

Trade Openness and Innovative Performance of Small and Medium Scale Enterprises: The Story of Nigeria and Ghana

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Abstract

The study compared the influence of trade liberalisation on innovative performance of SMEs in the two largest economies in West Africa – Nigeria and Ghana. This study utilized data from both primary and secondary sources. The six states in Southwest Nigeria, and Ashanti and Greater Accra regions that house more than 50% and 70% of SMEs in Nigeria and Ghana respectively were purposively selected for the study. In order to have a representation of each business line covered in this study, stratified sampling technique was used in selecting SMEs in four major business areas, namely; manufacturing, trade and distribution, service, and agro-allied business. Questionnaire and interview were employed to obtain primary data from the selected SMEs in the study areas. Altogether, 1,247 and 626 SMEs were selected in southwest Nigeria and the two regions in Ghana respectively using simple random sampling technique. Data collected were analyzed using both descriptive and inferential statistics. The results established that there was a significant positive relationship between trade liberalisation and product innovation ($r = 0.071$; $\rho = 0.026$), marketing innovation ($r = 0.095$; $\rho = 0.003$), and organisational innovation ($r = 0.077$; $\rho = 0.015$) in the selected Nigerian SMEs. However, only process innovation ($r = 0.220$; $\rho = 0.000$) showed significant association with trade liberalisation in the selected SMEs in Ghana. The study concluded that trade liberalisation is crucial for the survival and innovative performance of sub Saharan African countries' SMEs in the face of intense competition and challenges of globalisation and economic liberalisation. Hence, it is important for developing countries particularly Nigeria and Ghana, to step up the contestability of their domestic markets and formulate effective innovation strategies in order to increase the competitiveness of their domestic SMEs.

Keywords: Trade Openness, Innovation, Firm performance, Small and Medium Scale Enterprises, Nigeria, Ghana.

1. Introduction

Since the 1960s, Small and Medium-sized Enterprises (SMEs) have been receiving due recognition, especially in the developed nations for playing very important roles towards fostering accelerated economic growth, development and stability within several economies (Ugwushi, 2009). They make up the largest proportion of businesses all over the world and play tremendous roles in employment generation, provision of goods and services, creating a better standard of living, as well as contributing immensely to the Gross Domestic Products (GDP) of many countries (OECD, 2008).

A colossal review of the Nigerian and Ghanaian SMEs performances, empirical evidence shows that SMEs in Ghana are relatively performing better than their counterparts in Nigeria. Besides, both countries SMEs have not been gained relatively when compared with that of SMEs in either developed or emerging economies. Even when compared with some of its counterparts in the African region such as South Africa, statistics do not favour Nigerian SMEs in terms of contribution to gross domestic product (GDP) in this era of trade liberalisation. Some compelling statistics support this. For instance, SMEs in Ghana provide an average of 85% of manufacturing employment and contribute about 70% to Ghana's GDP, whereas Nigeria's SMEs provide an average of 70% and contribute about 10% to the country's GDP. (Akingunola, 2011; Johnson, 2011; Sanusi, 2011; Abor & Quartey, 2010).

Most of the sub Saharan African countries had put in place a lot of intervention measures in order to boost the performance of SMEs. For instance, the Nigeria and Ghana governments embarked on economic reforms in the 1980s with the adoption of the liberalization policy in order to encourage competition, increase productivity, stimulate economic growth, and boost the performance of the domestic firms in their economies (Obadan & Okojie, 2010; Abor & Quartey, 2010). Trade liberalisation has integrated the whole world into one huge market and this has opened the economies of the developing countries generally, and particularly, the sub Saharan African countries to goods emanating from the developed and emerging economies to the extent that many firms, specifically Small and Medium Enterprises (SMEs), are out of business. The reason for this is that most of these firms are not yet sufficiently competitive, thus, they cannot withstand the competitive pressure resulting from liberalisation and the opening to the world market, not to mention exporting to the world market (Kodicara, 2009).

According to McAdam, Reid, Harris and Mitchell (2008), with the removal of barriers to trade, competition has intensified and has presented both opportunities and challenges to domestic SMEs to innovate and improve their competitive position. The sub Saharan African countries economy generally, and Nigeria and Ghana particularly have been substantially opened, not only by removing tariff and non-tariff barriers but also in

deregulating and liberalizing many sectors in their economies. However, these countries had not made considerable progress in opening-up their economy to competition (Sanusi, 2011; Abor & Quartey, 2010; Obadan & Okojie, 2010; Abor & Biekpe, 2007).

Innovation has long been considered as an important factor for creating and maintaining the competitiveness of nations and firms (McAdam *et al*, 2008). Also, empirical evidences in literature have supported the claim that through an increase in competition, international trade enhances innovation (Bøler, Moxnes & Ulltveit-Moe, 2015; Moxnes, Ulltveit-Moe & Bøler, 2012; Ruiz, 2010). In order to boost their competitiveness, many firms have actively pursuing ambitious innovation policies. This initiative is based on the assumption that providing innovative products with enhanced utility may help SMEs strengthen their competitive position at home as well as international markets. (Curtis, 2016; Dangayach, Pathak, & Sharma, 2005; Nguyen, Pham, Nguyen, & Nguyen, 2008). Thus, the link between trade liberalisation and innovation has become the subject of growing attention among experts and practitioners.

Review of literature revealed that many studies have been conducted on trade liberalisation and SMEs performance (Faloye, 2015; Ariel & Marc, 2011; Goldberg & Pavcnik, 2003; Obadan & Okojie, 2010; Obokoh, 2008; Tambuana, 2008, 2011; Tewari & Goebel, 2002). Most of these studies focused on the effect of trade liberalisation on production, profit, export supply, financial, and marketing performance of SMEs with little or no studies focusing on innovative performance of SMEs. Moreover, most of the previous studies on innovation such as Prajogo, Power and Sohal (2004), Wang and Ahmed (2004), Avermaete, Viaene, Morgan, Pitts, Crawford, and Mohon (2004), Leiponen (2005), Freel (2005), Ar and Baki (2011) emphasized technological innovations while only limited studies have examined the impact of trade openness on non-technological dimensions of innovation. Also studies show that innovation in organizations vary from sector to sector (Damanpour, 1999; Vega-Jurado, Gutierrez-Gracia, Fernandez-de-Lucio & Manjarres-Henriquez, 2008) and there is a significant role of environment on the innovation activities (Calantone, Garcia & Droge, 2003; Masood, Sadia, Saqib & Saman, 2013; Olavarrieta & Friedman, 2008) these have been overseen by most of the existing studies. However, researches that integrate different sectors, different firm sizes, and different environment in investigating innovative performance of SMEs in trade liberalisation era are very scanty. Thus, the thrust of this research is to examine the empirical link between technological and non technological innovation and trade liberalisation in small and medium businesses in four major sectors – manufacturing, services, agro-allied, and trade & distribution in sub-Saharan African countries using West Africa’s two most important economies – Nigeria and Ghana.

2. Literature Review

2.1 Innovation Types

Innovation has been viewed differently and has continued to be a subject of interest to scholars from a number of different disciplines, thus, innovation has emerged as a multidimensional concept which includes various dimensions like product-process, incremental-radical and administrative-technological innovations (Cooper, 1998). Review of literature shows that different criteria are used to define innovations such as implementation, success, impacts, and degree of change. For instance, Schumpeter (1934) made one of the earliest attempts to define innovation. According to him, innovation is a process of introducing new ideas or combinations of factors that revolutionise the patterns of production. Schumpeter (1934) identified five types of innovations namely; introduction of new products/services, introducing new process in an industry, opening new markets, new sources of inputs and changes in industrial organisation. Also Damanpour (1999) sees innovation as the adoption of an idea or behaviour, whether a system, policy, program, device, process, product, or service, that is new to the adopting organisation. According to Luecke and Katz (2003) defined innovation is “the introduction of a new thing or method. Innovation is the embodiment, combination, or synthesis of knowledge in original, relevant, valued new products, processes and services”. Tidd, Bessant, and Pavitt, (2005), divided innovation into four types namely; product, process, position, and paradigm innovations. According to the Duo, a product innovation is defined as a change in the products or services the organisation offers. A process innovation changes the ways in which products and services are created and delivered. A position innovation changes the context in which new product or services are introduced into the market. Finally, a paradigm innovation changes the underlying mental models that depict what the organisation is doing. In the third edition of the Oslo Manual (OECD, 2005), innovation was defined as “the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method in business practices, workplace, organisation or external relations.” In this manual, an innovation is defined as being one of four types of innovations - product, process, marketing, and organisational – though without any additional description of what an innovation is overall. The minimum requirement for an innovation according to the manual is that any type of the innovation must be new (or significantly improved to the firm. For the purpose of this study, the definition in the third edition of the Oslo Manual OECD (2005) was adopted.

2.2 Trade Liberalisation and Innovative Performance

Recent literature on trade and growth shows that international trade affects firms' innovative activities through increased competition. For instance, Coelli, Moxnes and Ulltveit-Moe (2016) estimated the causal impact of diminishing tariffs on innovation by using firm-level variation in country and industry exposure prior to the tariff cuts. Their results showed a strong and negative causal relationship between tariff reduction and innovation. Moreover, Ruiz (2015) conducted a study on the influence of trade liberalisation on innovation and, by extension, on sector and aggregate productivity growth under sectoral heterogeneity. He found that differences in the degree of competition generate substantial differences in firms' innovative responses to trade liberalisation. According to him, a movement from autarky to free trade promotes innovation and productivity growth in those sectors which are initially less competitive.

Also Baldwin and Gu (2004), carried out a study on how Canadian manufacturing plants have responded to reductions in tariff barriers between Canada and the rest of world over the past two decades. They reported that Plants that began to export after the FTA increased their product specialization relative to those that did not export. Besides, their study showed that plants that move into export markets increase investments in R&D and training to develop capacities for absorbing foreign technologies and international best practice. However, Liu, Lu and Luong (2014) cited in Du and Lu (2018) reported contrary results in their work titled "Is free trade good or bad for innovation?" They investigated the impact of trade liberalisation on firm innovation using the Difference-in-Differences technique to exploit the quasi-natural experiment brought about by China's accession to the WTO. According to them, trade liberalisation reduces a firm's overall innovation.

In the work of Bloom, Draca, and Reenen (2010), it was established that patenting, R&D, IT and TFP have risen in firms who were more exposed to increases in Chinese imports (the within firm effect). Fontes and Tansini (1996) used Uruguayan manufacturing sector to assess the impact of increased import competition and foreign firm presence, caused by a trade liberalization process on the innovative activities of firms. The results show that FDI has a positive but not always significant effect on R&D investments, while import-competition has a negative and significant effect. Also their study revealed that export-oriented firms seems to have a higher incentive to invest in R&D than traditional firms in industries originally targeted by import-substituting policies. Bustos (2011) examined the impact of a regional free trade agreement, MERCOSUR, on technology upgrading using Argentinean firms. The study showed that firms in industries facing higher reductions in Brazil's tariffs increase investment in technology faster. According to him, the effect of tariffs is highest in the upper-middle range of the firm-size distribution.

In the work of Goldberg, Khandelwal, Pavcnik and Topalova (2010), detailed trade and firm-level data from India were employed to investigate the relationship between declines in trade costs, imports of intermediate inputs, and domestic firm product scope. They find out that lower input tariffs account on average for 31% of the new products introduced by domestic firms. The relationship between increased import competition and incremental innovation was empirically examined by Fernands and Paunov (2010). Chilean manufacturing firms and their products dataset was employed for the econometric analysis. Their work revealed that estimated increases in unit values capture product quality upgrading. Damijan, Kostevc and Polanec (2008) explored the causal relationship between innovation and export activities of firms by applying bivariate probit regressions of the model of simultaneous exporting and innovation equations. They found that past innovation does not increase likelihood of exporting, whereas past exporting does have a positive impact on innovation. Besides, their study revealed no evidence that either product or process innovations increases the likelihood that a firm will become a first-time exporter. However, past exporting status increases the probability that medium and large firms will become process innovators according to them. This is indirect evidence of process innovations while past exporting has no link with product innovations.

In the work of Fernandes (2009), the effects of increased import competition on product quality upgrading using Chilean manufacturing plant data were examined. The results showed a robust positive and significant effect from import competition on product level or product quality upgrading and differentiated products. Besides, Nguyen, Pham, Nguyen, and Nguyen (2008) investigated the impact of trade liberalization on innovation activities by SMEs using the Vietnam Small and Medium Enterprise Survey. They posited that innovation, as measured directly by 'new products', 'new production processes and 'improvement of existing products' are strongly influenced by trade liberalization. According to them, increased competition and lower import barriers (tariffs, quotas and other non-tariff barriers) would lead to increased foreign competition in the domestic market which will force inefficient domestic firms to try to improve their productivity by eliminating waste, exploiting external economies of scale and scope, and adopting more innovative technologies. Boermansa and Roelfsema (2012) used a broad survey that covers multiple countries, that is cross-sectional data. They posited that exports, foreign affiliates and international subcontracting activities have a large impact on innovation. From the foregoing, the following hypotheses were drawn:

- (i) H1a: There is no significant relationship between trade liberalisation and product innovation in the selected Nigerian SMEs.

- H1b: There is no significant relationship between trade liberalisation and product innovation in the selected Ghanaian SMEs.
- (ii) H2_a: There is no significant relationship between trade liberalisation and process innovation in the selected Nigerian SMEs.
 H2b: There is no significant relationship between trade liberalisation and process innovation in the selected Ghanaian SMEs.
- (iii) H3_a: There is no significant relationship between trade liberalisation and marketing innovation in the selected SMEs in Nigeria.
 H3b: There is no significant relationship between trade liberalisation and marketing innovation in the selected SMEs in Ghana.
- (iv) H4_a: There is no significant relationship between trade liberalisation and organisational innovation in the selected SMEs in Nigeria.
 H4b: There is no significant relationship between trade liberalisation and organisational innovation in the selected SMEs in Ghana.

2.3 Conceptual Framework

After reviewing the relevant literature and in the light of the specified study objective, Figure 1 below presents a simplified conceptual framework underlying the empirical work in this paper.

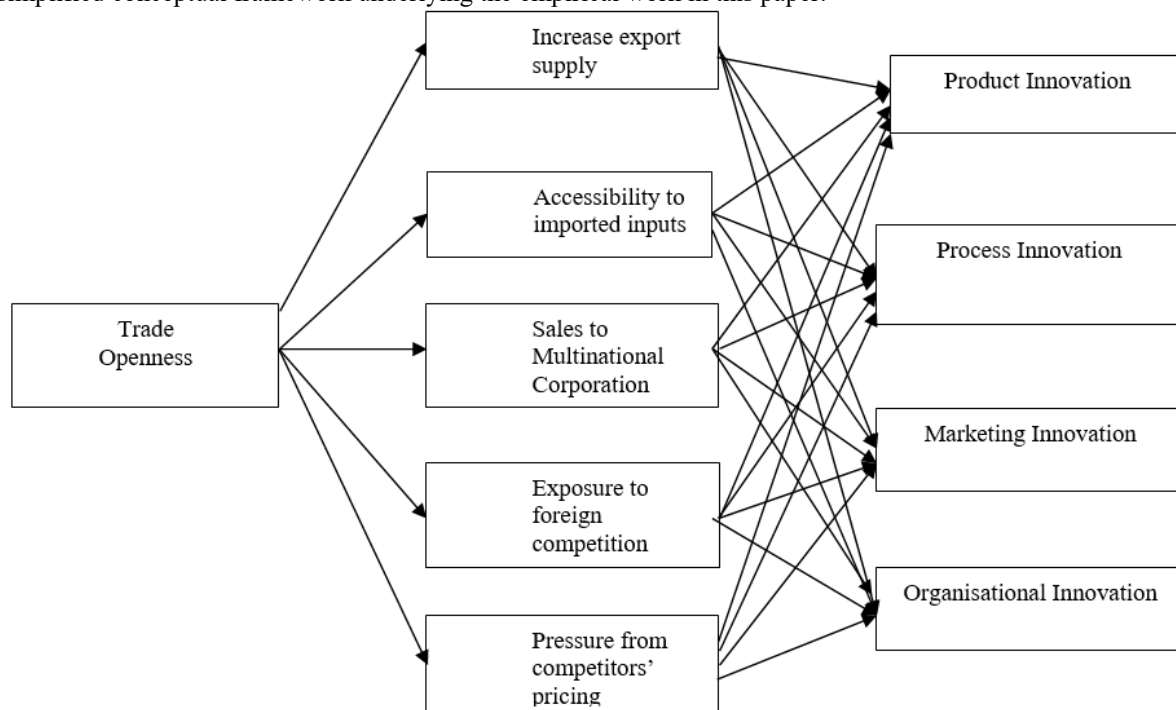


Fig 1: Conceptual Framework

3. Study Method

The research is a comparative study. Thus, Nigeria and Ghana in sub-Saharan Africa were selected for the study. The two countries were considered because they have similar trade policies and both are members of Economic Community of West Africa States (ECOWAS). Besides, the two countries adopted Structural Adjustment Programme (SAP) in the 1980s. South Western Nigeria that has the highest concentration of SMEs and highest number of exporting manufacturing SMEs in Nigeria (Obokoh, 2008; Ajayi, 2007) and the two regions- Greater Accra and Ashanti, that house more than 70% of SMEs in Ghana and make up the largest market area for the country's manufactured products (Abor & Quartey, 2010) were purposively selected for the study.

Based on the work of Bowale and Akinlo (2012) as well as Mabe, Mabe and Codjoe (2013) the study was focused on four major lines of business in the study areas namely; manufacturing, trade and distribution, service, and agro-allied firms. These formed the sampling frame for the study. The population for the study in Nigeria covers all the SMEs in the study area, in respect of their line of business, that employed between 10 and 199 employees and that are in the database and directories of Small and Medium Scale Enterprises Development Agency of Nigeria (SMEDAN). While the study population in Ghana consists of all the SMEs in the study area, in respect of their line of business that employed between 6 and 99 employees and that are in the database and directories of National Board for Small Scale Industries (NBSSI) in Ghana. Altogether, there were 6,239 SMEs in

the selected six (6) state capitals in southwest Nigeria, out of these, a total of 1,249 (20.02%) SMEs were selected for the survey while 626 (20.05%) out of the aggregate number of SMEs in the selected areas in Ghana were sampled using stratified random sampling technique. A sample size of 20% or 1:5 will capture the essence of the study more, and make the sample size more representative of the entire population. Data for the study were collected using adapted questionnaire from the previous studies in alignment with the study objective and it was divided into sections.

Model Specification

This study adopted the innovation equation given by Nguyen *et al.* (2011) in capturing the link between trade liberalization and innovative performance of SMEs in the study areas. The Logistic model for this study is specified as follows:

$$I = \beta_0 + \beta_1x_1 + \beta_2x_2 + \beta_3x_3 + \beta_4x_4 + \beta_5x_5 + \varepsilon \dots \dots \dots 1.1$$

In a more compact form, equation (1.1) can be rewritten as

$$I = \beta.X_i + \varepsilon \dots \dots \dots 1.2$$

Where:

I = Innovation (an indicator taking value of 1 if firm is an innovator and 0 if otherwise)

β_0 = Intercept

β_{1-5} = Coefficient

x_1 = Firm imports input (VAR 1); this is a dichotomous variable that takes the value 1 when the firm imports input(s); and 0 if otherwise.

x_2 = Firm exports its product (VAR 2); this is a dichotomous variable that takes the value 1 when the firm exports its product(s); and 0 if otherwise.

x_3 = Sales to multinational corporation (VAR 3); this is a dichotomous variable that takes the value 1 when firm makes sales to multinational corporation(s); and 0 if otherwise.

x_4 = Exposure to foreign competition (VAR 4); this is a dichotomous variable that takes the value 1 when the firm is facing foreign competition; and 0 if otherwise.

x_5 = Influence of competitors' price (VAR 5) on firm's pricing; this is a dichotomous variable that takes the value 1 when firm price its product(s) according to competitors' price(s); and 0 if otherwise.

ε = an error term.

The study considered major measures of innovations namely; product/product modification, process innovation, marketing and organisational innovations. These variables were treated as dependent variables and these variables are binary response variables.

In the empirical investigation, the study considered four measures of innovations:

- (i) *Product Innovation*: This is a dichotomous variable that takes the value 1 when the firm introduces new products or modified the existing ones in the past 5 years; and 0 if otherwise.
- (ii) *Process Innovation*: This is a dichotomous variable that takes the value 1 if the firm introduces new production processes/new technology in the past 5 years; and 0 if otherwise.
- (iii) *Marketing innovation*: This is a dichotomous variable that takes the value 1 if the firm introduces new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing in the last 5 years; and 0 if otherwise.
- (iv) *Organizational innovation*: This is a dichotomous variable that takes the value 1 if the firm introduces a new organisational method in the firm's business practices, workplace organisation or external relations in the past 5 years; and 0 if otherwise.

4. Discussion of Findings

Out of the targeted 1,247 and 626 SMEs in Nigeria and Ghana respectively, 996 and 297 SMEs actually responded in Nigeria and Ghana representing about 79.87 percent and 47.52 percent of response rate respectively, which the researcher deemed impressive. Findings revealed that the bulk of the SMEs in the selected area in Nigeria were established within the last 15 years. Altogether, 71.9 percent of the sampled SMEs had been in operation within the last 15 years. Only 9 percent had been in operation for more than 25 years while 16.7 percent, 25.9 percent, and 29.3 percent of the sampled SMEs were established within last 5 years, between 6 and 10 years, and between 11 and 15 years respectively. In Ghana, 8.8 percent had been in existence for less than 5 years. 15.2 percent and 19.9 percent were established between 5-10 years and between 11-15 years respectively. Those that were within

the range of 16 and 20 years of establishment were 18.9 percent, and 24.3 percent had been in existence for more than 26 years. In terms of ownership structure, finding showed that 45.3 percent of sampled SMEs in Nigeria were sole proprietorship while family business, limited liability, and partnership were 12.2 percent, 24.6 percent, and 15.2 percent respectively. However in Ghana, result showed that 34.7 percent of the sampled firms were owned by sole proprietors while only 20.9 percent were partnership form of business. Also, Limited Liability Company, family business, and cooperative society accounted for 32.3 percent, 8.4 percent, and 3.7 percent of the sampled SMEs respectively. Among the four lines of business surveyed in Nigeria, trading/distribution and services were the most common form of businesses that the SMEs engaged in, these were represented by 38.43 percent and 32.12 percent respectively. These were followed by Manufacturing (25.05 percent), and agro-allied businesses (4.40 percent). This statistics was similar for sampled SMEs in Ghana, 39.1 percent were involved in trading/distribution, service enterprises was 31 percent, while 27.9 percent was engaged in Manufacturing and only 2 percent was engaged in agro-allied business.

The influence of trade liberalisation on the four major types of innovation as identified by ISLO (2005) was examined on the selected SMEs in Nigeria and Ghana. The results of the logistic regression (*see Table 1*) for selected Nigerian SMEs showed that accessibility to imported inputs ($\rho = 0.029$) and exportation of firm's products ($\rho = 0.000$) had significant negative ($\rho < 0.05$) effects on new product/product modification innovation. The odds ratio for accessibility to imported inputs and exportation of firm's products were 0.67 and 0.42 times respectively. This indicated that when holding all other variables constant, a SME is 67% and 42% more likely to involve in innovation activities than SME that did not have access to imported inputs and exportation of firm's products respectively. The implication of this is that trade liberalisation, through both access to imported inputs and exportation of firm's products, had negative influence on product/product modification innovation in the selected Nigerian SMEs. The finding was in contrast with the existing findings (such as Sheryl, 2014; Bustos, 2011; Aw, Bee, Mark & Daniel, 2011; Park, Yang, Shi & Jiang, 2010; Goldberg, 2010; Fernandes & Paunov, 2010; Osamu, 2008; Robert, 1999; Fontes & Tansini, 1996) that showed positive effects of improved access to foreign markets and exports on innovation. However, the finding was in support of some empirical evidence, such as Damijan, Kostevc and Polanec (2008), which showed negative effects. The results of the logistic regression for selected Ghanaian SMEs were contrary to that of their counterparts in Nigeria (*see Table 1*). Finding revealed that that accessibility to imported inputs was statistically significant ($\rho = 0.044$). This showed that only accessibility to imported inputs had strong positive influence on product innovation. The odds ratio for accessibility to imported inputs was 1.720. These results were consistent with some previous studies (Kiryama, 2012; Nguyen *et al.*, 2011; Sebastian, 2007). The result of the Pearson correlation results $r = 0.071$; $\rho = 0.026$ and $r = -0.068$; $\rho = 0.248$ indicated that there was a significant positive relationship between trade liberalisation and product innovation and that there was insignificant negative influence of trade liberalisation on product innovation in the surveyed Nigerian and Ghanaian SMEs respectively. Thus, Hypothesis 1a was rejected and Hypothesis 1b was accepted in case of the selected SMEs in Nigeria and Ghana respectively.

This study also showed that trade liberalisation was not associated with increased process innovative in the selected Nigerian SMEs as none of the predictors were significant (that is $\rho > 0.05$). This finding was not in line with some existing findings (Sharma, 2014; Kariyama, 2012; Nguyen *et al.*, 2011; Sebastian, 2007) and the result contended the findings of some previous studies (Peluffo, 2008). The results of Pearson Correlation ($r = 0.019$; p -value = 0.554) showed that there was no significant relationship between trade liberalisation and process innovation in the selected Nigerian SMEs. Hence, hypothesis 2a was accepted. This finding disagreed with some existing findings (Sharma, 2014; Kariyama, 2012; Nguyen *et al.*, 2011; Sebastian, 2007). However, the regression results showed that accessibility to imported inputs ($\beta = 1.767$; $\rho = 0.004$) and influence of competitors' prices on firms' products pricing ($\beta = 1.504$; $\rho = 0.019$) had significant positive effects on process innovation in selected Ghanaian SMEs (*see Table 2*). The odds ratio for accessibility to imported inputs and influence of competitors' prices on firms' products pricing were 5.855 and 4.499 times respectively. This indicated that when holding all other variables constant, a selected Ghanaian SME is 5.855 and 4.499 times more likely to involve in innovation activities than SME that did not have access to imported inputs and exportation of firm's products respectively. This showed that both predictors had strong positive influence on process innovation. The findings confirmed the claim that accessibility to imported inputs and influence of competitors' prices on firms' products had positive and significant impacts on process innovative (Sebastian, 2007; Nguyen *et al.*, 2011; Kiriyama, 2011) and disagreed with some previous studies (Peluffo, 2008). The results of the Pearson correlation ($r = 0.220$; $\rho = 0.000$) showed that trade liberalisation had positive influence on process innovation in the sampled Ghanaian SMEs. Hence, hypothesis 2b was rejected.

Table 3 showed that two of the predictors namely; firm's product(s) competing with imported products ($\beta = 0.085$; $\rho = 0.023$) and influence of competitors' prices on firms' products pricing ($\beta = 0.648$; $\rho = 0.046$) had positive coefficient and were significant ($\rho < 0.05$). This showed that trade liberalization, had significant positive impact, through competition, on marketing innovation in the sampled SMEs in southwest Nigeria. This result corroborated earlier studies (Kariyama, 2012; Nguyen *et al.*, 2011; Sebastian, 2007; Pamuku, 2000). The results of the Pearson

Correlation showed that $r = 0.095$ and $p\text{-value} = 0.003$, thus, hypothesis 3a was rejected. The regression results for surveyed Ghanaian SMEs showed that only accessibility to imported inputs ($B = 0.786$; $p\text{-value} = 0.020$) had positive effects on marketing innovation. Firm exports had positive Coefficient but not statistically significant ($B = 0.422$; $p\text{-value} = 0.114$). Besides, result showed that there was a weak negative correlation between trade liberalisation and marketing innovation ($r = -0.54$) and this relationship was statistically insignificant ($p\text{-value} > 0.05$). Thus, hypothesis 3b was accepted. These findings were not contending with some existing studies (Sebastian, 2007; Nguyen *et al*, 2011; Kiriyama, 2012).

The results of regression analysis in Table 4 showed that out of the five variables that were used to measure trade liberalisation, only sales of firm's product to MNCs had statistically significant effect on organisational innovation with B Coefficient and Exp (B) of 0.250 and 1.577 respectively. The odds ratio (Exp (B)) for sales to MNCs indicated that when holding all other variables constant, a SME is 1.58 times more likely to involve in organisational innovation activities than SME that did not interact with MNCs in the southwest Nigeria. The result showed that trade liberalization had significant positive impact, through sales to MNCs, on innovation. These findings contended with some previous studies (Nguyen *et al*, 2011; Kiriyama, 2012). The results of the Pearson Correlation ($r = 0.077$; $p\text{-value} = 0.015$) showed that there was a positive association between trade liberalisation and organisational innovation and this relationship was statistically significant. Hence, hypothesis 4a was rejected. It was also showed that both firm's product(s) competing with imported products (VAR 4) and influence of competitors' prices on firms' products pricing (VAR 5) had positive and significant effect on organisational innovation in selected Ghanaian SMEs. This showed that the two variables were positively related to organisational innovation. However, the results of Pearson Correlation ($r = -0.082$; $p\text{-value} = 0.160$) showed that organisational innovation was insignificantly influenced by trade liberalisation. Hence hypothesis 4b was accepted.

5. Conclusion

It had been widely acclaimed that SMEs constitute a large part of the world economy. Empirical evidences showed that, SMEs that are linked to the global market are more innovative and that SMEs can make use of global value chains to improve their technology and ability to innovate. Protecting the future of SMEs, making them at par with the rest of the firms from across the world, and attaining a sustainable growth and development should be paramount to the policymakers and other stakeholders in developing countries generally, and sub Saharan African countries particularly, considering the strategic importance of SMEs in terms of their contributions to social stability, economic growth, fiscal revenue, employment generation, raising export, technology advancement, and social stability. The logistic regression analysis indicates that the influence of trade liberalisation on product, marketing, and organisational innovations in Nigerian SMEs were statistically significant while trade liberalisation was found to have statistically significant influence on only process innovation in Ghanaian SMEs. This study concludes that in the face of an increasing trade openness and tough competition from bigger firms mostly in developed and emerging economies with plentiful resources, the survival and growth of the SMEs in developing countries, particularly in sub Saharan African countries, and specifically Nigeria and Ghana, hinge on the formulation of effective innovation strategies and stepping up of the contestability of their domestic markets. Thus, governments and other stakeholders in SMEs sub sector must give special attention to innovation and competitiveness.

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Appendix

Table 1: Logistic Regression Analysis of Influence of Trade Liberalisation on Product Innovation in selected SMEs in Nigeria and Ghana

Predictor	Nigeria			Ghana		
	β	p	$E\beta$ (odds ratio)	β	p	$E\beta$ (odds ratio)
VAR 1	-0.403	0.029	0.669	0.542	0.044	1.720
VAR 2	-0.867	0.000	0.420	-0.148	0.637	0.863
VAR 3	-0.008	0.964	0.992	-0.450	0.155	0.638
VAR 4	-0.034	0.865	0.967	19.946	0.997	459621351.8
VAR 5	0.044	0.810	1.045	1.078	0.092	2.939
Constant	0.146	0.568	1.157	1.210	0.000	3.353

Test	Nigeria			Ghana		
	χ^2	df	p	χ^2	df	p
Overall Model Evaluation	20.728	5	0.001	30.479	5	0.000
Hosmer & Lemeshow	2.647	5	0.754	6.093	7	0.529
-2 Log likelihood	1240.791			257.397		
Cox & Snell R Square	0.201			0.099		
Nagelkerke R Square	0.209			0.158		
Model Classification	67.8%			80.4%		
Pearson Correlation	0.071			-0.068		
Sig. (2-tailed)	0.026			0.248		

Description for the above table: VAR 1 = Firm imports input; VAR 2 = Firm exports its product; VAR 3 = Sales to multinational corporation; VAR 4 = Exposure to foreign competition; VAR 5 = Influence of competitors' price on firm's pricing.

Source of Data: Results of regression Analysis

Table 2: Logistic Regression Analysis of Influence of Trade Liberalisation on Process Innovation in selected SMEs in Nigeria and Ghana

Predictor	Nigeria			Ghana		
	β	p	$E\beta$ (odds ratio)	β	p	$e\beta$ (odds ratio)
VAR 1	-0.300	0.107	0.741	1.767	0.004	5.855
VAR 2	-0.021	0.932	0.980	0.198	0.575	1.219
VAR 3	0.232	0.229	1.261	0.424	0.277	1.529
VAR 4	0.192	0.328	1.212	1.504	0.019	4.499
VAR 5	-0.304	0.121	0.738	19.557	0.998	311383211.09
Constant	-0.146	0.001	0.395	0.925	0.001	2.522

Test	Nigeria			Ghana		
	χ^2	df	p	χ^2	df	p
Overall Model Evaluation	7.739	5	0.171	29.533	5	0.000
Hosmer & Lemeshow	7.446	5	0.190	29.949	6	0.000
-2 Log likelihood	1205.329			214.217		
Cox & Snell R Square	0.080			0.097		
Nagelkerke R Square	0.110			0.170		
Model Classification	70.2%			85.2%		
Pearson Correlation (r)	0.019			0.220		
Sig. (2-tailed)	0.554			0.000		

Description for the above table: VAR 1 = Firm imports input; VAR 2 = Firm exports its product; VAR 3 = Sales to multinational corporation; VAR 4 = Exposure to foreign competition; VAR 5 = Influence of competitors' price on firm's pricing.

Source of Data: Results of regression Analysis

Table 3: Logistic Regression Analysis of Influence of Trade Liberalisation on Marketing Innovation in selected SMEs in Nigeria and Ghana

Predictor	Nigeria			Ghana		
	β	p	$E\beta$ (odds ratio)	β	p	$e\beta$ (odds ratio)
VAR 1	-0.379	0.069	0.684	0.786	0.020	2.195
VAR 2	-0.539	0.140	0.583	0.422	0.114	1.525
VAR 3	0.079	0.742	0.924	-0.384	0.181	0.681
VAR 4	0.085	0.023	1.089	-0.316	0.369	0.729
VAR 5	0.648	0.046	0.030	-0.432	0.282	0.649
Constant	2.449	0.000	11.582	0.689	0.003	1.993

Test	Nigeria			Ghana		
	χ^2	df	p	χ^2	df	p
Overall Model Evaluation	20.384	5	0.002	11.764	5	0.038
Hosmer & Lemeshow	3.802	6	0.703	25.348	8	0.001
-2 Log likelihood	850.497			346.593		
Cox & Snell R Square	0.170			0.040		
Nagelkerke R Square	0.218			0.056		
Model Classification	84.4%			71.5%		
Pearson Correlation	0.095			0.54		
Sig. (2-tailed)	0.003			0.358		

Description for the above table: VAR 1 = Firm imports input; VAR 2 = Firm exports its product; VAR 3 = Sales to multinational corporation; VAR 4 = Exposure to foreign competition; VAR 5 = Influence of competitors' price on firm's pricing.

Source of Data: Results of regression Analysis

Table 4: Logistic Regression Analysis of Influence of Trade Liberalisation on Organisational Innovation in selected SMEs in Nigeria and Ghana

Predictor	Nigeria			Ghana		
	β	p	e^{β} (odds ratio)	β	p	e^{β} (odds ratio)
VAR 1	-0.270	0.101	0.763	-0.068	0.817	0.934
VAR 2	0.259	0.252	1.295	-0.134	0.279	0.875
VAR 3	0.250	0.002	1.577	0.231	0.398	1.260
VAR 4	0.064	0.730	1.066	0.976	0.004	2.654
VAR 5	-0.277	0.108	0.758	0.779	0.043	2.179
Constant	0.288	0.256	1.334	-0.731	0.001	0.481

Test	Nigeria			Ghana		
	χ^2	df	p	χ^2	df	p
Overall Model Evaluation	15.840	5	0.007	13.404	5	0.020
Hosmer & Lemeshow	2.933	4	0.569	18.608	6	0.005
-2 Log likelihood	1363.401			374.442		
Cox & Snell R Square	0.106			0.145		
Nagelkerke R Square	0.201			0.161		
Model Classification	54.3%			60.8%		
Pearson Correlation	0.077			-0.082		
Sig. (2-tailed)	0.015			0.160		

Description for the above table: VAR 1 = Firm imports input; VAR 2 = Firm exports its product; VAR 3 = Sales to multinational corporation; VAR 4 = Exposure to foreign competition; VAR 5 = Influence of competitors' price on firm's pricing.

Source of Data: Results of regression Analysis