

Moderating Effect of Firm Size on The Relationship Between Supply Chain Collaboration and Firm Competitiveness in Paint Distribution Companies in Rivers State

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Abstract

The focus of this study was to investigate the moderating effect of firm size on the relationship between supply chain collaboration and competitiveness of Paint Distribution Companies in Rivers. The study used a descriptive survey approach. A structured questionnaire was administered to 104 respondents 81 were returned useful giving a 78% which is adequate for analysis. The Pearson Moment Correlation Coefficient was used to depict the relationship between supply chain collaboration and firm size. Stepwise regression was used to explain the moderating effect of firm size on the relationship between supply chain collaboration and firm competitiveness. The finding revealed that firm size has a significant and positive moderating effect on the relationship between supply chain collaboration and firm competitiveness. The study therefore recommends that companies be mindful of the firms they seek to collaborate with as firm size is a moderator in such relationship

1. Introduction

Due to the steady instability in both industrial and business environments competition is fast shifting away from brands to supply chains (Suryanto et al., 2016). Scholars like ((de Sousa Jabbour et al., 2017; Olatunji et al., 2019) are of the view that the shift has resulted in firms exploring ways to effectively and efficiently manage their supply chains to create value as well as gain competitive advantage. On their part, Ding et al. (2016) aver that factors such as market volatility, industrial revolutions, and competitive pressures have prompted companies to focus on environmental supply chain practices in addition to core competencies to enhance efficiency, profitability and competitiveness. Although focusing on environmental supply chain practices and core.

Graham (2018) and Mishra et al. (2018) aver that attaining competitiveness in supply chains requires the synergistic integration of supply chain partners regarding resources and capabilities. This highlights the need for supply chain collaborations between firms and partners in the quest to enhance competitiveness. An earlier scholar like Horvath (2001), thinks that collaboration acts as a driving force for an effective supply chain management, on his part, Barratt (2004) opined that collaboration plays a role of core capability in the chain. We align with this line of thought in the sense that we see collaboration approaches as an enabler for supply chains to achieve set

objectives to improve performance. Also, collaboration improves revenue, reduces cost, and increases flexibility to tackle demand uncertainty.

Competitiveness has now become a buzzword, it has been used to describe the multidimensional phenomenon, that combines aspects of economics, management, politics, history and culture (Ajitabh & Momaya, 2004; Bhawsar & Chattopadhyay, 2015). Waheeduzzaman (2011) argued that even in its general form, competitiveness is viewed from two dimensions – macro and micro which are, however, closely interlinked. Managers and business owners are continually exploring different ways to make their businesses more competitive. competitiveness reflects how nations and enterprises manage their competencies and exploit resources to achieve long-term prosperity or profit (Dvoulety & Blaxkova, 2020; Bhawsar & Chattopadhyay, 2015)

The concept of competitiveness at the firm level is clearly understood as the ability of a company to compete in a competitive environment, to grow and to be profitable (Sipa et al., 2015), i.e. it signifies superior and lasting multidimensional economic performance (Fischer and Schornberg, 2007). Competitiveness at this level is mainly related to the long-term profitability of the company (Jambor & Babu, 2016). Thus, we submit that the proper understanding of collaboration in supply chain becomes a necessity to remain competitive in this global environment.

Studies have been conducted on firm size as a moderator for example El-Rabat et al. (2023) examined the moderating role of firm size on the relationship between financial distress and earning management where they sought to level of influence firm size exact on each of the variables. Also, Wayongh et al. (2019) examined the moderating effect of firm size on the relationship between financial leverage and financial performance of non-financial firms listed in the NSE Kenya. Roespinoedji et al. (2019) examined determinants of supply chain performance moderating role of firm size in tourism hotel industry in Indonesia. Furthermore, Mohamud et al. (2018) examined the moderating effect of firm size on the relationship between management participation and firm performance. From the studies examined above it is obvious that firm size is recognized by industry practitioners as a crucial element in moderating certain strategies in any organizational setting. The subject is still very relevant to scholars. Hence this study introduces firm size as a moderator to ascertain its effect on the relationship between supply chain collaboration and firm competitiveness. Specifically, this study seeks to explore the role of a firm's size on the relationship between collaboration among supply chains and firm competitiveness

Study Variables and Research Framework

Study variables unveil the direction of the research work. They serve as the skeletal structure upon which the entire work is built. This study has three variables supply chain collaboration which is the explanatory variable, firm competitiveness as the explained variable and firm size as the moderating variable This is represented below in Figure 1

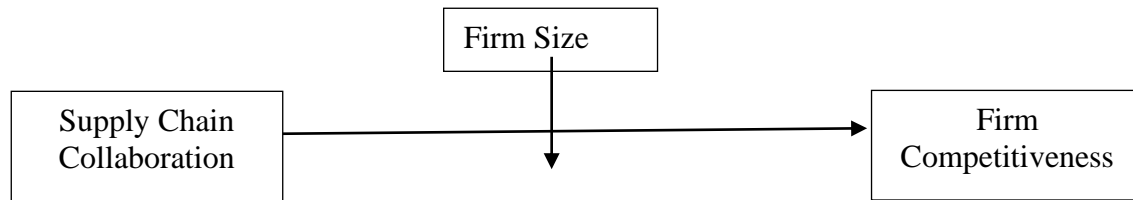


Fig 1: Conceptual Framework for Supply Chain Collaboration and Competitiveness.

Source: Researchers Conceptualization 2023.

Purpose:

To assess the moderating effect of firm size on the relationship between supply chain collaboration and firm competitiveness in paint distribution companies in Rivers State

Hypothesis

H₀₁: Firms does not significantly moderate the relationship between supply chain collaboration and firm competitiveness.

2. Literature Review

2.1 Theoretical Background

This study is anchored on the resource-based view theory (RBV). The RBV claims that engaging in collaborations with partners concerning resources, capabilities and strategic assets may achieve supply chain learning and competitive advantages over rival firms thereby reaching a sustained market advantage due to the difficult to imitate nature of advantage (Yang et al., 2019). These resources according to Yang et al. (2019) need to be valuable, rare, inimitable and non-substitutable to attain a competitive advantage for a firm ultimately influencing firm performance. Further studies expanded the RBV by expanding the literature on how interconnected firms in effective collaborations combine resources to attain a competitive advantage for the focal firm (Dubey et al., 2017; Yang et al., 2019). According to Panahifar et al. (2018), the benefits of engaging in collaborations or alliances include benefits derived from the focal firm's shared and non-shared resources (internal rents), benefits derived from shared resources of partners (appropriated relational rent), benefits extracted from partners shared and non-shared resources by reason because of the leakages and inter-firm learning (inbound spillover rent) and benefits derived from the transfer of gains from focal firm to partners (outbound spillover rent).

2.1.1 Supply Chain Collaboration (SCC)

Scholars are in near consensus that the importance of collaboration in the supply chain cannot be overstated more so, in this competitive business environment They also argue that the need to collaborate with supply chain partners to ensure competitive advantage is even more pressing than ever before (Baah & Jin, 2019; Routroy et al., 2018). Zhang and Cao (2018) defined supply chain collaboration as “two or more autonomous firms working together to plan and implement supply chain operations. SCC creates a commitment to supply chain partners to work as a partnership and collaborate on core operations to obtain mutual objectives (Cao & Zhang 2013). SCC is a corporate operation based on the relationship and communication through the chain and all partners of the supply chain (Liao & Kuo 2014). Collaboration is a trustful relationship among firms where rewards and risks are shared between partners (Olorunniwo & Li 2010).

This line of thought had been established by earlier scholars like (Barratt & Oliveira 2001; and Phillips & Moon 2000) conceived supply chain collaboration as a relationship between inter organizations by which all members collaborate to share resources, achieve goals, share information, rewards, responsibilities and jointly solve problems. Carter et al. (2000) assert that collaboration is mainly determined by trust and commitment which will change the efficacy of cost, quality and time. This implies that firms need to collaborate to change the nexus between cost, value and profit equation. Thus, firms work together by sharing information, processes, risks, and rewards to achieve mutual gain. SCC is a very wide term that usually spans the overall supply chain.

2.1.2 Firm Competitiveness

The concept of competitiveness is one topic that has significant import for entrepreneurs, politicians' academics and the general public. It is a topic that has generated quite several studies and yet it appears we cannot get enough of it. This line of thought reflects the view of Bhawsar and Chattopadhyay (2015) when they aver that the concept has become a buzzword. Competitiveness has been viewed as a multidimensional phenomenon, that combines aspects of economics, management, politics, history and culture.

Falciola et al. (2020) contend that due to its complexities and relativity, the concept tends to be understood differently within an empirical setting as the context changes with time and context. However, in its most general form competitiveness can be viewed from two perspectives- macro and micro but scholars argue that both perspectives are closely related (Dvoulety et al. 2020).

The concept of competitiveness at the firm level is clearly understood as the ability of a company to compete in a competitive environment, to grow and to be profitable (Sipa et al., 2015), in other words, it indicates superior and lasting multidimensional economic performance. Firm competitiveness is determined by a broad range of internal and external factors (Laureti & Viviani, 2011; Bhawsar & Chattopadhyay, 2015).

Edmonds (2000) perceived competitiveness to mean the ability of a firm to produce a good product and provide quality service at the right price at the right time. However, Klapalova (2011) argues that in addition to their competence, the success of companies always depends on the characteristics of the competitors, the market situation, the structure and other factors (e.g., institutional) that affect the company's operating conditions. Furthermore, Barakonyi (2000) highlights the complexity and temporally and spatially changing content of the concept of competitiveness.

2.1.3 Firm Size

The size of a business unit means the size of a business firm. It means the scale or volume of operation turned out by a single firm. The study of the size of a business is important because it significantly affects the efficiency and profitability of the firm. According to Jiang (2003), firm size is defined as "employees per establishment, employees per company, sales per firm, and value-added per firm." In Shi's (2014), he pointed out that firm size is the carrier of firm production and business activities. On their part Shaheen and Malik (2012) described firm size as the quantity and array of production capability and potential a firm possesses or the quantity and diversity of product it has to offer.

According to Niresh & Velnampy, (2014), firm size is a primary factor in determining the profitability of a firm due to the concept of economies of scale. Parmonon (2012) argued that larger firms have stronger competitive capabilities than smaller ones as a result of their superior access to resources. Thus, while size has been accepted as a main feature in the firm performance

debate (Niresh & Velnampy, 2014; Akinyomi & Olagunju, 2013; Cabral & Mata, 2003; Prasetyantoko, A., and Parmono, R 2012), it is not clear how it affects the relationship between supply chain collaboration and firm competitiveness. Firm size was thus introduced as a moderator in determining its interaction effect in the relationship between supply chain collaboration and firm competitiveness.

Empirical Review

El-Rabat et al. (2023) conducted a study on the moderating role of firm size on the relationship between financial distress and earnings management. The study aimed to examine the moderating role of firm size on the relationship between Financial Distress (FD) and Earnings Management (EM). The results indicated that the firm size moderates the relationship between FD and EM, implying that firm size reduces the negative impact of the Z-score on EM

Wayongah et al. (2019) examined the moderating effect of firm size on the relationship between financial leverage and financial performance of non-financial firms listed in the NSE, Kenya. The purpose of the study was to establish the moderating effect of firm size on the relationship between financial leverage and financial performance of non-financial firms listed in the Nairobi Securities Exchange (NSE). The study revealed that firm size moderates the relationship between financial leverage and financial performance.

Roespinoedji et al. (2019) examined the determinants of supply chain performance: The moderating role of firm size in tourism hotel industry in Indonesia. The purpose was to determine the relationship between exogenous and endogenous variables with the moderating role of firm size. The study found that firms moderately rate statistically significant between information sharing and supply chain performance

Ali et al. (2018) examined the moderating effect of firm size on the relationship between management participation and firm performance. The purpose was to determine the effect of management participation practices on the performance of manufacturing firms. Findings from the study revealed that the performance of manufacturing firms was significantly related to the nature and extent of management participation. The study also found that while firm size was a predictor in management participation and firm performance it is not a moderator in the relationship between management participation and firm performance and therefore there may be other moderators not dealt with in this study.

Kannadhassan et al. (2011). Examined firm size as a moderator of the relationship between business strategy and performance in the Indian Automotive Industry. The purpose was to investigate the effect of firm size in moderating the relationship between the strategy and performance of automotive companies in India. The result showed that firm size is a moderator in the relationship between business strategy and performance.

Research Methodology.

The study adopted the cross-sectional survey research design. The population of the study comprises the 52 paint distribution companies listed in the Rivers State Ministry of Commerce and Industry Yellow Pages 2013/2014. Two copies of the instrument were sent to each of the 52 listed paint distribution companies the respondents include the managing director and the logistics manager, thereby giving a total of 104 respondents. The Pearson Product Moment Correlation Coefficient was used to determine the relationship between supply chain collaboration and firm competitiveness, while the partial correlation was used to determine the moderating effect of firm size on the relationship between supply chain collaboration and firm competitiveness.

Analysis and Result

Table 1: Questionnaire distribution and retrieval

Numbers	Questionnaires	Percentage (%)
No. sent out	104	100
No Returned	89	86
No not returned	15	14
No of Useful	81	77

Source: Field Survey Data 2023

From Table 1, 104 copies of the instrument were distributed to the respondents and 89(86%) were returned. 15 (14%) copies were not returned. Of the 89 copies returned only 81(77%) were found to be useful. As the other 6 copies were not properly filled and so were discarded. The useful copies of the returned questionnaire are 77% which to deemed sufficient to conduct the study.

Sex Distribution of Respondents

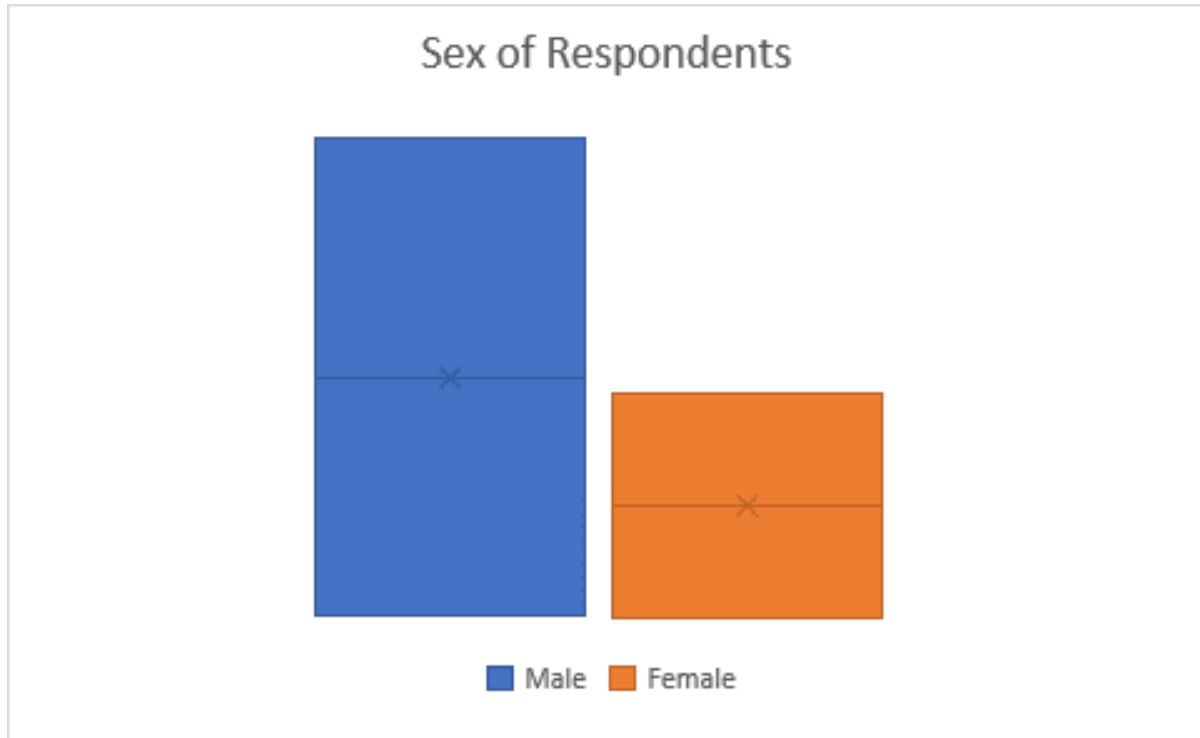
The respondents were required to state their sex as stipulated in the study instrument, the table below shows the distribution of the gender of the respondents

Table 2: Sex of Respondents

	Frequency	Per cent	Valid Percent	Cumulative Percent
Valid Male	55	67.9	67.9	67.9
Female	26	32.1	32.1	100.0
Total	81	100.0	100.0	

Source: SPSS Output 2023

Fig 1: Distribution of Respondents based on Sex



Source: SPSS Output 2023

Table 2 and Figure 1 show the sex distribution of the respondents the table revealed that there were 55(67.9%) female and 26(32.1%) male respondents this indicates that more females are engaged in the pain distribution sector of the economy in Rivers State.

Table 3 Model Summary

Model	R	R Square	Adjusted R	Std Error
1	.956	.932	.931	.749

a Predictors: (Constant, Supply Chain Collaboration)

Table 4 Anova

Model	Sun if square	df	Mean square	F	Sig
Regression	604.553	1	604.553	1077.230	.000
Residual	44.336	79	.561		
Total	648.889	80			

a Dependent Variable: Firm Size

b. Predictors: (Constant, Supply Chain Collaboration)

The overall regression model was significant $F(1, 79) = 1077.230, p < .001, R^2 = .93$

Table 5 Coefficient

Model	Unstandardized		Standardized		Sig
	B	Std error	Beta	T	

Constant	2.721	.296		9.199	.000
Supply chain collaboration	.848	.026	.965	32.821	.000

a Dependent Variable: Firm Size

From Table 5 we observe that supply chain collaboration is a significant predictor of firm size with a $p < .001$, this indicates that supply chain collaboration can account for a 96,5% unique variance of firm size.

Table 6 Model Summary

Model	R	R Square	Adjusted R	Std Error
1	.909	.826	.824	1.195

a Predictors: (Constant), Firm Competitiveness)

Table 7 Anova

Model	Sun if square	df	Mean square	F	Sig
Regression	536.124	1	536.124	375.592	.000
Residual	112.765	79	1.427		
Total	648.889	80			

a Dependent Variable: Firm Size

b. Predictors: (Constant), Firm Competitiveness

The overall regression model was significant $F(1, 79) = 375.592, p < .001, R^2 = .91$

Table 8 Coefficient

Model	Unstandardized	Coefficient	Standardized	T	Sig
	B	Std error	Beta		
Constant	-5.239	.901		-5.813	.000
Firm Competitiveness	1.330	.069	.909	19.380	.000

a Dependent Variable: Firm Size

From Table 8 we detect that firm competitiveness is a significant predictor of firm size with a $p < .001$, This indicates that supply chain collaboration can account for a 90% unique variance of firm size.

Hypothesis 1

H_{0i} : Firm size does not significantly moderate between supply chain collaboration and firm competitiveness in paint distribution companies.

Table 9 Model Summary of supply chain collaboration and firm competitiveness combined with firm size

Model	R	R Square	Adjusted R	Std Error
1	.976	.952	.951	.630

a Predictors: (Constant), Supply Chain Collaboration, Firm Competitiveness

Table 10 Anova

Model	Sun if square	df	Mean square	F	Sig
Regression	617.961	1	308.981	779.250	.000
Residual	30.928	78	.397		
Total	648.889	80			

a Dependent Variable: Firm Size

b. Predictors: (Constant), Supply Chain, Firm Competitiveness

Table 11 Regression showing the moderating effect of firm size on supply chain collaboration and firm competitiveness

Model	Unstandardized B	Coefficient Std error	Standardized coefficient Beta	T	Sig
Constant	-5.239	.901		-5.813	.000
Supply chain collaboration	.627	.044	.714	14.366	.000
Firm Competitiveness	.423	.073	.289	5.815	.000

a Dependent Variable: Firm Size

From Table 5 when we examined the effect of supply chain collaboration on firm size we saw that the absolute t value was 32.821, also In Table 8 when we examined the effect of firm competitiveness on firm size we saw it had a t absolute value of 19.380, but when we examined the moderation of firm size on the relationship between supply chain collaboration and firm competitiveness. We observed changes in the size of the absolute t values. The supply chain collaboration t value changed from 32.832 to 14.366, which suggests a significant effect by firm size while the t value for firm competitiveness dropped from 19.380 to 5.815 also suggesting a significant effect. We also observe changes in the beta values. The beta value for supply chain collaboration dropped from .956 to .714, while the beta value for firm competitiveness reduced from .909 to .289. indicating that firm size does have a significant moderating effect on the relationship between supply chain collaboration and firm competitiveness in paint distribution companies.

Discussion of findings

The focus of this study was to examine the moderating effect of firm size on the relationship between supply chain collaboration and firm competitiveness. The moderation effect of firm size was found to have a positive and significant moderating effect on the relationship between supply chain collaboration and firm competitiveness. We find support for our position from the study conducted by Roespinoedji et al. (2019) who reported that firm size moderate relationship between information sharing and supply chain performance in the tourism hotel industry of Indonesia. Also, another study lends credence to our position as Wayongah (2019) also reported that firm size moderates the relationship between financial leverage and financial performance.

The study therefore recommends that paint distribution companies be mindful of the firms they seek to collaborate with as firm size is a moderator in such relationship

Suggestion for further studies.

Further studies can be carried out in different industry settings to identify the effect of firm size as a moderator on the relationship between supply chain innovation and business performance.

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