

# THE INTERNATIONAL JOURNAL OF BUSINESS & MANAGEMENT

## Moderating Effect of Organizational Culture on the Relationship between Supply Chain Integration and Performance in Food and Beverage Manufacturing Companies in Kenya

Dr. Yusuf Kibet

Senior Lecturer, Department of Marketing and Logistics, Moi University, Kenya

### **Abstract:**

*The purpose of the study was to determine the moderating effect of organizational culture on the relationship between supply chain integration and performance in the manufacturing sector of Kenya. The study employed an explanatory research design. The study used network theory. The target population was 217 procurement managers from 217 food and beverage manufacturing companies. A sample size of 140 respondents was selected. The study employed a simple random sampling technique to choose the sample. The collection of primary data was facilitated by the administration of a questionnaire. The data were subjected to regression analysis for the purpose of analysis. The findings of the study provide confirmation that there is a moderating effect of organizational culture ( $\beta_1 = 0.224$ ,  $P < 0.05$ ) on the relationship between supply chain integration and the performance of food manufacturing firms. The research findings indicate that the influence of supply chain integration on the performance of food manufacturing firms is contingent upon the organizational culture. Food and beverage manufacturing businesses should consider enhancing the comprehensiveness of their supply chain integration procedures. This may be achieved by granting suppliers access to their inventory management systems, enabling them to make timely choices on inventory replenishment. The integration of supply chains facilitates the exchange of management practices across enterprises, enhances the management of supplier expertise, and allows suppliers to communicate any difficulties that may impact order fulfillment to the organization.*

**Keywords:** Supply chain integration, organizational culture, performance, food and beverage, manufacturing companies

### **1. Introduction**

Organizational performance refers to the collective accomplishments achieved by several departments within a company. The notion of organizational performance is intricately connected to the endurance and accomplishments of an organization (Ahmed & Shafiq, 2016). According to Georgise et al. (2014), the performance of a firm is influenced to different extents by the actions of other businesses engaged in the integration of inputs and the management of the supply chain. The augmentation of supply chain management capabilities in modern organizations is, therefore, a strategy to improve market efficiency, effectiveness, and, ultimately, competitive advantage in relation to competitors.

Dubey et al. (2018) claim that incorporating supply chain flexibility into the manufacturing process has the potential to augment the operational effectiveness, financial performance, and competitive advantage of the business. Hence, organizations that opt to incorporate supply chain adaptability as a strategy to augment flexibility, without it being mandatory for a specific operational occurrence may potentially overlook prospects to penetrate a market that demands heightened levels of responsiveness (Eckstein, Goellner, Blome & Henke, 2015). The notion of supply chain integration continues to be a significant subject of inquiry for persons seeking to understand the efficient exploitation of the supply chain to create long-lasting value.

A significant issue that is widely discussed in contemporary studies on supply chain integration pertains to the absence of a definitive and universally accepted definition for the concept of "integration." The utilization of terminology within academic and professional domains is susceptible to varying interpretations, resulting in a dearth of lucidity and consistency in scholarly literature (Birgen, 2021). The evaluation of the effectiveness of integration efforts is further hampered by the lack of agreement over the final attributes of a "successful" merger. According to Muthoni and Mose (2020), there is a lack of a comprehensive theoretical framework that effectively explains the mechanisms by which the integration of supply chains influences performance outcomes.

Supply Chain Integration (SCI) refers to a scenario wherein all participants involved in the supply chain are in agreement with the shared goal of effectively delivering a suitable product to the specified destination within the proper timeframe and at an acceptable cost to guarantee customer contentment. The alignment described is accomplished by

collaborative endeavors and the employment of suitable technologies and procedures that provide a thorough understanding of customer-to-supplier demand (Rudyanto et al., 2020).

The market is experiencing a gradual increase in competitiveness, driven by enterprises' efforts to secure modest gains in market value. This endeavor frequently entails substantial investments in marketing, distribution, logistics, and the exploration and innovation of novel goods (Syed & Chaudhury, 2016). Hence, it is not unexpected that food and beverage managers have the perception that supply chain integration, a kind of intervention in supply chain management, is a vital business strategy for sustaining competitiveness in the demanding global environment. According to the findings of Greer and Theuri (2012), the execution of supply chain interventions can result in substantial financial expenditures, varying from tens to hundreds of millions. The purpose of these investments is to facilitate a firm in gaining a competitive advantage in the market. The food and beverage sector may profit significantly from the adoption of implementation-based supply chain integration, as it aligns with good logistics management and addresses many requirements (Gilmore, 2020).

Food and beverage firms have considerable challenges from many stakeholders along the supply and value chain (Gilmore, 2020). The main source of friction is the gradual shift in power dynamics within the industry, particularly from producers to distributors. Hsiao, Kemp, Van der Vorst, and Omta (2010) argue that smaller retail chains have a stronger impact on their food and drink suppliers in several aspects of the supply chain, including demand price, logistics, service, and technology. The phenomenon can be attributed to the growing convergence between customers and other retail establishments.

In their study done in Turkey, Osei and Kagniciogu (2018) aimed to assess the impact of supply chain integration (SCI) on the commercial and operational performance of companies operating in the food sector. The findings of the study revealed that all three dimensions of SCI had a significant and positive influence on both operational and corporate performance. The improvement of the three dimensions of supply chain integration, specifically supplier, customer, and internal, results in progress in the operational and business performance of the food industry in Turkey.

The study done by Zhao, Feng, and Wang (2015) in China demonstrated that there is a notable correlation between supply chain integration (SCI) and the improvement of financial performance. This study highlights the need for proficient management in utilizing strategic alliances established through supply chain integration (SCI) to enhance financial results. Choi, Narasimhan, and Kim (2016) conducted research examining the correlation between supply chain integration and firm performance in Korean and Japanese organizations. Their findings provided empirical support for a favorable link between supply chain integration and the performance of enterprises. El-Tamimi (2015) performed a study to assess the influence of supply chain integration (SCI) on the operational performance of pharmaceutical companies in Jordan. The study's results demonstrated a statistically significant positive association between strategic corporate initiatives (SCI) and operational success.

Despite the inherent difficulties stemming from insufficient infrastructure, Nigeria continues to be a very appealing global center for investors and suppliers operating within the domains of the supply chain, logistics and transportation. In recent years, Liberia and Ghana have gained prominence as important gateways to the West African market, mostly attributed to their capacity to provide competitive commercial opportunities (Dadzie, Winston, & Hinson, 2015). Among African states, the region exhibits the most pronounced level of market structure and control. The logistics and supply chain industry in multiple African countries has consistently faced challenges due to inadequate infrastructure and superstructure, which hinder the efficient transportation of materials and goods. As a consequence, this leads to escalated costs for both products and overall business operations within the market (Dadzie, Winston, & Hinson, 2015).

Som, Cobblah, and Anyigba (2019) conducted a study to analyze the influence of the Supply Chain Initiative (SCI) on the operational efficiency of manufacturing firms in Ghana. The findings of the study revealed that the impact of both informational and operational integration on supply chain performance was positive, whereas relational integration had a detrimental effect. In a study undertaken by Uwamahoro (2018), the researcher examined the impact of the SCI on the operational outcomes of manufacturing enterprises in Rwanda. The findings of the research demonstrate that both operational and firm performance are impacted by internal integration, supplier integration, and customer integration. Nevertheless, it is important to highlight that the most significant correlation with performance was observed in the context of internal integration and customer integration.

Atnafu and Hussen (2015) did a research in which they assessed 35 chemical manufacturing firms in Ethiopia. The purpose of their study was to investigate the influence of Supply Chain Integration (SCI) on the operational performance of these enterprises. The findings of the study revealed a significant positive association between internal integration, supplier integration, customer integration, and operational success.

The East African Community comprises the nations of Kenya, Burundi, and Uganda as its constituent member states. Sitati (2015) asserts that Rwanda, Tanzania, and South Sudan have the highest degree of economic integration. In a research done by Mbaisi (2016) in Kenya, the objective was to investigate the effects of supply chain integration on large-scale industrial firms. The research findings suggest that there is an increased incidence of strategic relationships between large manufacturing enterprises and their suppliers. These relationships entail the use of digital channels for the purpose of consultation, especially throughout the organization's developing phases. The study done by Njagi and Muli (2020) aimed to investigate the relationship between supply chain integration and the operational performance of manufacturing firms in Kenya. The findings of the study suggest that the performance of manufacturing firms in Kenya is significantly impacted by the incorporation of technology, internal operational cohesion, and customer engagement.

The production of food and beverages encompasses several value chains that start with agricultural cultivation and expand to encompass local, national, and global markets. Beverage or drink manufacturing companies produce a diverse array of products, encompassing both alcoholic and non-alcoholic beverages, such as bottled water, fruit and vegetable

juices, and carbonated beverages. The food and beverage production industry in Kenya is a notable sub-sector that has been recognized as a pivotal catalyst for economic growth and development. Therefore, it possesses significant potential in terms of job creation, poverty reduction, and the promotion of wealth generation (Mideva & Moronge, 2019).

Mideva and Moronge (2019) assert that the sub-sector continues to play a substantial role in achieving the Millennium Development Goals, both in the immediate and extended periods. More specifically, it plays a pivotal role in effectively fulfilling the objectives of eradicating hunger and severe poverty while also facilitating economic growth and cultivating global alliances. Food and beverage manufacturers integrate various functions within their operations. These functions include the supply function, which involves the selection and management of suppliers' procurement planning; the production function, which oversees manufacturing operations, optimizes stock flows, and manages material handling and the marketing function (Mwaura, Letting, Nicholas, Ithinji, & Orwa, 2016).

Idris and Agbim (2015) assert that inadequate cultural integration across diverse commercial enterprises has deleterious consequences for the economic performance of the corporate group and the shareholders' wealth. Bolboli and Reiche (2016) assert that a considerable percentage, over 90%, of business excellence initiatives encounter failure as a result of insufficient cultural integration among managers within corporate groups. The existence of cultural variety within the collective is a notable hindrance to attaining peak performance. The absence of a proficient organizational culture has been recognized as a notable element contributing to subpar performance and productivity (Eaton & Kilby, 2015). In order to improve performance and productivity within the corporate collective, it is imperative for business managers to acquire a thorough understanding of the importance of effective organizational culture (Viegas-Pires, 2016).

According to Zheng and McLean (2016), culture is a comprehensive framework of learned perspectives, beliefs, and customs that significantly influence the consumer behavior of individuals within a certain community. According to Viegas-Pires (2016), the culture of an organization is mostly influenced by its leaders, particularly those who hold a well-defined set of core values. The emergence of organizational culture is a consequence of the need to effectively adjust and endure in the external environment while also promoting internal cohesion inside the firm. The external adaptation and survival process include the discovery and adoption of a distinct ecological niche, enabling the organization to adeptly traverse and respond to ever-changing environmental circumstances. Dasanayake and Mahakalanda (2016) define internal integration as the facilitation of effective interpersonal relationships within an organization through the development of shared language and concepts, delineation of group and team boundaries, management of power dynamics and status hierarchies, and establishment of suitable systems for incentivizing and disciplining employees.

Food and beverage manufacturing firms in Kenya are dependent on suppliers for the procurement of essential raw materials required for their production operations. It is essential to recognize that firms take into account elements beyond financial performance when evaluating success since non-financial metrics have substantial importance in modern situations. This economic activity has the potential to generate income from foreign exchange by exporting products and services, thus contributing to the diversification of the country's economy. The industry listed above has had a substantial increase in its contribution to the nation's gross domestic product and employment rates throughout a specific time period (Nyaoga & Magutu, 2016).

### *1.1. Statement of the Problem*

The phenomenon of globalization has resulted in Kenyan manufacturers encountering formidable competition from multinational and international corporations (Muiruri, Ngugi, & Kihara, 2021). The advent of globalization has led Kenyan manufacturers to face significant competition from transnational and international firms (Muiruri, Ngugi, & Kihara, 2021). In the present environment, it is evident that the food and beverage subsector has exerted a substantial influence on the economy of Kenya, as indicated by a noteworthy decline of 13.4% in its performance, as stated by the Kenya National Bureau of Statistics in 2021. Furthermore, it is important to highlight that food and beverage industries in Kenya are vulnerable to disruptions and challenges in their supply chains. The aforementioned challenges arise due to the insufficiency of both internal and external supply chain systems (Mideva & Moronge, 2019).

The lack of consolidation within the food and beverage manufacturing subsector is a significant challenge in achieving a competitive advantage (Maina, Njehia, & Eric, 2020). Birgen (2021) posits that the incorporation of supply chain management into industrial organizations facilitates the creation of value. Muthoni and Mose (2020) assert that the pursuit of increased competitiveness is a crucial goal for enterprises. In contemporary times, there has been a growing interest among businesses in devising approaches to improve the integration and optimization of their information and material flow operations and procedures. This pertains to both internal processes and collaborative efforts with supply chain partners (Muricho & Muli, 2021).

Organizations are enhancing their competitive advantage through the strategic utilization of cooperative alliances inside their internal operations and with their customers and suppliers, in conjunction with technology improvements (Abdullah, Mohamad & Thurasamy, 2017). Manufacturers are compelled to modify their supply chains to synchronize their supply chain systems and management with their fundamental value proposition in light of the changing markets and strategies. The implementation of this modification is of utmost importance in order to achieve a long-lasting competitive advantage (Dubey et al., 2018). The motivation for the evolution of supply chains is mostly influenced by the need to effectively respond to evolving challenges or notions.

Nonetheless, the incorporation of the supply chain remains a considerable challenge owing to its ever-changing nature, complicated intricacies, and the participation of several organizations. Manufacturing firms in emerging economies have acknowledged the significant influence of supply chain integration on improving organizational performance and strategically contributing to overall operational success. The existing body of empirical research on the impact of supply chain integration on manufacturing company performance is limited. The purpose of this study is to

address the existing gap in knowledge by examining the role of organizational culture as a moderator in the link between supply chain integration and organizational performance of selected food and beverage manufacturing industries in Kenya.

### 1.2. Objective of the Study

To determine the moderating effect of organizational culture on the relationship between supply chain integration and organizational performance in the food and beverage manufacturing sector of Kenya

### 1.3. Hypothesis

- Ho: There is no moderating effect of organizational culture on the relationship between supply chain integration and organizational performance in the food and beverage manufacturing sector of Kenya

## 2. Empirical Review

In their study, Osei and Kagniciogu (2018) undertook research with the aim of assessing the impact of supply chain integration (SCI) on the commercial and operational performance of the food sector in Turkey. The research conducted a detailed evaluation of the effects of internal, customer, and supplier integration on both operational and business performance. The findings of the study revealed that all three dimensions of SCI had a significant and advantageous influence on both operational and corporate performance. The proposition posits that improvements in the three dimensions of supply chain integration (supplier, customer, internal) lead to progress in the operational and business performance of the food industry in Turkey.

Zhao, Feng, and Wang (2015) undertook an empirical inquiry whereby they administered a survey to a representative cohort of 195 enterprises operating inside the confines of China. The study's findings indicate that the integration of supply chains (SCI) has a significant impact on improving financial performance. The study emphasized the need to implement efficient management methods to maximize the strategic benefits of supply chain integration (SCI) and ultimately enhance financial performance. Choi, Narasimhan, and Kim (2016) conducted a study that investigated the correlation between supply chain integration and corporate performance among Korean and Japanese firms. The results of their study demonstrated a positive association between the level of supply chain integration and the performance outcomes of these companies.

In a pertinent study, El-Tamimi (2015) investigated the effects of supply chain integration (SCI) on the operational performance of pharmaceutical companies in Jordan. The research conducted revealed a statistically significant positive association between supply chain integration (SCI) and operational performance. This conclusion was drawn from an analysis of data collected from a sample of 235 participants. The research findings indicate a favorable correlation between strategic corporate investments (SCI) and operational success within the pharmaceutical sector in Jordan.

Som, Cobblah, and Anyigba (2019) performed a distinct research study to investigate the effects of the Supply Chain Initiative (SCI) on the operational efficiency of industrial firms in Ghana. The present study examined the many dimensions of supply chain integration (SCI), including operational, relational, and informational integration. The research study utilized a quantitative research methodology, employing a sample size of 1500 individuals who were employed. The findings of the study revealed that the impact of both informational and operational integration on supply chain performance was positive, whereas relational integration had a detrimental effect. Therefore, the results indicate that improvements in both informational and operational integration have a positive impact on the supply chain performance of manufacturing organizations. Nevertheless, it is important to acknowledge that there is a lack of definitive evidence supporting a direct and positive relationship between relational integration and the performance of supply chains in manufacturing firms.

The study undertaken by Uwamahoro (2018) examined the impact of the SCI on the operational outcomes of manufacturing enterprises in Rwanda. The research employed a sample size including 258 individuals who were employed as laborers. The findings of the research demonstrated that internal integration, supplier integration and customer integration exerted a significant impact on both operational and firm performance. Nevertheless, it was observed that there was a notable correlation between performance and both internal integration and consumer integration. The findings indicate that improving internal, supplier, and customer integration may positively influence the operational performance of manufacturing firms in Rwanda.

Atnafu and Hussien (2015) did a study in which they assessed 35 chemical manufacturing firms in Ethiopia. The purpose of their research was to investigate the influence of Supply Chain Integration (SCI) on the operational performance of these enterprises. The study utilized a quantitative approach to examine the relationship between internal integration, supplier integration, customer integration, and operational success. The findings of the investigation revealed a statistically significant positive correlation between the variables in question. Therefore, our findings indicate that improvements in the integration of suppliers, internal processes, and customers have a significant role in driving operational performance improvements inside chemical manufacturing firms in Ethiopia.

The present investigation, carried out by Mbaisi (2016), aimed to assess the influence of supply chain integration on large-scale manufacturing enterprises in Kenya. The inquiry in this study was conducted using a descriptive research design. The researchers utilized a survey approach to evaluate the level of supply chain integration across prominent manufacturing enterprises in Kenya. This was achieved through the administration of a standardized questionnaire. The research findings suggest that there is an elevated occurrence of strategic relationships between prominent manufacturing enterprises and their suppliers. These companies often utilize electronic platforms to interact with their suppliers to

augment the value of their business throughout the development phase. Previous studies have investigated the impact of different dimensions of supply chain integration on both organizational performance and supply chain performance.

In their study, Annea and Julianab (2019) undertook a quantitative research inquiry to examine the impact of surgical care interruptions (SCI) on the operational efficiency of hospitals in Kenya. The research findings revealed that the operational performance of hospitals was significantly and positively influenced by internal integration, customer integration, and supplier integration. This finding implies that there exists a favorable correlation between the integration of internal processes, supplier relationships, customer interactions and the operational achievements of hospitals.

The study undertaken by Njagi and Muli (2020) aimed to investigate the relationship between supply chain integration and the performance of manufacturing firms in Kenya. In this experiment, a mixed-method approach was utilized, wherein a sample of 85 workers was recruited. The researchers utilized a stratified sampling technique to determine the specific sample size for each stratum in the study. The data were obtained through the utilization of a survey tool. The data was subjected to regression analysis for analytical purposes. The findings of the study suggest that the integration of technology, internal processes, and customer engagement significantly influence the performance of manufacturing firms in Kenya. This finding implies that there exists a favorable correlation between internal integration, technology integration, and customer integration and the success of manufacturing firms in Kenya. Likewise, advancements in performance might result in improvements in these integration variables. However, the study's results revealed that the incorporation of suppliers had a negative effect on performance, implying that the potential of supplier integration to improve the performance of manufacturing firms is restricted.

The prevailing body of empirical research investigating the correlation between SCI and performance yields positive results, in line with a recent systematic review and meta-analysis undertaken by Bongei, Ngacho, and Kibet (2020). Nevertheless, it is crucial to acknowledge that these studies demonstrate significant variability. Omondi's (2022) research reveals a significant lack of consensus not only in the reported results but also in the methodology utilized to evaluate both the scientific cooperation index (SCI) and performance. Nevertheless, the assessment of the SCI construct is carried out using many instruments, which encompass unidimensional, multidimensional, and even a compilation of methodologies.

Prior studies have investigated the significant impact of integrating logistics and supply chains on enhancing a company's competitive advantage (Mellat-Parast & Spillan, 2014). Nevertheless, there has been a notable dearth of attention directed towards the strategic significance of various forms of supply chain integration within the food and beverage production sector, specifically within the unique setting of Kenya (Odongo, 2017; Njagi & Muli, 2020).

While previous scholarly studies have examined supply chain integration (Michael, Odock & Oredo, 2022), there is a lack of comprehensive, systematic, and structured typologies that cover the whole logistics and supply chain field. Moreover, scholarly investigations exploring the connections between different measures of supply chain integration have demonstrated that internal integration has a favorable influence on external integration. Nevertheless, the persistent challenge of supply chain integration arises due to the complex structure and engagement of several organizations (Chirchir, Stephen & John, 2022). Additionally, Durach and Wiengarten (2020) have identified the existence of moderating effects in the measures of supply chain integration (SCI).

The current corpus of literature about the integration of supply chains sometimes fails to consider the distinct attributes of numerous firms, instead placing emphasis on certain contexts or sectors such as manufacturing or retail (Maina, Njehia & Eric, 2020). Furthermore, it is frequently observed that research predominantly adopts a Western viewpoint, overlooking the significant impact of institutional and cultural elements on supply chain integration within non-Western settings (Chirchir, Stephen, & John, 2022).

The study conducted by Ni (2015) investigated the moderating effect of IT competence, namely IT human resource and IT strategy, on the relationship between SCI and operational performance. The findings of the study revealed that the level of IT proficiency significantly influenced the various activities associated with Supply Chain Integration (SCI), including internal integration, process integration, and product integration. The study provided more evidence to support the notion that the successful implementation of IT strategies is influenced by factors such as internal integration, process integration, and product integration. The outcomes of the study also indicated that the relationship between SCI and operational performance was impacted by IT expertise.

The study conducted by Huo, Qi, Wang, and Zhao (2014) aimed to examine the possible moderating impact of competitive strategy on the association between supply chain integration (SCI) and operational performance within Chinese manufacturing businesses. The research employed hierarchical linear regression analysis to investigate the correlation between competitive strategies and the incorporation of internal processes and products in supply chain integration techniques. The findings of the study revealed that the implementation of competitive strategies had a noteworthy impact on the adoption and execution of these specific supply chain integration (SCI) techniques. The study's findings contribute more data to bolster the idea that the relationship between strategic corporate investments (SCI) and operational effectiveness is not influenced by competitive strategies.

Although there exist inconsistencies in the research findings concerning the association between supply chain integration and operational performance, there is a scarcity of studies that have specifically investigated the mediating effects of supply chain integration constructs and their impact on operational performance (Errassafi, Abbar & Bennabou, 2019; Somjai, Girdwichai & Jermisittiparsert, 2019). The literature review indicated that prior research has predominantly focused on investigating the role of internal integration as a mediator in understanding the relationship between external integration and operational performance (Errassafi et al., 2019; Somjai et al., 2019).

Errassafi et al. conducted a study which demonstrated that internal integration plays a significant mediating effect in the relationship between customer integration and operational performance. Nevertheless, it has been found that the

mediating role of internal integration in the link between supplier integration and operational performance is not evident. Previous studies have seen the incorporation of internal integration as a mediating factor in the examination of the relationship between supply chain integration and operational performance (Errassafi et al., 2019; Somjai et al., 2019). The objective of this study is to assess the possible moderating influence of organizational culture on the relationship between supplier integration and operational performance in a challenging business context.

### 3. Theoretical Framework

The present study employed the network theory by Coleman (1988). Coleman observed that social organization, such as that of a small village, might arise from interactions between two individuals driven by self-interest. While individual actors strive to maximize their respective interests, they are concurrently constrained by their interdependent relationship with one another.

The authors Nancy, David, Holly, and Noshir (2013) claim that establishing limitations on actors' activities and regulating self-interest are contingent upon the link between such actors. The aforementioned constraints are counterbalanced by the increased accessibility of resources that each member acquires through their mutual engagement. The use of Network Theory (NT) can provide a theoretical framework for analyzing reciprocity in cooperative relationships, as proposed by Oliver (1990).

Nancy et al. (2013) believe that the establishment of trust between individuals or groups is a gradual process facilitated by the mechanisms of social exchange. A network does not aim to achieve an optimal equilibrium but instead remains in a constant state of change and dynamic. The process of establishing connections between companies within a network can be understood as comprising two interrelated forms of interaction: exchange processes, which involve the sharing of information, goods, and services, and social processes, as well as adaptation processes, which encompass various elements such as personal, technical, legal, logistics, and administrative aspects (Johanson & Mattsson, 1987). The utilization of network theory (NT) is mostly seen in the field of supply chain management (SCM) for the purpose of representing and examining the many activities, individuals, and resources included within a supply chain. The focal point of attention has been directed at the development of long-lasting, trust-based relationships among the many stakeholders within the supply chain (Gadde & Haakansson, 2013).

The fundamental basis of network theory is rooted in the concept that companies rely not only on their direct contacts with immediate partners but also on the wider network of links with entities inside their supply chain. According to Ullah (2012), the achievement of competitive advantage is reliant on the skillful and efficient coordination of supply chains. Network interactions play a crucial role in enabling the flow of information, therefore providing buyers and sellers with the opportunity to tap into resources and skills that exceed their individual capacities. Therefore, it is crucial for supply chain firms to develop long-lasting partnerships built on trust.

Hakansson and Ford (2002) claim that the establishment of a bidirectional commercial link between a customer and supplier occurs when they engage in business transactions over a prolonged period, considering their respective skills and resources. Over a period of time, the purchaser is capable of developing a network of reliable suppliers for the purpose of engaging in commercial transactions. The use of network theory has been documented in several industrial sectors on a worldwide scale (Peck, 2005; Zhao, Anand & Mitchell, 2005). The theory of networks provides a conceptual framework for understanding and analyzing the connection between buyers and suppliers, with the goal of enhancing the resources, skills and competencies of suppliers to enhance organizational performance. The utilization of Network theory provides a theoretical framework for undertaking a conceptual analysis of reciprocity within cooperative relationships.

### 4. Conceptual Framework

The conceptual framework for this study was based on the independent variable, supply chain integration, which influences the dependent variable organization performance and figure 1 shows this relationship. The organization's culture will be the moderator.

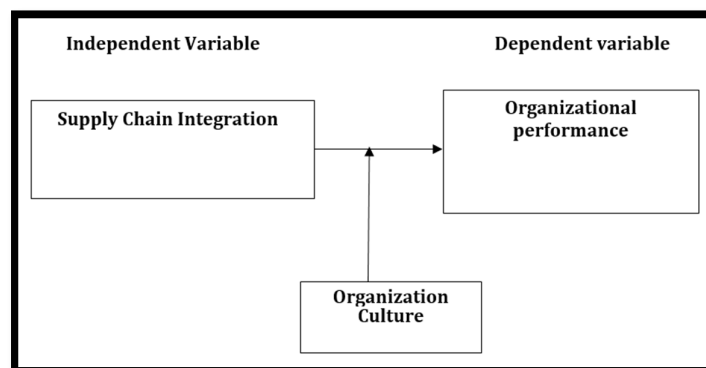


Figure 1: Conceptual Framework

### 5. Research Methodology

The researcher employed an explanatory research design. The study's target sample consisted of 217 procurement managers employed by 217 food and beverage manufacturing organizations. The researcher employed the basic random

sampling procedure to determine the sample size. The procurement managers were deliberately chosen from the food and beverage industry firms in Kenya. The process of selecting procurement managers involved the utilization of basic random sampling, which resulted in the selection of 140 responders. The utilization of simple random sampling was deemed suitable due to the considerable size, diversity, and dispersed nature of the overall population.

The researcher sampled all the 115 foods and beverage manufacturing companies in Kenya using Yamane's (1972) sample size formula as computed as hereunder:

$$n = \frac{N}{1 + N(e)^2}$$

Where:

- n = the sample size,
- N = the population size,
- e = the acceptance sampling error
- = 217/1+217(.05)<sup>2</sup>
- = 140 respondents

The utilization of a questionnaire was deemed the most suitable method for gathering primary data from the participants. The questionnaire was deemed suitable due to its ability to facilitate expeditious and effective data collection. The researcher developed closed-ended questionnaires, which were distributed to a sample of 140 managers employed in certain organizations.

Upon completion of data collection, the researcher proceeded with data cleaning, a process that entailed identifying missing or erroneous replies and rectifying them to enhance the overall quality of the data. The data underwent coding and subsequent entry into the computer system for the purpose of analysis, utilizing the Statistical Package for Social Sciences (SPSS V26). The study produced numerical data. In order to comprehend the associations between various variables, inferential statistics was employed. Multiple regression analysis was used to analyze the relationship between variables and test the Hypotheses. The regression model was as follows:

- Y = β<sub>0</sub> + β<sub>1</sub> X<sub>1</sub> + ε .....Equation 1 (Direct effect)
- Y = β<sub>0</sub> + β<sub>2</sub> X<sub>2</sub>.....Equation 2 (Moderated effect)
- Y = β<sub>0</sub> + β<sub>1</sub>X<sub>1</sub> + β<sub>2</sub>X<sub>2</sub> + β<sub>3</sub>X<sub>1</sub>\* X<sub>2</sub> + ε .....Equation 3 (Hierarchical Multiple regression)
- Y is Organizational performance.
- β<sub>0</sub>, β<sub>1</sub>, β<sub>2</sub>, β<sub>3</sub> β<sub>4</sub> - Regression coefficients
- X<sub>1</sub> -Supply chain integration
- X<sub>2</sub>- Organization Culture
- ε -Error Term

**6. Results**

The researcher used a three-step hierarchical multiple regression analysis to test the moderating effect of organizational culture on the relationship between supply chain integration and the performance of food manufacturing firms.

*6.1. Model Summary on Interactions*

The findings of the hierarchical regression analysis revealed that the relationship between organization culture, supply chain integration, and performance of food manufacturing firms was examined. The results indicated that the four independent variables collectively accounted for 33.2% (R<sup>2</sup> = 0.332) of the variance in the performance of food manufacturing firms. Furthermore, these variables were found to be statistically significant in model 1. The findings of the regression analysis indicate a statistically significant positive association between supply chain integration and the performance of food manufacturing firms, as seen in Model 1. The independent variable accounted for the variability in the performance of food manufacturing firms. The moderator organization culture accounted for 63.4% (R<sup>2</sup> = 0.634) of the variability in organization culture, indicating a moderate explanatory power. Additionally, it contributed an extra R<sup>2</sup> of 0.311 (31.1%), which was statistically significant according to the results presented in model 2 of table 1.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.569 <sup>a</sup>	.323	.318	.33836	.323	58.314	1	122	.000
2	.796 <sup>b</sup>	.634	.628	.24988	.311	102.690	1	121	.000
3	.821 <sup>c</sup>	.674	.665	.23695	.040	14.566	1	120	.000

Table 1: Model Summary  
 a. Predictors: (Constant), SCI  
 b. Predictors: (Constant), SCI, OC  
 c. Predictors: (Constant), SCI, OC, SCIOC

The findings of the study indicate that the interaction between supply chain integration and organization culture (SCIOC) in model 3 accounted for 67.4% ( $R^2 = 0.674$ ) of the variation in the performance of food manufacturing firms. This resulted in a substantial increase in  $R^2$  of 0.040 (4%), as evidenced by the statistical significance seen in model 3.

The findings from models 1, 2 and 3 demonstrate a strong fit of the models, as evidenced by the overall test of significance with a p-value of 0.000 (below the significance threshold of 0.05). These results are reported in table 2. To clarify, the independent variables, moderator, and their interactions exhibited a high level of statistical significance in predicting the performance of food manufacturing firms, as seen in table 2. Therefore, it can be concluded that models 1 to 3 demonstrate validity and adequacy in their ability to forecast the performance of food manufacturing companies by including the interaction of independent variables with organizational culture.

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.676	1	6.676	58.314	.000 <sup>b</sup>
	Residual	13.967	122	.114		
	Total	20.644	123			
2	Regression	13.088	2	6.544	104.805	.000 <sup>c</sup>
	Residual	7.555	121	.062		
	Total	20.644	123			
3	Regression	13.906	3	4.635	82.559	.000 <sup>d</sup>
	Residual	6.738	120	.056		
	Total	20.644	123			

Table 2: ANOVA<sup>a</sup>

a. Dependent Variable: Performance

b. Predictors: (Constant), SCI

c. Predictors: (Constant), SCI, OC

d. Predictors: (Constant), SCI, OC, SCIOC

F-statistics were employed to assess the validity of the model. The results of the F-statistics analysis ( $F = 58.32$ ,  $p$ -value  $< 0.001$ ) indicate a statistically significant association between supply chain integration and the performance of manufacturing firms. Upon inclusion of organizational culture in the study, the resultant model (Model 2) exhibited statistical significance ( $F=104.81$ ,  $p$ -value  $< 0.001$ ), indicating that organizational culture serves as a substantial predictor of manufacturing business performance. Subsequently, with the inclusion of the product terms in the analysis (Model 3), the F-statistics yielded a significant value of  $F = 82.56$ , with a  $p$ -value less than 0.001. Hence, the statistical analysis revealed that the model exhibited significance, indicating that the independent variable, organizational culture, along with the moderated factors, serve as important predictors of performance in food manufacturing firms.

The statistical analysis shown in table 3 demonstrates that the regression coefficients ( $\beta_1 = 0.391$ ,  $t = 7.636$ ,  $P = .000$ ) for supply chain integration and performance of food manufacturing firms were found to be statistically significant. This study, therefore, satisfied the conditions for inserting a moderator, as evidenced by the obtained data. In Model 2, it was feasible to effectively evaluate the genuine influence of organizational culture on the performance of food manufacturing companies. The findings from the hierarchical regression analysis demonstrated that there was a substantial positive relationship between organizational culture and the performance of food manufacturing firms ( $\beta_2=.678$ ,  $t = 10.134$ ,  $P=0.000$ ). This finding suggests that organizational culture plays a moderating role in influencing the performance of food manufacturing firms.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.673	.211		12.653	.000
	SCI	.391	.051	.569	7.636	.000
2	(Constant)	1.214	.212		5.721	.000
	SCI	.043	.051	.062	.837	.404
	OC	.678	.067	.753	10.134	.000
3	(Constant)	4.729	.943		5.017	.000
	SCI	-.790	.223	-1.149	-3.534	.001
	OC	-.275	.258	-.305	-1.066	.288
	SCIOC	.224	.059	2.085	3.817	.000

Table 3: Coefficients<sup>a</sup>

a. Dependent Variable: Performance

The regression coefficients indicating the interaction between supply chain integration and organizational culture on the performance of food manufacturing enterprises were found to be statistically significant ( $\beta_3 = 0.224$ ,  $t = 3.817$ ,  $P < 0.05$ ). Therefore, the null hypothesis was rejected. This implies that the relationship between supply chain integration and the performance of food manufacturing firms was moderated by organizational culture. This study agrees with the



findings of Som, Cobblah, and Anyigba (2019), which suggest that improvements in both informational and operational integration lead to enhanced supply chain performance in manufacturing firms. Moreover, the present study aligns with the research conducted by Osei and Kagniciogu (2018), which suggests that the adoption of SCI has a significant and positive influence on both operational and commercial outcomes. The implication is that improvements in supply chain integration, specifically supplier integration, customer integration and internal integration, result in progress in the operational performance of the food industry.

## 7. Conclusions

The performance of food and beverage manufacturing enterprises in Kenya was shown to be positively influenced by the integration of supply chain activities. There was a moderating influence of organizational culture on the relationship between supply chain integration and the performance of food manufacturing enterprises. Companies engage in the sharing of management strategies with their suppliers. This will enable them to effectively manage and mitigate risks related to their suppliers' operations, including but not limited to longer lead times, supply failures and subpar product quality.

## 8. Recommendations

Food and beverage manufacturing businesses should consider enhancing the comprehensiveness of their supply chain integration procedures. This may be achieved by granting suppliers access to their inventory management systems, enabling them to make timely choices on inventory replenishment.

The prioritization of enhancing internal supply chain operations inside manufacturing firms is crucial for effective management. The establishment of good coordination across different departmental units is necessary in order to cultivate a unique internal supply chain environment that has the potential to greatly enhance operational performance. The research additionally proposes the significance of incorporating information and communication technology (ICT) tools, particularly Enterprise Resource Planning (ERP), into the operational practices of manufacturing firms. This enables the establishment of a linkage between the internal supply chain of the organization and its suppliers and customers.

## 9. References

- i. Abdullah, R., Mohamad, M. N., & Thurasamy, R. (2017). Supply chain integration: Level of existence in green supply chain management practices among Malaysian ISO 14001 manufacturing firms. *International Journal of Supply Chain Management*, 6(2), 243-249.
- ii. Ahmed, M. & Shafiq, S. (2016). The impact of organizational culture on organizational performance: A case study of telecom sector. *Global Journal of Management and Business Research*, 14(3), 21-30.
- iii. Annea M., & Julianab, N. (2019). Supply chain integration and operational performance of Kenya's public health sector. *International Journal of Research in Business and Social Science*, 8(5), 1-10. <https://doi.org/10.20525/ijrbs.v8i5.472>
- iv. Atnafu, D., & Hussen, O.S. (2015). The Effect of Supply Chain Integration on Operational Performance: The Case of Chemical Industry in Ethiopia. *European Journal of Business and Management*, 7(28), 24-29.
- v. Birgen, K. K. (2021). *Supply Chain Integration and Operational Performance Among Multinational Manufacturing Firms in Kenya* (Doctoral dissertation, University of Nairobi).
- vi. Bolboli, A. & Reiche, M. (2016). A model for sustainable business excellence: Implementation and the roadmap. *The TQM Journal*, 25(4), 331-346.
- vii. Bongei, F. C., Ngacho, C., & Kibet, Y. (2020). Supply Chain Management Integration and Demand Management Practices on Organizational Performance of Kenya Medical Research Institute. *East African Journal of Business and Economics*, 2(1), 72-83.
- viii. Chirchir, M. K., Stephen, O. O., & John, O. O. (2022). Supply Chain Integration and Firm Performance: The Mediating Effect of Competitive Advantage among Large Manufacturing Firms in Kenya. *African Journal of Business and Management (AJBUMA)*, 7(2), 45-67.
- ix. Choi, T. Y., Dooley, K. J., & Rungtusanatham, M. (2001). Supply networks and complex adaptive systems: control versus emergence. *Journal of Operations Management*, 19(3), 351-366.
- x. Coleman, J. S. (1988). Social capital in the creation of human capital. *American Journal of Sociology*, 94, S95-S120.
- xi. Dadzie, K. Q., Winston, E., & Hinson, R. (2015). Competing with Marketing Channels and Logistics in Africa's Booming Markets: An Investigation of Emerging Supply Chain Management Practices in Ghana. *Journal of Marketing Channels*, 22(2), 137-152.
- xii. Dasanayake, S. & Mahakalanda, I. (2016). A literature survey on organizational culture and innovation. *Global Business and Management Research*, 42(2), 539-550.
- xiii. Dubey, R., Altay, N., Gunasekaran, A., Blome, C., Papadopoulos, T., & Childe, S. J. (2018). Supply chain agility, adaptability and alignment. *International Journal of Operations & Production Management*. 56(1), 143-159.
- xiv. Durach, C. F., & Wiengarten, F. (2020). Supply chain integration and national collectivism. *International Journal of Production Economics*, 224, 107543.
- xv. Eaton, D. & Kilby, G. (2015). Does your organizational culture support your business strategy? *The Journal of Quality Participation*, 37(4), 4-7.
- xvi. Eckstein, D., Goellner, M., Blome, C., & Henke, M. (2015). The performance impact of supply chain agility and supply chain adaptability: the moderating effect of product complexity. *International Journal of Production Research*, 53(10), 3028-3046.

- xvii. El-Tamimi, H.S. (2015). *The Impact of Supply Chain Integration on Operational Performance at Jordanian Pharmaceutical Manufacturing Organizations* (Doctoral dissertation, Ph.D. Dissertation, Management Department, Middle East University).
- xviii. Errassafi, M., Abbar, H., & Benabbou, Z. (2019). The mediating effect of internal integration on the relationship between supply chain integration and operational performance: Evidence from Moroccan Manufacturing Companies. *Journal of Industrial Engineering and Management*, 12 (2), 254-273.
- xix. Gadde, L.E., & Håkansson, H. (2013). *Supply Network Strategies*. (2<sup>nd</sup> ed.) Chippenham: John Wiley & Sons Ltd.
- xx. Georgise, F. B., Klaus-Dieter, T., & Seifert, M. (2014). Integrating developing country manufacturing industries into global supply chain. *Journal of Industrial Engineering and Management*, 7(1).
- xxi. Gilmore, D. (2020). Food & Beverage Logistics Study. Available at: <https://www.supplychainmarket.com/doc/food-beverage-logistics-study-0001>
- xxii. Greer, B. M., & Theuri, P. (2012). Linking supply chain management superiority to multifaceted firm financial performance. *Journal of Supply Chain Management*, 48(3), 97-106.
- xxiii. Haakansson, H. & D. Ford. (2002). How Companies Interact in Business Networks? *Journal of Business Research*. 55:133-139.
- xxiv. Hsiao, H. I., Kemp, R. G. M., Van der Vorst, J. G. A. J., & Omta, S. O. (2010). A classification of logistic outsourcing levels and their impact on service performance: Evidence from the food processing industry. *International journal of production economics*, 124(1), 75-86.
- xxv. Huo, B., Qi, Y., Wang, Z., & Zhao, X. (2014). The impact of supply chain integration on firm performance. *Supply Chain Management: An International Journal*. 19(4), 369-384.
- xxvi. Idris, A. J. & Agbim, K. C. (2015). Micro-credit as a strategy for poverty alleviation among women entrepreneurs in Nasarawa State, Nigeria. *Journal of Business Studies Quarterly*, 6(3), 122-143.
- xxvii. Johanson, J. and Mattsson, L.G. (1987). Inter-organizational relations in industrial systems: a network approach compared with the transaction cost approach. *Inter-Organizational Studies of Management and Organization*, 17 (1), 34-48.
- xxviii. Kenya National Bureau of Statistics (2021). *Economic Survey*. Nairobi. Kenya. Government Printer.
- xxix. Maina, C., Njehia, B. K., & Eric, B. K. (2020). Sources of Competitive Advantage in the Dairy Industry: Supply Chain Management Practices. *International Journal of Supply Chain Management*, 5(1), 54-72.
- xxx. Mbaisi, B. (2016). *Factors Affecting Supply Chain Integration in Large Manufacturing Firms in Kenya* (Doctoral dissertation, University of Nairobi).
- xxxi. Mellat-Parast, M., & Spillan, J. E. (2014). Logistics and supply chain process integration as a source of competitive advantage. *The International Journal of Logistics Management*. 25(2), 289-314.
- xxxii. Michael, C. K., Odock, S. O., & Oredo, J. O. (2022). Supply Chain Integration and Performance of Large Manufacturing Firms in Kenya. *DBA Africa Management Review*, 12(3), 10-126.
- xxxiii. Mideva, B., & Moronge, M. (2019). Influence of integrated supply chain on performance of food and beverage manufacturing firms in Kenya. *The Strategic Journal of Business & Change Management*, 6(1), 605-622.
- xxxiv. Muiruri, E. M., Ngugi, P. K., & Kihara, A. (2021). Influence Of Customer Focus on Competitiveness of Food and Beverage Manufacturing Firms in Kenya. *European Journal of Business and Strategic Management*, 6(1), 56-72. Muricho & Muli, 2021).
- xxxv. Muthoni, J. P., & Mose, T. (2020). Influence of supply chain management practices on performance of food and beverage manufacturing firms in Kenya. *International Academic Journal of Procurement and Supply Chain Management*, 3(2), 45-62.
- xxxvi. Mwaura, A. W., Letting, D., Nicholas, K., Ithinji, G., & Orwa, B. (2016). Reverse logistics practices and their effect on the competitiveness of food manufacturing firms in Kenya. *International Journal of Economics, Finance and Management Sciences*, 3(6), 678-684.
- xxxvii. Nancy, K., David, L., Holly, A & Noshir, C. (2013). Network Theory and Small Groups. *Small Group Research*, 35 (3), 307-332
- xxxviii. Ni, L. (2015). The Impact of Supply Chain Integration on Operation Performance: The Moderating Role of IT Competence. *Management Science and Engineering*, 9(4), 40-45.
- xxxix. Njagi, J. M., & Muli, S. M. (2020). Influence of Supply Chain Integration Practices on the Performance of Manufacturing Firms in Kenya: A Case of Kenya Breweries Limited. *International Journal of Business and Social Research*, 10(1), 35-57.
- xl. Nyaoga, R., & Magutu, P. (2016). Constraints management and value chain performance for sustainable development. *Management Science Letters*, 6(6), 427-442.
- xli. Odongo, E. N. (2017). Supply chain integration and performance of public universities in Kenya. *Unpublished MBA Project*. Oliver, 1990).
- xlii. Osei, M.B., & Kagniciogu, C.H. (2018). The impact of supply chain integration on firms' business and operational performance in the food retail sector/industry. *Journal of Management, Marketing and Logistics*, 5(1), 18-30.
- xliii. Peck, H. (2005). Drivers of supply chain vulnerability: an integrated framework. *International Journal of Physical Distribution & Logistics Management*.
- xliv. Rudyanto, R., Soemarni, L., Pramono, R., & Purwanto, A. (2020). The influence of antecedents of supply chain integration on company performance. *Uncertain Supply Chain Management*, 8(4), 865-874.
- xlvi. Sitati, A. K. (2015). *Effects of the East African Community trade integration on the performance of logistics firms in Mombasa County, Kenya* (Doctoral dissertation, University of Nairobi).

- xlvi. Som, J.O., Cobblah, C., & Anyigba, H. (2019). The effect of supply chain integration on supply chain performance. *Proceedings of the Ninth International Conference on Engaged Management Scholarship (2019)*.
- xlvii. Somjai, S., Girdwichai, L., & Jermsittiparsert, K. (2019). The mediating role of operational performance and internal integration of supply chain in the relationship between interplant coordination and external integration. *Journal of Human Sport and Exercise*, 14(5), 2187-2201.
- xlviii. Syed, A. A., & Chaudhury, B. R. (2016). Clustering - An Enabler to The Leather Footwear Exporting Indian SMEs. *International Journal of Entrepreneurship and Development Studies*, 4(1), 1-22.
- xlix. Ullah, I. (2012). Role of buyer-supplier relationship and trust in organizational performance. *Delhi Business Review*, 13(2), 73-82.
- l. Uwamahoro, A. (2018). Effects of supply chain integration on performance: An analysis of manufacturing firms in Rwanda. *East Africa Research Papers in Business, Entrepreneurship and Management*, 3, 3-20.
- li. Viegas-Pires, M. (2016). Multiple levels of culture and post M&A integration: A suggested theoretical framework. *Thunderbird International Business Review*, 55(4), 357-370.
- lii. Yamane, Taro (1972). "Statistics: An introductory analysis." New York: Harper & Row.
- liii. Zhao, Z., Anand, J., & Mitchell, W. (2005). A dual networks perspective on inter-organizational transfer of R&D capabilities: international joint ventures in the Chinese automotive industry. *Journal of Management Studies*, 42(1), 127-160.
- liv. Zhao, G., Feng, T., & Wang, D. (2015). Is more supply chain integration always beneficial to financial performance? *Industrial Marketing Management*, 45, 162-172.
- lv. Zheng, W. & McLean, G. N. (2016). Linking organizational culture, structure, strategy, and organizational effectiveness: Mediating role of knowledge management. *Journal of Business Research*, 63(1), 763-771.