Effect of Logistics, Supply Input, Production and Finance on Small and Medium Enterprises (SMEs) Performance in Kaduna State

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Abstract: This paper examined the effect of logistics, supply input, production and finance on small and medium enterprises performance in Kaduna State. Questionnaire was distributed using stratified sampling. 174 copies of the questionnaire were used for the analysis with a population of 201 registered owners/manager of SMEs operating within the state. PLS-SEM path modelling were used to process data. Findings reveal that logistics, production as well as finance has significant effect on SMEs performance, while supply input has negative and insignificant effect on performance of SMEs. The study concludes that logistics, production, supply input and finance is important to improve SMEs performance. The study therefore Recommends that the Government pay more attention to the development of the value chain to reorient the SME sector and implement a new strategy based on the principle that SMEs are a business that can provide a reasonable basis for greater wealth, growth employment and improves the capacity of the country to earn foreign currency through small and medium enterprises.

Keywords: Logistics, Supply input, Production, Finance, SMEs, Performance.

Introduction
Small and Medium Enterprises (SMEs) are widely acknowledged as the key engine of economic development (SMEDAN & NBS, 2013). A central issue dominating policy debates around the world and Africa has been to induce economic growth through the growth of SMEs. SMEs contribution to the Nigerian economy is essential for the accomplishment of the broader development objectives such as poverty
relief, spreading of employment opportunities and increasing indigenous ownership of resources in the economy (Chidoko, Makuyana, Matungamire & Bemani 2011). Small and Medium Scale Enterprises (SMEs) contribute about half of Nigerian GDP and accounts for over 25 percent of employment in the country (SMEDAN & NBS, 2013). There are 17 million SMEs in Nigeria, employing 32.41 million persons and contributes about 48% to the nation’s Gross Domestic Product in nominal terms (SMEDAN & NBS, 2013). This sector is responsible for most of the advances in new products and process and provides most of the employment opportunities, as a central indicator of the overall operation of an economic system (Enterprise Baseline Survey 2012).

Performance as ability of an organization to achieve set objectives such as high profit, quality product; large market share, good financial outcomes and survival at predetermined time using relevant strategy for action. Thus, performance can also be employed to consider how an organization is performing in terms of market share, volume of products, customer’s demand, loyalty and investment. (Obiwuru, Okwu, Akpa & Nwankwere 2011). Consequently, Wang (2010) is of the opinion that performance is seen as product accomplishments, results and achievements in an organization.

Logistics is the physical distribution that attempts to systematically manage a set of related activities that include transportation, distribution, storage, finished products, inventory levels, packaging and material handling to guarantee the efficiency of the delivery of finished products to the clients (Kwateng, Manso and Mensah, 2014). Post-harvest losses due to inadequate transport and storage account for 30% of production in developing countries, which undermines improvements in productivity and reduces returns for producers to invest in new mechanized techniques that will increase productivity (Fernandez-Stark, 2013). The input supply depends on the specific agricultural product, in general the important inputs for production are typically land, seeds, fertilizers, chemical products for agriculture (herbicides, fungicides and pesticides), agricultural equipment and equipment for irrigation and water. Other pre-production services include extension services, market information, credit and certification for production in other high-value markets (Bamber, Abdulsamad & Gereffi, 2014).

Underdeveloped input markets can limit the use of fertilizers, drought and disease-resistant seeds and greater mechanization, which contributes to low productivity, which is a major problem in many countries in Africa (Alliance for a Green Revolution in Africa). Poor access to credit and information along with poor infrastructure can weaken this demand (Banful, 2011).

The production phases involve a combination of physical transformation and the participation of various manufacturers and services. Contrary to the traditional and exclusive approach to production, the concept emphasizes the importance of adding value in each stage, so it treats production as one of the various added value components of the chain. It is said that production is not complete until the goods produced reach the final consumer.

Finance is an important factor to consider in the development of the value
chain, all phases require financial contributions to function effectively. Access to credit lines (Labaste and Webber, 2010) should be allowed to improve the quality inputs, processes and production of agribusiness resources. Value chain approaches, such as quality production, market access and other forces of supply and demand, depend on availability and access to finance. Mitchell and Shepherd (2006) have argued that to support and increase productivity, credit services should be available to farmers in order to invest in quality inputs. Kouwenhoven, Lossonczy and Nalla (2005) said that credit lines increase the production and supply of agricultural products in an economy.

The backbone of any nation’s industrial development is entrepreneurial activities this can be certify with the economic breakthroughs of the Asian Countries (Wang, Walker & Redmond 2011). Agreeing to a report by Small and Medium Enterprise Development Agency of Nigeria SMEDAN (2013), 96% of SMEs in Nigeria still operate as micro businesses and only around five to ten percent of start-up companies survive and develop to maturity SMEDAN (2008). Thus, Omolomo, Odunayo and Tobora (2014) indicated that irrespective of country, more than 50% of SMEs collapse within their first five years and about 25% go bankrupt or fold up in Nigeria. The crucial role of value chain development to the growth and survival of SMEs in Nigeria is pivotal. It is therefore important to study the extent to which value chain development enhances Small and Medium Enterprises performance. There are various studies emerging on effect of value chain development on performance empirically, but so far, result have yielded mixed findings that are inconclusive and contradictory. Therefore, this study tend to look at effect of value chain development (input supply, finance, production and logistics) on performance of Small and Medium Enterprises in Kaduna State.

Research Hypotheses

H₀₁: Input supply has no significant effect on performance of SMEs in Kaduna State.

H₀₂: Logistics has no significant effect on performance of SMEs in Kaduna State.

H₀₃: Finance has no significant effect on performance of SMEs in Kaduna State.

H₀₄: Production has no significant effect on performance of SMEs in Kaduna State.

2. Literature Review

2.1 Theoretical Framework

This study is underpinned by the porter theory of competitive advantage. The theory supports the use of a value chain strategy and prudent practices to improve performance in an organization (Porter, 1990). Porter's competitive advantage revolves around design, finance and the production market, the supply of products and the support of the company's products. Porter's competitive advantage theory distinguishes between; primary activities (Grant 1991) and support activities (Porter, 1985). The main activities include; logistics of entry, operations, exit logistics, marketing, sales supplies and service in the main organization that creates value directly. While the support activities are production, finance and solid infrastructures that support the creation of companies in the main organization (Porter, 1985). The competitive advantage leads to explain the role played by logistics, supply of inputs,
finance and production, thus promoting the ability of companies to compete in a particular sector. Porter's competitive advantage theory, applied in an organization, is limited to recommending the use of appropriate commercial strategies and prudent practices to improve performance (Porter, 1990). The competitive advantage theory will glue the four independent dimensions (supply entry, production, finance and logistics) with the actions in this proposed conceptual framework.

2.2 Concept of Performance
Iskandar, Ahmad and Martua (2014) describe performance as elements that can be evaluated through the level of their productivity. This includes the quality, quantity, knowledge or creativity of the individual towards complete works that are in accordance with the responsibility during a given period. Armstrong (2009) also defines performance as an evaluation of an organization through product, product quality, productivity, cost management, safety and health, the relationship and the development of employees. Understanding determinant factors of SMEs performance is considered an important area of focus in Enterprises (Rosli, 2011). However, Anastasia (2008) viewed organizational performance measurement construct as effectiveness, efficiency, satisfaction and innovation of product. Also, Apolot (2012), organizational performance in sales growth, customer’s satisfaction and profitability were measured in their business. Therefore, this study adopts the definition as opined by Apolot (2012).

2.3 Logistics
The systematic attempt and physical distribution that manage a series of related activities, such as transportation, distribution, storage, finished products, inventory levels, storage, packaging and material handling to guarantee the efficiency of the delivery of finished products to customers, it is linked to logistics (Kwateng, Manso and Mensah, 2014). However, Fernández-Stark (2013) losses of small and medium enterprises due to inadequate planning, transport and storage account for up to 30% of small-scale activities in developing countries, undermining improvements of performance and investment entrepreneurs in new mechanized techniques that will lead to performance.

2.4 Supply Input
The supply of inputs depends on specific agricultural products, in general, evaluates land, seeds, fertilizers, agrochemicals such as herbicides, fungicides and pesticides, agricultural equipment, water and irrigation equipment are important factors for production. Therefore, pre-production services include extension services, market information, credit and certification for production in other high-value markets (Bamber, Abdulsamad and Gereffi, 2014). However, the market for inadequate inputs can curb the use of fertilizers, drought and disease-resistant seeds and greater mechanization, which contributes to low productivity, which is a major problem in many countries in Africa (Alliance for a Revolution green in Africa).

2.5 Production
The production phase basically consists of a combination of physical transformation and participation of
various producers and services. The production phase, in contrast to the traditional exclusive attention to production, emphasizes this concept on the importance of adding value in each phase, so it treats production as a phase between the different added value components of the chain. However, it is said that production is not complete until the goods produced reach the final consumer.

2.6 Finance
Finance is considered a key factor in the development of the value chain, since all the phases require financial contributions to function effectively in order to improve the quality contribution, the processing and the production of resources. Value chain approaches, such as quality production, market access and other forces of supply and demand, depend on availability and access to finance. Mitchell and Shepherd (2006) say that to support and increase productivity, credit services should be available for small and medium enterprises to invest in quality inputs. Kouwenhoven, Lossonczy and Nalla (2005) said that lines of credit increase growth and can lead to the survival of small and medium enterprises in an economy.

2.7 Empirical Review
Akenbor and Okoye, (2011) examined the impact of the value chain analysis on the competitive advantage of manufacturing companies in Nigeria. The study data was collected through secondary sources, such as the annual reports of companies of several years and the Statistical Bulletin CBN 2009. The results revealed that the analysis of the value chain has a positive but insignificant impact on the competitive advantage of a manufacturing company in Nigeria. The study made use of secondary and focused attention on those manufacturing companies quoted in the Nigerian Stock Exchange which is commendable. Muhammed, Ali, Qayyum and Shazad, (2012) examined the impact of supply chain management on the overall performance of an organization. About 30 copies of the questionnaire were distributed among the managers of the two organizations who should have a better understanding of supply chain operations and their impact on the overall performance of the organization; all responded positively. It has been discovered that the dimensions associated with SCM are important for the overall performance of the organization. The sample size of the study is small and grossly inadequate to have a fair findings. Titianne, (2013) assessed The drivers of the business value chain, in particular, access to incentives (finance), training and access to production resources have influenced the performance of smallholders within the milk supply chain. A semi-structured questionnaire was the main tool used to collect primary data. The study showed that the training improved the performance of the small owners more; this was followed by access to incentives and, therefore, production resources. The study only look at smallholder’s dairy farmers, thus findings cannot be generalized for small business. Mutuerandu and Iravo, (2014) evaluated the level of implementation of SCM practices at Haco Industries Ltd. The four key dimensions of SCM practices (strategic supplier associations, customer relations, information exchange and training practices) were used as independent variables, while what market / business and operational performance were used to measure organizational performance.
The results of the study revealed that there is a high level of practical implementation of SCM practices at Haco Industries Limited. Only findings were reported in the study, data analysis was not reported. Karimi and Rafiee, (2014) investigate the adoption of supply chain management practices in the performance of the organization through competitive priorities. This research is based on the objectives and methods of the application. Descriptive scaling of any correlation based on the modeling of structural equations (SEM). The results of the research indicate that the practices that influence the influence of supply chain management on the Iranian pump company are applied, according to the priorities of the competition. Instrument were tested using rigorous statistical tests.

**Model for the Study**

![Model Diagram]

The model describes a relationship between the variables that influence the performance of SMEs in the state of Kaduna. The framework has been tested to demonstrate whether the performance of SMEs is a function of the independent variable.

### 3.0 Methodology

This study adopts cross-sectional survey design. It was adopted because it is an applicable designed to obtain relevant information about the current state of things (William, Brown & Onsman, 2010). The population of the study consists of 201 SMEs that operate their businesses within Kaduna State and are registered with SMEDAN as at November, 2016. The respondents of this study are owners/managers of the SMEs in Kaduna. They are selected because of their knowledge and familiarity with the running of their own establishment. The list of registered SMEs was obtained from SMEDAN in Kaduna State branch office.

The size of the study sample was determined using the formula suggested by Yamane as cited in Israel (2013). The study arrived at one hundred and thirty-four (134) as sample size. However, to take care of response bias and improper filling of questionnaires by some respondents, 30% was added to the minimum sample size as suggested by Israel (2013) bringing the sample size to one hundred and seventy four (174).

The data was obtained through the use of self-administered questionnaires for the respondents. This study used the stratified sampling technique to distribute copies of the questionnaire to the three senatorial districts in the state; Central Kaduna, North Kaduna and South Kaduna. The study included a
representative sample of companies in the four secondary activities. The questionnaires used for this study were adapted by several authors. The entry questionnaire for the supply was adapted by Muhamad et al. (2012) with 5 articles, the logistic questionnaire was adapted by Wisner (2013) with 5 articles, the questionnaire on production and finances was adapted by Titianne (2013) with 5 entries. While the performance questionnaire was adapted by Apolot (2012) with 11 entries. The study uses the Partial Minimum Square (SmartPLS2) to analyze the data and followed the two-stage approach for the evaluation of the measurement model and the structural model, respectively. In accordance with the suggestions of Urbach and Ahlemann (2010). This study tested the criteria and important processes to estimate the external and internal model. There are four common criteria to evaluate the external model in the following way: unidimensionality, reliability, convergent validity and discriminant validity. The second stage was used to evaluate the goodness and adaptation hypotheses in the proposed research framework. The criteria for evaluating the external model are the following; coefficient of determination (R-Square, R2), trajectory coefficient and effect size (f2).

4. Results
To ascertain the reliability and validity of the instruments used for data collection, the measurement model was calculated using PLS-SEM path modelling. Table 1 represents the reliability and validity of latent variables of the study.

Table 1
Construct Reliability and Convergent Validity (Measurement Model) n=174

<table>
<thead>
<tr>
<th>Construct</th>
<th>Items</th>
<th>Loadings</th>
<th>AVE</th>
<th>CR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firm Performance</td>
<td>FP1</td>
<td>0.83</td>
<td>0.58</td>
<td>0.87</td>
</tr>
<tr>
<td></td>
<td>FP2</td>
<td>0.90</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>FP3</td>
<td>0.81</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>FP9</td>
<td>0.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>FP11</td>
<td>0.69</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Logistics</td>
<td>LG1</td>
<td>0.65</td>
<td>0.65</td>
<td>0.88</td>
</tr>
<tr>
<td></td>
<td>LG2</td>
<td>0.94</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>LG3</td>
<td>0.96</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>LG5</td>
<td>0.62</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production and Finance</td>
<td>PF1</td>
<td>0.77</td>
<td>0.60</td>
<td>0.82</td>
</tr>
<tr>
<td></td>
<td>PF2</td>
<td>0.76</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PF3</td>
<td>0.79</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supply Input</td>
<td>SI1</td>
<td>0.88</td>
<td>0.56</td>
<td>0.83</td>
</tr>
<tr>
<td></td>
<td>SI2</td>
<td>0.71</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SI4</td>
<td>0.76</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SI5</td>
<td>0.62</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: AVE represents Average Variance Extracted; CR represents Composite Reliability. FP4, FP5, FP6, FP7, FP8, FP10, LG4, PF4. PF5, SI3 were deleted because of their insufficient loadings.

Table 1 show the reliability and validity of constructs of the study. Construct reliability and convergent validity of constructs were tested using composite
reliability and Average Variance Extracted (AVE) as suggested by Garson (2016). Composite reliability coefficient should be ≥ 0.7 also (Lee & Chen, 2013), while AVE coefficient should be ≥ 0.5 (Garson, 2016). Item loadings should be above 0.5. On Table 1, it is seen that all of the items met the minimum bench mark for item loadings (i.e., 0.5), composite reliability (i.e., 0.7) and AVE (i.e., 0.5). Therefore, it is assumed that the items on Table 1 displayed reliability and convergent validity. The data were next subjected to discriminant validity test using fornell-larcker criterion. The result is presented in Table 2.

Table 2: Discriminant Validity using Fornell-larcker Criterion. (n=174)

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Logistics</td>
<td>0.81</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Production and Finance</td>
<td>0.28</td>
<td>0.77</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Performance</td>
<td>0.64</td>
<td>0.41</td>
<td>0.76</td>
</tr>
<tr>
<td>4</td>
<td>Supply Input</td>
<td>0.08</td>
<td>-0.11</td>
<td>-0.15</td>
</tr>
</tbody>
</table>

Note: The bolded numbers represents the square root of the AVE of each latent construct.

AVE was used by the study to establish discriminant validity using the Fornell-Larcker criterion. For discriminant validity to exist, the square root of the AVE should be higher than its correlation with other latent variables (Garson, 2016). On Table 3, the bolded numbers represent the square root of the AVE of each latent construct. The square roots of the AVE of each construct are higher than their correlations with other latent construct. Going by the fornell-larcker criterion, the data exhibited discriminant validity. The study next tested the hypotheses of the study by calculating the structural model, bootstrapping the samples 5,000 times.
Figure 1: Structural Model

Table 3: Test of Hypotheses

<table>
<thead>
<tr>
<th>Relationship</th>
<th>Beta Coefficient</th>
<th>SE</th>
<th>t statistics</th>
<th>P Value</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>LG -&gt; FP</td>
<td>0.59</td>
<td>0.05</td>
<td>11.31***</td>
<td>0.00</td>
<td>Rejected</td>
</tr>
<tr>
<td>PF -&gt; FP</td>
<td>0.22</td>
<td>0.07</td>
<td>2.99**</td>
<td>0.00</td>
<td>Rejected</td>
</tr>
<tr>
<td>SI -&gt; FP</td>
<td>-0.17</td>
<td>0.12</td>
<td>1.38</td>
<td>0.17</td>
<td>Fail to Reject</td>
</tr>
<tr>
<td>R Square</td>
<td>0.497</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: LG represents Logistics; PF represents Production and Finance; SI represents Supply Input; FP represents Firm Performance.

Table 3 presents information on the test of hypotheses. Two of the three formulated hypotheses are supported, while one was not supported. From Table 3, it is seen that logistics has effect on firm performance, significant at less than 1% ($\beta = 0.59, p<0.01$). That is to say, a unit increase in logistics, will lead to 59% increase in firm performance. Production and finance has significant effect on firm performance also at less than 1% ($\beta = 0.22, p<0.01$). Finally, supply input has negative but insignificant effect on firm performance ($\beta = -0.17, p>0.10$).

Table 4: Effect Size of Exogenous Variables

<table>
<thead>
<tr>
<th>Construct</th>
<th>$f^2$</th>
<th>Effect Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logistics</td>
<td>0.62</td>
<td>Large</td>
</tr>
<tr>
<td>Production and Finance</td>
<td>0.07</td>
<td>Small</td>
</tr>
<tr>
<td>Supply Input</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

Note: NA means Not Applicable

The study further tested for the effect size of the exogenous variables on the endogenous variable of this study using $f^2$. According to Cohen (1988), $f^2$ values of 0.02, 0.15, and 0.35, represents small, medium, and large effects respectively. Table 4 show the effect size of each of the exogenous variables in the present study. The effect size of logistics on firm performance is 0.62, this means logistics has large effect on firm performance. Production and finance has an $f^2$ value of 0.07, this means production and finance has a small effect on firm performance during periods of economic recession. Supply input on the other hand has no effect on firm performance.

Table 5: Construct Cross-validated Redundancy ($Q^2$)

<table>
<thead>
<tr>
<th>Construct</th>
<th>SSO</th>
<th>SSE</th>
<th>$Q^2$ (=1-SSE/SSO)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firm Performance</td>
<td>805.000000</td>
<td>615.705016</td>
<td>0.24</td>
</tr>
</tbody>
</table>

The Stone-Gleisser $Q^2$ value was used to the predictive relevance of the model. A $Q^2$ value of 0.02 represents a small effect size, 0.15 represents a medium
effect size, and 0.35 represents a high effect size (Cohen, 1988). From Table 5, it is seen that the $Q^2$ value of firm performance is above 0. More precisely, the $Q^2$ value of firm performance is 0.24, this means the independent variables of this study has a medium degree of predictive relevance with regard to firm performance.

**Discussion of Findings**

Previous studies have considered value chain development and its component such as logistics, input supply, production and finance in general. But have largely ignored to study the component separately. Consequently, to fill this knowledge gap, this study empirically examined the effect of logistics, input supply, production and finance separately. Based on the result, it is reveal that logistics, production and finance has a positive and significant effect on performance of SMEs. While input supply was found to have a negative but insignificant effect on SME performance in Kaduna State.

5. Conclusion and Recommendations

Based on the findings of the study, the study concludes that, logistics, production and finance has significant effect and lead to increase in firm performance while supply input has negative but insignificant effect on firm performance. Thus development of the value chain is important to improve the performance of the company. The value chain is considered a tool to coordinate and facilitate small and medium enterprises and the provision of investment services. However, finance as part of the value chain is important for the sustainable expansion of small and medium enterprises. Therefore, the study concludes that a well-developed value chain allows SMEs to carry out their activities in an appropriate manner and thus generate employment, wealth creation and human capital development.

The study recommends that the government pay more attention to the development of the value chain to focus the SME sector and implement a new strategy based on the principle that SMEs are a company that can provide a reasonable basis for greater wealth, Employment growth and increase the country's ability to earn foreign currency through small and medium enterprises.

6. Suggestions for Further Study

The study was limited to only SMEs operating within Kaduna state. However, SMEs may differ in different state in the country. Thus, replicating this study would enable better generalization of findings. Further studies should be conducted using other dimensions such as marketing evaluation, recycling research and development (R&D) among others.

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