The Effect of Supply Chain Management on Firm Performance:

The Case of Selected Commercial Banks in Ghana

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ABSTRACT

This study examined the effect of supply chain practices in firm performance. The population of this study was supply chain professionals in selected commercial banks in Ghana. A quantitative research technique was employed. The simple random sampling method was used to select 178 respondents from four (4) commercial banks. A structured questionnaire was used to collect data. Pearson's correlation test and linear regression analysis were used to analyse data. Findings indicated that supply chain practices significantly influence firm performance, with supply chain practices accounting for 67.7% of the total variation in firm performance. Moreover, supply chain practices significantly influence each dimension of firm performance. Thus, it accounts for 89% of the total variation on market performance, while it accounts for 30.1% and 9.2% of the total variation on operational performance and financial performance respectively. It is therefore concluded that firm performance would improve when supply chain practices in the banks are enhanced. Generally, supply chain practices positively influence firm performance among the banks. This means that improved practices of supply chain would enhance firm performance among the banks.

KEYWORDS: Supply chain (SC), Supply Chain Management (SCM), Supply Chain Lean Process (SCLP), Supply Chain Operational Strategy (SCOS), Firm Performance (FP), Operation Performance (OP) Operational Management Strategy (OMS)

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INTERNATIONAL REFEREED JOURNAL

10 ANNIVERSARY SPECIAL ISSUE

VOL. 10 & 11
NO. 2 & 1

JAN - JUN
2017

Introduction

More often than not, the performance of every organisation is based on the effectiveness of several business functions such as marketing, sales, operations, and human resource management. On the basis of this argument, Defee and Stank (2005) posited that the performance of a business does not depend on only one business function; neither is any function less relevant to business performance. Several writers (Abbasi, 2012; Mensah et al, 2014) have identified Supply Chain Management (SCM) as one of the primary business functions that drive or affect firm performance in all sectors of industries.

Supply chain mangement is defined as "a set of activities undertaken in an organisation to promote effective management of its supply chain" (Karimi and Rafiee, 2014, p. 3). It is also simply described as a set of corporate activities undertaken based on the firm's supply chain plan and objective (Kurien and Qureshi, 2011). However, the study of Olugu and Wong (2009) contains one of the most detailed definitions of supply chain. In their study, supply chain is defined as "a coordinated system that is made up of planning, sourcing, making and development of processes with its constituent parts to include material suppliers, production facilities, distribution centres and customers connected together through the feed-forward-flow of material as well as feedback flow of information". Considering these definitions, supply chain can simple be said to be a coordinated system of people and actions for sourcing raw materials from suppliers, which are transformed into finished goods and channelled to customers.

These finished products are the source of revenues or financial value to the firm. Hence, the primary role of supply chain management is to achieve desired firm performance. It is in view of this role that the process of delivering finished goods to customers is more associated with value chains (Solakivi, 2014). Besides the fact that supply chain management is aimed at firm performance in practice, some empirical evidences have shown that it positively affects firm performance. An example is the study of Solakivi (2014) in which a positive link was established between supply chain management and firm performance and in a Ghanaian context, Mensah et al. (2014) also provided similar evidence.

The subject's literature however shows little evidence on the effect of supply chain management in firm performance in the banking sector. Dewar, et. al (2011) also acknowledged this gap in the literature and attributed its prevalence to the misconception that supply chain management is less practiced in banks and financial institutions. Nonetheless, supply chain management has become a dominant business function among banks and other financial institutions in both developed and developing countries (Dewar et al., 2011). Fabbe-Costes & Jahre (2008) also observed that supply chain management is not much common to banks and financial institutions. The situation is not different with respect to Ghana. According to Mensah et al. (2014), the relevance of supply chain management has heightened to the extent that Ghanaian banks currently implement supply chain as a major business function. They added that banks in Ghana undergo supply chain management as much as manufacturing firms do. Personal experiences in the sector showed that supply chain management is currently considered a major business function in Ghanaian banks. With respect to empirical evidences on the link between supply chain management and firm performance, this implies that supply chain is one of the drivers of firm performance in the banking sector in Ghana. Yet there is no identifiable empirical evidence on the extent to which supply chain management affects the performance of banks in Ghana.

In view of this problem, this study attempts to assesses the effect of supply chain on the performance of selected banks in Ghana. This study seeks to provide empirical evidence on the relevance of supply chain management to firm performance in the banking sector. The study is conducted to remedy problems unique to the selected Ghanaian commercial banks in terms of their SC impact.

Objective of the Study

This paper assesses the effect of supply chain practices on firm performance. Invariably, the paper seeks to identify if indeed supply chain practices makes a significant influence on firm's performance among commercial banks.

Significance of the Study

It is hoped that this study will inform managements of the selected banks about whether supply chain is positively contributing to firm's performance as expected. The study, based on the nature of the relationship between supply chain management and firm performance, shall encourage managements to accord supply chain management the needed value, enabling them to deploy adequate resources to supply chain departments towards improved performance. In view of the dearth of related studies conducted in the banking sector in Ghana, it is hoped that this study will contribute to knowledge and stimulate academic debate on the subject. Hence, this study is likely to serve as a good reference work for other similar studies in the future.

Literature Review

Supply chain management primarily involves some activities, regardless of the industry and sector involved. Firstly, supply chain management starts with a supply chain plan that specifies the schema for sourcing materials and changing the materials into finished goods for customers (Defee & Stank, 2005). The supply chain plan is developed to address other stages of the supply chain management such as implementation, risk management and evaluation (Holcomb et al., 2011). In supply chain implementation, supply chain plans defined are executed. During the execution, supply chain risks are hedged and mitigated to ensure supply chain effectiveness (Masuku & Kirsten, 2004; Mensah et al., 2014). Yet the implementation involves evaluation and control processes in which the course of supply chain is monitored to harmonise with expectations and standards (Defee & Stank, 2005).

It is argued that supply chain makes a significant positive effect on firm performance only if it is associated with competent employees who form the basis of suitable strategy and implementation (Kushwaha, 2012; Solakivi, 2014). Hence, the nature of the link between supply chain and firm performance reflects the appropriateness of SC employees and strategy.

This study is underpinned by a theoretical framework developed by Solakivi (2014). In his framework, supply chain has three metrics, namely logistics outsourcing, supply chain collaboration, also referred to as supply chain integration, and information technology (IT) capability. In this framework, firm performance has two metrics. These are intra-firm supply chain performance and financial performance (FP). In terms of intra-firm supply chain performance, cost performance, service performance and asset utilisation are captured as sub constructs.

The framework of Solakivi (2014) is captured in the resulting framework of Koh et al. (2007). In this framework, supply chain has two metrics, namely outsourcing and multi-suppliers (OMS) and strategic collaboration and lean practices (SCLP). This is to say that Koh et al.'s (2007) metrics of supply chain is more elaborate and contains the metrics of Solakivi (2014). As a result, several studies such as that of Wagner et al., (2012) made use of these metrics in measuring supply chain. In view of this evidence, the measurement of supply chain in this study is based on the metrics of Koh et al. (2007).

The measurement of firm performance in several studies (Koh et al., 2007; Kushwaha, 2012; etc.) goes beyond the metrics captured by Solakivi (2014). Thus many studies (Kushwaha, 2012; Karimi & Rafiee, 2014) capture marketing performance (MP) and operational performance (OP) as metrics of firm performance, while the theoretical framework of Solakivi (2014) does not recognise these metrics. Considering the nature of operations in the banking sector in Ghana, and the competitive nature of this sector, it is argued that operational performance, market performance and financial performance are relevant to the firm performance construct. Moreover, operational and marketing performance constructs are driven by financial performance.

In this study therefore, firm performance is measured by adjusting the framework of Solakivi (2014). This adjustment is expressed in terms of the introduction of operational and marketing performance metrics and shifting the intra-firm supply chain performance metric to the supply chain construct. The intra-firm supply chain performance metric is shifted to the supply chain construct because it has more to do with supply chain activities. Hence, firm performance is measured in this study based on three metrics (i.e. operational performance – OP; market performance – MP; and financial performance – FP) while supply chain is measured based on two metrics (outsourcing and multi-suppliers – OMS; and strategic collaboration and lean practices – SCLP).

Supply Chain in Banking

The review so far has provided insight into what constitutes supply chain management and supply chain. At this level, emphasis is placed on what constitutes supply chain in banking. Over the years, supply chain is thought to be more extensively practiced in manufacturing firms. In fact, this thought and understanding has compelled most researchers (Masuku & Kirsten, 2004; Sukatia et al., 2012; Mensah et al., 2014; etc.) to conduct their supply chain studies on manufacturing companies.

Invariably, supply chain has been less associated with the banking sector among researchers (Dewar et al., 2013). However, supply chain practices are as relevant to banks as they are to manufacturing firms (Dewar et al., 2013), and the study agrees that this applies to Ghana too.

There is not much difference in what constitutes supply chain in banking and in manufacturing. Firstly, as done in manufacturing firms, banks use supply chain to source and acquire logistics (Defee & Stank, 2005). Logistics are viewed as the most primary requirement for a management to thrive and succeed regardless of the industry and sector involved (Solakivi, 2014). This is possibly because logistics facilitate actions taken by employees across all departments of the firm. So if supply chain is the basis of acquiring these logistics, it is logical to say that banks need supply chain as much as any manufacturing firm needs.

Others have conceptualised banking supply chain to match supply chain in manufacturing firms. Thus in banking, services are viewed as products that must be tailored and delivered to customers (Defee & Stank, 2005). Before these services are delivered, appropriate human resources must be acquired as the source of strategy and service. Moreover, banks need to acquire adequate capital from shareholders, or the discount window, which is a system of banking in which banks can borrow money from other banks with no or little interest (Defee & Stank (2005). It is argued that the mechanism and process by which these resources are acquired prior to serving customers follow a supply chain principle often called financial supply chain (Defee & Stank, 2005).

As seen earlier, supply chain is defined as a connected set of resources and processes that starts with the raw materials sourcing and expands through the delivery of finished goods to the end consumer. Fabbe-Costes & Jahre (2008) argue that this definition applies to banks because they equally seek to deliver finished goods (which are banking services) to the end consumer or customer. On the basis of this argument, supply chain in a bank is not

limited to logistics acquisition and management. As seen in the framework of Solakivi (2014), banking supply chain involves supply chain integration (i.e. on the basis of linking up with other banks in the discount window, shareholders, and customers) and communication with all stakeholders. If banks make substantial use of supply chain, then it is worth arguing that supply chain influences bank performance; this is to say that the nature of supply chain in a bank determines the nature of performance achieved.

Supply Chain and Firm Performance

The connection between supply chain and firm performance is widely upheld in the literature. Thus several researchers (e.g. Dewar et al., 2013; Mensah et al., 2014; etc.) have provided evidences in this respect. Besides these evidences, practitioners also believe that supply chain is relevant to firm performance (Defee & Stank, 2005). However, the link between supply chain and firm performance is empirically presented in the literature from various perspectives.

Some studies, Miguel & Brito (2011) and Kushwaha (2012 have limited this link to operational performance. These studies indicate that improved supply chain enhances firm performance in terms of operational performance. Kushwaha (2012) defines operational performance as the degree to which organisational expectations are met from the perspective of how strategy, policies, and resources are managed by people. Based on this definition, it is evident that operational performance is just an aspect of firm performance.

Some other researchers (e.g. Wagner et al., 2012; Rostami et al., 2013) also found that supply chain is connected to firm performance in terms of financial performance. Financial performance is a measure of the net profitability of a company relative to its total investment or cost of operation (Wagner et al., 2012). Of course, every organisation's primary goal is to achieve substantial profit, or financial performance. Yet this achievement is associated with other performance measures. Ul Hassan et al. (2013) identify them as marketing and operational performance. Marketing performance is defined in this context as the degree to which a firm gains competitive advantage and market opportunities relative to other firms in the industry (Ul Hassan et al., 2013). Thus it is believed that supply chain supports the competitive advantage of firms, and enhances their market opportunities. On the basis of this argument, Koh et al. (2007) contend that firm performance is an embodiment of operational, market and financial performance.

Though empirical evidences have been provided regarding the positive connection between supply chain and firm performance, these evidences have been based on one or two of these metrics of performance. Moreover, the evidences provided do not relate to the banking sector. Dewar et al. (2013) and Defee & Stank (2005) identify this situation as a serious gap in the literature as a result of the fact that banks are currently using supply chain actively and in good depth. This study is therefore conducted to contribute to addressing these gaps in the literature.

Methodology

In this study, the main goal is to assess two variables, namely supply chain practices (SCP) and firm performance and the relationship between them. Guided by the research problem and the conceptual framework developed, there is the need to make a major application of inferential statistical tools to identify the dimensions of these variables, and to examine the relationship between them. For instance, the Pearson's correlation and simple linear regression need to be used to assess the relationships conceptualised in Figure 1 below, as proposed by Rice (1995) and Sawilowsky (2005).

Conceptual Framework and Hypotheses

Based on evidences identified in the reviewed literature, the current study examines the link or relationship between supply chain and firm performance. As with some studies (Wagner et al., 2012; Kushwaha, 2012) in the literature, a positive relationship is expected between supply chain and the three metrics of firm performance, namely: (1) operational performance (OP); (2) market performance (MP); and (3) financial performance (FP).
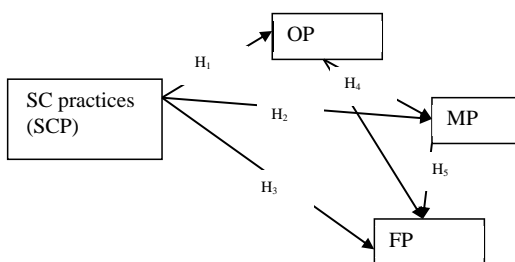
Source: Researcher's construct

Figure 1: The Link between Supply Chain and Firm Performance

This study attempt to assesses the extent to which each dimension of supply chain, as conceptualised and found in the study of Koh et al. (2007), links to each dimension of firm performance which is part and parcel of this study. In Figure 1 above, the link between supply chain and firm performance and its dimensions is based on the application of supply chain in the banks. Thus this relationship does not exist without an adequate level of application of supply chain among the banks. As seen in Figure 1 above, the following hypotheses are tested:

H_1: SC practices positively influences the operational performance of the selected banks.

Ho: SC practices adversely influences the operational performance of the selected banks.

H_2: SC practices positively influences the market performance of the selected banks.

Ho: SC practices adversely influences the market performance of the selected banks.

According to Creswell (2003), the use of these and similar statistical tools is done in quantitative studies. Thus studies in which these statistical tools are used should be given a quantitative implementation approach. In view of these assertions, this study was conducted as a quantitative research. With regard to this research technique, a structured questionnaire was used to measure SC practices and firm performance, and appropriate statistical tools that include Statistical Package for the Social Sciences (SPSS) Version 21, the Kolmogorov-Smirnov test, Pearson's correlation test and linear regression analysis were used to analyse data to explore the relationship between them.

The population of the study was employees in the SC departments at the head offices and Accra-based branches of four commercial banks in Accra. The commercial banks chosen are Ecobank

(EB), Ghana Commercial Bank (GCB), Stanbic Bank (SB) and Standard Chartered Bank (SCB). These banks were chosen because they formally and substantially engage in SC management. Also, access to needed data in these banks, based on the researcher's experience and exposure in the banking sector, was guaranteed. Furthermore, these banks were major players in the banking sector in Ghana.

The target population constitutes employees who had worked in their respective banks for a considerable period, with twelve (12) months used as the minimum period in this respect. Respondents were expected to have worked in the banks for at least 12 months to ensure that they provided responses based on adequate work experience in their respective banks. This sets the basis for maximising data integrity.

Information made available to the researcher by the human resource managers of the banks revealed that the population of employees who satisfied the above criteria was approximately 321. Considering the resources and time available to the researcher, a sample of respondents was needed out of this population. The sample and sampling procedure is discussed in the next section.

In this study, the simple random sampling procedure was used. The simple random sampling technique enables the researcher to reach a sample that reflects all or a greater attributes of the study population (Krejcie & Morgan, 1970). This method was used to adapt results of the study for generalisation over the entire population.

According to Krejcie & Morgan (1970), a sample for a quantitative study must be representative of the population. In view of this argument, they provided a standard table for determining sample size in research studies based on the number of participants in the study population. By applying their table, a sample of 178 respondents was found to correspond to the population size of 321. So a sample size of 178 respondents was used in this study.

This study involved two variables, Supply Chain (SC) and Firm performance (FP). The dependent variable was Firm performance, while SCP is the independent variable. As seen in the review of literature, each variable is a construct. A construct is a variable that cannot be measured directly but can be measured through a number of observable variables (Suhr, 1999). Hence, a structured questionnaire was used to measure these constructs. In this respect, both constructs were measured using a 5-point likert scale that ranged between 1 and 5, where 1 stands for strongly disagree and 5 stands for strongly agree.

Supply chain performance (SCP) was measured by using items that relate to Supply Chain planning, implementation, integration, monitoring and evaluation, risk management, and outcome, as done in the study of Koh et al. (2007). Firm performance was measured based on the three main proxies of bank performance identified in the research of Solakivi (2014). These proxies are operational performance, marketing performance and financial performance.

One goal of the researcher was to ensure that the instrument used in data collection was substantially reliable and valid. So some measures were taken that include a pilot work on 10% (approximately 18) of the selected 178 respondents to achieve adequate validity and reliability for the questionnaire. The primary strategy for ensuring validity was to design a questionnaire that addressed the research objectives exactly. Statements and questions in the questionnaire were also made simple, short and unambiguous to encourage respondents to respond to them. The entire questionnaire was made relatively short in length, encouraging respondents to fill them. The instrument was also given to some research experts to scrutinise and review.

The questionnaire was administered by e-mail and hand delivery, depending on which option a respondent preferred.

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VOL. 10 & 11
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The Statistical Package for the Social Sciences (SPSS) Version 21 was used for data analysis. This statistical software was used as a result of its robustness for quantitative and multivariate data analysis.

The Kolmogorov-Smirnov test was used to test for data normality. The hypotheses of this study were tested using Pearson's correlation, and simple and multiple linear regression analysis. These statistical tools were used for the following reasons: (1) data used was continuous in nature; (2) data used was normally distributed or was drawn from a normally distributed population; and (3) the goal was to test for relationships.

Findings

In this section, data is analysed to examine the effect of Supply Chain performance (SCP) on firm performance. Before this relationship is examined however, there is the need to assess the SCP variable, which has two dimensions, Supply chain lean process (SCLP) and Outsourcing and multi-suppliers (OMS). Table 1below shows the correlation matrix of SCP, SCLP and OMS.

Table 1 above shows the correlation matrix of SCP and its dimensions. It can be seen that SCP is strongly and positively correlated to each of its dimensions at 5% significance level. SCP makes the highest positive correlation with OMS ($r = 0.895$, $p < .05$), though SCLP also makes a strong positive effect on SCP ($r = 0.814$, $p < .05$). These correlations imply that SCP is highly influenced by OMS and SCLP, or OMS and SCLP embody SCP in the banks. In the following linear regression analysis, the relationship between SCP and its dimensions is better examined.

Table 1: Correlation Matrix

	SCP	SCLP	OMS
SCP	1	.814**	.895**
SCLP	.814**	1	.835**
OMS	.895**	.835**	1

** Correlation significant at 5% significance level

Table 2: Model Summary – Prediction of SCP

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.895[a]	.801	.800	.48409	
2	.903[b]	.816	.814	.46714	2.055
a. Predictors: (Constant), OMS					
b. Predictors: (Constant), OMS, SCLP					
c. Dependent Variable: SCP					

Table 2 above shows the model summary of the prediction of SCP from SCLP and OMS. In the table, two models are formed in the stepwise linear regression analysis. In the first model, OMS accounts for a variation of 80.1% of the total variation on SCP. In the second model, OMS and SCLP account for 81.6% of the total variation on SCP. This means that SCLP alone accounts for 1.5% of the total variation on SCP. Hence OMS constitutes a greater part of SCP in the selected banks relative to SCLP.

Table 3: ANOVA[a] – Prediction of SCP

Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	155.800	1	155.800	664.822	.000[b]
	Residual	38.667	165	.234		
	Total	194.467	166			
2	Regression	158.679	2	79.340	363.576	.000[c]
	Residual	35.788	164	.218		
	Total	194.467	166			

a. Dependent Variable: SCP   b. Predictors: (Constant), OMS   c. Predictors: (Constant), OMS, SCLP

Table 3 above is an associated ANOVA test. It is used to verify if the stepwise linear regression analysis is a better way of expressing the relationship between SCP and its dimensions. This test is done at 5% significance level. From the table, the test is significant for each of the two models formed ($p < .05$). This suggests that the stepwise linear regression analysis is a better way of expressing the relationship between SCP and its dimensions. Table 4 therefore shows the coefficients of this stepwise linear regression analysis.

Table 4: Coefficients[a] – Prediction of SCP

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	.679	.101		6.721	.000	.479	.878
	OMS	.982	.038	.895	25.784	.000	.907	1.057
2	(Constant)	.491	.110		4.457	.000	.274	.709
	OMS	.780	.067	.710	11.671	.000	.648	.912
	SCLP	.215	.059	.221	3.632	.000	.098	.332

a. Dependent Variable: SCP

Table 4 above shows the coefficients of the prediction of SCP from its dimensions, SCLP and OMS. In the first model, OMS significantly predicts SCP at 5% significant level (t = 25.78, p < .05; β = 0.982). In the second model, OMS (t = 11.67, p <.05, β = 0.78) and SCLP (t = 3.63, p <.05, β = 0.215) both significantly predict SCP at 5% significance level. It can be seen in the second model that OMS accounts for a higher unstandardized coefficient, which confirms that OMS accounts for a higher effect on SCP in the selected banks. So there is ample evidence to say that OMS contributes a greater part of the influence on SCP relative to SCLP and therefore positively support the

alternative hypothesis one H$_1$ which states that: ***Supply Chain practices positively influences the operational performance of the selected banks. Hence the null H$_0$ hypothesis which states that supply chain practices have negative influences on the operational performance of the selected banks is rejected.***

Before examining the effect of SCP on firm performance, there is the need to evaluate the relationship between firm performance and its three dimensions, OP, MP and FP. Table 5 shows a correlation matrix of firm performance and its dimensions.

Table 5: Correlation Matrix 2

	Firm performance	OP	MP	FP
Firm performance	1	.713**	.864**	.483**
OP	.713**	1	.634**	.543**
MP	.864**	.634**	1	.415**
FP	.483**	.543**	.415**	1

** Correlation significant at 5% significance level

Table 5 above shows the correlation matrix of firm performance and its dimensions. It can be seen that firm performance is positively correlated to each of its dimensions at 5% significance level. Furthermore, firm performance makes the highest positive correlation with MP (r = 0.864, p < .05), followed by OP (r = 0.713, p < .05). The relationship between firm performance and FP is however weak (r = 0.483, p < .05), though positive. Consequently, firm performance is highly influenced by MP and OP in the selected banks.

Table 6: Model Summaryc – Prediction of Firm Performance

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.864ᵃ	.746	.744	.44515	
2	.890ᵇ	.792	.789	.40422	1.955

Table 6 above shows the model summary of the prediction of firm performance from Operational performance (OP), Market performance (MP) and Firm's performance (FP). In the table, two models are formed. In the first model, MP accounts for a variation of 74.6% of the total variation on firm performance. In the second model, OP and MP account for 79.2% of the total variation on firm performance. This means that OP alone accounts for 4.6% of the total variation on firm performance.

It could therefore be said that MP constitutes a greater part of firm performance in the selected banks relative to OP and FP. FP is not in any of the models because it has been removed in the stepwise linear regression analysis. This suggests that FP weakly drives firm performance in the selected banks.

Table 7: ANOVA – Prediction of Firm Performance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	96.022	1	96.022	484.570	.000[b]
	Residual	32.696	165	.198		
	Total	128.719	166			
2	Regression	101.923	2	50.961	311.899	.000[c]
	Residual	26.796	164	.163		
	Total	128.719	166			

a. Dependent Variable: Firm performance
b. Predictors: (Constant), MP
c. Predictors: (Constant), MP, OP

Table 7 above is an ANOVA test associated with the prediction of firm performance from OP, MP and FP. This test is used to verify if the stepwise linear regression analysis is a better way of expressing the relationship between firm performance and its dimensions. This test is done at 5% significance level. From the table, the test is significant for each of the two models formed ($p < .05$). This suggests that the stepwise linear regression analysis is a better way of expressing the relationship between firm performance and its dimensions. In view of this result, the regression coefficients are interpreted as follows.

Table 8: Coefficients – Prediction of Firm Performance

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	-1.562	.182		-8.595	.000	-1.920	-1.203
	MP	.959	.044	.864	22.013	.000	.873	1.045
2	(Constant)	-1.393	.167		-8.326	.000	-1.724	-1.063
	MP	.764	.051	.688	14.947	.000	.663	.865
	OP	.247	.041	.277	6.009	.000	.166	.328

a. Dependent Variable: Firm performance

Table 8 above shows the coefficients of the prediction of firm performance from its dimensions, OP, MP and FP. In the first model, MP significantly predicts firm performance at 5% significant level (t = 22.01, p < .05; β = 0.959). In the second model, MP (t = 14.95, p <.05, β = 0.764) and OP (t = 6.01, p <.05, β = 0.247) both significantly predict SCP at 5% significance level. FP is not reflected in any of the models since it has been removed from both models on the basis of its weak effect on financial performance. Moreover, MP makes the highest effect on financial performance relative to OP. Generally, firm performance amongst the banks is largely driven by MP and OP. It therefore positively supports the alternative hypothesis two H_2 which states that ***Supply chain practices positively influences the market performance of the selected banks. In effect the null H_0 which states that supply chain practices have negative influences on market performance of the selected banks is rejected.***

Table 9: Excluded Variables – Prediction of Firm Performance

Model	Beta In	t	p-value	Partial Correlation	Collinearity Statistics	
					Tolerance	
1	OP	.277[b]	6.009	.000	.425	.599
	FP	.151[b]	3.627	.000	.273	.828
2	FP	.068[c]	1.607	.110	.125	.697

a. Dependent Variable: Firm performance   b. Predictors in the Model: (Constant), MP
c. Predictors in the Model: (Constant), MP, OP

Table 9 above depicts the variable extracted in the prediction of firm performance from its dimensions. In the context of this table, a variable removed is the one with a p-value greater than the level of significance 5%. It can be seen that FP has been removed from the generated models. This confirms that FP does not significantly influence firm performance in the face of MP and OP. By implication, FP could significantly influence firm performance if not examined as a co-predictor of MP and OP. Invariably, FP could significantly influence firm performance when not considered in the company of PM and OP.

Having examined the dimensions of SCP and firm performance, Tables 10, 11 and 12 come with an analysis that assesses the effect of SCP on firm performance.

Table 10: Correlation between SCP and Firm Performance

		Firm performance	SCLP
Firm performance	Pearson Correlation	1	.856**
	Sig. (2-tailed)		.000
	N	167	167
SCLP	Pearson Correlation	.856**	1
	Sig. (2-tailed)	.000	
	N	167	167

Table 11: Model Summary – Prediction of Firm Performance from SCP

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.823[a]	.677	.675	.50215

a. Predictors: (Constant), SCP

Table 12: Coefficients – Prediction of Firm Performance from SCP

Model		Unstandardized Coefficients	Standardized Coefficients		t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	.293	.118		2.484	.014	.060	.526
	SCP	.669	.036	.823	18.587	.000	.598	.740

a. Dependent Variable: Firm performance

Table 10 above shows the correlation between SCP and firm performance. It can be seen that firm performance is strongly positively correlated to SCP at 5% significance level (r = 0.856, p < .05. This means that firm performance is improved when supply chain practices are improved in the banks. In Table 11 above, SCP accounts for 67.7% of the total variation on firm performance, with the regression error term accounting for 32.3% of the total variation. In Table 12 above,

SCP significantly predicts firm performance at 5% significance level (t = 18.59, p < .05, β = 0.669). Hence in terms of both the correlation coefficient and regression estimates, SCP strongly influences firm performance.

Since SCP has two dimensions, there is the need to examine the effect of SCP in terms of its dimensions on firm performance. Tables 13, 14, 15 and 16 come with this analysis.

Table 13: Model Summary – Prediction of Firm Performance from OMS and SCLP

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.858[a]	.736	.733	.45509	
2	.856[b]	.732	.731	.45691	2.061

Table 13 above shows the model summary of the prediction of firm performance from SCLP and OMS. In the first model, OMS and SCLP account for a variation of 73.6% of the total variation on firm performance. In the second model, SCLP alone accounts for 73.2% of the total variation on firm performance. This means that OMS alone accounts

for 0.4% of the total variation on firm performance. Therefore, SCLP makes the largest effect on firm performance in the selected banks relative to OMS. Table 14 below is the coefficients table of the prediction of firm performance from OMS and SCLP.

Table 14: Coefficients – Prediction of Firm Performance from OMS and SCLP

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	.205	.108		1.910	.058	-.007	.418
	SCLP	.677	.032	.856	21.250	.000	.614	.740

a. Dependent Variable: Firm performance

Table 14 shows the coefficients of the prediction of firm performance from SCLP and OMS. From the table, OMS is not shown because it is removed in the prediction of firm performance. SCLP (t = 21.25, p <.05, β = 0.677) significantly predicts firm performance at 5% significance level. Moreover, a change in SCLP changes in the conditional mean of firm performance by 0.677 within a confidence interval of 0.61 to 0.74. The relationship between SCLP and firm performance is expressed as:

Firm performance = 0.677*SCLP + 0.205

It is therefore evident that SCLP makes the highest level of influence on firm performance relative to OMS – a further proof of null hypothesis H_1. However, as seen in Table 14, OMS makes a strong positive effect on firm performance (r = 0.748, p < .05). This implies that the removal of OMS in the model shown in Table 4.18 does not mean it does not influence firm performance significantly. Rather the model indicates that OMS fails to make a significant effect on firm performance relative to the effect of SCLP on firm performance.

Table 16: Correlation between Firm Performance and SCLP and OMS

		Firm performance	SCLP	OMS
Firm performance	Pearson Correlation	1	.856**	.748**
	Sig. (2-tailed)		.000	.000
	N	167	167	167
SCLP	Pearson Correlation	.856**	1	.835**
	Sig. (2-tailed)	.000		.000
	N	167	167	167
OMS	Pearson Correlation	.748**	.835**	1
	Sig. (2-tailed)	.000	.000	
	N	167	167	167

**. Correlation is significant at the 0.05 level (2-tailed).

Table 17: Excluded Variables – Prediction of Firm Performance from OMS and SCLP

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
1	OMS	.111[b]	1.524	.129	.118	.303

Table 17 above identifies the variable extracted in the prediction of firm performance from SCLP and OMS. It can be seen that OMS has been removed from the model shown in Table 17. In this table, OMS accounts for a coefficient of β = 0.11. The removal of OMS confirms that it does not significantly influence firm performance in the face of the effect of SCLP on firm performance.

Table 18: Other Regression Estimates

Outcome variable	Predictor (s)	R Square	ANOVA		Coefficient			
			F	p-value	Constant	β	t	p
FP	OP	29.4%	68.83	0.000	1.32	0.735	8.296	0.000
FP	MP	17.2%	34.3	0.000	0.332	0.698	5.857	0.000
MP	OP	40.1%	110.69	0.000	2.8	0.51	10.52	0.000

Source: *SPSS Version 21 Computation*

In Table 18 above, the relationship between FP and OP, FP and MP, and MP and OP are examined. In terms of the FP*OP relationship, OP significantly predicts FP at 5% significance level (t = 8.296, p < .05, β = 0.735), and accounts for 29.4% of the total variation on FP. Also, MP significantly predicts FP at 5% significance level (t = 5.857, p < .05, β = 0.698), and accounts for 17.2% of the total variation on FP. Also, OP significantly predicts MP at 5% significance level (t = 10.52, p < .05, β = 0.510), and accounts for 40.1% of the total variation on MP. Hence, operational and market performance positively influence financial performance. Furthermore, operational performance significantly influences market performance.
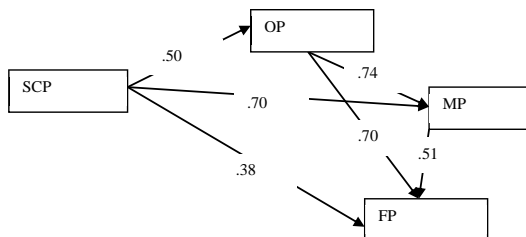

Figure 3: A Framework of Findings

Table 19: Effect of SCP on OP, MP and FP

Outcome variable	Predictor (s)	R Square	ANOVA		Coefficient			
			F	p-value	Constant	β	t	p
OP	SCP	30.1%	71.21	0.000	0.996	0.500	8.439	0.000
MP	SCP	89.00%	1335.46	0.000	1.955	0.695	36.57	0.000
FP	SCP	9.200%	16.81	0.000	2.03	0.375	4.100	0.000

Source: SPSS Version 21 Computation

In Table 19, the effect of SCP on OP, MP and FP is assessed. In terms of the OP*SCP relationship, SCP significantly predicts OP at 5% significance level (t = 8.439, p < .05, β = 0.500), and accounts for 30.1% of the total variation on OP. Also, SCP significantly predicts MP at 5% significance level (t = 36.57, p < .05, β = 0.695), and accounts for 89% of the total variation on MP. In addition, SCP significantly predicts FP at 5% significance level (t = 4.1, p < .05, β = 0.375), and accounts for 9.2% of the total variation on FP. Based on these effects, SCP makes the highest effect on MP. It makes the least positive effect on FP. Figure 3 shows a framework of these findings.

Figure 3 is a framework of key findings. Supply chain practices makes the highest positive effect on MP (β = 0.70), while it makes the weakest effect on FP (β = 0.38). SCP also makes a positive effect on operational performance (β = 0.50). Therefore, supply chain management activities influence firm performance through operational performance and market performance. In the next section, findings are discussed with respect to reviewed literature and data analysis.

Discussion

Findings generally suggest that supply chain management in the selected banks is expressed in terms of operational management strategy (OMS) and supply chain lean process (SCLP). This finding is supported by a conceptual model empirically confirmed by Agarwal & Shankar (2005) and Koh et al. (2007). Moreover, the literature generally recognises OMS and SCLP as the two dimensions of supply chain management in an organisation (Janvier-James, 2012). Variables constituting OMS and SCLP in the study's findings are consistent with the study of Dewar et al. (2013), which was also based on the South African banking sector. However, with respect to several studies conducted in the manufacturing sector (e.g. Awad

& Nassar, 2010; Abbasi, 2012; Mensah et al., 2014), not all practices of supply chain management are confirmed in this study. For instance, supply chain in the manufacturing sector involves physical distribution of finished goods to customers through depots and retailers (Janvier-James, 2012), but this study shows no evidence relating to physical distribution of finished products. Therefore, supply chain in the selected banks is not the same as what is practiced in the manufacturing sectors.

Findings show that supply chain practice in the banks makes a strong positive effect on firm performance. This suggests that supply chain practice significantly impact firm performance.

Invariably, improved supply chain management in the selected banks would result in enhanced firm performance. This study is supported by the research of Dewar et al. (2013) conducted in the banking sector. However, based on the paucity of studies on this subject in the banking sector, the literature weakly shows support for this finding with respect to the banking sector. Nonetheless, several studies (e.g. Defee & Stank, 2002; Holcomb et al., 2011; Karimi et al., 2014) support this evidence in the manufacturing sector.

Impressively, supply chain practices in the banks positively influence each dimension of firm performance. This finding suggests that the effect of supply chain practices on firm performance is based on the effect made by supply chain practices on operational performance, market performance and financial performance. The study of Koh et al. (2014) provides support for this finding but in the context of SMEs. Also, Solakivi (2014) realised this finding in the context of multiple sectors including the banking sector. The study of Kushwaha (2012)

also supports this finding, but only in terms of operational performance. Generally, therefore, the link between SCP and the dimensions of firm performance is consistent with the literature.

Moreover, SCP makes the highest effect on firm performance through market performance. This finding is based on the fact that market performance is best predicted by SCP among the three dimensions of firm performance. Similarly, SCP makes the least effect on financial performance, a reason for which financial performance makes the least effect on firm performance. The evidence that financial performance makes the least effect on firm performance relative to OP and MP is empirically supported by Wagner et al. (2012). Moreover, Abbasi (2012) argue that MP would make the highest effect on SCP because supply chain management incorporates marketing, while operational performance strongly influences market performance. It is therefore evident that the resulting framework represented by Figure 3 is substantially supported by the literature.

Conclusion

Supply Chain Practices (SCP) has two dimensions in the context of the banks. These are SCLP and OMS. In terms of both correlation coefficients and linear regression analysis, both dimensions positively influence supply chain practices in the banks. However, SCLP accounts for much of the influence on SCP. This means that a higher proportion of what constitutes SCP; thus 80.1% of the variation, is contributed by SCLP. OMS contributes 1.5% of what constitutes SCP in the banks. It is therefore evident that SCLP makes the highest effect on SCP relative to OMS.

Moreover, firm performance in the banks is a measure of three constructs, namely OP, MP and FP. In the regression analysis, MP accounts for a variation of 74.6% of the total variation on firm performance. OP alone accounts for 4.6% of the total variation on firm performance. FP makes the

least and insignificant effect on firm performance in terms of the linear regression analysis. Therefore, MP makes the highest effect on financial performance relative to OP and FP.

SCLP alone accounts for 73.2% of the total variation on firm performance. This means that OMS alone accounts for 0.4% of the total variation on firm performance. Hence, SCLP makes the largest effect on firm performance, with OMS making a relatively small effect on firm performance.

Operational performance positively influences financial performance. In other words, financial performance is enhanced with enhanced operational performance in the banks. Hence a change in financial performance in the banks is dependent on operational performance. Also, market performance positively influences

financial performance. This implies that financial performance is also enhanced as market performance improves. Yet, the effect made by market performance on financial performance largely comes from operational performance. Therefore, operational performance is the basis of financial performance. On the other hand, SCP makes the least effect on financial performance. So, supply chain practices in the banks influence market, operational and financial performance, but it makes the largest effect on market performance. Therefore, the two alternative hypotheses of this study are supported by the data

Recommendation

Generally, supply chain practices positively influence firm performance among the banks. This means that improved practices of supply chain would enhance firm performance among the banks. Though SCP positively influences operational performance, it makes its highest effect on market performance.

Limitations of the study

This study's findings and conclusions cannot be generalised over the banking sector in Ghana. This is because out of 29 commercial banks, this study was based on only four (4) commercial banks. Evidently the number of banks on which this study was based was not representative of the banking sector in Ghana. Consequently, there is a high risk of generalising this study's findings.

Suggestions for Future Research

It is suggested that future researchers provide empirical evidences that represent the entire banking sector in terms of the effect of SC practices on firm performance. The need for researchers to conduct this study to reflect the banking sector in Ghana is critical because there is limited academic debate on the subject in the context of the banking sector. Future researchers must therefore examine the relationship between SCP and firm performance based on a representative sample of commercial banks in the banking sector in Ghana.

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