

# **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**

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## Abstract

*The main objective of the study was to determine the moderating effect of information sharing on the relationship between supply chain linkages and supply chain performance among flower firms in Nairobi County. The specific objectives of the study were to determine the moderating effect of information sharing on the relationship between customer linkages, supplier linkages and internal linkages on supply chain performance. The study adopted the explanatory research design and data collected through a census approach on target population of procurement employees of 34 flower farms registered under Kenya Flower Council in Nairobi County. Structured questionnaires were used to collect data while descriptive and inferential statistics were also used in data analysis. Pearson correlation was used to test the linear relationship of variables while multiple regression model was used to analyze data in order to test the hypotheses for the study. Information sharing significantly moderates the relationship between customer linkages and supply chain performance, supplier linkages and supply chain performance, and internal linkages and supply chain performance.*

*Keywords: Customer Linkages, Supplier Linkages, Internal Linkages, Information Sharing, Supply Chain Performance*

## INTRODUCTION

Supply chain performance has become an important focus of competitive advantage for business organization. Effective supply chain performance is important to build and sustain competitive advantage in product and services of the firms Gunasekaran and McGaughey (2004). According to Sufian (2010), to achieve a competitive advantage and better performance, supply chain management strategy needs to be linked with supply chain linkages.

Information sharing, if managed effectively, can give rise to visibility of customers' and suppliers' operational activities (Aviv, 2002; Barratt Oliveira, 2001; Fawcett and Magnan, 2002; Croson and Donohue, 2003; Van der Zee, 2005).

Despite the intuitive importance of effective information sharing (IS) for team decision-making (Bunderson & Sutcliffe, 2002), past research has shown teams often deviate from the optimal utilization of information when making decisions; discussion often serves to strengthen individual pre-discussion preferences rather than as a venue to share new information.

Customer linkages allow companies to enhance customer responsiveness due to increased ability to anticipate and track customer complaints, demands and needs (Hausman & Stock, 2003). Internal linkages allows companies to meet and improve production scheduling

through cross-functional linkages, supply and demand planning, production scheduling and planning, and customer demand management (Stratman & Roth, 2002).

Internal linkages minimize conflicts and misinterpretations, facilitate the flow of information among different functions, and focus all the efforts towards fulfilling customer orders and requirements in a timely manner. Supplier linkages also minimize the inspections of incoming materials as the customer firm will have an impetus to assist and certify suppliers on quality management resulting in improved productivity and quality and better design of parts (De Toni & Nassimbeni, 2000). Kenya is now the fifth largest flower exporter in the world. Ninety per cent of all Kenyan flowers are exported to Europe and Kenya also supplies 25 percent of cut flowers sold in European market.

The floriculture industry is one of the most crucial sectors in Kenya's economy. It contributes a significant percentage of Gross National Product (GNP) and employs tens of thousands of workers. The industry has, however, faced a decline over the last five years (Kangogo, 2013). The Kenya floricultural supply chains have been unable to display consistency and stability in performance (World Bank, 2010). The supply chains have frequently experienced costly discontinuities in the current dynamic markets and vastly-changing technological environments. According to (Kangogo, 2013) the floriculture supply chains are inflexible and susceptible to disruption since they are unable to swiftly and suitably respond to emerging international protocols, certification requirements, and to governmental and regulatory changes. All these signs are symptomatic of supply chains typified by disruption. When the floriculture supply chains are disrupted, the economic fundamentals are affected since horticulture is one of Kenya's chief exports (World Bank, 2010).

Despite the increasing research interests in supply chain performance (SCP), its relationship to other themes, or explorations of linkages between SCP and other strategies, are still very limited (Manuj and Mentzer, 2008). There have been previous calls for further empirical research on the link between linkages and performance (Stank, Keller and Closs 2001b; Wisner, 2003; Rodrigues, Stank and Lynch, 2004), and the lack of understanding regarding the implications of linkages constitutes a problem for both researchers and managers. It is quite clear from the foregoing that very little research has been done on the supply chain linkage adopted by Kenyan flower firms, yet this is Kenya's largest export market and it is through improved supply chain management practices that cut flower trade would increase and make the industry sustainable and profitable, earning Kenya more foreign exchange currency. This study therefore sought to investigate whether the supply chain linkages and information sharing adopted by Kenyan flower firms and their effect on supply chain performance need to address for further growth.

## METHODOLOGY

### Research Design

The study adopted an explanatory research design where the units of analysis were employees in procurement departments drawn from 34 flower firms which are members of Kenya Flower Council in Nairobi County (KFC, 2014). The data were collected through census on procurement employees of Kenya Flower Council in Nairobi County.

### The Data

Primary data were gathered from the respondents using the questionnaires and keyed into SPSS package version 20 for analysis. To test for reliability, the researcher used the internal consistency technique by employing Cronbach Alpha value of  $\alpha > 0.7$ .

### Model Specification and Estimation Approach

Pearson correlation coefficients were used to assess the degree/strength of relationship that exists between the Independent and the dependent variables. Multiple regression model was used to analyze the data in order to determine the significance of the hypotheses of the study. Regression was calculated using the basic regression model as indicated below:

#### Model

$$y = \alpha + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 * Z + \beta_5 x_5 * Z + \beta_6 x_6 * Z + \varepsilon \dots \dots \dots 1$$

Where;

**Y**= supply chain performance

**$\alpha$**  =constant

**$\beta_1 \dots \dots \beta_6$**  = parameter estimates

**$X_1$**  = customer linkages

**$X_2$**  = supplier linkages

**$X_3$**  = internal linkages

**Z** = information sharing

**$X_4 Z$**  = customer linkage\* information sharing

**$X_5 Z$**  = supplier linkage \* information sharing

**$X_6 Z$**  = internal linkage \* information sharing

**$\varepsilon$**  =is the error of prediction.

## EMPIRICAL RESULTS

Table 1: Demographic Information of the Respondents

		Frequency	Percent
<b>Gender</b>	Male	166	53.4
	Female	145	46.6
	Total	311	100
<b>Age bracket</b>	18-30 Yrs.	139	44.7
	31-35 Yrs.	62	19.9
	36-40 Yrs.	70	22.5
	41-45 Yrs.	37	11.9
	Over 46 Yrs.	3	1
	Total	311	100
<b>Education level</b>	PhD	8	2.6
	Masters	57	18.3
	Bachelors	170	54.7
	Diploma	62	19.9
	Secondary	14	4.5
	Total	311	100
<b>Job tenure</b>	Less Than 3 Yrs.	110	35.4
	4-6 Yrs.	115	37
	7-9 Yrs.	50	16.1
	10 Yrs. And Above	36	11.6
	Total	311	100
<b>Training on information technology related to e-procurement</b>	Yes	211	67.8
	No	100	32.1
	Total	311	100

The study put into account the demographic information of the respondents since the background information of the respondents is crucial for the authenticity of the results. 166 (53.4%) of the respondents were male and majority of them comprised of the youth as evidenced by the 18 to 30 years age bracket of 139 (44.7 %), Most of the employees were degree holders 170 (54.7%).

It was further concluded that majority of the respondents have worked in the firms long enough hence they would provide relevant information as sought by the study. Nonetheless, 211 (67.8 %) of the respondents noted that they had undergone training on technology related to e-procurement.

Table 2: Correlation Results

	Supply Chain Performance	Customer Linkages	Supplier Linkages	Internal Linkages	Information Sharing
Supply chain performance	1				
Customer linkages	.560**	1			
Supplier linkages	.661**	.615**	1		
Internal linkages	.621**	.523**	.641**	1	
Information sharing	.309**	.318**	.389**	.433**	1

\*\* Correlation is Significant At The 0.01 Level (2-Tailed)

The results in table 2 above indicate that there is a positive and significant correlation between; supplier linkages and supply chain performance ( $r = 0.661$ ,  $p < 0.01$ ), internal linkages and supply chain performance ( $r = 0.621$ ,  $p < 0.01$ ), customer linkages and supply chain performance ( $r = 0.560$ ,  $p > 0.01$ ) and finally, a positive and significant correlation between information sharing and supply chain performance ( $r = 0.309$ ,  $p > 0.01$ ).

Table 3: Moderating Effect of Information Sharing

	Model 1		model 2		model 3	
	Beta	t	Beta	t	Beta	t
(Constant)	0.714*	3.4	0.816*	3.366	0.918*	4.484
Customer linkages	0.214*	2.619	0.188*	3.66	-2.525*	-5.171
Supplier linkages	0.36*	6.296	0.361*	6.298	3.379*	5.36
Internal linkages	0.299*	5.572	0.301*	5.541	0.235*	0.663
Information sharing			0.122*	-0.486		
Customer linkage*information sharing					-0.036	-0.434
Supplier linkage*information sharing					-3.963*	-5.746
Internal linkage*information sharing					0.119	0.225
R	0.723		0.755		0.755	
R Square	0.523		0.57		0.57	
Adjusted R Square	0.517		0.563		0.561	
F	83.993		80.828		67.156	
Sig.	0.000		0.000		0.000	

a Dependent Variable: supply chain performance

\* Significant at the 0.05 level

**H<sub>01</sub>: Moderating Effect of Information Sharing on the Relationship between Customer Linkages and Supply Chain Performance**

The beta value ( $\beta = -0.036$ ,  $p < 0.05$ ) in table 3 shows that information sharing has a negative and significant moderating effect on the relationship between customer linkage and supply chain management. Thus, information sharing is a significant moderator of the relationship between customer linkages and supply chain performance.

**H<sub>02</sub>: Moderating Effect of Information Sharing on the Relationship between Supplier Linkages and Supply Chain Performance**

Information sharing negatively and significantly moderates the relationship between supplier linkage and supply chain performance ( $\beta = -3.963$ ,  $p < 0.05$ ). That is, a decrease in supply chain performance was significantly associated with supplier linkage, and this relationship was enhanced by information sharing.

**H<sub>03</sub>: Moderating Effect of Information Sharing on the Relationship between Internal Linkages and Supply Chain Performance**

Finally, the results in Table 3 revealed that there is a positive and significant moderating effect of information sharing on the relationship between internal linkages and supply chain performance ( $\beta = 0.119$ ,  $p < 0.05$ ).

**DISCUSSIONS AND CONCLUSION**

The research findings indicated that information sharing significantly moderates the relationship between customer linkage and supply chain performance, supplier linkage and supply chain performance and internal linkages and supply chain performance. Particularly, the study results revealed that information sharing has a negative and significant moderating effect on the relationship between customer linkage and supply chain performance ( $\beta = -0.036$ ,  $p < 0.05$ ). This tentatively implies that firms that majorly focus on the privacy concerns of their customers; they will have an edge in attracting and retaining clients.

Similarly, the regression model revealed a negative effect between supplier linkage and supply chain performance ( $\beta = -3.963$ ,  $p < 0.05$ ) when moderated with information sharing. This indicates that information disclosure by the firm among supply partners may makes them lose power over competitors hence impacting negatively on supply chain performance. Finally, the results in the previous chapter have revealed that there is a positive and significant moderating effect of information sharing on the relationship between internal linkages and supply chain performance ( $\beta = 0.119$ ,  $p < 0.05$ ). This implies that information sharing significantly reduces

costs and improves operational effectiveness thereby improving the overall supply chain performance. Also, the positive association between internal linkages and supply chain performance is facilitated by better coordination of physical movement within the supply chain that is facilitated by information sharing. Therefore information sharing provides a significant linkage that fosters greater supply chain performance.

The study included only four factors, there could be some other relevant factors that may be perceived as important by supply chain partners but were excluded from this study. Future researches, therefore, may consider more factors, like environmental uncertainty, company environment and information technology. Finally, conducting a replication study in other industries such as manufacturing firms is needed in order to establish whether the findings of the study hold.

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