EFFECT OF INFORMATION SHARING PRACTICES ON OPERATIONAL PERFORMANCE OF FOOD PROCESSING FIRMS IN NAIROBI COUNTY, KENYA

Mayabi Peres Linda, Miriam Nyambura Thogori and Joseph Masinde Wabwire
Department of Management Science, Faculty of Business Studies, Chuka University

Emails: lindamayabi254@gmail.com; smiriamthogori08@gmail.com; bethmasinde@gmail.com

Abstract
The information sharing practices account to about fifty percent of the profitability and better performance of any firm (KAM 2023). The food processing subsector performance has been declining thus its contribution to the Gross Domestic Product has reduced to 10% thus leading to operation inefficiency. Information sharing can significantly enhance the contribution of food processing firms to a country's GDP by improving efficiency, innovation, market access, and value addition. The objective of the study was to probe the effect of information sharing practices on performance of food processing firms in Nairobi County. The study was premised on the grey system theory. Descriptive research design was employed. A population of 172 food processing firms and a sample size of 120 firms was determined. Stratified and simple random sampling were used to select specific firms while data were collected using structured questionnaires. Descriptive statistics aided in describing the primary characteristics of the data. Regression analysis was used to establish the relationship between information sharing practices and operational performance of food processing firms with the aid of SPSS version 28. T-statistics were used to gauge the significance of individual objectives at 5% confidence level while F-statistic was used to establish the overall significance of the model. The study established that information sharing practices positively affected operational performance, (regression coefficient 0.247, p = 0.029). The study concludes that enhanced information sharing substantially improves the performance of food processing firms. It recommends increased investment in platforms such as Electronic Data Interchange (EDI) to facilitate timely, accurate, and reliable information flow, streamline supply chain coordination, and improve overall efficiency and cost-effectiveness. Additionally, the study contributes to academic literature by offering theoretical and empirical insights into supply chain management practices, thereby serving as a resource for future research.

Keywords: Information Sharing Practices, Operational Performance, Food Processing Industry, Supply chain management practice

INTRODUCTION

The food processing sector in Kenya has exhibited low productivity and operational inefficiency, raising concerns about its capacity to contribute to Vision 2030 and the Big Four Agenda (Kenya Association of Manufacturers [KAM], 2020). This declining performance is evident in the sector's reduced contribution to GDP, from 15% to 10%, and the closure of several firms, such as Mumias Sugar Factory, Pecha Food Limited, Stawi Food and Fruits Limited, Maz International Limited, and Kuguro Foods Complex Limited. One proposed strategy for enhancing the performance of food processing firms is the adoption of supply chain management practices (SCMPs), which are estimated to account for approximately 50% of an enterprise's profitability and productivity.

Supply Chain Management Practices (SCMPs) refer to the comprehensive set of activities used by a firm to optimize its internal supply chain (Tan, 2020). A key component of SCMPs is information sharing, which encompasses both informal and formally agreed methods of disseminating relevant data across the supply chain to improve collaboration, especially in logistics (Wardaya, 2013). Information sharing plays a significant role in reducing costs, increasing productivity, and enhancing customer service. Kazi (2012) identifies information sharing as one of the five foundational elements of strong supply chain relationships, highlighting the importance of understanding data needs and instituting robust policies to gain competitive advantage.

Research has shown that high levels of information sharing positively influence supply chain success and firm performance. For instance, Marinagi et al. (2015) found that integrated information systems and efficient communication across supply chain entities significantly enhance overall performance. However, other studies such as Khalil *et al*. (2019) argue that poor information sharing quality can negatively affect productivity. Many of these studies have not fully explored the roles of information exchange policy, integrated information systems, and data needs clarity, key factors for ensuring timely, accurate, and secure communication across departments or organizations. Effective policies minimize duplication and reduce inefficiencies, while integrated data systems facilitate accurate forecasting, faster decision-making, and better logistics coordination. When data needs are well understood and consistently met, operational units can make informed decisions swiftly, avoiding delays and errors associated with irrelevant or incomplete data.

Moreover, since supply chains often involve the sharing of proprietary information, maintaining data integrity becomes critical. Marinagi *et al*. (2015) examined the role of information exchange as an intervening factor between information quality and supply chain performance. The current study builds upon these insights by treating information sharing practices as an independent variable to assess its direct effect on the performance of food processing firms.

Numerous studies advocate that information sharing confers a competitive edge. For instance, Koçoğlu *et al*. (2011) investigated supply chain integration and its influence on information exchange in Turkish manufacturing firms. Using data from 158 top companies listed by the Istanbul Chamber of Commerce, they found that integration enhances connectivity, collaboration, and coordination, thereby improving information sharing. However, this study focused on a non-African context and did not explore food processing firms, leaving a gap the current study aims to fill using food processing firms in Nairobi County.

Similarly, Baah *et al*. (2021) in Ghana explored how information exchange influenced supply chain performance through agility, collaboration, and visibility. Using descriptive research and Partial Least Squares Structural Equation Modeling (PLS-SEM), they found that information sharing significantly enhanced supply chain visibility and performance. The current study adopts a similar descriptive design and applies multiple regression models to evaluate these relationships in the Kenyan context.

In Macedonia, Ristovska *et al*. (2017) assessed the effects of information exchange practices in textile firms using SPSS for data analysis. They discovered that relevant, timely, and accurate information improves decision-making. These findings reinforce the idea that effective data sharing enhances operational responsiveness and performance.

Kenya, as a growing economy, relies heavily on its manufacturing sector, particularly food processing, which accounts for about 10% of GDP (KIPPRA, 2018). The sector, encompassing a wide range of products—from dairy and canned vegetables to confectioneries and fish, plays a vital role in job creation, poverty alleviation, and industrialization (KAM, 2020; Kariuki, 2016). Food and beverage processing firms in Nairobi County include informal family-run businesses, large formal enterprises listed on the Nairobi Securities Exchange, and subsidiaries of multinational companies (Muteshi *et al*., 2017).

Despite this potential, the performance of food processing firms has declined in recent years. According to the World Bank (2020), firms in this sector have experienced reduced profitability due to unstable operating conditions. Comparatively, while agriculture, construction, and transport sectors recorded output increases of 15.8%, 13.1%, and 13.7%, respectively, food processing's contribution to GDP dropped from 15% to 10% (KNBS, 2015). Hansen (2020) further notes that current food production levels in processing firms are insufficient to meet national demand, jeopardizing the realization of food security goals under the Big Four Agenda.

Both Fawcett (2007) and Ristovska *et al*. (2017) emphasize that effective information sharing enhances firm performance by enabling better decision-making, avoiding unnecessary costs, and improving data processing efficiency. While several Kenyan studies have explored information sharing in SCM, few have focused specifically on the food processing sector. For instance, Kimitei *et al*. (2015) investigated information sharing's role in moderating relationships between supply chain linkages and performance among flower farms in Nairobi. Using an explanatory research design and census approach, their findings showed that information exchange significantly moderated the link between internal, supplier, and customer linkages and performance.

Other relevant Kenyan studies include Nyagah *et al*. (2015), who examined e-procurement practices and supply chain performance in the dairy sector. Their research found a positive relationship between electronic order processing, e-supplier evaluation, information exchange, and supply chain performance. Mutangili (2019) similarly observed that information sharing and e-procurement practices significantly influenced supply chain performance in Kenya Airways.

Wairingu (2015) studied the impact of information sharing on the supply chain performance of manufacturing firms in Nairobi, using a descriptive research design and a sample of 100 businesses drawn from a population of 463. The study concluded that sharing customer, sales, order, and delivery information significantly enhanced performance. This study seeks to investigate the effect of information sharing practices on the performance of food processing firms in Nairobi County. By examining how data needs, information exchange policies, and integrated systems influence operational efficiency, this study aims to provide empirical evidence to support strategies for reviving the food processing sector in Kenya.

METHODOLOGY

This study was conducted in Nairobi County, selected due to its high concentration of large-scale food processing enterprises, which provided a sufficient population from which a representative sample could be drawn. The research employed a descriptive research design, which is suitable for analyzing existing conditions and gaining an in-depth understanding of the research problem.

The target population comprised 172 food processing firms in Nairobi County. Using Yamane's formula, a sample size of 120 firms was determined. The population was stratified into three categories based on firm size, large, medium, and small, to ensure proportional representation. Stratified random sampling was employed to select firms from each stratum. The unit of analysis was the food processing firm, while the respondents were supply chain managers or their equivalents.

Data was collected using a structured questionnaire, selected based on the nature of the data required, the objectives of the study, and time considerations. The use of questionnaires offers several advantages, including time efficiency, cost-effectiveness, reduction in bias, ease of administration, and facilitation of quantitative analysis. The questionnaires were distributed by the researcher and three trained research assistants using the drop-and-pick-later method. Respondents were informed about the purpose of the study, assured of confidentiality, and given sufficient time to complete the questionnaires.

A pilot study was conducted involving 12 food processing firms in Thika, Kiambu County, which shares similar manufacturing characteristics with Nairobi County. These firms and respondents were excluded from the main study. The pilot aimed to test the reliability and validity of the data collection instruments. The reliability test yielded a Cronbach's Alpha coefficient of 0.7, indicating acceptable internal consistency. To establish content validity, the questionnaire was reviewed and validated by the supervisor, while face validity was ensured through appropriate formatting, logical arrangement of questions, and clarity of instructions.

During data analysis, descriptive statistics (such as measures of central tendency and dispersion) were used to summarize the basic features of the data. For inferential analysis, Pearson's Product-Moment Correlation Coefficient was applied to assess the relationships among study variables. Simple linear regression analysis was used to determine the strength and direction of the association between independent and dependent variables. The T-test was used to assess the statistical significance of individual predictors at a 5% significance level, while the F-test evaluated the overall significance of the model. The R-squared (R^2) statistic indicated the proportion of variance in the dependent variable explained by the independent variables. To validate the assumptions underlying linear regression, several diagnostic tests were conducted. Multicollinearity was examined using the Variance Inflation Factor (VIF) to ensure that the independent variables were not highly correlated with one another. Heteroskedasticity was assessed through the use of P-P plots, which helped to determine whether the variance of the residuals was constant across all levels of the independent variables. Additionally, the normality of the residuals was tested using the Shapiro-Wilk test, which assessed whether the residuals followed a normal distribution. These diagnostic tests confirmed that the data satisfied the essential assumptions for conducting linear regression, thereby ensuring the validity of the statistical inferences and the reliability of the model estimates.

RESULTS AND DISCUSSIONS
Response Rate

In this study, the target sample size was 120 food processing firms, and 100 completed questionnaires were successfully collected. This translates to a response rate of 83.33%, which is not only excellent but also surpasses the 77% response rate reported by Wanjiku (2019). This high response rate underscores the effectiveness of the data collection process and enhances the reliability and generalizability of the study findings.

Diagnostic Tests
Test for Normality

The Shapiro-Wilk test was employed to assess the normality of residuals, as recommended by Aczel and Sounderpadian (2002). The results presented in Table 1 show that the p-values for both variables were greater than 0.05, indicating that the residuals were normally distributed.

Table 1: Normality Test

	Shapiro-wilk		
	Statistic	df	Sig
Information Sharing Practices	0.944	100	0.072
Performance	0.933	100	0.143

The p-value of Shapiro Wilk Test was 0.944 which is greater than 0.05 (insignificant) hence a conclusion that the residual was normally distributed.

Multicollinearity Test

Variance Inflation Factor (VIF) was used to test for multicollinearity. As shown in Table 2, the VIF value for Information Sharing Practices was 1.166, well below the threshold of 10, indicating no multicollinearity. Multicollinearity may lead to wrong results due to its effect of inflating the predictor variables (Cooper & Schindler 2003).

Table 2: Multicollinearity Test

Model	Collinearity Statistics		
	Tolerance	VIF	Status
(Constant)			
Information Sharing Practices	0.857	1.166	No Multicollinearity

Dependent Variable: Performance

Heteroskedasticity Test

Heteroskedasticity was assessed using a Normal P-P Plot of regression standardized residuals. The plot showed that the residuals were randomly and evenly spread with no systematic pattern, suggesting the absence of heteroskedasticity.

Information Sharing Practices and Performance

Information Sharing Practices was measured in terms of information sharing policy, integrated information system and data needs. Performance was measured using low level of Wastages, maximum utilization of resources and cost reduction. Descriptive statistics such as mean, standard deviation, range, minimum and maximum for information sharing practices and performance were carried out. The summary of descriptive statistics is shown in Table 3.

Table 3: Descriptive Statistics

Statement	N	Min	Max	Mean	Std. Deviation
Our firm has developed an information sharing policy	100	2.00	5.00	3.2200	0.54272
Our information sharing policy guides on the information to be shared within the firm	100	2.00	5.00	3.7500	0.62563
Our information sharing policy guides on the information sharing outside our firms	100	2.00	5.00	3.760	0.6834
Integrated information system has helped to improve the performance of our firm	100	2.00	5.00	3.2300	0.52905
Our firm do generate data that can be shared across the supply chain as need arises	100	2.00	5.00	3.9300	0.68542
Our firm has agreed on templates for sharing all necessary data	100	2.00	5.00	3.5600	0.59152
Aggregate	100			3.575	0.6096

Where: ISP-Information Sharing Practices
P-Performance

The results in Table 3 specify that most of supply chain managers suggested that their firms do generate data that could be shared across the supply chain as the needs arises had the highest mean of 3.9300. Other supply chain managers were undecided on the development of information sharing policy which had a mean of approximately 3.2200. Supply chain managers varied their views on their firms generating data that could be shared across the supply chain as needs arises by a standard deviation of 0.68542. This implies that most of the food processing firms are very keen on the type of information to share across the supply chain since they operate in a competitive environment. Therefore, the overall mean of 3.575 and a standard deviation of 0.6096 indicated that the respondents generally agreed that information sharing practices were incorporated in Food Processing Firms.

Pair Wise Correlation between the Study Variables

Correlation determines the direction of a relationship between any two variables as shown in Table 4.

Table 4: Pearson correlation between study variables

Variables	P	ISP
P	1	0.244
ISP	0.244	1

The results also show that information sharing practices had a Pearson correlation of 0.244 and a p-value of $0.029 < 0.05$ implying a positive and statistically significant relationship between performance and information sharing practices. This is because sharing of information enhances performance of food processing firms. This suggests that an increase in information sharing practices would lead to statistically significant increase in performance.

Simple Linear Regression
This study determined the significance of information sharing practices on performance of food processing firms in Nairobi County. A multiple linear regression was used to examine the relationship between information sharing practices and performance. A multiple linear regression analysis is represented in Table 5.

Table 5: Coefficients estimates of Information Sharing Practices and Performances

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	3.058	0.404		7.568	0.000
	Information Sharing Practices	.247	0.112	0.218	2.210	0.029

$R^2=0.047$

Table 5 above shows that the regression coefficients of information sharing practices was 0.247 with a p-value of 0.029<0.05 hence information sharing practices had a positive and statistically significant effect on performance. The R^2 of the model was 0.047 indicating a model where 4.7 % of the changes in performance could be accounted for by information sharing practices, while 95.3% of the changes would be attributed to other factors not included in the study and the error term. This means a unit increase in information sharing practices would result to 0.247 units increase in performance holding other factors constant. Therefore, the null hypothesis was rejected and this implied that there is a statistically significant relationship between information sharing practices and performance.

The study adopts the view that information sharing practices was an important consideration that need to be made when determining the performance of food processing firms in Nairobi County. These results are consistent with Ristorska (2017) who carried out a study in Macedonia on the effects of information exchange practices on performance of textile firms. The researchers found that the relevance, timeliness and accuracy of information within and outside the company makes it possible to achieve opportune and timely decision making. The findings also reflect those of Manangi *et al.* (2015) who found out in their study on intervening role of information exchange on information quality and supply chain performance that information exchange in the supply chain allows improved general performance occasioned by implementation of supply chain management principles that raise the dependability and quality of information. These results also match with those reported ealier by Kocoglu *et al.*, (2011), whose findings offered helpful intuitions on how firms might use information exchange to boost the efficiency of their supply chains. The results further corroborate the findings of Baah *et al.* (2021) which showed that information exchange is chief to boosting competitive gains and robust supply chain performance.

However, the findings of the current study do not agree with the previous research of Kimitei *et al.*, (2015) who found that information sharing practices affected performance negatively. Theoretically, these findings fail to concur with Julong Deng 1985 on the grey system theory that there is no free flow of information and complete messages.

The present findings suggest that information sharing practices could significantly improve the performance of the food processing firms since most of the supply chain managers opined that their firms do generate data that could be shared across the supply chain as the needs arises. The simple regression model for effect of information sharing practices on performance is therefore presented by the equation below.

$$Y = 3.058 + 0.247\ X_1$$

CONCLUSION

The study concludes that an increase in information sharing practices leads to an increase in performance since the regression coefficients of information sharing practices was 0.247 with a p-value of $0.029 < 0.05$. Therefore, food processing firms should develop strategies to ensure free flow of information to enhance performance of the food processing firms.

RECOMMENDATIONS

It is recommended that food processing firms should transfer information inside the organization and to maintain the organization's operations, enterprises must promote information exchange procedures. Firms should also invest more in the information sharing platforms such as the EDI to enhance free flow of information through collaboration, incentives, or mandates in supplier agreements and supply chain managers can inform clients about the benefits of EDI such as improved order accuracy, faster processing, and better traceability.

Suggestions for Further Research

This study has several suggestions for possible areas for further research:

i.   The study established that the three variables (information sharing practices, logistics management and inventory management) only explained a small percentage change in the performance of food processing firms. This study therefore suggests that future researchers would carry out more research using different variables that were not included in the study.

ii. This study was in particular based on food processing firms in Nairobi County. These firms had distinctive characteristics given that they only deal with food Processing. Future studies should be conducted in other firms and other contexts, the service sector.

REFERENCES

Anuar, A., & Yusuff, R. (2011). Manufacturing Best Practices in Malasyian small and Medium Enterprises (SMEs). *Benchmarking: An International Journal.*

Baah, C., Agyeman, D., Acquah, I., Agyabeng-Mensah, Y., Afum, E., Issau, K., & Faibil, D. (2021). Effect of information sharing in supply chains: understanding the roles of supply chain visibility, agility, collaboration on supply chain performance. *Benchmarking: An International Journal*, 29 (2), 434-455.

Bargouthi, M. I., Bharadwaj, P., & Byramjee, F. (2025). The influence of selected supply chain management practices on SMEs performance: the mediating role of competitive advantage. *Journal of Global Operations and Strategic Sourcing*, (ahead-of-print).

Chen, I., & Paulraj, A. (2004). Towards A Theory of Supply Chain Management: The United States. *JAMA oncology*, *3*(10), 1335-1342.

Cooper, R., & Schindler, S. (2003). Business research methods. Irwin: McGraw-Hill.

Fawcett, S. (2008). Supply Chain Management: From Vision to Implementation. Upper Saddle River, New Jersey, Pearson Practice

Fu, Q., Abdul Rahman, A. A., Jiang, H., Abbas, J., & Comite, U. (2022). Sustainable supply chain and business performance: The impact of strategy, network design, information systems, and organizational structure. *Sustainability*, *14*(3), 1080.

Hübner, A., Wollenburg, J., & Holzapfel, A. (2016). Retail logistics in the transition from multi-channel to omni-channel. *International Journal of Physical Distribution & Logistics Management*.

Isho, M. Y. (2022). The effects of supply chain management on competitive advantage: the case of manufacturing companies in Ethiopia. *International Journal of Business Studies*, *6*(2), 136-153.

Kariuki, S. (2016). Staff Profile-Dr. Samuel Nduati Kariuki.

Khalil, M., Khalil, R., & Khan, S. (2019). A study on the effect of supply chain management practices on organizational performance with the mediating role of innovation in SMEs. *Uncertain Supply Chain Management*, 7(2), 179-190.

Kim, S. (2006). Effects of Supply Chain Management Practices, Integration and Competition Capability Performance. *Supply Chain Management: An International Journal*.

Kimitei, E., Bonuke, R., Chepkwony, J., & Kipkiyai, C. (2015). Moderating effect of information sharing on the relationship between supply chain linkages and supply chain performance. A case of flower firms in Nairobi County, Kenya. http://ir.mu.ac.ke:8080/xmlui/handle/123456789/2226

KIPPRA, (2018), Realizing the Big Four Agenda through Energy as an enabler. Policy Monitor. Supporting Sustainable Development through Research and capacity building. Issue 9 No.3 (http: kippra.or.ke/wp-content/uploads/2018/04/ KIPPRA-Policy-Monitor-Issue-9-No-3.pdf).

Koçoğlu, İ., İmamoğlu, S. Z., İnce, H., & Keskin, H. (2011). The effect of supply chain integration on information sharing: Enhancing the supply chain performance. *Procedia-social and behavioral sciences*, *24*, 1630-1649.

Kot, S. (2023). *Development insights on supply chain management in small and medium-sized enterprises*. Logos Verlag Berlin GmbH.

Li, S., Ragu-Nathan, B., Ragu-Nathan, T. S., & Rao, S. S. (2006). The impact of supply chain management practices on competitive advantage and organizational performance. *Omega*, *34*(2), 107-124.

Marinagi, C., Trivellas, P., & Reklitis, P. (2015). Information quality and supply chain performance: The mediating role of information sharing. *Procedia-Social and Behavioral Sciences*, *175*, 473-479.

Min, S., & Mentzer, J. (2004). Developing and Measuring Supply Chain Management Concepts. *Journal of business Logistics,* 25 (1),63-99.

Mutangili, S. (2019). Influence of E-Procurement Practices on Supply Chain Performance: A Case Study of Kenya Airways. *Journal of Procurement & Supply Chain*, *3*(2), 1 - 16.

Muteshi, D., Awino, Z., Kitiabi, R., & Pokhariyal, G. (2017). Firm-Level Strategy and Performance of Food and Beverage Manufacturing Companies on Kenya. *DBA African Management Review ,7(2)*.

Nyaga, (2019). *Eprocurement, Strategy Drivers and Performance at the National Treasury in Kenya* (Doctoral dissertation, University of Nairobi).

Ramirez, E. (2021). Author's declaration of originality.

Richard, K., Ojino, D., & Ayoo, P. (2019). Effects of Strategic Sourcing On Organizational Performance: A Case of Acacia Premier Hotel, Kisumu.

Ristovska, N., Kozuharov, S., & Petkovski, V. (2017). The Impact of Logistics Management Practices on Company's Performance. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, *7*(1), 245-252.

Soosay, C., Hyland, P., & Ferrer, M. (2008). Supply Chain Collaboration: Capabilities for Continuous Innovation. *Supply Chain Management:*

Wardaya., Idrus, M., Hadiwidjoyo, D., & Surachman. (2013). Improving Competitive of the National Industry of Logistics Service Providers through Collaboration from the Perspective of Consumer Goods Manufacturing Companies in East Java. *International Journal of Business Management Invention*, 2(5),27-38.