MSMEs Productivity in Nigeria

Oluseye Samuel Ajuwon

Sylvanus Ikhide

Joseph Oscar Akotey

Development Finance, University of Stellenbosch Business School, Cape Town, South Africa.

Abstract

This study uses the World bank enterprise survey data for Nigeria to examines Micro, Small and Medium Enterprises (MSMEs) productivity rate in the Nigerian economy. The study explores factors that constrain MSMES output growth in Nigeria. Some of the factors identified include huge infrastructural gap, inadequate institutional support and low access to credit. The resultant effect is a low investment commitment amongst MSMEs thus hampering the productivity of MSMEs in the Nigerian economy. The MSMEs productivity growth rate was measured using annual sales of firms from the World bank enterprise survey data for Nigeria. This research employs the non-parametric variance estimation using the locally-weighted scatterplot smoothing (LOWESS) method on three sets of two-points data (2006 and 2003, 2008 and 2002, and finally 2012 and 2009) of annual fiscal sales for each category of firms comprising micro, small, medium and large firms. The result shows that the small businesses have a negative productivity growth rate in Nigeria. This in line with IFC (2013) which found that small businesses have the least productivity growth rate amongst firms of all sizes. However, this study departs from IFC findings which states that small businesses' low productivity growth rate is tenable across all the sectors of the economy. The study found that small businesses actually recorded high productivity growth rate in some subsectors of the economy that specializes in product customization such as garment and furniture. Therefore, this study validates the flexible specialization theory that emphases the economic importance of MSMEs in the post-industrial era where product customization is the new order of production. The policy implication of this study is that any targeted intervention in the MSMEs sub-sector of the economy designed to increase productivity, should be channeled into the subsector with the most employee specialization as well as product customization.

Keyword(s): MSMEs, small business, Output, Productivity, **JEL Classifications:** P42 M13 O55

Introduction

This study examines Micro, Small and Medium Enterprises (MSMEs) productivity rate in the Nigerian economy, using World bank enterprise survey data for Nigeria. The link between MSMES productivity and economic growth stems from its ability to boost competition and entrepreneurship which in turn have spillover effects on innovation, aggregate productivity and efficiency in an economy (Beck, Demirguc-kunt and Levine, 2005). However, factors that determine MSMES output shares, output composition, market orientation and location (Tambunan, 2008) are constrained in Nigeria. These factors are natural and technical endowment, favourable business environment, level of infrastructural development and government support (such as the provision of necessary information on business opportunities, capacity training, monitoring and mentoring, and loan guarantee schemes). In Nigeria, there is huge infrastructural gap, inadequate institutional support and unsupportive credit environment with a resultant effect on low investment commitment to bring start-up and young firms to a commercial scale. All these, couple with scarce entrepreneurship is crippling the output expansion of MSMEs in the Nigerian economy. This study therefore seeks to examine MSMEs productivity in Nigeria.

Output growth in MSMEs can be identified from three sources namely: increase in the number of establishment (taking into consideration that the number of employee and output of the existing firms remain constant), increase in the number of employees (with the number of firms and productivity held constant), increase in the output or productivity, which can

be termed efficiency (holding constant the number of firms and employee in each firm) or the combination of the three factors. This study was basically limited to the increase in the output or productivity overtime, due to the aim of the study and the nature of the data used.

IFC (2013) found that increase in employment for microenterprise firms outweigh increase in productivity, and that microenterprise firms have the least productivity growth rate among all types of firm sizes. IFC result affirms that the result is tenable across all the sectors of the economy as well as across regions and country income groups. However, ILO (2015) is of the opinion that small firms exhibit this trend of lower productivity in the manufacturing and services sector only, while ascertaining that young (1-5 years old) small firms have the highest growth rates. IFC concluded that on the average, larger enterprises are more productive than the small businesses because they benefit from economies of scale, and invest more in machinery and skilled development. They also display tendencies to develop new products and make use of outsourcing that tends to increase workers' productivity (large firms tend to be more innovative). African Development Bank (AfDB, 2010) report also confirms that microenterprise firms are the least productive of all sizes of firm. There is the need to ascertain which is obtainable in the Nigerian economy.

Modern theories on MSMEs ('Pro-SMEs Policy' thesis and Flexible Specialization theory), specifies that MSMEs plays two important roles simultaneously: economic growth acceleration through increase in their output, and poverty reduction through job creation and income generation effects. There are also the indirect effects of growth-linkage on employment, consumption and investment that positively impact economic growth.

Therefore, MSMEs firms are highly heterogeneous for one single trend pattern of explanation to their contribution to output. Also, in the developing countries like Nigeria where MSMEs are often characterized by high presence of informal microenterprises and few small and medium sized enterprises, there is the need to empirically investigate the contribution of MSMEs to output growth rate. This will enable a proper segmentation of the heterogeneous MSMEs into which will be good for income stabilization policy, employment creation and productivity increase, for the purpose of a suitable intervention. It is in this light that this study examines the relationship between MSMEs productivity growth rate in Nigeria.

STYLISED FACTS ON MSMEs IN NIGERIA

According to the 2013 data released by Small and Medium Enterprises Development Agency of Nigeria (SMEDAN) in collaboration with the National Bureau of Statistics (NBS), shows that Nigeria has 37,067,416 MSMEs (Micro 36,994,578, Small 68,168, and Medium 4,670) in establishment number. Employing 59,741,211 representing 84.02% of the total labour force in the country. MSMEs contributed N38.78 trillion to the GDP representing 48.47% of the total GDP for the year, with micro enterprise alone contributing 80.76% of the output by MSMEs. MSMEs contribution to export as a ratio of GDP stood at 7.27% during this same period. One of the importance of MSMEs is its contribution to the international market in the form of export and import. In Nigeria, evidence however shows that Nigerian MSMEs are still far from playing any significant role in the international market in comparison to what is obtainable in some other part of the world. MSMEs export ratio of GDP is 35% of Asia's exports and 25% for OECD economies (OECD, 1997). In India, MSMEs are contributing on the average 40% of the country's total exports (SME Chamber of India).

This shows that the Nigerian MSMEs have not been able to penetrate the international market given the fact that informal microenterprises dominate the small business in Nigeria. In this respect, a lot needs to be done to bring these small businesses to the realm where they can successfully compete with their counterpart worldwide. Expanding the MSMEs capability to operate in the global market through first and foremost formalizing the many informal microenterprise, providing market information and support, will bring about increase in the output growth rate, as well as generating more jobs and income.

FACTORS AFFECTING MSMEs PRODUCTIVITY IN NIGERIA

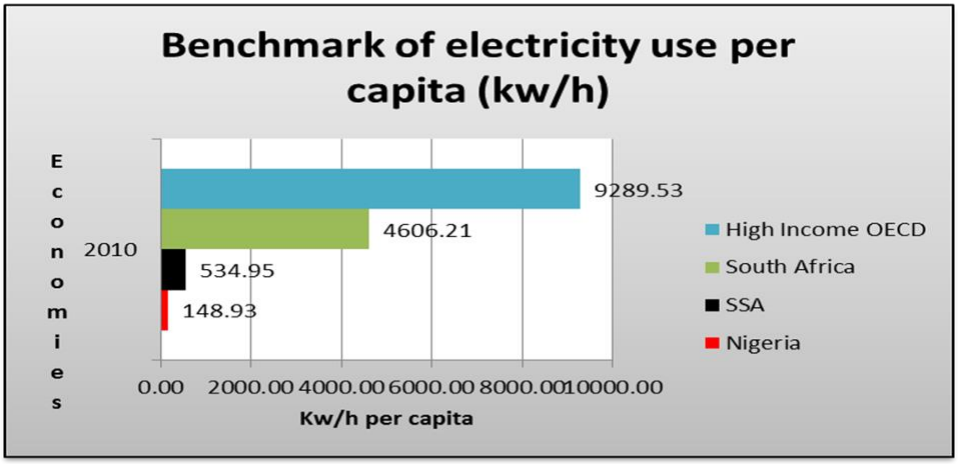
There are so many factors affecting productivity growth rate of small businesses in the Nigerian economy. These factors include poor infrastructural development, unsupportive credit market, inadequate institutional support and the issues with globalization (dumping).

Huge Infrastructural Deficit.

The level of infrastructural development in a country, to a great extent determine the productivity in the economy (Ekeledo & Bewayo, 2009). One of the major factors affecting MSMEs output growth is the huge infrastructural deficit in Nigeria.

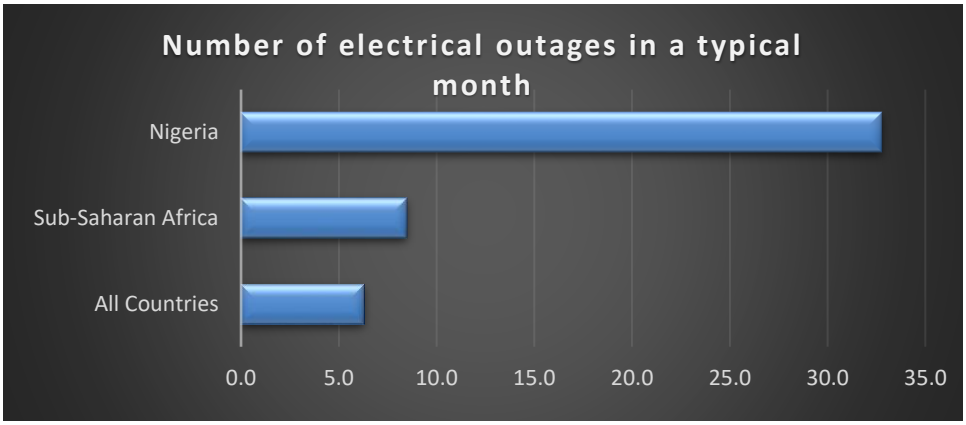
Poor supply of electricity and bad road network are chief among these infrastructures. Despite the fact that the Nigerian economy recorded over 5% GDP growth rate for almost twenty years on the average, electricity consumption per capita was rather on the decline. Majority of the rural areas in the country are still not connected to the national electricity grid, therefore the masses are made to generate their electricity through electricity generating machine individually. The areas covered by the national grid are not in any way better-off because of the incessant power failure. Comparing Vietnam economy that has lower GDP growth rate, shows her to have been able to achieve hundred per cent rural electrification, while more than 50% of Nigerian population are yet not on the national grid (World Development Indicators, 2015).

FIGURE 1: BENCHMARKING ELECTRICITY USE PER CAPITA



Source: World Development Indicators, 2015.

FIGURE 2: NUMBER OF ELECTRICAL OUTAGES IN A TYPICAL MONTH



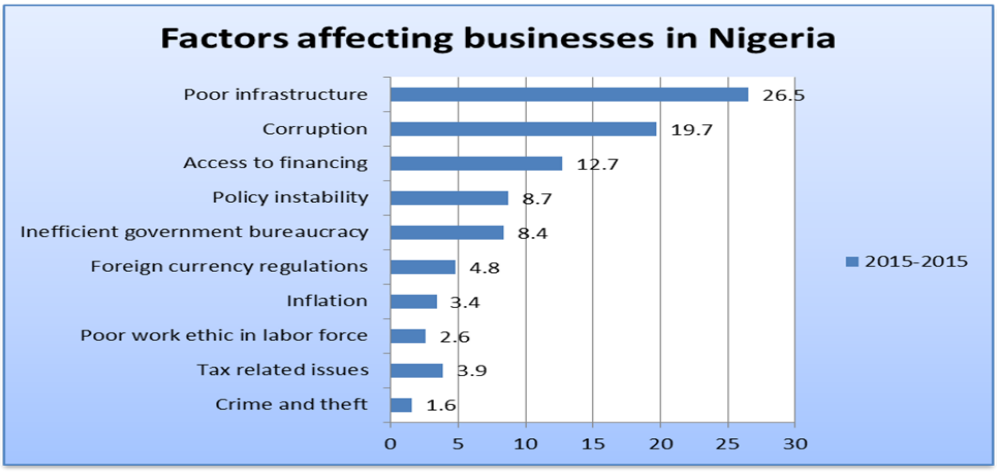
Source: World Bank Enterprise Survey (2014)

The gap between Nigeria and other comparable developing countries in electricity access and consumption is not encouraging. Looking at South Africa that has a population of less than one third of the Nigerian population is generating on the average more than nine folds of electricity Nigeria is generating. This problem is posing a huge challenge to enterprise development in the Nigerian economy. It is a known fact that many Multi-National Companies (MNC) are

relocating outside Nigeria, citing electricity constraints as the source of relocation. A good example is the Dunlop and Michelin tyres that stop Manufacturing in Nigeria.

The lack of access to stable supply of electricity and all other form of infrastructural facility (Figure 3) is taking tolls on the Nigerian economy. This is affecting the capacity utilization in all forms and sizes of enterprise, and in particular hurting MSMEs output growth rate in the economy. Frequent outages in electricity supply can affect output levels with adverse implications for firm productivity and efficiency, especially for MSMEs that are not financially buoyant to self-generate electricity.

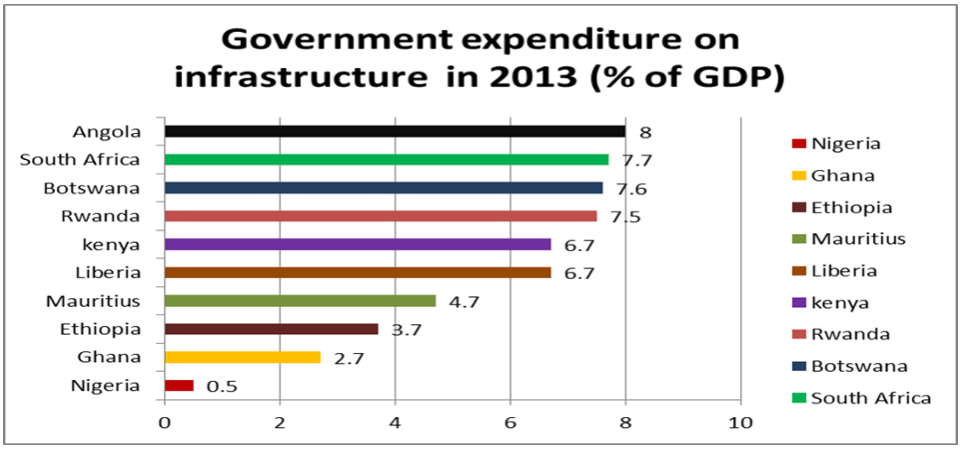
FIGURE 3: FACTORS AFFECTING ENTERPRISE OPERATIONS IN NIGERIA (WORLD BANK ENTERPRISE SURVEY, 2014)



SOURCE: World Economic Forum Global Competitiveness Index, 2015

Over the years, Nigeria government commitment to investment in the infrastructural sector of the economy was impalpable. For example, Figure 4 shows that in 2013, Nigeria budget for capital investment in infrastructure was just 0.5%, about the least in Africa.

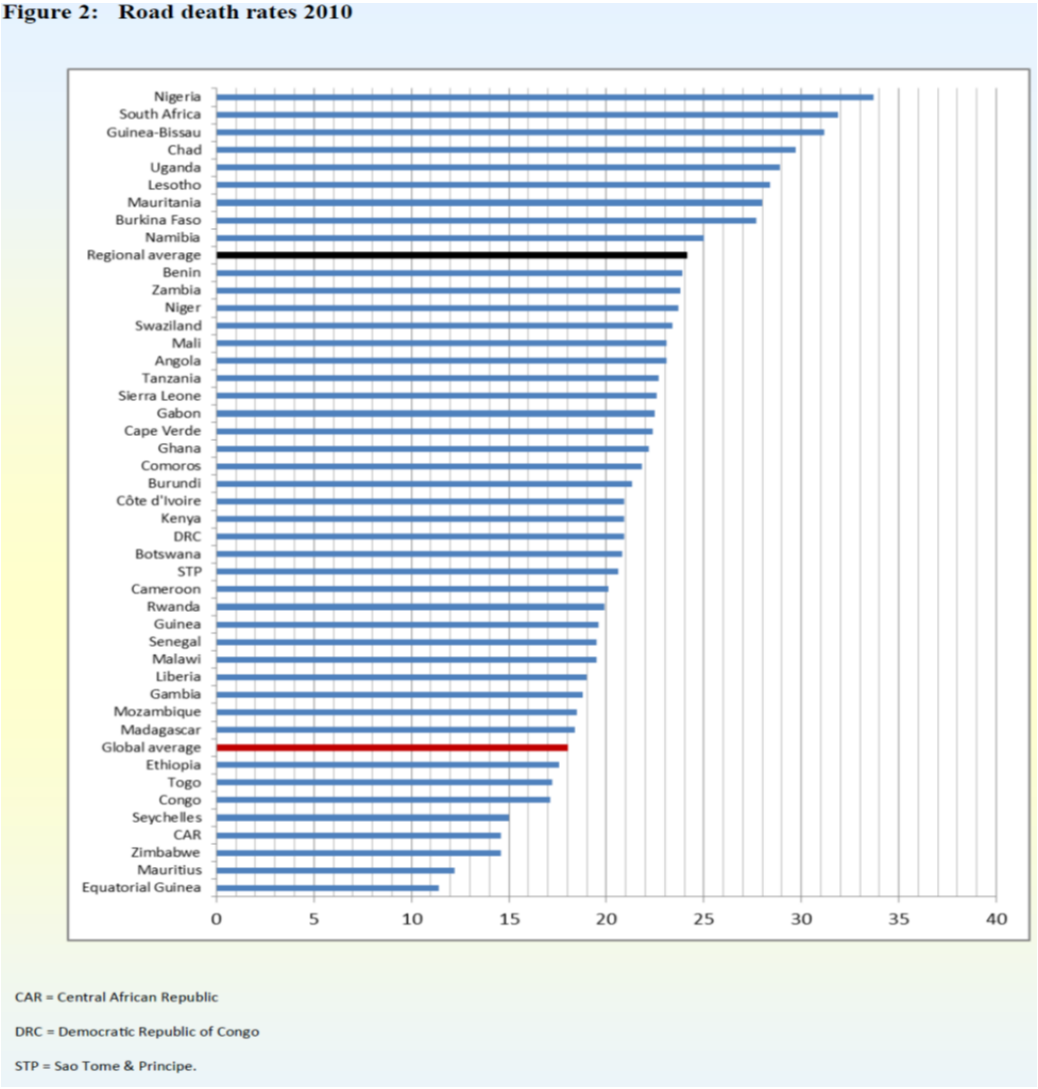
FIGURE 4: GOVERNMNET CAPITAL EXPENDITURE ON INFRASTRUCTURE AS A RATIO OF GDP IN SUB-SAHARAN AFRICA.



Source: World Bank, 2015

On the road network, Nigeria has the largest road network in West Africa, and next to South Africa in the sub-Sahara African region. According to Central Intelligence Agency (CIA) World fact book, Nigeria has 193,200 kilometers of surfaced roads for 2004 record. The roads in Nigeria are however poorly maintained and are often cited as a cause of the country's high rate of fatal road accident. According to World Health Organization (WHO) report titled 'Road Safety in the WHO African Region' in 2013, Nigerian roads was adjudged to be the most dangerous in Africa. It identifies Nigeria roads with the highest fatality at 33.7 death per 100,000 population per year. The road network potent danger to enterprise growth in term of huge cost of maintenance on transportation facilities, as well as more time is wasted in movement, and valuable lives and resources are being destroyed daily through road accident.

FIGURE 5: ROAD DEATH RATES BY COUNTRY (2010)



Source: Curled from *www.who.int/violence_injury_prevention/**road_safety**.../**2013**/.../**facts**heet_afro.pdf*

Access to Finance

The growth of MSMEs depends on the ability to overcome the credit constraint and develop their potentials in physical and human capital. Investment in capital requires greater access to finance. Ogujiuba (2004) also noted that lack of adequate and timely access to finance is a key obstacle to the growth and profitability of MSMEs in the developing countries. The absence of efficiently operating rural financial markets is a serious constraint on sustainable rural MSMEs development in the developing countries. Financial access by MSMEs increases income through productive investment and helps to create employment opportunities through increase in MSMEs activities (CGAP, 2009).

To diagnose the problems militating against MSMEs in Nigeria, the Small and Medium Enterprise Development Agency of Nigeria (SMEDAN) and National Bureau of Statistics (NBS) in 2010 and 2013 conducted a nationwide survey on MSMEs, which found among many other things that access to credit is the top priority areas of assistance that the MSMEs need and want. Also, Peter Bamkole, Director of Enterprise Development Centre, Pan-Atlantic University, listed six broad constraints that limit the growth of MSMEs in Nigeria using "MISFIT" acronym to represent problems of access to Market; Infrastructure; Support services; Finance; Information; and Technology. He however submitted that of the six constraints, access to finance is of high priority (KPMG, 2014).

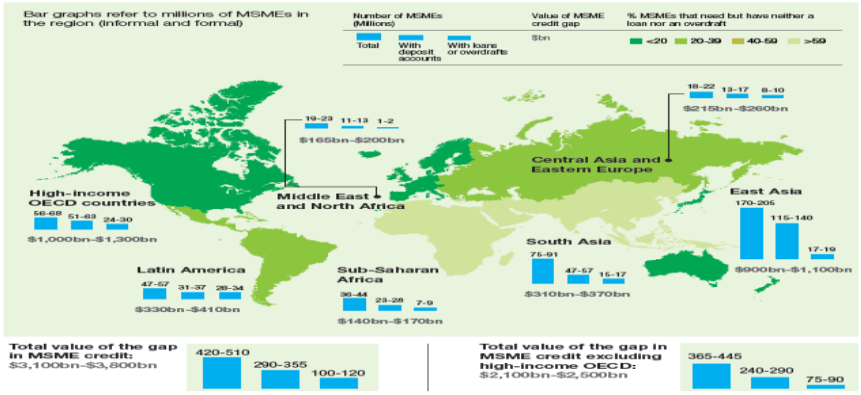
In accessing finance, the most preferred external source of finance for MSMEs is debt-financing option as explained by pecking order theory (Myers and Majluf, 1984) because of the ownership independence and other characteristics it offers. Commercial banks offer the highest chunk of debt finance in any economy (Abe et. al., 2012). Bank lending to MSMEs is not without challenges. High transaction and administrative costs stemming from problems of asymmetric information and high-risk perception, and lack of collateral remain major constraints of MSMEs access to appropriate external financing. According to CGAP (2009), the main reasons Nigeria MSMEs gave for not applying for loans from the bank were:

i. Cumbersome application procedures;
ii.High interest rate
iii.Inaccessible collateral requirement; and
iv.Loan terms (maturities) are much shorter than what MSMEs require.

The Nigerian government and all the stakeholders have a lot of work to do in this area. The starting point is developing a wholesome credit guarantee scheme that will allay the fear of the commercial banks from granting credit to the small businesses and ease the burden of access to credit for the small businesses.

The problem of access to finance for small businesses is not peculiar to Nigeria alone, it is a global phenomenon. However, it is worse in some region than the other. Unfortunately, African region is one of those regions worse-off. Dalberg (2011) shows that MSMEs in Africa and South Asia suffers the greatest credit gap in the world, has shown in the figure 6. Over 50% of MSMEs in Africa and south Asia have no access to financial credit. Credit gap for MSMEs in Sub-Saharan Africa alone is valued to be between 140 and 170 billion U.S. dollars. This clearly demonstrates that access to finance is a source of perennial problems to MSMEs growth in Africa and Nigeria in particular.

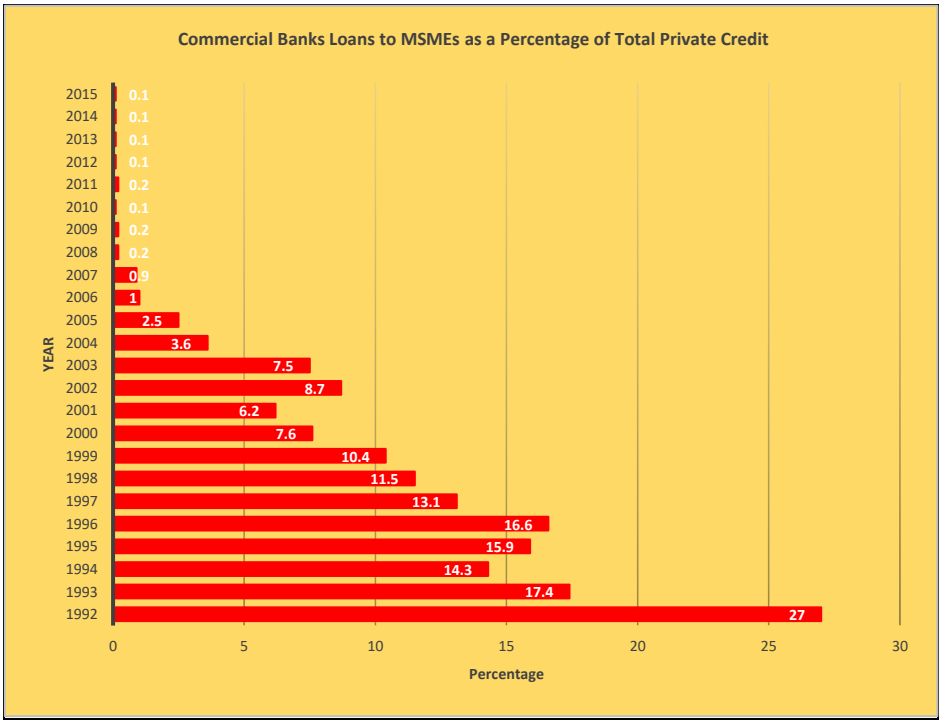
FIGURE 6: WORLD MSMEs CREDIT GAP



Source: Dalberg SME briefing paper (2011)

Also, the data obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin in Figure 7 shows that the percentage of credit to MSMEs has continued to decline. In 1991, 28% of commercial bank credits financed MSMEs and this has dropped to 0.1% by 2015. With this decline, one might argue that there are increasing alternative sources of finance for MSMEs. However, MSMEs in Nigeria are complaining of lack of access to finance than ever before, which shows the problem is apparent. In addition, banks remain the largest source of credit in any economy.

FIGURE 7: COMMERCIAL BANKS CREDIT TO MSMEs AS A PERCENTAGE OF TOTAL PRIVATE CREDIT



Source: CBN Statistical Bulletin (2013)

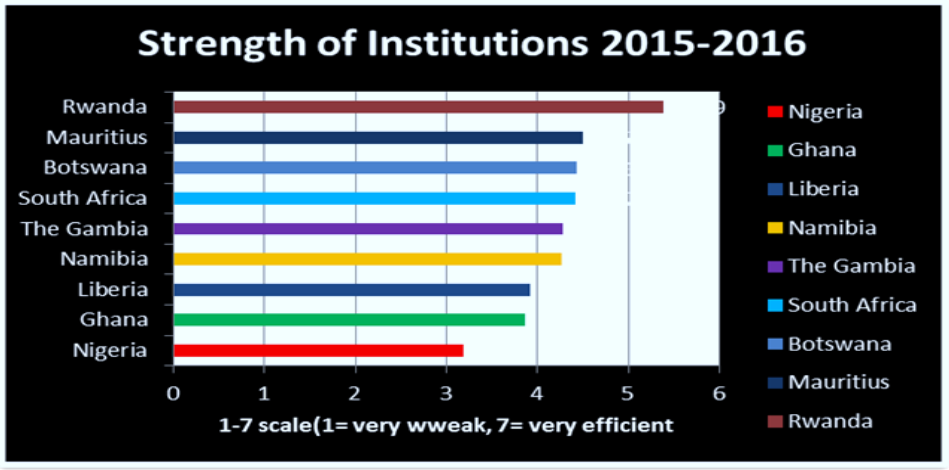
Weak Institutions

Quoting the words of the United Nations Office on Drugs and Crime (UNODC) executive director that says 'investing in justice systems and the rule of law were prerequisites for long-term prosperity'. Weakness of the government institutions is the ineffectiveness and selfishness of responsible authorities to enforce the laws and hold people accountable for their actions and inactions, and the continue passiveness of the masses. This accounts almost wholly the abysmal state of government and economic malaise Nigeria has trapped itself.

Weak institution can create an environment that reduces motivation and productivity. For example, any economy that is characterized by high presence of informal sector is always a sign of weak government institutions. For institutions to be efficient, there must be strict enforcement of the rule of law. The impact of the weak state institutions on the economy can be felt through the absence of guarantee on property and contract rights, as well as poor administrative capacity plagued with rent-seeking civil service. When property and contract rights are not well defined or properly enforced, there is bound to be disequilibrium in the market giving rise to unemployment or stagnation in the economy (Chowdhury, 1999). A study conducted by the World Bank (2006) indicated that Nigeria rank 152 out of 155 in registering property. The weakness in

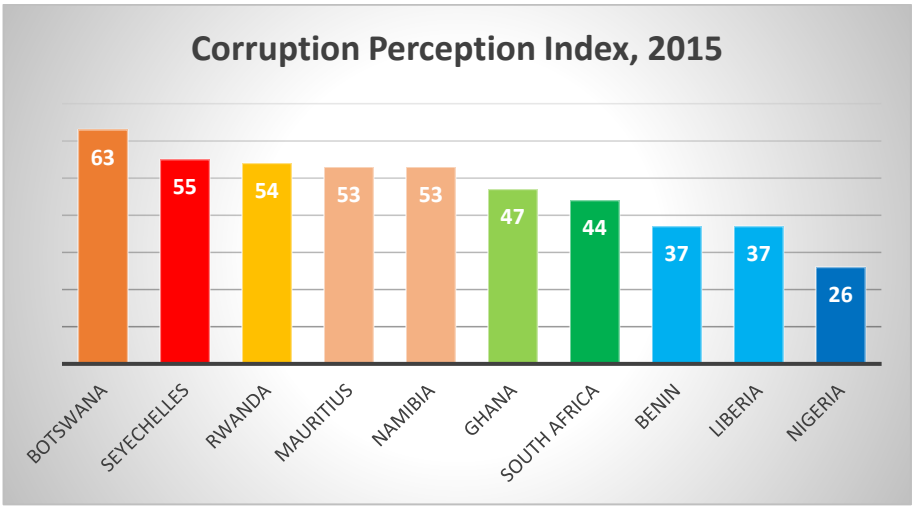
the government institutions is badly hurting the Nigerian economy, not allowing the economy to take its proper position in the committee of nations as depicted in the figures 8 and 9.

FIGURE 8: BENCHMARKING THE STRENGTH OF NIGERIA'S INSTITUTIONS AGAINST THE TOP PERFORMANCE IN SUB-SAHARAN AFRICA FOR 2015-2016.



Source: World Economic Forum, 2015

FIGURE 9: PERCEPTION OF CORRUPTION FOR SELECTED COUNTRIES IN SUB-SAHARAN AFRICA.



Source: Transparency International, 2015

Globalization (Dumping)

Trade liberalization currently enforced by the World Trade Organization (WTO) from the Uruguay Round Table Agreement of 1993 (it concluded in 1993, but took seven years), has a negative effect on the weak developing country like Nigeria where the access to basic infrastructure is almost none existence. There is an unequal technological strength among nations and this is not providing a fair level ground for competition. This has resulted in the weak technological

nations been completely over-ride by the well-advanced economies. In Nigeria, the ailing industries are collapsing on a daily basis, because they do not have the strength to compete with the industries operating in a more efficient system where all the infrastructure are working efficiently. Nnabuile *et.al.* (2014) reported that the Nigerian economy is vulnerable to the pressures of imported goods that could otherwise be produced locally.

Pack (1993) in his study 'Productivity and Industrial Development in the sub-Saharan Africa', found that the prevalent high domestic resources cost, seriously reduces the competitive strength of sub-Saharan African countries.

Literature review

There is a general consensus that MSMEs is important for both economic and social development in any economy, especially the developing economies. From the economic perspectives, MSMEs provide many benefits (Advani, 1997). MSMEs have been recognized as the engines through which the growth objectives of developing countries can be achieved (Abor and Biekpe, 2006). MSMEs is the main source of job and employment creation and output growth, not only in the developing countries but also in the developed countries (Tambuana, 2006). It is acknowledged in countries like Australia, Canada, France and Germany that MSMEs are the important engine of economic growth and technological progress (Thornburg, 1993).

There are three major paradigm of stand on MSMEs output and the economic growth. They are the classical theory, the Flexible Specialization thesis and lastly, the Pro-SMEs Policy Thesis.

Classical Theory

The classical theory thesis is found in the seminal articles of Hoselitz (1959), Staley Parker (1979) and Anderson (1982) among others. Hoselitz (1959) study on Germany industrialization, found that the early stage of industrial development in Germany, were manufacturing outfit that were characterized by artisans and craftsmen, in small production units. This artisans and craftsmen metamorphosed into large size enterprise with more modern technology, and the smaller and traditional units of production fizzle. On this premise, Parker (1979) and Anderson (1982) developed a general growth phase topology on the size pattern of firms by region and over time in the less developed countries. It was believed that the enterprises in the developed countries had generally become large firms over-time and that the less developed countries will witness such growth pattern. However, the current structure of enterprise in the developed countries shows that small businesses are still actually the engine of growth in those countries has submitted by Thornburg (1993).

Flexible Specialization Theory

The theory of Flexible Specialization is a strategic mode of customized production of goods as against massed production. It is subject to incessant changes and is based on the flexible use of the factors of production such as multi-user equipment as well as specialized skilled and innovative workers in a post-industrial revolution era where competition only rewards innovation. This theory was pioneered by Piore and Sabel in their 1984 seminal work titled "The second Industrial Divide: Possibilities for prosperity". They argued that due to market saturation, declining productivity levels and a spike in market structural stability there has been a paradigm shift from the Fordist mode of mass production to the non-Fordist. This was occasioned by the proliferation of flexible specialization with customized forms of production such as craftsmanship, fashion and the information technology, which is dominated mostly by small and medium scale enterprises. Examples of Small businesses in craft-based industrial regions can be found in Silicon Valley, New York City garment's district, as well as other similar clusters in Italy, Japan, Germany and Austria.

The main crux of the flexible specialization thesis vis-à-vis MSMEs is centred on the argument that MSMEs growth can favourably compete and even outperform Large Enterprises' in certain sectors of the economy. This is especially true for firms in the Information and Communication Technology sector that heavily rely on changing innovation and efficiency. This view that small and younger firms grow more rapidly over large firms as they strive to sufficiently accumulate resources to enable them withstand any external shocks has been collaborated by a number of studies (see Smallbone and North, 1995; Smallbone and Wyer, 2000; Heinonen et al., 2004). It also enforces the views of Joseph Schumpeter (1942) who was one of the earliest scholars to emphasize the socio-economic importance of small firms as the prime agents of innovations and economic growth. This suggests that the importance of small businesses in any economy cannot be overemphasized.

Pro-SMEs Policy Thesis

The development institutions, as well as the development finance practitioner are the advocate of small businesses promotion. This is hinge on the premise that small businesses enhance competition and it is the bedrock of entrepreneurship as well as innovation. It is a source of employment and income for a sizeable proportion of the population and it significantly contribute to output and economic growth in an economy (World Bank, 1994, 2002 and 2002).

Empirical Literature Review

So many works have been done to determine the impact of MSMEs on the economy output both in the developed and developing countries alike. The work of Beck *et. al.* (2003), provided the first robust cross-country analysis on SMEs and economic growth and found a positive relationship between SMEs output growth and economic growth. Also, Beck and Demirguc-Kunt explores the relationship between the relative sizes of small businesses and economic growth, as well as the impact of small businesses in poverty alleviation and found a strong positive relationship between small businesses and economic growth, but that there was no evidence of a causal link between small businesses and economic growth, and found no evidence of small businesses alleviating poverty or reducing income inequality. This shows that small businesses have positive impact on the economic growth, and that economic development creates a natural place for development and growth of enterprises of all sizes and to make small business to flourish, there is the need to encourage economic development in all ramification. Tambunan (2006) in his work 'Micro, Small and Medium Enterprises and Economic Growth', following from the work of Beck *et.al* (2003), also found a positive relationship between small businesses output growth and economic growth for seventeen selected Asian-Pacific countries. Hu (2010) analyses of 37 datasets of both developed and developing countries found that small businesses contribute to economic growth. However, IFC (2013) found that microenterprise firms have the least productivity growth rate among all types of firm sizes and that this cut across all the sectors of the economy as well as across regions and country income groups. At a country specific level, Bee Yan Aw (2001), found in Taiwan, China that firm grows because they are more productive. The study also show that productivity-size relationship has a built-in virtuous circle. The problem with this study is that there is an optimum size for any enterprise, with which they become less productive. Also, there are some kind of services that cannot enable the firm to grow as the study rightly demonstrated that some sectors are characterised by high presence of small businesses such as fabricated metals and nonelectrical industries. Some firms' product requires personal services which already place such firms in a position in which they cannot grow.

Most of the empirical studies in Nigeria (Opafunso & Adepoju (2014), Muritala et.al. (2012), Okpara & Wynn (2007)) did not establish MSMEs productivity. It is in this light we are contributing to the empirical study on the MSMEs output growth rate in the Nigerian economy. Opafunwa & Adepoju (2014) used a survey on Ekiti state, found a relationship between MSMEs and poverty reduction in Nigeria. Muritala *et.al.* (2012) also used a survey on Ogun state to analyze all constrain affecting the growth of MSMEs in Nigeria. Okpara & Wynn (2007) also used a survey on 400 MSMEs to analyze all constrain affecting MSMEs growth in Nigeria.

DESCRIPTION OF THE DATA

This study employed the 2007, 2010 and 2014 World Bank Enterprise Survey data on Nigeria. The data is a stratified multi-stage random sampling, comprising of geographically enumerated areas and cutting across many sectors of the economy. The survey after cleaning comprises of 952 data set for year 2007 survey of which 749 were small enterprise, 181 medium enterprises and 22 were large enterprise. The year 2010 survey comprises of 2740 data set of which 1798 were small enterprise, 836 were medium enterprise and 106 were large enterprise. The year 2014 survey contains 1306 data set after cleaning of which 128 were micro, 717 were small, 358 were medium and 103 were large enterprise. By the enterprise survey definition, which is along employment in the firms, micro enterprise employee less than 5 number of employees, small enterprise with between 5 and 19 employees, medium enterprise of between 20 and 99 employees, and large enterprises of 100 and above employee size.

This survey contains two-point output information for each enterprise surveyed. This gave us the opportunity to compare each firm size output for two periods. For the 2007 survey, we have information on each firms output for 2006 and 2003. For 2010 survey, there is information for each firms output in 2008 and 2002 and finally for 2014, we have information for each firm output in 2009 and 2012. Any firm that does not provide information for the two-point period were not used. This

enabled the identification of the productivity growth rate for each of the enterprise (micro, small, medium and large enterprise) in the Nigerian economy.

Like we said earlier, output growth in MSMEs or any enterprise can be identified from three sources namely: increase in the number of establishment (taking into consideration that the number of employee and output of the existing firms remain constant), increase in the number of employees (with the number of firms and labour productivity held constant), increase in the output or productivity, which can be term efficiency (holding constant the number of firms and employee in each firm) or the combination of the three factors. This study will basically be limited to the last source, increase in the output or productivity of the firms, due to the nature of the data used and the essence of the study.

Our non-parametric variance analysis uses the locally-weighted scatterplot smoothing (LOWESS) method proposed by Cleveland (1979) and modified by Neumark, Wall and Zhang, (2008).

Step 1: Let yi be the output growth rate of observation i (an establishment over a two-year period), xi the size of observation i measured using average size definition, and N the total number of observations. The standard implementation of locally-weighted mean smoothing would proceed as follows. Order the data such that xi ≤ xi-1 for all i = 1, …, N-1. For each yi, choose the subset of the data that is indexed by i- = max (1, i-k) through i- = min (i+k, N), where k= [(N.h – 0.5)/2] and h is the pre-specified bandwidth that indicates the proportion of the data used in the calculation of the smoothed value $\widehat{yi}$. Choose a function that assigns a weight wi to each observation j=i-, …, i-; observations outside of this range are given no weight. For example, one may choose a tri-cubic weight function (the kernel), in which case the smoothed value $\widehat{yi}$ is calculated as:

$$\widehat{yi} = \frac{\sum_{j=i+}^{i+}(wj.yj)}{\sum_{j=i-}^{i+}(wj)}, where\ wj = \left(1 - \left(\frac{\{xj-xi\}}{\Delta}\right)^3\right)^3$$ and Δ = 1.0001*max (xi- - xi, xi - xi-).

Step 2: Given a repeated value for many observation, this first method is computationally infeasible. It would involve calculating repeated weighted average. Instead, we utilize the following method where we first compute an average value y for each unique value of x, and then calculate a smoothed value $\widehat{yi}$ from the reduced dataset.

We use the following procedure. First, order the data such that xi ≤ xi+1 for all I = 1, …, N-1. For each unique value of xi, create a zi = xi. Let the total number of z be M and order all of them such that zi < zi+1 for all I = 1, …, M-1. The, let $yi = \frac{\sum_{yi\in\widetilde{Yi}} yi}{C(\widetilde{Yi})}$ for all I = 1, …, M, where $\widetilde{Yi} = \{(yi, xi): (xi = zi)\}$ and C($\widetilde{Yi}$) is the cardinality of $\widetilde{Yi}$. Now we apply the standard smoothing procedure to the observations (yi, zi), except that the weight function is adjusted using frequency of yi. Again using a tri-cubic weight function, this amounts to calculating the following smoothed value:

$\widehat{yi} = \frac{\sum_{j=i-}^{i+}(wj.yj)}{\sum_{j=i-}^{i+}(wj)}$ where wj = $C(\widetilde{Yi}).\left(1 - \left(\frac{\{xj-xi\}}{\Delta}\right)^3\right)^3$.

These two methods essentially use the same information in the data although they usually assign slightly different smoothed values to different observations. Whereas the standard method gives multiple predicted values for each zi in cases where there is multiple xi such that xi = zi, our method only returns one predicted value per unique value of x.

Data Analysis

This result start with the descriptive statistics for the three enterprise survey data point used. The 2007 data set descriptive statistics summary will be presented first, followed by 2010 and finally that of 2014. For 2007 dataset, 2006 fiscal year output and 2003 fiscal year output were surveyed for Large, Medium and Small enterprises. The dataset for 2007 and 2010 does not have provision for Microenterprise. For 2010 dataset, 2008 and 2002 fiscal year output were surveyed. Finally, for 2014, 2012 and 2009 fiscal output were surveyed.

Table 1: Year 2007 Dataset Descriptive Statistics Summary

	LARGE FIRMS		MEDIUM FIRMS		SMALL FIRMS	
Indicators	2006	2003	2006	2003	2006	2003
Mean	7.85E+08	4.67E+08	5.59E+09	1.32E+10	2.42E+09	3.34E+09
Median	7900000	5500000	5000000	2800000	3500000	2000000
Maximum	7.00E+09	6.23E+09	3.50E+11	1.00E+12	4.00E+11	6.73E+11
Minimum	70000	100000	20000	15000	2011	2013
Std. Dev.	1.97E+09	1.37E+09	3.54E+10	9.12E+10	2.42E+10	3.31E+10
Skewness	2.456927	3.63191	7.587181	8.807118	13.45286	14.52027
Kurtosis	7.45904	15.5064	64.0309	86.933	199.1812	253.586
Jarque-Bera	40.35993	191.7419	29827.53	55469.03	1223710	1985995
Probability	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Sum	1.73E+10	1.03E+10	1.01E+12	2.39E+12	1.81E+12	2.50E+12
Sum Sq. Dev.	8.18E+19	3.96E+19	2.26E+23	1.50E+24	4.37E+23	8.20E+23
Observations	22	22	181	181	749	749

Source: Computed by the Author

Table 2: Year 2010 Dataset Descriptive Statistics Summary

	LARGE FIRMS		MEDIUM FIRMS		SMALL FIRMS	
Indicators	2008	2002	2008	2002	2008	2002
Mean	2.43E+09	1.93E+07	7.16E+07	5.11E+07	16019299	1.08E+08
Median	4.87E+08	8000000	28002000	6000000	6000000	8637700
Maximum	3.20E+10	4.26E+08	4.68E+09	9.10E+09	3.85E+09	1.90E+10
Minimum	35500000	1400000	2200000	180000	170000	30000
Std. Dev.	5.41E+09	5.12E+07	2.08E+08	4.13E+08	95751067	8.68E+08
Skewness	3.479888	6.742702	14.31771	16.26742	36.10583	15.56496
Kurtosis	15.52473	49.80788	293.6297	312.2994	1433.48	272.6897
Jarque-Bera	906.774	10480.02	2970781	3369242	1.54E+08	5521477
Probability	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Sum	2.58E+11	2.04E+09	5.99E+10	4.27E+10	2.88E+10	1.94E+11
Sum Sq. Dev.	3.07E+21	2.75E+17	3.62E+19	1.42E+20	1.65E+19	1.35E+21
Observations	106	106	836	836	1798	1798

Source: Computed by the Author

Table 3: Year 2014 Dataset Descriptive Statistics Summary

	LARGE FIRMS		MEDIUM FIRMS		SMALL FIRMS		MICRO FIRMS	
Indicators	2012	2009	2012	2009	2012	2009	2012	2009
Mean	3.88E+10	1.73E+07	2.00E+09	4.47E+07	4.24E+08	3.96E+09	19338651	30590141
Median	55000000	1.90E+06	4000000	3000000	1250000	5000000	900000	1900000
Maximum	1.00E+12	6.42E+08	2.75E+11	3.00E+09	2.75E+11	4.00E+11	9.01E+08	2.60E+09
Minimum	450000	3000	70000	20000	1000	20000	40000	5000
Std. Dev.	1.40E+11	6.70E+07	1.91E+10	2.39E+08	1.03E+10	3.04E+10	1.02E+08	2.34E+08
Skewness	4.910346	8.202764	11.2657	9.348262	26.65738	10.02847	7.480065	10.54741
Kurtosis	28.97615	75.44322	140.4898	100.04	712.6994	111.8959	59.99643	115.7505
Jarque-Bera	3309.761	23677.82	289548.9	145680.9	15132157	366285.1	18519.46	70174.21
Probability	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Sum	4.00E+12	1.79E+09	7.14E+11	1.60E+10	3.04E+11	2.84E+12	2.48E+09	3.92E+09
Sum Sq. Dev.	2.00E+24	4.58E+17	1.30E+23	2.04E+19	7.56E+22	6.62E+23	1.32E+18	6.95E+18
Observations	103	103	358	358	717	717	128	128

Source: Computed by the Author

Result

The result for the analysis shows a consistent negative productivity growth rate for small business throughout the analyses of the annual fiscal sales. Whilst the result of the analysis of the annual fiscal sales obtained from the 2007 survey shows a sharp fall in output productivity growth rate of 27.35% and 57.76% for both small and medium-scale enterprises respectively between the period of 2006 and 2003, the reverse is the case for large firm as they recorded a positive productivity growth rate of 147.05% during the same period. For 2010 survey data analysis, it was only small firm that had a negative output growth rate of 27.36%, between 2008 and 2002, while medium and large enterprise recorded a positive output growth rate of 40.13% and 12531.81% respectively. Similarly, the 2014 data shows that micro and small firms reordered negative growth rate of 36.78% and 89.29% respectively between 2012 and 2009, while medium and large firm recorded positive growth of 4363.33% and 223750.97% respectively. This result clearly demonstrates that small business in Nigeria has a low productivity rate. This is in tandem with the findings of IFC (2013) that microenterprise firms have the least productivity growth rate amongst firms of all sizes.

TABLE 4: YEAR 2007 DATASET ANALYSIS

INDICATORS		YEAR 2006 Y = 2006	YEAR 2003 X = 2003	DIFFERENCE R = Y - X	PERCENTAGE DIFFERENCE P = (R/X)100
FIRM SIZE	SMALL	1.81482E+12	2.49846E+12	-6.8365E+11	-27.36
	MEDIUM	1.01098E+12	2.39368E+12	-1.3827E+12	-57.76
	LARGE	17264200000	10276044000	6988156000	68.00

Source: Computed by the Author

TABLE 5: YEAR 2010 DATASET ANALYSIS

INDICATORS		YEAR 2008 Y = 2008	YEAR 2002 X = 2002	DIFFERENCE R = Y - X	PERCENTAGE DIFFERENCE P = (R/X)100
FIRM SIZE	SMALL	28802699353	1.94013E+11	-1.6521E+11	-85.15
	MEDIUM	59869445541	42723808600	17145636941	40.13
	LARGE	2.57752E+11	2040500000	2.55712E+11	12531.81

Source: Computed by the Author

TABLE 6: YEAR 2014 DATASET ANALYSIS

INDICATORS		YEAR 2012 Y = 2012	YEAR 2009 X = 2009	DIFFERENCE R = Y - X	PERCENTAGE DIFFERENCE P = (R/X)100
FIRM SIZE	MICRO	2475347350	3915538000	-1440190650	-36.78
	SMALL	3.04021E+11	2.83768E+12	-2.5337E+12	-89.29
	MEDIUM	7.14223E+11	16002022800	6.98221E+11	4363.33
	LARGE	3.99639E+12	1785291900	3.99461E+12	223750.97

Source: Computed by the Author

We further did a robust analysis on the 2014 survey data set by disaggregating the data into subsector to determine sectoral productivity levels. We found that micro firms in the garments subsector are most productive as they show a positive output growth rate of 6,696.95%. The next productive subsector for micro enterprises is hotel and restaurants with output growth rate of 547.37%. This is followed by the furniture subsector that recorded output growth rate of 539.38%. This confirm the flexible specialization theory that advocate that one of the reason for the continuous existence of small businesses was because of customers' choice of customized forms of production. The least productive subsector for micro enterprises is the electronics industry which recorded a negative 95.83% output growth rate.

For small firms, the most productive industry is the wholesale trade subsector that witnessed an increase in output growth rate to the tune of 2,433.11%, this clearly demonstrates wholesale subsector to be the best space for the small firms. The garment and textile industries are next most productive subsectors for small enterprises in Nigeria. The garment recorded an output growth rate of 240.9% and the textile subsector experienced a growth rate of 229.24%. However, both the information technology (IT) and the machinery and equipment subsectors witnessed a sharp decline in output growth rate comprising 100% and 99.99% drop respectively. The decline witnessed in these sectors could be the effect of competition on small firms due to the huge capital outlay required to compete favourably in these industries.

For the medium firms, the most productive subsector is the fabricated metal products industry that witnessed an increase in output growth rate to the tune of 104,026.42%. The hotel and restaurants industry is next most productive subsectors for medium-scale enterprises in Nigeria. The hotel and restaurant industry recorded an output growth rate of 43,644.71%, while the furniture subsector experienced a growth rate of 8156.24%. However, the Chemicals, Transport and Plastic and Rubber subsectors all witnessed a sharp decline in output growth rate comprising 97.37%, 91.80% and 78.93% respectively. With the result obtained, we have been able to properly classify the heterogeneous MSMEs into diverse segmentations for any targeted interventions such as income stabilization policy, employment creation and productivity increase, etc.

TABLE 7: YEAR 2014 SUSBSECTOR ANALYSIS FOR MICRO FIRMS

SECTORS	SUB-SECTOR	MICRO Y = 2013	X = 2010	R = Y - X	P = (R/X)100
MANUFACTURING	FOOD	1050000	3270000	-2220000	-67.89
	TEXTILES	3640000	2151000	1489000	69.22
	GARMENTS	9.34E+08	13748000	9.21E+08	6696.95
	CHEMICALS	-	-	-	-
	PLASTIC & RUBBERS	-	-	-	-
	NON-METAL MINERAL PRODUCTS	63600000	25970000	37630000	144.90
	BASIC METALS	1250000	700000	550000	78.57
	FABRICATED METAL PRODUCTS	31392000	70600000	-3.9E+07	-55.54
	MACHINERY & EQUIPMENT	300000	350000	-50000	-14.29
	ELECTRONICS	500000	12000000	-1.2E+07	-95.83
	FURNITURE	2.13E+08	33345000	1.8E+08	539.38
SERVICES	WHOLESALE	55280000	53050000	2230000	4.20
	RETAIL	8.81E+08	2.77E+09	-1.9E+09	-68.22
	IT	1740000	2800000	-1060000	-37.86
	HOTEL & RESTAURANTS	1.65E+08	25500000	1.4E+08	547.37
	OTHER SERVICES	10350000	2.17E+08	-2.1E+08	-95.23
OTHERS	CONSTRUCTION	100000	120000	-20000	-16.67
	TRANSPORT	6580000	15870000	-9290000	-58.54

Source: Computed by the Author

TABLE 8: 2014 SUSBSECTOR ANALYSIS FOR SMALL FIRMS

SECTORS	SUB-SECTOR	SMALL Y = 2013	X = 2010	R = Y - X	P = (R/X)100
MANUFACTURING	FOOD	7.53E+08	1.42E+12	-1.4E+12	-99.95
	TEXTILES	3.1E+09	9.42E+08	2.16E+09	229.24
	GARMENTS	1.12E+10	3.29E+09	7.93E+09	240.97
	CHEMICALS	8300000	1.1E+09	-1.1E+09	-99.25
	PLASTIC & RUBBERS	30050000	2.18E+11	-2.2E+11	-99.99
	NON-METAL MINERAL PRODUCTS	6.63E+08	1.31E+11	-1.3E+11	-99.50
	BASIC METALS	830000	3.6E+08	-3.6E+08	-99.77
	FABRICATED METAL PRODUCTS	3.62E+08	1.47E+09	-1.1E+09	-75.32
	MACHINERY & EQUIPMENT	1500000	1E+10	-1E+10	-99.99
	ELECTRONICS	2.2E+08	46700000	1.73E+08	370.02
	FURNITURE	5.18E+08	2.81E+10	-2.8E+10	-98.16
SERVICES	WHOLESALE	2.76E+11	1.09E+10	2.65E+11	2433.11
	RETAIL	3.08E+09	5.88E+09	-2.8E+09	-47.66
	IT	11790000	2.45E+11	-2.5E+11	-100.00
	HOTEL & RESTAURANTS	2.11E+09	3.2E+10	-3E+10	-93.39
	OTHER SERVICES	2.36E+09	3.77E+10	-3.5E+10	-93.74
OTHERS	CONSTRUCTION	90450000	7.1E+10	-7.1E+10	-99.87
	TRANSPORT	1.9E+08	1.13E+10	-1.1E+10	-98.32

Source: Computed by the Author

TABLE 9: 2014 SUSBSECTOR ANALYSIS FOR MEDIUM FIRMS

SECTORS		MEDIUM			
	SUB-SECTOR	Y = 2013	X = 2010	R = Y - X	P = (R/X)100
MANUFACTURING	FOOD	1.58E+09	2.25E+09	-6.8E+08	-30.10
	TEXTILES	2.01E+09	3.12E+08	1.7E+09	545.80
	GARMENTS	1.27E+09	46550000	1.22E+09	2619.14
	CHEMICALS	11400000	4.33E+08	-4.2E+08	-97.37
	PLASTIC & RUBBERS	4340000	20600000	-1.6E+07	-78.93
	NON-METAL MINERAL PRODUCTS	5.88E+09	4.65E+08	5.41E+09	1163.73
	BASIC METALS	2.06E+08	33920000	1.72E+08	506.87
	FABRICATED METAL PRODUCTS	1.01E+11	97105000	1.01E+11	104026.42
	MACHINERY & EQUIPMENT	3500000	1450000	2050000	141.38
	ELECTRONICS	7000000	4000000	3000000	75.00
	FURNITURE	1.41E+11	1.71E+09	1.4E+11	8156.24
SERVICES	WHOLESALE	9.53E+08	2.93E+08	6.6E+08	225.24
	RETAIL	1.79E+10	1.09E+09	1.68E+10	1543.98
	IT	10300000	16100000	-5800000	-36.02
	HOTEL & RESTAURANTS	2.75E+11	6.29E+08	2.75E+11	43644.71
	OTHER SERVICES	2.37E+09	3.86E+09	-1.5E+09	-38.55
OTHERS	CONSTRUCTION	8.95E+08	1.78E+09	-8.8E+08	-49.59
	TRANSPORT	2.17E+08	2.64E+09	-2.4E+09	-91.80

Source: Computed by the Author

CONCLUSION AND RECOMMENDATION

This research uses three World bank enterprise survey data for Nigeria to examines the extent of MSMEs output contribution to productivity growth rate in the Nigerian economy. The study also explores the factors that constrain MSMES output shares, output composition, market orientation and location in Nigeria. Some of the factors identified include huge infrastructural gap, inadequate institutional support and low access to credit. The resultant effect is a low investment commitment amongst MSMEs thus hampering the output expansion of small businesses in the Nigerian economy.

This study empirically measures MSMEs productivity growth rate using annual sales of firms from the World bank enterprise survey data for Nigeria. This research employs the non-parametric variance estimation using the locally-weighted scatterplot smoothing (LOWESS) method on three sets of two-points data (2006 and 2003, 2008 and 2002, and finally 2012 and 2009) of annual fiscal sales for each category of firms comprising micro, small, medium and large firms. The result shows that the small businesses have a negative productivity growth rate in Nigeria. The result is in line with IFC (2013) which found small businesses to have the least productivity growth rate amongst firms of all sizes. However, this study departs from IFC findings which states that small businesses' low productivity is tenable across all the sectors of the economy. We found that small businesses actually recorded high productivity growth rate in some subsectors of the economy that specializes in product customization such as garment and furniture. Therefore, this study validates the flexible specialization theory of Piore and Sabel (1984) that emphases the economic importance of MSMEs in the post-industrial era where product customization is the new order of production.

The policy implication of this study is that any targeted intervention in the MSMEs sector designed to increase productivity, must be channeled into the subsector with the most employee specialization as well as product customization. Also, drawing from a synthesis of the Flexible specialization theory and Pro-SME policy thesis, MSME

production hubs similar to what is done in Silicon Valley and New York's garment district should be encouraged as this can help spur MSME output because it prompt easy knowledge transfer and skill adaptation.

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