged materials to new sites. As the construction industry adopts more sustainable practices to reduce waste, there is an opportunity for cost savings by using reverse logistics. In the food industry, reverse logistics is responsible for returning packaging materials and pallets. Companies also must deal with rejected food shipments. Rejections can create logistical challenges due to delays that lead to food spoilage and concerns over tampering. The Reverse Logistics Association (opens in a new tab) is developing secure, quick, reliable, login (SQRL) codes on packaging to provide detailed product information and address these logistical challenges (Obwocha & Osoro, 2023).

Steps to Good Reverse Logistics; Process the Return' the return process starts when the consumer signals they want to return a product. This step should include return authorization and identify the product's condition. This process also involves scheduling return shipments, approving refunds and replacing faulty goods (Prasetia & Imaroh, 2020). Deal with Returns; once a returned product arrives at your location or centralized processing center, inspect it and determine its return category. Sort products into the disposition options: fix, resell as new, resell as a return, recycle, scrap or refurbish. Keep Returns Moving; reduce your daily waste by sending repairable items to the repair department. Repair; after reviewing the returned item/equipment and determining whether it can be repaired, move it to the repair area. If not possible, sell any sellable parts. Recycle; any parts or products that you cannot fix, reuse or resell should be sent to the area for recycling. The different types of reverse logistics are also known as reverse logistics components. They focus on returns management and return policies and procedures (RPP) and account for remanufacturing, packaging, unsold goods and delivery issues. Other types of reverse logistics account for leases, repairs and product retirement (Ali & Shoaib, 2023).

Reverse Logistics Components: Returns management; this process deals with product returns from customers or avoiding returns in the first place. These activities should be fast, controllable, visible and straightforward. Customers judge a company on its return flow and re-return policies. A re-return is the return of an item a second time. Often, these returns trigger the extended return policies, such as offering store credit (Prasetia & Imaroh, 2020). For example, a customer buys a returned product on clearance, takes it home and discovers it broken. The store policy would not normally accept the return, but it does allow for a store credit for the faulty product. A re-return can also occur when a vendor rejects the return and gives it back to the purchaser without a refund. This scenario could happen with custom-made items. Return policy and procedure (RPP): The policies about returns that a company shares

with customers is its RPP. These policies should be visible and consistent. Employees should also adhere to them (Obwocha & Osoro, 2023).
Remanufacturing or refurbishment: Another type of reverse logistics management includes remanufacturing, refurbishing and reconditioning. These activities repair, rebuild and rework products. Companies recover interchangeable, reusable parts or materials from other products, also known as the cannibalization of parts (Prasetia & Imaroh, 2020). Reconditioning involves taking apart, cleaning and reassembling products. Packaging management; this type of reverse logistics focuses on reuse of packing materials to reduce waste and the disposal. Unsold goods; reverse logistics for unsold goods handles returns from retailers to manufacturers or distributors. These types of returns can be due to poor sales, inventory obsolescence or a delivery refusal. End-of-life (EOL): When a product is EOL, it is no longer useful or does not work. The product may no longer meet a customer's needs or be replaced by a newer, better version. Manufacturers often recycle or dispose of products that are end-of-life. These goods can create environmental challenges for manufacturers and countries. Delivery failure: With failed deliveries, drivers return products to sorting centers. From there, the sorting centers return the products to their point of origin. While rare, some sorting centers may have the staff available to identify why a delivery failed, correct the problem and resend. Rentals and leasing: When a piece of equipment comes to the end of its lease or rental contract, the company that owns the product can remarket, recycle or redeploy it. Repairs and maintenance: In some product agreements, customers and companies maintain equipment or repair it if issues arise. In some cases, the company sells damaged returned products to another consumer after repair (Ali & Shoaib, 2023).

Recycling of Waste

Recycling, recovery and reprocessing of waste materials for use in new products. The basic phases in recycling are the collection of waste materials, their processing or manufacture into new products, and the purchase of those products, which may then themselves be recycled. There are two broad types of recycling operations: internal and external (Prasetia & Imaroh, 2020). Internal recycling is the reuse in a manufacturing process of materials that are a waste product of that process. Internal recycling is common in the metals industry, for example. The manufacture of copper tubing results in a certain amount of waste in the form of tube ends and trimmings; this material is remitted and recast. Another form of internal recycling is seen in the distilling industry, in which, after the distillation, spent grain mash is dried and processed into an edible foodstuff for cattle (Obwocha & Osoro, 2023).

External recycling is the reclaiming of materials from a product that has been worn out or rendered obsolete (Obwocha & Osoro, 2023). An example of external recycling is the collection of old newspapers and magazines for repulsing and their manufacture into new paper products. Aluminum cans and glass bottles are other examples of everyday objects that are externally recycled on a wide scale. These materials can be collected by any of three main methods: buy-back centres, which purchase waste materials that have been sorted and brought in by consumers; drop-off centres, where consumers can deposit waste materials but are not paid for them; and curbside collection, in which homes and businesses sort their waste materials and deposit them by the curb for collection by a central agency (Ali & Shoaib, 2023).

Society’s choice of whether and how much to recycle depends basically on economic factors. Conditions of affluence and the presence of cheap raw materials encourage human beings’ tendency to simply discard used materials (Obwocha & Osoro, 2023). Recycling becomes economically attractive when the cost of reprocessing waste or recycled material is less than the cost of treating and disposing of the materials or of processing new raw materials. Recycling of waste is defined in the Waste Framework Directive as any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original

or other purposes. It includes the reprocessing of organic material but does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations. Recycling can be split into the subcategories 'Material recycling' and the organic recycling 'Recycling; composting and digestion'. The latter is only possible for separately collected organic waste (Obwocha & Osoro, 2023).

Recycling is the process of collecting and processing materials that would otherwise be thrown away as trash and turning them into new products. Recycling can benefit your community, the economy, and the environment. Products should only be recycled if they cannot be reduced or reused. The hierarchy prioritizes source reduction and the reuse of waste materials over recycling. Recycling provides many benefits to our environment. By recycling our materials, we create a healthier planet for ourselves and future generations. Conserve natural resources: Recycling reduces the need to extract resources such as timber, water, and minerals for new products. Climate change: According to the most recent EPA data, the recycling and composting of municipal solid waste (MSW or trash) saved over 193 million metric tons of carbon dioxide equivalent in 2018. Energy savings: Recycling conserves energy. For example, recycling just 10 plastic bottles saves enough energy to power a laptop for more than 25 hours. To estimate how much energy you can save by recycling certain products, EPA developed the individual Waste Reduction Model. Waste and pollution reduction: Recycling diverts waste away from landfills and incinerators, which reduces the harmful effects of pollution and emissions (Prasetia & Imaroh, 2020). Economy; EPA released significant findings on the economic benefits of the recycling industry with an update to the national recycling economic information (REI) Study in 2020.

The recycling process is made up of three steps that are repeated over and over again. This creates a continuous loop which is represented by the familiar chasing arrows recycling symbol. The three steps of the recycling process are; Collection and Processing; businesses and consumers generate recyclables that are then collected by either a private hauler or government entity (Obwocha & Osoro, 2023). There are several methods for collecting recyclables, including curbside collection, drop-off centers, and deposit or refund programs. Visit how do I recycle. Common Recyclables for information on specific materials. After collection, recyclables are sent to a recovery facility to be sorted, cleaned, and processed into materials that can be used in manufacturing. Recyclables are bought and sold just like raw materials would be, and prices go up and down depending on supply and demand in the United States and around the world. Manufacturing; after processing, recyclables are made into new products at a recycling plant or similar facility. More and more of today's products are being manufactured with recycled content. Recycled materials are also used in new ways such as recovered glass in asphalt to pave roads or recovered plastic in carpeting and park benches. Purchasing New Products Made from Recycled Materials; you help close the recycling loop by buying new products made from recycled materials. There are thousands of products that contain recycled content. When you go shopping, look for the following: Products that can be easily recycled and Products that contain recycled content (Ali & Shoaib, 2023).

Performance of Food and Beverage Manufacturing Firm

It’s one of the oldest industries on the planet, but still full of innovation. From new products to higher-volume, lower-cost production techniques, this industry is always looking for new ways to produce the food consumers want at the best possible price. And vital equipment is there every step of the way (Obwocha & Osoro, 2023). From simple ovens and conveyor belts to complex bottling and packaging machines, the food and beverage industry depends on equipment for industrial-scale food production. The Food and Beverage Industry includes all the companies involved in transforming raw agricultural goods into consumer food products. The overall industry supply chain includes food processing, packaging, and distribution. It does not cover raw food production, which falls into the closely related agriculture industry. This

industry includes fresh food, packaged food, and beverages (both alcoholic and non-alcoholic). From food sold at the grocery store to cooked meals served at restaurants, institutions, and events, this industry serves a huge variety of retail outlets. The food and beverage sector grew out of simple origins: as people travelled from their homes, going about their business, they often had a need or desire to eat or drink. Others were encouraged to meet this demand by supplying food and drink. As the interests of the public became more diverse, so too did the offerings of the food and beverage sector (Al-Ansi, 2022).

Food and beverage (F & B) manufacturing firms play a critical role in the Kenyan economy. Nevertheless, in order to achieve production efficiency, Food and Beverage manufacturing firms are required to adopt a strategy of supplier collaboration to safeguard their production capacity by ensuring there is steady material inflows (Prasetia & Imaroh, 2020). Supplier collaboration is a strategic approach to management of suppliers which involves aligning suppliers and partners around a business strategy to deliver on key goals and drive mutual value in collaboration. The firms may also have to restructure their supply chain by building relationships with trade partners and distributors, (Chowdhury et al., 2020). To attain smooth flow of raw materials, food and beverage manufacturing firms need to incorporate aspect of supplier collaboration in their production strategic planning's as they try to boost their production capacity and performance (Ali & Shoaib, 2023).

The adoption of supplier collaboration accrues the following benefits to both the manufacturer and raw materials suppliers, it improves business performance, customer satisfaction, expands market share and has the potential of boosting revenue streams for the manufacturing firm. Meanwhile, Hailu, (2020) assert that any major supply chain disruption could result to real distress on the entire industry, while Chowdhury et al., (2020) suggests that the outbreak of corona virus disease (Covid-19) pandemic in China has created global economic consequences leading to negative supply of stock. Supply chain disruptions can result to reduced productivity of manufacturing firms while the firms continue to rely on suppliers for sustained operations and existing customers for continued revenue earnings. Firms collaborate in order to mitigate risks and enjoy benefits that accrue when they adopt a strategy to enter into and negotiate for prices as they incorporate external linkages. Sustainability is a global issue in today's business, and this fact however is challenging firms to remain careful in order to be competitive (Oláh, Kitukutha, Haddad, Pakurár, Máté & Popp., 2019). According to Patsavellas et al., (2021) internet of things and the wireless connectivity has ushered in a new era of economic disruption which manufacturing firms should strive to overcome. When a manufacturing firm adopt a sustainable development strategy, it has to ensure that the technological change gears up the economic, environmental and social development together with inclusiveness and environmental sustainability (Oláh et al., 2019).

Supplier collaboration exerts better leverage over parts of the firm's supply chain that are resistant to positive change. The long-term survival of firms is largely dependent on the ability of firms to wittingly produce and deliver product that satisfy customers (Akintokunbo & Akpotu., 2020). Increased manufacturing and production by food and beverage manufacturing firms is a key step to address food security problem (Anastasiadis, Apostolidou & Michailidis., 2020). This calls for an efficient and prudent use of resources in food production and sustainability issues (Anastasiadis et al., 2020). A good supplier collaboration strategy should comprise the following characteristics, able to lower long term costs for the firm, improves productivity and safety, retention of supply partners and finally it drives ethical standards and greater supply chain transparency. Satisfaction of customers largely depends on a wider aspect by how the firm undertake and manages her supplier collaboration as it purposes to remain competitive. However, to continue being competitive is a challenge that requires strategic action and value oriented with the potential of positioning the organization for competitive advantage, (Akintokunbo & Akpotu., 2020).

Empirical Review

Reverse Logistics

Reverse logistics is important because it maintains an efficient flow of goods. The process reduces costs, creates value, decreases risk and completes the product life cycle. With this practice, companies are participating in a system focused on a sustainable economy. Companies find new uses for disposed products with recovery, repair and recycling (Purwanto et al., 2022). Materials once typically viewed as waste have value again. These ensures compliance as many countries institute a policy requiring "producers" to develop more sustainable practices. The guidelines outline subsidies for waste prevention, research and development and recycling. Other policies restrict landfills, mandate collection and recycling programs, and penalize certain waste practices. Reverse logistics creates value by turning waste into sales and builds customer trust. Businesses resell, reuse and recycle returned products. In addition, effective reverse logistics keeps down any storage and distribution costs. There is value in finding the best disposition option for returned items. For example, retail businesses like B-Stock resell returned goods. B-Stock sold 70 million returned or excess goods in 2019. The company buys the returns for a percentage of their original cost and then resells them at a discount to the consumer (Ali & Shoaib, 2023).

Using reverse logistics to boost the efficiency of the traditional supply chain benefits everyone. Some businesses separate their forward and reverse logistics, and others combine them (Purwanto et al., 2022). The relative success of combining them depends on the company's experience, the value of its products and return volume. Either way, they use practices to maximize their profitability ratios with their supply chain activities. Optimized reverse logistics produce financial benefits while positively impacting the environment and business culture. Refining the processes for what happens to products after delivery helps retain customers and save money. The product data collected when engaging with customers after delivery is an advantage of well-executed reverse logistics (Al-Ansi, 2022).
Data provides insight into an organization's supply chain and an opportunity to improve products and/or the customer experience (Prasetia & Imaroh, 2020). Optimized reverse logistics also leads to better supply chain visibility, which leads to benefits like: Cost reduction; Greater customer satisfaction; Better customer retention; Faster and better service; Loss reduction; Improved brand sentiment; and Waste reduction and greater sustainability. Companies must track inbound and outbound logistics to get the full picture. Inbound logistics manages the receipt of raw materials or goods from the supplier to the manufacturer. Outbound logistics is the processes that deliver the finished goods to the end user. Both inbound and outbound logistics are measured from the manufacturer's perspective, while reverse logistics can be part of any point in the supply chain (Ali & Shoaib, 2023).

Recycling of Waste

Recycled-content product; the product was manufactured with recycled materials either collected from a recycling program or from waste recovered during the normal manufacturing process (Singh et al., 2020). The label will sometimes include how much of the content came from recycled materials. Post-consumer content; Very similar to recycled content, but the material comes only from recyclables collected from consumers or businesses through a recycling program. Recyclable product; Products that can be collected, processed, and manufactured into new products after they have been used. These products do not necessarily contain recycled materials. Remember not all kinds of recyclables may be collected in your community, so be sure to check with your local recycling program before you buy (Al-Ansi, 2022).

Recycled-content product; the product was manufactured with recycled materials either collected from a recycling program or from waste recovered during the normal manufacturing process (Tarigan et al., 2021). The label will sometimes include how much of the content came from recycled materials. Post-consumer content; Very similar to recycled content, but the material comes only from recyclables collected from consumers or businesses through a recycling program. Recyclable product; Products that can be collected, processed, and manufactured into new products after they have been used. These products do not necessarily contain recycled materials. Remember not all kinds of recyclables may be collected in your community, so be sure to check with your local recycling program before you buy (Ali & Shoaib, 2023).

Waste recycling refers to the process of collecting, sorting, and processing waste materials to convert them into reusable materials or products. It is a crucial component of waste management and a sustainable approach to dealing with waste (Tarigan et al., 2021).. The main objective of waste recycling is to reduce the amount of waste sent to landfills or incinerators and conserve natural resources by reusing materials. Recycling helps in minimizing environmental pollution, conserving energy, reducing greenhouse gas emissions, and promoting a circular economy. The process of waste recycling typically involves the following steps: Collection; waste materials, such as paper, plastics, glass, metals, and organic waste, are collected from households, businesses, and industries. Collection methods may include curbside collection, drop-off centers, or specialized recycling facilities. Sorting and Separation; the collected waste is then sorted and separated based on material type. This process may involve manual sorting, automated sorting systems, or a combination of both. Separation ensures that different types of materials are handled and processed separately for effective recycling (Al-Ansi, 2022).

Processing and Treatment: After sorting, the recyclable materials undergo various treatment processes to prepare them for reuse (Tarigan et al., 2021). This may involve shredding, crushing, melting, or cleaning the materials to remove contaminants and prepare them for the manufacturing of new products. Manufacturing: The processed recyclable materials are used as raw materials to manufacture new products (Tseng et al., 2022). For example, recycled paper can be used to produce new paper products, recycled plastics can be transformed into new plastic items, and recycled metals can be used in various manufacturing industries. Distribution and Consumption; the recycled products are then distributed to markets and consumers for purchase and use. Consumers play a vital role in the recycling process by choosing products made from recycled materials, thereby creating demand and supporting the recycling industry (Ali & Shoaib, 2023).

Performance of Food and Beverage Manufacturing Firms

Proper supplier collaboration strategy may possibly help food and beverage manufacturing to plan and effectively tackle external and internal effects that potentially obstruct production and firm performance (Tseng et al., 2022). This is due to the growing complexity of contemporary supply chains and the subsequent increased probability of experiencing a disruption. As international trade becomes increasingly efficient and companies continue to expand their networks, the need to establish and maintain a detailed understanding of your supply chain becomes more significant. Meanwhile, issues around food security and associated risks are extremely important. Some methods or approaches have been used to identify and assess risks that occur in agri-food supply chain. Effective performance of food and beverage manufacturing firms should go beyond the firm's established suppliers to try and mitigate against the risk of supply chain break down (Al-Ansi, 2022).

The basic goals of performance management are to improve Performance, reduce costs and minimize risk (Wang & Zhang, 2022). A good performance management solution provides a

reliable performance metrics. Cost Reduction use one supplier; you are eliminating competition for your orders. Find several suppliers who compete on price, and use several of them at all times so you can avoid costly delays in receiving products. Using multiple suppliers protects you from spending money for less-than-satisfactory service. In addition, if there's no approval process and individuals have the power to order supplies whenever they want, you could be ordering things you don't need. Examine your ordering process to see if it is causing waste (Al-Ansi, 2022).

Some companies have also scaled down their manufacturing capacity impacting negatively on the financial performance of manufacturing firms therefore the study sought to analyze the effect of total assets on financial performance of food and beverage manufacturing firms in Nakuru county Kenya (Wang & Zhang, 2022). The study was guided by economic theory of firm growth. The study adopted descriptive survey research design with a target population of 15 food and beverage manufacturing firms. The unit of observation was 15 food and beverage manufacturing firms in Nakuru County. The unit of analysis was 56 employees in the finance department. The study utilized primary data. Questionnaires were used to collect primary data desirable for the study. Piloting was done in Kericho County. Data was analyzed using both descriptive and inferential statistical methods. Descriptive analysis was done using frequency, percentage, means and standard deviations to describe the basic characteristics of the population. Inferential statistics involved the use of Pearson's Product Moment correlation and multiple regression model. The finding of the study was presented in table form (Ali & Shoaib, 2023).

RESEARCH METHODOLOGY

This study used descriptive research design (Mugenda & Mugenda 2008). The function of a research design was to ensure that the evidence obtained enabled the researcher to effectively address the research problem as unambiguously as possible. A target population is typically a group or collection of factors you want to learn more about. The target population was a subset of the general public identified as the targeted population was 262 respondent who comprised, procurement officer, finance officer, admin officer and production officer. Purposive Random sampling is a technique used in qualitative research to select a specific group of individuals or units for analysis. Participants are chosen "on purpose," not randomly. It is also known as judgmental sampling or selective sampling. This study used both open and closed ended questionnaire. The study used Statistical Package for Social Science (SPSS) version 28. The analyzed results or data is now presented in tables, charts, graphs, and other figures. The following multiple regression formula was applied in this study.

RESEARCH FINDINGS AND DISCUSSION

Out of 236 questionnaires that were circulated to the respondents, 203 of the respondents dully filled and retuned questionnaires; yielding a response of 86.0%. This was considered to be a very reliable response rate for the generalization of study findings is in line with Sharma (2018), states that a response rate of 70% and above is believed to be a reliable response rate. This was less 26 (10%) respondents who were pilot tested.

Descriptive Statistics

In this section, the study presents findings on Likert scale questions on the role of inventory management practices and performance of FBM firms in Nairobi City County, Kenya. The study specifically presents the effect of reverse logistics and recycling of waste on performance of preference group's FBM firms in Nairobi City County, Kenya. Respondents were asked to use a 5-point Likert scale where 5 (SA) = Strongly Agree, 4(A) = Agree, 3(UD) = undecided, 2 (D) = Disagree, and 1(SD) = Strongly Disagree. Results obtained were interpreted using

means and standard deviations where a mean value of 1-1.4 was interpreted as; (SD) =strongly disagree, (D)= disagree, N= neutral, (A)= agree and (SD) = strongly agree.

Reverse Logistics

Respondents were requested to give their responses in regard to Reverse logistics in a five point Likert sale where SA=Strongly Agree, A=Agree, N= Neutral, D=Disagree, and SD= Strongly Disagree. Results obtained were presented in Table 1below:

Respondents were requested to give their opinion on the variable Reverse logistics. From table 1, the respondents unanimously agreement that Reverse logistics ensured performance of FBM firms and periodic review in Nairobi City County in Kenya viable with agreement of a mean was 3.742, and Standard Deviation of 1.0600; Through their experience in Nairobi City County the respondents gave neutral response with a mean of 3.533 and Standard Deviation of.9200; their skill has contribution to the quality and innovation of the reverse logistics with strongly agree a Mean of 3.903, and Standard Deviation of .9005; level of education in Reverse logistics it is important to put in place and maintain procurement the respondents gave a strongly agree with a Mean of 4.061, and Standard Deviation of .20349; The management of Nairobi City County in Kenya implements performance of FBM firms award the respondents disagreed with a Mean of 3.541 and SD=1.3018); and Reverse logistics enhances performance of FBM firms at Nairobi City County in Kenya, they agreed with a Mean of 3.566, Standard Deviation of .7015. This finding agrees with the findings of Nyile *et al.* (2022) who observed that clear description of Reverse logistics, enhance effective performance of FBM firms in Nairobi City County, Kenya.

Table 1: Reverse Logistics

Statement	Mean	Std. Dev.
My firm ensures their experience Sharing through Real time basis	3.370	1.060
Through reverse logistics in Nairobi City County Kenya has been able to make decisions on timeliness	3.531	.9200
logistics has contribution to performance of Nairobi City County, Kenya	3.903	.9005
By Quick, frequent & accurate green purchasing It is important to put in place Reverse logistics	4.061	.20349
The management of strategic evaluation in virtual integration	3.541	1.3018
Reverse logistics enhances performance of Nairobi City County, Kenya.	3.566	.8015

Recycling of Waste

Respondents were asked to give their responses in regard to recycling of waste on performance of FBM firms in Nairobi City County in Kenya i.e. 5point likert sale where SA=Strongly Agree, A=Agree, N= Neutral, D=Disagree, and SD= Strongly Disagree. Their responses are presented in table 2 below. From table 2, respondents, respondents agreed that recycling of waste ensure performance of FBM firms Nairobi City County in Kenya; the respondent gave a Mean of 4.037 and Standard Deviation of .7307; decision making on performance of FBM firms Nairobi City County in Kenya , they gave strongly disagree with a Mean of 4.002 and Standard Deviation of .7307; output of recycling of waste can affect performance of FBM firms in Nairobi City County in Kenya; the gave strongly agree with a Mean of 4.206, Standard Deviation of .20307; In cases of health workers systems to embrace a better performance of FBM firms in Nairobi City County in Kenya they gave a Mean of 4.009 and Standard Deviation of .8073; Alternative recycling of waste to performance of FBM firms in Nairobi City County

in Kenya ;most of the respondents were neutral with a Mean of 3.925 and Standard Deviation of .7306; and to enhance market share results, our county has in recent time conducted modern sensitivity resolution towards performance of FBM firms in Nairobi City County in Kenya; they gave a Mean of 4.104 and Standard Deviation of .7055.

These findings are in line with the findings of Nyile *et al.* (2022) who observed that the characteristic of recycling of waste are the best value reaction to sort out non-performance of, after Recycling of waste, for resolving return on investment. The problem areas giving rise to disputes are mainly related to Nairobi City County's matters.

Table 2: Recycling of Waste

Statement	Mean	Std. Dev.
My county a embrace recycling of waste on performance of Nairobi City County in Kenya.	4.034	.7307
My Firm embrace decision making change on performance of Nairobi City County in Kenya.	4.003	.7307
My firm embrace output doctrine n performance of Nairobi City County in Kenya	4.009	.20373
In cases of recycling of waste on performance of FBM firms in Nairobi City County in Kenya	3.925	.8306
Alternative recycling of waste for money process on performance of FBM firms in Nairobi City County in Kenya	4.104	.8055
To enhance recycling of waste processes on performance of Nairobi City County in Kenya	4.053	.7105

Performance of FBM firms in Nairobi City County

Respondents gave their level of agreement on various statements relating with performance of FBM firms in Nairobi City County, Kenya. The results were as presented in Table 3 below. From the research findings, respondents were in agreement that performance of FBM firms in Nairobi City County in Kenya is being affect by supply chain agility, they gave 63.2%; when asked about customer satisfaction and its effect on performance of FBM firms in Nairobi City County in Kenya they gave strongly agree of 60.7 %; When the respondents were asked to show their level of agreement on how less complaints affects performance of FBM firms in Nairobi City County in Kenya they gave strongly disagreed of 9%; When also the respondents were asked to show their level of agreement on return on investment of the in Kenya government on performance of FBM firms in Nairobi City County in Kenya they gave They gave agreed of 59.7%; Alternative strategy to contribute to Waste management on performance of FBM firms in Nairobi City County in Kenya they gave neutral of 42.5% and through strategic application, performance of private is measured by quality, flexibility, Waste management on performance of FBM firms in Nairobi City County in Kenya they gave disagreed of 74.2%. The outcome is in line with the findings of Mutai and Osoro (2021) they observed that some of the factors that contribute to inefficiency in public procurement as corruption, delayed payments, poor planning, statutory amendments, insufficient use strategic evaluation low public participation, and improper payment procedures negatively affects performance of FBM firms Nairobi City County in Kenya in Kenya.

Table 3: Performance of FBM firms in Nairobi City County

Statements	Yes (%)	No (%)
Customer Satisfaction an affects performance of FBM Nairobi City County in Kenya	52.2	47.5
No. of FBM firms can affects their performance of FBM firms in Kenya	60.6	36.4
Access to less complaints can affect performance of FBM in Kenya	44	56
can affects performance of private state corporation Nairobi City County in Kenya	58.7	41.3
Complaints can affect performance of FBM firms Nairobi City County in Kenya	42.2	57.5
performance of FBM firms in Nairobi City County in Kenya	74.1	25.9

Pearson Correlation Analysis

The study further conducted inferential statistics entailing both Pearson and regression analysis with a view to determine both the nature and respective strengths of associations between the conceptualized predictors such as Reverse logistics, and Recycling of waste and performance of FBM firms in Nairobi City County, Kenya.

Table 4: Correlation Coefficients

		Performance of FBM firms	Reverse logistics.	Recycling of waste
Performance Of Nairobi City County	Pearson correlation	1		
	Sig. (2-tailed)			
Reverse logistics	Pearson correlation	.534*	1	
	N.	203*		
	Sig. (2-tailed)	.000		
Recycling of waste.	Pearson correlation	.152*	.240	1
	N	203*	203	
	Sig. (2-tailed)	.000	.035	
			203	203

From the findings, a positive correlation is seen between each variable and performance. The strongest correlation was established between reserve logistics and performance of FBM firms in Nairobi City County in Kenya (r = 0.534 and the weaker relationship found between Recycling of waste and performance of FBM firms in Nairobi City County (r = 0.152). This is tandem with the findings of Ongeri and Osoro (2021), who observed that all independent variables were found to have a statistically significant association with the dependent variable at over 0.05 level of confidence.

Regression Analysis

To determine the relationship between the independent variables and the dependent variable and the respective strengths, the regression analysis produced coefficients of determination. Findings in table 5 reveal a positive relationship between the performances of FBM firms in Nairobi City. From the result shown below, it's clear that when all the independent variables are regressed against the dependent variable the constant gives a negative result meaning there is a strong relationship and how each predator has an effect on the dependent variable.

Table 5 Regression coefficient Results

Unstandardized coefficients		Standardized coefficients	T	Sig.
	B	**Std. Error** **Beta**		
(constant)	-.132	.060 -1.144	4.004	.002
Reverse logistics	.464	.132 .555	5.472	
.003				
Recycling of waste.	.256	.115 .321	2.657	
.001				

b. Dependent Variable: performance of FBM firms in Nairobi City County in Kenya

A unit change in reverse logistics would thus lead to a .464 effect on performance of FBM firms in Nairobi City County in Kenya sector ceteris paribus; further unit change in recycling of waste would lead to .256 of change in on performance of FBM firms in Nairobi City County and finally a unit change in strategic resolution would have an effect of .256 of performance of Nairobi City County in Kenya. This finding is in line with the findings of Ongeri and Osoro (2021). This implies that among other factors, Reverse logistics and Recycling of waste are significant determinants of performance of FBM firms in Nairobi City County, Kenya.

Conclusion

Reverse Logistics

The study concludes that there is a positive relationship between Reverse logistics and Performance of FBM firms Speciation identification, periodic design assessment, continues improvement and proactive assessment are among the Reverse logistics factors that significantly influenced the performance of FBM firms in Nairobi City County, Kenya. The study further concludes that by implementing Reverse logistics has enhanced performance of FBM firms in Nairobi City County, Kenya, leading to operational increase in efficiency and effectiveness. Therefore, the study concludes that FBM firms in Nairobi City County, Kenya has significantly increased their strategic' quality management in the In Kenya government in strategic management practices.

Recycling of Waste

The researcher concludes that there is a positive relationship between Recycling of waste and performance of FBM firms in Nairobi City County, Kenya. Partnership enforcement policy, collective bargaining, alternative dispute resolution processes, free expression of concerns by involved practices are among the coordination factors that significantly influenced the performance of FBM firms in Nairobi City County, Kenya. The researcher further concludes that by adopting alternative coordination and partnership mechanisms as it was observed at Nairobi City County in the level of performance of FBM firms in Nairobi City County has increased. Therefore, the study concludes that Nairobi City County in Kenya has been experiencing significant increase in service delivery through embracing proper coordination in the supply chain practices.

Recommendations

Reverse Logistics

The study recommend that Reverse logistics formalizes relations between practices within a robust legal framework, but is much more besides; it is an opportunity to define the arrangements that encompass every aspect of what outcomes the Nairobi City County in Kenya wants from the strategic and how it wants the relationship to work. This means that the In Kenya needs to take an active role in the development of the quality mechanism early on; it should not be left as a supplementary activity post negotiation. At preparation of every quality

management can contribute to strategic evaluation on performance of FBM firms in Nairobi City County, Kenya. Proper Reverse logistics can result to high procurement in Nairobi City County, Kenya.

Recycling of Waste

This researcher recommends that recycling of waste had a strong relationship with performance of FBM firms in Nairobi City County, Kenya. When relationship are not properly managed, they may cause strategic delays, undermine team spirit, increase delay costs, and, above all, damage business relationships. With the increase in the number of participants in a strategic management, it is obvious that more business interactions and arguments end up with an increase in the number of strategic relationship disputes. Research in preventing and resolving relationship disputes supports the effort for better understanding and harmonization of the different cultures. Therefore, this study recommends to the management of Nairobi City County in Kenya to enhance and upgrade on the implementation of all applicable alternative disputes resolution mechanisms so to protect relationship with its stakeholders in the supply chain practices.

Areas for Further Studies

This research focused on reverse logistics, and recycling of waste and performance of FBM firms in Nairobi City County, Kenya. The study therefore recommends a further study to be conducted to other counties in Kenya. Then get their findings and compare with this and agree or disagree. The study also recommends replication of the study in other sectors such as manufacturing sector and public sector to allow comparison of research findings. Future researchers an investigate the factors affecting supply chain best practices broadly in all areas of concern in this profession on performance of FBM firms the supply chain practices.

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