Influence of Demand Collaboration on Performance of Food and Beverages Manufacturing Companies in Nairobi City County

Briget Wangui Mwatha[1]*, Dennis Chege[2]

Jomo Kenyatta University of Agriculture and Technology, Kenya

Corresponding Author

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ABSTRACT

Effective demand collaboration strategies can significantly improve operational efficiency, supply chain responsiveness, and overall performance, enabling companies to maintain a competitive edge in the market. Despite the crucial role of demand collaboration in enhancing the performance of companies, many firms have yet to fully leverage its potential. This paper sought to examine the influence of demand collaboration on the performance of food and beverage manufacturing companies in Nairobi City County. The study applied a mixed research design. The study gathered data through questionnaires which were administered both physically and online. Data collected was analyzed through both descriptive and inferential analysis. Results revealed a ? of 0.847 and a p-value of 0.001, between demand collaboration and the performance of food and beverages manufacturing companies. The study concluded that demand collaboration had a positive and significant influence on the performance of food and beverage manufacturing companies in Nairobi City County. The study recommends continued strengthening of front office agreements with trading partners and enhanced collaborative communication within the supply chain networks. Additionally, it is recommended that food and beverage companies should implement advanced technologies for order forecasting and optimization of stock requests. Finally, it is recommended that food and beverage manufacturing companies should invest in customer satisfaction initiatives, such as product quality enhancements and service improvements.

Key Words: Demand Collaboration, Performance, Food and Beverages Manufacturing Companies, Nairobi City County

INTRODUCTION

Firms in different markets have to ensure that they can overcome the vulnerabilities in the supply chains. For instance, the food and beverage industry operates in an industry marred by huge uncertainties that affect its ability to match the demand and supply (Nyang'au, 2017). One of the greatest challenges in the food industry is ensuring that the firms can meet the demands of goods and services in the market. Firms can leverage supply chain resilience to manage the disruptions and uncertainties in the market (Osman, 2023). Supply chain collaboration is one of the techniques used by firms to improve their financial performances by meeting the current and expected needs in the market. The supply chain collaboration helps reduce and improve performance by ensuring that firms understand the specific needs in the market and prepare their sourcing accordingly.

According to Mogaka (2023), demand collaboration is the process by which several stakeholders unite to forecast the demand and supply chain the process. Demand collaboration aims to offer the information

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required to ease the forecasting process. Collaboration may require various teams such as the marketing team, sales, customers, and suppliers to come together to share data (Duong & Chong, 2020). Collaboration by these teams helps an organization to create a more comprehensive forecast of the present and future demand. Collaboration in demand helps overcome such challenges as the reluctance in data sharing, and information asymmetry and increases the quality of data in the supply chains (Friday et al., 2021). Demand collaboration also helps address the variability of demand which occurs due to seasons or cyclical factors. High variability n demand makes it hard for organizations to meet the demand. However, demand collaboration helps address these challenges through forecasting and scenario analysis of the demand situation.

The adoption of demand collaboration is not a new concept among manufacturing firms in the world. Many Food and Beverages Manufacturing firms engage in demand collaboration to ensure smooth supply and delivery of raw materials (Chi, Huang, & George, 2020). The use of demand collaboration in the US, for instance, has helped firms to ensure customer satisfaction. These firms engage in demand collaboration to mitigate risks and enjoy the benefits of negotiating prices with suppliers. For instance, Food and beverage manufacturing firms engage in external linkages to ensure a continuous supply of products (Ghazal & Alzoubi, 2021). In the UK, demand collaboration is formed through open communications and honest feedback with the partners in the supply chains. The firms can share their needs, expertise, and experiences on the supply chain. These collaborations help reduce costs and improve innovations in the supply chains.

In Africa, demand for collaboration with Food and Beverages Manufacturing firms has gained preeminence in recent years as firms seek to leverage collaborative relationships to improve performances. In Nigeria for instance, demand collaboration has helped manufacturing firms to improve their supply chain performances (Oyedijo et al., 2022). Demand collaboration is common in the agribusiness sector whereby firms and partners collaborate to tackle the problem of fragmentation and seasonality. Besides, the collaboration entails building partnerships that enable manufacturing firms to acquire customized services and capacities that may not be readily available in the market (Ndofirepi, Farinloye, & Mogaji, 2020). In Ghana, demand collaboration has been utilized in the agricultural sector to reduce information asymmetry in the market, for instance, firms have engaged in demand collaboration to exchange information and usable knowledge on the market dynamics.

In Kenya, the Food and Beverages Manufacturing firms play a huge role in the country's economy. with the demand for food and beverages increasing over the last few years, Food and Beverages Manufacturing firms have to ensure that they can keep up with the demand (Nyang'au, 2017). The firms utilize demand collaboration to enable them to achieve the desired level of efficiency needed to meet the current market needs. The demand collaboration enables these firms to ensure a steady inflow of raw materials in the highly volatile agribusiness sector. The demand collaboration enables the firms to align the suppliers with the current market demands to ensure a continuous supply of materials. According to Mogaka (2023), demand collaboration has helped firms improve their revenue streams, increase performance, and increase customer satisfaction.

Despite the huge benefits associated with demand collaborations among Food and Beverages Manufacturing firms in Kenya, many firms especially in Nairobi County have not yet fully utilized their power (Chebichii, Namusonge, & Nambuswa, 2021). The growing complexities of contemporary supply chains require that firms have a clear strategy on how to utilize demand collaboration to meet market needs. As the competition in the Food and Beverages Manufacturing industry intensifies, firms ought to plan and come up with strategies to leverage on-demand collaboration to overcome the demand obstruction. Effective demand collaboration will thus go beyond working with a few local suppliers to identifying other strategic partners in different sectors to mitigate the risks of supply chain breakdowns (Muthoni & Mose, 2020). As such, there is a need to examine the Influence of Demand Collaboration on the Performance of Food and

Beverages Manufacturing Companies in Nairobi City. The results from this study will offer quality insights into how Demand Collaboration impacts the Performance of Food and Beverages Manufacturing Companies in Nairobi City County.

Despite the huge role played by the Food and Beverages manufacturing companies in Kenya, the companies face glaring challenges in managing the demand in the market. These challenges have a negative impact on the performance of beverage and food companies in the Country and the desired contribution to development. Fiona and Muli (2022), explain that the manufacturing sector contributes about 10% of the country's GDP, most of which is from the food manufacturing sector. This contribution to the GDP is unsustainable due to the cyclic nature of the agricultural production in Kenya and its borders. The Kenya National Bureau of Statistics (KNBS, 2023) explains that the manufacturing sector is projected to increase by 2.7% translating to 10% of GDP from the previous record of 7.3%. However, the industry is expected to continue facing challenges from the tightening fiscal monetary policies and high inflation rates in the world. Besides, the Russian-Uranian war and the Gaza conflict are expected to have a major impact on the prices of raw materials in the country.

Owing to the dynamism in the food manufacturing industry, it is imperative that issues such as demand collaboration be studied. Demand collaboration plays an active role in the performance the food and beverage manufacturing firms (Muiruri, Ngugi, & Kihara, 2021). A good demand collaboration model among the supply chain partners can help increase the supply chain responsiveness, improve productivity, and increase customer service. Firms can also increase their overall performances by investing in demand collaboration in the supply chain. Past studies on the impacts of demand collaboration have shown that it has a positive influence on the development and the performance of supply chain resilience (Muthoni & Mose, 2020). Firms can increase their supply chain visibility by investing in demand collaboration with their partners. While several studies have sought to examine the role of collaboration in organizational performance (Oyedijo et al., 2022; Muthoni & Mose, 2020), most of these studies focused on supplier collaboration in developed countries, whereas few studies have focused on the influence of demand collaboration on the performance of food and beverages manufacturing companies in developing nations. Notably, there are limited studies in the Kenyan context of Nairobi County in general. This research seeks to influence demand collaboration on the Performance of food and beverages manufacturing companies in Nairobi County.

THEORY AND LITERATURE REVIEW

The Network Theory

The network theory was conceptualized in the late 1970s and the early 1980s whereby it sought to explain the importance of strategic alliances between firms (Chen & Wen, 2023). The theory explains the need for strategic alliances in forming meaningful relationships that benefit the main players in the market. Importantly, the theory identified supply chains as a complex network consisting of different entities linked by a set of persons, objects, or events. Additionally, the theory noted that the success of the supply chain networks depends on the relationships among the various actors in the supply chain (Jiakuan & Haoyu, 2023). The importance of a network in an organization spans beyond the making of profits to ensuring that an organization is engaged in sustainable business activities.

The idea of networking in the supply chain is built on the understanding that firms can leverage the vast amount of entities in the supply chain. The network offers benefits to every organization through the investments and the actions of others in the process (Huang, Han, & Macbeth, 2020). Firms can gain a competitive advantage in the network through information sharing and knowledge management with the partners. Besides, the networks can aid firms in decision-making by leveraging the information available in

the market (Meadows et al., 2020). The theory can be applied in demand planning to ensure that firms allocate their resources effectively by setting on long-term strategic partnerships. The companies in the supply chain network have the leverage of choosing from a greater set of suppliers thus increasing the quality of the raw materials.

The network theory is used in this study because it sheds light on how Food and Beverage companies in Nairobi can leverage partnerships to form demand collaboration in the supply chain. These partnerships will help the forms to form trustworthy partnerships that contribute to value addition on both sides. Besides, beverage and food companies can leverage the networking theory to simplify their decisions about the most effective supply strategy to follow. The use of networking theory will not only help firms to increase their financial performance but also to create formidable strategic linkages that are critical for long-term organizational survival. By using this theory, the food and beverage companies in Nairobi can evaluate the existing demand for collaboration and identify whether they add value to the organization. Importantly, the firms will be able to identify areas of improvement that will help achieve the desired organizational goals.

Empirical Literature

Demand collaboration requires firms to work with producers and a range of suppliers to improve the performance of the supply chain. Different researchers have sought to examine the various factors affecting the success of demand collaboration. Kazantsev et al. (2018) examined the impacts of demand collaborations in industry 4.0 production networks. This study surveyed top companies in the EU aerospace suppliers to understand the various demand collaboration techniques employed by these firms. The research used a thematic analysis to identify some of the collaboration barriers and how the firms address these barriers. The results showed that the demand for collaboration in the industry is aimed at offering short-term and demand-driven excess capacities. Importantly the study noted that information technology can be employed to support demand-driven collaboration and help firms use their excess capacities thus responding to existing business opportunities. The main research gap in this study is that it was done in the EU which has a different market dynamic in Kenya. Besides, the research focused on industry 4.0 which may use different demand collaboration than the food and beverage industry.

Chi, Huang, and George (2020) examined the role of collaboration in influencing a demand-driven supply chain. The research employed a moderated meditation model to understand how formal contract impacts businesses. The research used a survey of 209 IT firms whereby the top business executives were targeted. The study noted that formal contracts have a positive impact on the supply chains. Importantly, the researchers noted that firms will choose operational alignment when forging demand collaboration in a business environment where competition is high. The main research gap is that the study focused solely on business contracts in IT firms which is different from the focus of our research. However, the study offers important insights on how demand collaboration has helped firms to cut down on costs.

Duong and Chong (2020) explored the role of collaboration in the supply chains in the presence of disruptions. This study used a systematic literature review of 157 articles published after 2014. The study used descriptive statistics to evaluate the various collaboration mechanisms employed by firms. The study noted that the most important collaboration techniques used by firms include information sharing, competition, and cost reduction. Specifically, the study noted that information sharing can help firms overcome disruptions in the supply chains. Information sharing helps firms to increase their flexibility and their visibility in the marketplace. The main research gap in this article is that it focused on an industry that is different from food and beverage. However, the findings from this study offer a good foundation for the various collaboration techniques that can be employed in the food and beverage sector.

Adem, Childerhouse, Egbelakin, and Wang (2018) examined the various collaboration methods used in NGOs in Jordan. The study employed a literature review from the commercial and the humanitarian sectors.

The study used semi-structured questionnaires to evaluate the 26 international NGOs. The findings indicate that NGOs face several factors when forging demand collaboration. Some of these challenges include government policies and socioeconomic factors that affect the motivation of NGOs to engage in demand collaboration. This study offers important insights into the role of government regulations in determining the demand for collaboration pursued by an organization. The research gap is that this study was done in Jordan which has a different economic and social environment compared to Kenya. Besides, the study focused on International NGOs that operate in a different environment to food and beverage companies.

Annosi et al. (2021) explored the role of digitization in preventing food waste in supply chains. The study examined some of the barriers to effective collaboration and their impacts on profitability. The study collected data using semi-structured interviews in the supply chain whereby logistics managers and directors were targeted. The study noted that collaborative demand management can help firms in the food and beverage sector avoid food wastage. Importantly, the study noted that digital solutions are crucial in enabling food and beverage companies to avoid wastage. The main research gap in this research is that it was conducted in Greece which has a different economic and political environment compared to Kenya. However, the study was conducted in the food and beverage industry implying that results will offer important insights on our study topic.

Brun, Karaosman, and Barresi (2020) examined the role of supply chain collaboration and its impacts on transparency. The study used a case study approach on influential NGOs to understand how demand collaboration influences transparency and performances in fashion firms. The study noted that demand collaboration increases transparency through information sharing. This information sharing also improves organizational performance and also increases customer satisfaction in the marketplace. This study will offer important insights into how forms can use demand collaboration to improve their competitive edge in the market through customer satisfaction. The main research gap in this study is that it was conducted in Australia, which has different market dynamics than Kenya. Besides, the study focused on the fashion industry implying that the results cannot be generalized and applied in the food industry.

DATA AND METHODS

Research Design: The research was conducted using a descriptive study design.

Target Population**:** A total of 95 food and beverage businesses in Nairobi County, served as the unit of analysis while a total of 665 employees working in the firms served as the unit of observation, employees included, a warehousing supervisor, purchasing manager, manufacturing/production manager, transport or logistics manager, customer services manager, inventory manager as well as order processing or demand forecasting manager.

Sample and Sampling Methods: The current study sample size was established through the use of the Taro Yamane formula (1967). The formula is shown below.

Yamane Formula, $n = \frac{N}{1 + N(e^2)}$ = n=665/ [1+665(0.07*0.07) =665/4.2585= 157.37, which now becomes 157. In executing the formula, a sample of 157 respondents was obtained.

Data Collection Instruments and Methods: Data was gathered using questionnaires that had Likert questions, with a scale between 1 and 5, where 1 represented strongly disagreed, 2 represented disagreed, 3 represented neutral, 4 represented agreed 5 represented strongly agreed. The questionnaires were administered in person to participants as well as using the electronic method by emailing the questionnaires to the participants. The instrument was subjected to pilot tests to establish its validity and reliability.

Validity was tested using content validity whereas reliability was ascertained using Cronbach technique at a critical score of 0.7.

Data Analysis: An analysis was undertaken using descriptive and inferential analysis. Descriptive analysis included the determination of central tendencies and measures of dispersion. Inferential analysis was undertaken through regression analysis at a p-value of 0.05. Observed p-values below 0.05 were interpreted to indicate that there was a significant link between the independent and dependent variables.

RESULTS AND DISCUSSIONS

Response Rate

The study target was to collect data among 157 respondents who were physically given the questionnaires or sent to their emails. The researcher was, however, able to receive back 142 filled questionnaires, which represented a 90.45% response rate.

Descriptive Statistics

Descriptive Statistics on Demand Collaboration

Table 1 revealed that respondents agreed with the statement, front office agreement with our trading partners as shown by a mean of 4.07. Additionally, the participants agreed with the statement on the creation of order forecasting as indicated by a mean score of 3.67. Besides, participants agreed with the statement on determination of optimal stock requests and supplies in their company as shown by a mean score of 3.91. In addition, participants agreed with the statement on collaborative communication with supply chain partners indicated by a mean of 4.14. Moreover, respondents agreed with the statement on sharing resources with supply chain partners as is shown by a mean of 3.75. Lastly, respondents agreed with the statement on frequently sharing information with supply chain partners as shown by a mean of 4.28.

Genc and De Giovanni (2020) were of similar opinion in the exploration of effective demand collaboration with robust communication channels and technology infrastructure to facilitate real-time data exchange and collaboration. The study highlighted that by leveraging advanced analytics, artificial intelligence, and collaborative platforms, companies can harness the power of big data to enhance demand forecasting accuracy and agility. Additionally, the study noted that cloud-based solutions offer scalability and accessibility, enabling seamless collaboration across geographically dispersed supply chain partners.

Table 1: Descriptive Statistics for Demand Collaboration Practices

Demand Collaboration Practices	**SD**		**D**		**N**		**A**		**SA**			
Demand collaboration practices	**F**	**%**	**F**	**%**	**F**	**%**	**F**	**%**	**F**	**%**	**M**	**Std. dev**
front office agreement with our trading partners	3	2.1	6	4.2	6	4.2	90	63.4	37	26.1	4.07	0.813
Creation of order forecasting	0	–	2	1.4	8	5.6	63	44.4	69	48.6	3.67	0.591
Determination of optimal stock requests and supplies in the company	0	–	1	0.7	4	2.8	55	38.7	82	57.7	3.91	0.664
collaborative communication with supply chain partners	0	–	8	5.6	11	7.7	46	32.4	77	54.2	4.14	0.591
Sharing of resources with supply chain partners	0	–	4	2.8	10	7.0	61	43.0	67	47.2	3.75	0.852

frequently sharing information with supply chain partners	0	0	1	0.7	5	3.5	76	53.5	60	42.3	3.87	0.735

Table 2: Descriptive Statistics on Organizational Performance

Table 2 revealed that respondents agreed that profits had increased as indicated by a mean of 3.82; respondents also agreed that sales revenues had increased indicated by a mean of 4.01; respondents were also in agreement that their companies' market share had increased indicating by a mean of 3.65; respondents also agreed that their customers had reported higher satisfaction as indicated by a mean of 3.59.

	SD		D		N		A		SA			
Organization performance	**F**	**%**	**f**	**%**	**F**	**%**	**F**	**%**	**F**	**%**	**M**	**Std. Dev**
Profit	0	–	3	2.1	6	4.2	75	52.8	58	40.8	3.82	0.658
Sale revenues	2	1.4	5	3.5	10	7.0	54	38.0	71	50.0	4.01	0.862
Market share	0	–	4	2.8	14	9.9	38	26.8	86	60.6	3.65	0.786
Customer satisfaction	1	0.7	12	8.5	6	4.2	45	31.7	78	54.9	3.59	0.748

Inferential Analysis

Table 3 reveals that 80.5% of the changes in the performance of food and beverage manufacturing companies were explained by Demand collaboration as indicated by an r-square of 0.805.

Table 3: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.897[a]	.805	.803	.39272

a. Predictors: (Constant), Demand Collaboration

Table 4 reveals an F-statistic value of 576.415 with an associated p-value of 0.001, which suggests that the simple linear regression model applied by the study was a significant fit in predicting the performance of food and beverages manufacturing companies.

Table 4: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	88.900	1	88.900	576.415	.000[b]
	Residual	21.592	140	.154		
	Total	**110.492**	**141**			

a. Dependent Variable: Performance of the Company

b. Predictors: (Constant), Demand Collaboration

Table 5 indicates a beta coefficient of 0.690 and a p-value of 0.001 which indicates that the constant in the model was statistically significant in the prediction of the performance of food and beverages manufacturing

companies. Additionally, results revealed a beta value of 0.847 and a p-value of 0.001 between demand collaboration and the performance of food and beverages manufacturing companies in Nairobi City County which implied that demand collaboration significantly influenced the performance of food and beverages manufacturing companies in Nairobi City County since the calculated p-value of 0.001 was less than critical chosen value of 0.5. The findings of the study are in agreement with the previously conducted study by Iyer et al., (2019) on the effects of sales forecasts in providing insights into future demand patterns. The study highlighted that through demand collaboration, organizations can leverage customer feedback, market trends, and sales data to refine their sales forecasts continuously. Additionally, the study noted that by sharing this information transparently across the supply chain, suppliers can align production schedules with anticipated demand, thereby minimizing stockouts or excess inventory. This collaborative approach fosters agility and responsiveness, enabling companies to adapt quickly to changes in customer preferences and market dynamics.

Table 5: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.690	.143		4.836	.000
	Demand Collaboration	.847	.035	.897	24.009	.000

a. Dependent Variable: Performance of the Company

CONCLUSIONS AND RECOMMENDATIONS

The study concluded that food and beverages manufacturing companies in Nairobi City County had front-office agreements with their trading partners. Food and beverage companies within Nairobi City County created order forecasting. Food and beverage manufacturing companies in Nairobi City County determined optimal stock requests and supplies. Further, the study concluded that there was collaborative communication with supply chain partners among food and beverages manufacturing firms in Nairobi City County. The study also concluded that there was a sharing of resources with supply chain partners in food and beverages manufacturing companies in Nairobi City County. The study also concluded that food and beverage manufacturing companies in Nairobi City County frequently shared information with supply chain partners. Also, food and beverages manufacturing firms in Nairobi City County had their profits, sales revenues, and market share increased. Lastly, the study concluded that food and beverages manufacturing companies in Nairobi City County had their customers report higher satisfaction.

The study recommended that food and beverage manufacturing companies in Nairobi City County continue to strengthen their front office agreements with trading partners and enhance collaborative communication within their supply chain networks. Additionally, implementing advanced technologies for order forecasting and optimizing stock requests can further improve efficiency and reduce operational costs. Moreover, food and beverage manufacturing companies should fostere a culture of resource sharing and frequent information exchange with supply chain partners which will facilitate better coordination and responsiveness to market demands. Finally, it is recommended that food and beverages manufacturing companies in Nairobi City County should invest in customer satisfaction initiatives, such as product quality enhancements and service improvements to help sustain increased sales revenues, market share, and profitability.

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