

Harnessing Technological and Non-technological Innovations for SMEs Profitability in the Nigerian Manufacturing Sector

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Abstract

Science, Technology and Innovation (STI) have played a significant role in driving manufacturing sector of the advanced economies. This study examines the impact of technological and non-technological innovations as well as size of firm on the profitability of SMEs. The study was conducted using questionnaire among the manufacturing SMEs in Nigeria with a total of 365 of them correctly filled and analyzed using qualitative and Ordinary Least Squares techniques. The result revealed that process innovation (p-value<0.041) and product innovation (p-value<0.078) which represent technological innovation, marketing innovation (p-value<0.089) which represents non-technological innovation and size of firms (p-value<0.005) were significant in driving the turnover of the SMEs, whereas organisational innovation was not significant at 10% level of significance. The study therefore suggests that the manufacturing SMEs should continuously engage in both technological and non-technological innovations to improve their productivity, which will further increase their contribution to the Nigeria's GDP.

Keywords

Technological Innovation, Non-technological Innovation, Small and Medium Enterprises, Manufacturing, Nigeria

1. Introduction

Innovation in the manufacturing sector is crucial towards the realization of economic growth and development and it is driven by numerous factors which may be technological or non-technological [1]. Innovation is of great importance in creating competitive advantage for a firm. Consequently, innovation processes vary in dimensions based on sector, field of knowledge, size of the firm, corporate strategy, prior experience, age, technological level, the objective of innovation and the market [2].

In recent times, innovation is seemingly not perceived only

through the lens of new product development and process innovation or traditional R&D whereas non-technological activities also play a crucial role. According to [3], non-technological factors are necessary for achieving the most of firms' capacity for technological innovation. By and large, product and process innovations in manufacturing firms are reflected as technological, whereas organisational and marketing innovations are considered as non-technology-based [4].

[5] affirmed that the practice and evolution of innovation in manufacturing sector is subjected to interest in business and policy world. They are of the assumption that innovation leads to positive and evident business outcomes noticeably in

higher margin returns. This sustains the competitive edge of the manufacturing small and medium enterprises (SMEs) especially in the developed economies with higher performance. Innovative manufacturing firms are liable to enjoy higher profitability levels, price premium and generate growth in turnovers with higher margins as a result of their new product development which may have explicit benefits over existing products in established markets.

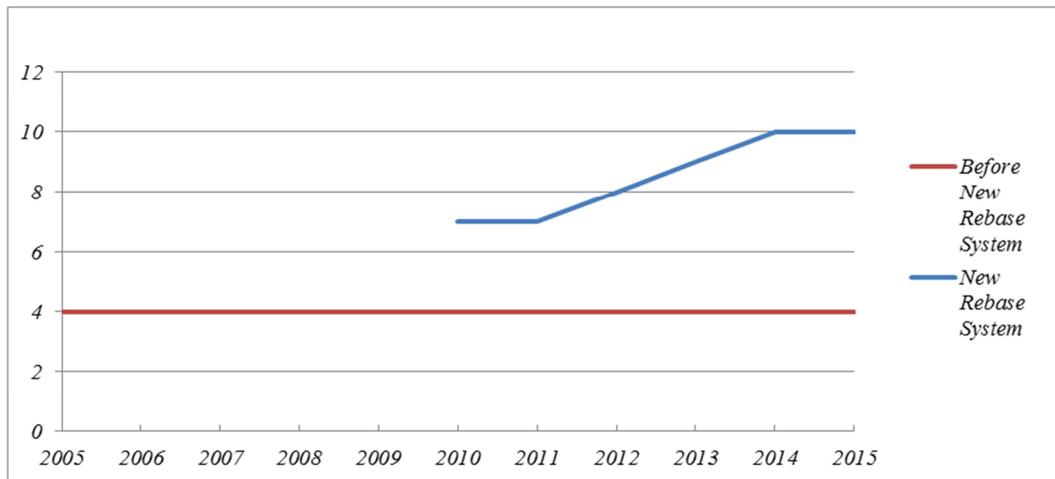
Innovation enables sustainable growth and profitability through attentive control perspectives. Manufacturing SMEs are usually noted for introducing innovative new products which open up new market niches which serves as a backbone for their survival [6]. In the present globalized economy, the manufacturing SMEs are threatened with stiff competition and growing demands for high quality products, services and market which is categorized by fast response time, reliable deliveries and new product functions. In such a dynamic and competitive environment, innovation is regarded as a key strategic factor for these manufacturing SMEs' competitiveness [7]. According to the theoretical growth literature, the benefits derived by firms' innovation investments are proportional to the amount of resources spent, since firms' innovation is expected to reinforce growth [8].

Considerably, there is evidence that innovation plays a vital role in shaping the growth, competitiveness of firms, industries and nations as a whole whereas at the firm level,

innovation is linked to performance and competitiveness [9]. Innovative manufacturing firms are competent at continually responding to change of any sort in their environments and are categorized by creative people developing new products and services.

However, the manufacturing sector in Nigeria which is mainly dominated by the SMEs is experiencing continuous drop in productivity. The contribution of manufacturing sector to real GDP is consistently reducing overtime as against the current global trend [10]. The contribution of manufacturing to real GDP before the new rebase system steadied around 4% between year 2005 and 2015 without any major improvement in the sector's productivity as shown in the Figure 1 below.

Though, considering the current rebase of the economy, the manufacturing sector's contribution to real GDP is between 7% and 10% between year 2010 and 2015. As this sector faces various challenges such as poor access to credit facilities, poor infrastructural facilities (e.g. electricity) and low R&D activities among others, the role played by innovation cannot be undermined. [11] asserted that R&D and innovation activities have significant impact on economic growth in Nigeria but the attention should not only be on spending on innovation activities but also developing strong institution and enhanced academia-industrial linkage.



Source: Central Bank of Nigeria Statistical Bulletin, 2015.

Figure 1. Contribution of Manufacturing Sector to Gross Domestic Product from year 2005 to 2015.

Studies of innovation at the SMEs level in the Nigerian manufacturing sector are still very few as most of the studies focus on a particular aspect of innovation [12, 7, 10]. Some studies focused on the entire manufacturing sector without size specific [1, 13, 7], while some focused on SMEs in another sector outside manufacturing [14-19]. On the other hand, while some focused on technological innovation only [12, 7, 20, 19, 10], others focused on non-technological innovation only [21-23]. Only a very few has studied technological and non-technological innovations [24-27].

More so, [12, 28, 29, 30] among others used descriptive analysis and some of them were too general or too specific to

a particular form of innovation or sector. But this study seeks to contribute to the dearth of studies on technological and non-technological innovations and their effects on SMEs profitability in Nigerian manufacturing sector using qualitative and econometrics analyses.

However, related studies carried out in Germany from the Community Innovation Surveys (CIS) made comparison between the relevance of technological and non-technological innovations activities. From CIS4 data, [27] compared non-technological innovations (organisational and marketing) with technological ones where they concluded that 60% of all manufacturing firms introduced technological

innovations and also 60% introduced non-technological innovations. This showed that there were no differences in the percentage of all industrial and service sector firms that introduced an organisational and/or marketing innovation. They also stressed that the key element that influences firms' innovation behaviour is the competitive environment.

This study uses innovation survey conducted in year 2010 by the National Centre for Technology Management (NACETEM) on the performance of manufacturing SMEs to capture dimensions of innovation practices that include technological and non-technological activities and estimates their role in innovation outcomes and their profitability. The findings in this paper would be useful for theoretical discussion as well as for policy formulation and entrepreneurial development.

Section 1 introduces the paper; section 2 discusses the concept of innovation and past empirical studies; section 3 presents overview of the SMEs in the Nigerian manufacturing sector; section 4 presents methodology and analysis, while section 5 concludes the paper.

2. Concept of Innovation

This section discusses the concept of technological and non-technological innovations. [31] emphasized that innovation consists of any of the following phenomenon: the introduction of new goods, the introduction of a new method of production, the opening of a new market, the conquest of a new source of supply of inputs or materials and the implementation of a new form organisation. He also affirmed that invention does not necessarily lead to innovation and that innovation has been recognized to play a central role in economic growth.

[32] defined innovation as the adoption of a new idea, behaviour, process, product, device, system, policy, programme, device or services which are said to be new to the organisation or market. Innovation arises out of perceived and often clearly articulated market needs. More so, innovation is referred to as an effective way of improving firm's productivity due to the resource limitation issue facing a firm [33]. This leads to focused R&D activities creating a host of products for the market. Innovation management literature stresses the significance of integrating product, process and organisational innovation for successful conveying of new ideas and new business opportunities into market success [34, 35].

[36] believed essentially that innovation is a vital element for economic advancement of a country and attractiveness of an industry. [37] affirmed that innovation is one of the indispensable competitive weapons and mostly seen as a firm's core value capability. Based on empirical studies in Malaysia by [38], it was concluded that business innovation is crucial for a firm to exploit and enjoy new opportunities and to gain competitive advantage in the market. The crucial role that innovation plays is not only noticed in large firms but also in SMEs [39, 40].

According to [41], the empirical evidence in Portugal as

regards the relationship between innovations and firm growth has concentrated on technological development. Even though the concept of innovation is mostly associated with the scientific and technological dimensions, there is a great consensus that innovation cannot be classified only to the technological side. In view of this, innovation can be classified into technological and non-technological innovations.

2.1. Technological Innovation

Technological innovation is typically seen as encompassing product and process innovations. [42] defined technological innovation as a new means of combining factors of production resulting from a change in inputs to produce outputs. Schumpeter regarded the process of technological innovation as sequential and central to an understanding of economic growth.

[43] ascertained that technological innovation is a unified process which entails activities of technology, organisations, business and finance. It means that the entrepreneurs seize the market prospects for commercial benefits as the goal to create a stronger performance, more efficient and lower cost of production and operation system. From this process, new products and production method are introduced, new markets are exploited, new raw materials or semi-finished products are obtained and new business organisations are formed.

[44] examined the dynamic mechanism of technological innovation activities in China. The work argued that the main driving force of technological innovation of enterprises consists of six important factors. These factors include the benefit drive, the market or social demand pull, the driving force of enterprise employees, the corporate image and the driving force of technological development, market competition and the driving force of government. The first four are the internal forces which make enterprises accumulate technological capability, carry on technological innovation, and the rest are external which force enterprises to produce innovation behaviour.

Based on the relevance of technological innovation in Malaysia, [45] noted that technological innovation capability should be defined to be under the condition of certain scale, technology and economy. It is pertinent that entrepreneurs should make good use of available resources for technological innovation.

Considering the economic nature of a developing nation, technological innovation is a process by which firms understand and adopt the design and creation of goods and services irrespective of their newness to their competitors, their market or the world [46]. Technological innovation involves a sequence of activities such as application of new technology and methods; adopting new techniques in production and new management tactic or strategy; improving quality of production; developing new production; providing new service; exploring new market and realizing market value. It can be deduced that technological innovation of enterprises is the innovation in R&D, production, sale and management.

More so, according to [47], technological innovation encompasses a series of activities such as conceptualizing new ideas, designing products, prototyping, producing in volume, marketing, and commercializing among others. It is a process of knowledge creation, conversion, and application. The essence of technological innovation is the emergence of new techniques in production and its commercial application. It is only through continuous product innovation that SMEs can strengthen their competitive advantages and cope with market opposition. It was also affirmed that the promotion of sustainable development of SMEs through technological innovation can be revealed through the application of information technology as a driving mechanism to stimulate industrialisation.

Similarly, the use of automated means in all types of industries will transform technology level of traditional industries. This is with a view to enhance and lay a solid foundation for industrial competitiveness as well as restructuring the old industrial enterprises thereby improving organisational structure of small and medium enterprise, boost the vitality of traditional enterprises and promote enterprise collaboration. More so, through technological innovation and transformation, SMEs are opportune to transform and improve the techniques of their processing equipment, manage resources, assess environmental protection, stimulate clean production, accelerate research and development and new energy sources [47].

Classification of Technological Innovation

Researchers in the past decades have paid much more attention to technological innovation with concise literatures illustrating various types of innovations based on the several surveys conducted. According to [48] and U.S Census Bureau in 2006, technological innovations are broadly classified into product and process.

i. Product Innovation

This refers to the implementation of product that is new or significantly upgraded for its intended usage that may include the integrated technical applications, components and materials or other characteristics therein. It integrates new knowledge or techniques, or a combination of both existing knowledge and techniques [48].

Product innovation necessitates the firm to be technologically inclined thereby enabling them to serve their customers well based on their capabilities. This will inspire the firm to engage in innovative activities by boosting their internal competences so as to meet the market demands. Product innovation will arise only when a technically knowledgeable firm is able to recognize and respond to customer necessities by developing or improving products. [49] in their findings in the USA opined that markets and technology are core components that bring about development of a new product.

ii. Process Innovation

This is the application of a new or significantly enhanced method of production or service delivery. It includes significant changes introduced in the process of production,

skills involved, equipment or software that are engaged during the innovation phase [48]. Usually, it is used to reduce unit costs of production or service delivery, to improve quality or deliver new or significantly improved products or services. They are essentially introduced into the firm's production or service operations that transform the way products are being manufactured.

[50] affirmed from their studies of process innovations of small firms in the USA that economic motivations, internal capabilities and technical competencies which a firm has gathered over time as well as their pool of expertise from learning or knowledge acquisition through outsourcing of new technological improvement were the major drivers that force these firms in embracing process innovation.

2.2. Non-technological Innovation

According to [48], non-technological innovation refers to all innovation activities which do not embrace technological motives. In other words, it entails those innovative activities of the firms which only complement the performances of technological innovations. Non-technological innovation is an important element of firms' innovation activities that complement technological innovation and it is defined as the introduction of new organisational structure or methods and the introduction of new marketing systems or procedures [25].

Based on the empirical evidence from the 1994 Australian Bureau of Statistics (ABS) survey, non-technological innovation is characterized by the application of advanced management methods, the adoption of significant organisational structures and the implementation of new or substantial corporate planned orientations. Furthermore, the extent to which non-technological innovation occurred across all Australian industries was also studied. The 1994 Australian Bureau of Statistics (ABS) survey conducted majorly focused on measuring the impact of non-technological innovation thereby considering manufacturing and services sectors. From their findings, they were able to demonstrate the extent to which non-technological innovations occurred across the economy and most importantly, it led to comparison of the incidence of non-technological innovations with technological innovations.

Classification of Non-technological Innovation

The adoption of the concept of non-technological innovation led to the introduction of two new types which complement the standard concepts and activities of product and process innovations which are classified into organisational and marketing [48].

i. Organisational Innovation

This is the implementation of a new method in firm's business practices, structure, workplace organisation or external relations. They are mostly intended to increase a firm's performance by reducing administrative costs or expenses thereby improving workplace satisfaction, gaining access to non-tradable assets or reducing costs of supplies [48].

More often, the term organisational innovation is largely used to refer to organisational standards of the firm, features of a specific product line with diverse changes among organisational aspects or functions of the firm such as marketing, product development, environmental and governmental interferences, industrial, customer and human relations, workers health and safety etc. To support the existing technological innovation in a firm, organisational practices and changes are adopted.

Various studies have examined the relationship between organisational and technological innovations by emphasizing the importance of technological innovation as a driving force for organisational changes within the firm [51, 52, 27] and these studies have empirically shown that technological innovation usually leads to organisational innovation and firms adopting technological innovations automatically need to reorganise their workforce, production processes, sale and distribution channels. [27] in Luxembourg affirmed that organisational practices and changes are observed as an input for firms' innovation processes and innovation capacity and firms dedicating more resources to managerial practices or new organisational forms should be in a better position to efficiently use new skills and technologies.

ii. Marketing Innovation

This is the implementation of a new marketing method or technique which has significant changes in its product design or packaging, product placement, product promotion or pricing with the aim of addressing customer needs, opening up new markets or newly positioning the firm's product on the market, with the objective of increasing the firm's sales [48]. The purpose is to identify new potential market and new ways to render service to target markets or customers through different methods of sales. However, according to [17], firms with relatively low level of R&D performance usually attribute their innovation activities to strategies that will embrace competitiveness, marketing and distribution systems (marketing innovation).

Marketing innovation is defined in terms of three dimensions namely: product strategy, price strategy and promotion strategy. These three persuasive strategies provide marketing actions such as changes in design or packaging, changes in sales or distribution channels and methods, advertising or sales promotions [53]. The motive is to increase the pool or demand for the firms' products and/or to enter new markets.

Theoretically, for any firm to have better abilities and potentials to increase customer satisfaction and competitiveness, it is expedient for such organisation to harness its market technologies competitively. [54, 53] emphasized the need to successfully adjust to changing market needs by rediscovering, exploiting business opportunities and more importantly embracing new information sources and resources (skills) leading to the development of new products or processes so as to remain relevant in the competitive market. Also, market innovation leads to higher business profitability when it relates to learning from external relations such as markets, clients or

competitors [27].

Notably, to harness technological and non-technological innovation, the main efforts are from within the enterprises, which engage in changes, most often, of different forms such as adoption of incremental and radical innovation. These two forms of innovation by firms can be better explained below:

a. Radical Innovation

Radical innovation is described as a total diverse technology in process or methodology [55]. It may be referred to as a new product, process or system that results from a technological breakthrough or advances in knowledge or the application of a technology having an extensive impact. According to [56], radical innovation represents revolutionary changes in technologies thereby representing clear departures from existing practice.

With radical innovation, technology is absolutely new but achieved within the same techno-economic paradigm. Our day-to-day example in an organisation or firm is R&D. However, electric light and gas light also represent classic radical innovations which were invented as attempt to provide forms of lighting that improved on existing methods for lighting homes.

b. Incremental Innovation

Incremental innovation is defined as a small, gradual improvement or modification to a current technology [55]. It is indeed referred to as the continual process of improvement of techniques. Moreover, incremental innovation involves small and technical modifications of an original or existing product, process or system which may have vastly greater economic or social importance than the original product.

Incremental innovation as it is may require significant levels of new investment in capital, internal capabilities, relationship with external suppliers and information sources, new marketing and sales approaches, etc. As SMEs in developing countries generally focus their efforts more on incremental innovative activities, they also engage in technological innovations due to customer pressure and invest very little in radical innovation. SMEs in India majorly engage only in incremental innovations [20] and this is not farfetched from Nigerian SMEs.

However, product innovations were largely narrowed to changing product designs and shapes to suit customer requirements and markets while process innovations connote changes in raw material replacement so as to achieve cost reduction and quality improvement. Consequently, enhancing firm level competitiveness was the major objective of SME innovations in India [20]. Despite the tendency to think of radical and incremental innovation as two fundamentally different natures of innovation, it is important to recognize that they are often interrelated and depend on each other.

2.3. Empirical Literature on Firms' Innovation and Profitability

The relevance of innovation as noted by [57] is described as an avenue to a competitive advantage and superior profitability for a firm. Recent literature and studies on technological and non-technological dimensions of

innovation [58] highlighted the complex nature of innovation processes where non-technological activities play a crucial role [25]. There are rationale why innovations might have a positive association with firm's profitability and performance. Firms engaging in innovations can have higher profitability propensities as their new product development create new market superiority over existing products in established markets, thereby commanding a price premium leading to growth in sales performance and higher margins in terms of profitability [5].

Based on the studies carried out by [26] in 2008, in terms of firms' profitability and employment, firms with only technological innovations do not grow more rapidly than other firms. However, firm profitability and growth is positively associated with the combination of technological and non-technological innovations other than the use of technological innovation only. [59] while studying the innovation strategies of German, UK, and Irish SMEs perceived that there is a strong linkage between innovation and turnover performance in these European countries. [49] claimed that innovative intensity presents great opportunities for SMEs in terms of growth and expansion into new areas though they did not study the relationship between innovation and growth.

[25] also analyzed the impacts of technological and non-technological innovations based on their determinants and effects using data of the German Innovation Survey (CIS 4) covering the years 2002-2004. Based on their comparison, they discovered that the share of firms introducing only technological innovations (13%) is lower than the share of firms introducing only non-technological innovations (24%) which indicates that the two innovations must be harnessed for a firm or an organisation to break-even and to enjoy competitive edge in the market. They also affirmed that technological and non-technological innovations are directly linked to each other both at the sector level and at the firm level. Their results showed that firms have an incentive to undertake non-technological innovation activities if they introduce technological innovations. This indicates that determinants of product and process innovations also affect the propensity to introduce non-technological innovations [25]. Technological and non-technological innovations must be inseparable if a firm must attain its full potentials.

According to [60] product innovation is proven to be an important source of competitive advantage to the firm and it increases firm product quality. [61] studies proved that product innovation had positive and significant relationship with organisational performance and profit enhancement. More so, [62] affirmed a positive impact of innovation on firms' performance and profitability from their study which sampled 744 Spanish-firms. Likewise, [63] found that product innovation is strongly and positively related to firm performance.

Process innovation should also be stressed by a firm or an organisation as its primary distinctive competence for competitive advantage [64]. Explicitly, process innovation is positively associated with firm growth [65]. To support this

argument, [66] study on SMEs in Finland found that process and product innovations are positively related to firm performance i.e. the introduction of novel products will significantly improve firms' performance. [67] reconfirmed the positive and significant influence of process innovation on firm's performance and profitability. [68] testified from their recent empirical findings in Malaysia that process and product innovations influenced firm performance significantly. It increases firm production efficiency.

Marketing innovation as a compliment to the technological innovation is a crucial concept for a firm to attain optimum performance in profit and growth. [37] noted that marketing innovation has a positive effect on sales growth and performance of a firm. If an organisational marketing prowess and potentials are efficiently and effectively harnessed with other forms of innovation, such an organisation is bound to be among the top in such industry. That is SMEs can achieve leadership positions by properly harnessing and applying aggressive innovation strategies in niche industries. Marketing innovation would also boost sales through the increasing demand for products, which in turn yields additional profit to innovative firms [69]. In the same vein, [70] concluded with strong evidence through their study that market innovation positively influenced business performance and profitability. Additionally, [66] using an estimated model affirmed a highly significant relationship between a market-related innovative activity and firm performance.

Organisational innovation has also been confirmed by some studies to contribute to higher total productivity, thereby leading to higher profitability. Product innovation will only attain maximum benefit, if it is applied with the combination of organisational innovation, and such linkage will eventually give maximum results [71]. [72] observed that organisational innovation has positive effect on firm's performance. It was also affirmed by [73] that new resources and products have positive relationship on firm's financial performance and on overall performance of the firm as well. Organisational innovation significantly affects the performance of the firms [74], while non-technological innovation emphatically has multiple effects on firm's performance [75].

The Australian Bureau of Statistics surveys conducted in 1994 showed that non-technological innovation is significant in the manufacturing sector as the total non-technological innovations were observed to have occurred in 15 per cent of the firms compared to technological innovations which similarly occurred in 13 per cent of the firms.

However, [23] in 2012 investigated the effects of non-technological innovation on the performance of firms in the manufacturing and service sectors in Nigeria. The study revealed that non-technological innovation had a positive impact and improve profit margin of firms in the manufacturing sector, while the effect of non-technological innovation was also significant but with a negative signs for the service sector.

Furthermore, studies from [19] analysed the impact of

technological innovation and R&D on the firm's performance of the Nigerian service sector. The study revealed that technological innovation has positive impact and relationship on firms' performance. Similarly, another innovation studies opined that innovation activities in Nigerian firms are majorly focused on surmounting the severe economic environment where they exist, thereby reducing cost and improving profitability performance [76].

3. SMEs in the Nigerian Manufacturing Sector: An Overview

SMEs in Nigerian perspective has no universal or nationally acceptable standard definition but could be defined based on the scale or size of business for specific needs. SMEs identification is a major problem in developing countries such as Nigeria because small and medium scale businesses are difficult to count and they are also problematic to quantify independently as large number of them are in informal sector. Hence, data on the number, size, geographical distribution and activities of enterprises and the SME sub-sectors are difficult to obtain [12].

According to [77, 78], small and medium scale enterprises in Nigeria are mostly determined by various quantitative parameters. Such parameters include the number of staff employed in the enterprise, the financial capacity, the magnitude or size of the plant, the sophistication of the equipment, sales turnover, profit margin and market share. In Nigeria, the official definition from the Federal Ministry of Industries and Central Bank of Nigeria stress financial or capital outlay as the operational bases for defining small and medium scale enterprises.

According to the National Policy on Small and Medium Enterprises in 2010 and [79] in 2015, small enterprises are categorized as those enterprises whose total assets (excluding land and building) are estimated above ₦5million but not exceeding ₦50 million with a total workforce of above 10 but not exceeding 49 employees while medium enterprises are those enterprises with total assets (excluding land and building) above ₦50 Million but not exceeding ₦500 million with a total workforce of between 50 and 199 employees. On the other hand, if there is a conflict of classification, the employment-based classification will take precedence [79].

Apart from a concise definitional issue of SMEs in Nigeria, there exists a high level of consensus of its importance, especially from the sub-sector to economic growth and development. [80] observed that the importance of SMEs differs with sectors and with the developmental level of a country. He opined that what makes SMEs in Nigeria less amenable is the disappointing outcomes from the inappropriate developmental strategies they often adopt that focus on large capital base, capital intensive and high import dependency while they are supposed to take into consideration the level of capital allocation requirements, management size and arrangement as well as their market

accessibility in decision making.

SMEs play a significant role in the development of a country's rural and urban labour forces through job creation opportunities leading to provision of desirable sustainability and innovation in the economy as a whole [81]. Consequently, a larger part of the Nigerian populace depends directly or indirectly on the small and medium enterprises as a means of sustenance which shows that virtually a great part of the business establishments in Nigeria and in the world one way or the other have their origin in small and medium enterprises [81]. Eventually, what makes SMEs distinctive among other bigger establishments are in three key aspects which are certainty, innovation and evolution [81, 79].

Recent studies on SMEs in other developing countries of the world have shown that countries with greater share of SMEs employment usually enjoy higher economic growth and development which necessitate the need for SMEs development in any economy if it must flourish or develop economically [82]. For this to be attainable, SMEs must be empowered to play a central role by focusing majorly on the development of the private sector. Based on economic data in newly industrialising nations such as Malaysia, Japan, Singapore and China among others, SMEs contribute immensely to private sector employment. Various studies on SMEs across the world have recently revealed that SMEs contribute about 55% to the GDP and above 65% to the total employment in high income countries.

On the other hand, SMEs contributions to the GDP and total employment in low income countries are 60% and 70% respectively while their contributions in middle income countries stood at about 70% of GDP and 95% of total employment [81]. According to [79], SMEs contributions to Gross Domestic Product across all sectors of the economy in nominal terms stood at 48.47%, while contributing 7.27% to exports.

The manufacturing sector in Nigeria also has a significant influence on the economy. It comprises of ten (13) categories which are subdivided into seventy-five (75) sub-sectors. The categories are: (i) Food, Beverages and Tobacco (ii) Basic Metal, Iron and Steel (iii) Non-Metallic Products (iv) Electrical and Electronics (v) Pulp Paper and Paper Products (vi) Chemical and Pharmaceutical products (vii) Textiles, Apparel and Footwear (viii) Motor Vehicles and Assembly (ix) Domestic/Industrial Plastic and Rubber products (x) Wood and Wood Products (xi) Oil Refining (xii) Cement (xiii) Other manufacturing [79].

The activities of the manufacturing industry in Nigeria is being spearheaded by a body known as the Manufacturers Association of Nigeria (MAN) which was established in May 1971 as a limited liability company by guarantee. MAN is a national industrial association coordinating the activities of companies in private and public sectors in manufacturing, construction and service sectors of the national economy. MAN has then turned out to be a force to reckon with as the absolute umbrella under which activities of manufacturers are being coordinated in Nigeria.

The association through its representative memberships

scattered across the six geo-political zones of Nigeria. It serves and acts as an avenue for government and others who seek a central point to air their views, ideas and reactions on matters pertaining to manufacturers for socio-economic gains. Through the establishment of the association, the private sector is now empowered to formulate and articulate policy recommendations that could strengthen the government efforts in policy formulation. Part of its objectives is to promote and protect manufacturers' mutual interest thereby creating a climate of opinion where manufacturers can operate efficiently and profitably.

The manufacturing sector in Nigeria is a potential growth driver that must be harmonized so as to maximize its forward linkage with wholesale and retail trades from a domestic production perspective through accelerated value-added production thereby making manufacturing sector a major driver of growth and exports [83]. Nigeria's Vision 20:2020 documents prepared by the [83] in 2009 states that "an analysis of the Nigerian manufacturing industry indicates that large firms are responsible for the bulk of non-oil, value added exports.

However, small and medium firms make up the bulk of the manufacturing and processing firms. Most of these firms are so small that they are unable to significantly participate in foreign markets. Increasing the volume of value-added exports can only be achieved by targeting investment in key sub-sectors and creating large firms focused solely on value-added exports. This will be achieved by creating an enabling environment so that small/medium firms can grow and prosper through increasing direct investment - both domestic and FDI - in the manufacturing industry [83].

As a result of the Nigerian economy's overdependence on oil which contributes about 80% of its foreign exchange the performance of the manufacturing sector noticeably in the last four decades has been negatively affected. Recently, the contribution of the manufacturing sector is mostly noticed in the processing and manufacturing of goods but its effects on the GDP is largely insignificant [83]. The inability of the government to develop non-oil sectors including manufacturing industry has hampered the development and growth that the sector would have contributed to the Nigerian economy at large. The contribution of manufacturing sector to GDP has been dwindling around 3% in Nigeria [84], compared to 20.3% in Japan, 40.2% in China, 27.3% in Singapore, 28.4% in the Republic of Korea, 20.5% in Cameroon, 19.4% in South Africa and 9.3% in Ghana to mention but a few.

In view of the poor performance of the sector, the MAN came up with its blueprint for the accelerated development of the manufacturing sector in Nigeria which was officially launched on 28th of June, 2012 and aimed at transforming the manufacturing sector into a dynamic and virile sector of the Nigerian economy. Also, a central part of the strategy of the Vision 20:2020 envisages a long term intensification of the country's industrialisation process and a movement towards a knowledge-based economy. To make this achievable, MAN felt the need to articulate a blueprint for the fast development

of manufacturing in Nigeria to complement the vision of government [85].

Although the present status of the Nigerian manufacturing sector cannot attain an enviable economic development but it has great potentials and bright future as Nigeria possesses one of the most flamboyant markets with its teeming population of about 160 million consumers and millions more consumers in the nearby countries [86]. The potentials and opportunities for SMEs in Nigeria to recover and play the crucial role of engine of growth, development, industrialisation, wealth creation, poverty reduction and employment creation are enormous.

The realization of this requires a paradigm shift from paying lip service to a practical radical approach and focus on this all-important sector of the economy by the government realistically addressing the identified problems with innovations [85]. The continuous fall of crude oil price and exchange rate volatility has showed that Nigeria economy is highly fragile as the country's manufacturing sector is feeling the heat of this mono-economy run by Nigerians.

4. Methodology, Conceptual Model and Hypotheses

The data for this study was obtained from the national innovation survey conducted in 2010 by the National Centre for Technology Management. The survey was the Nigerian component of the NEPAD African Science, Technology and Innovation (ASTII) Initiative undertaken among 19 African States covering the period 2005–2007. The survey was guided by the OECD third edition of the *Oslo Manual*. The paper employed a structured questionnaire to collect data from randomly selected manufacturing firms. Sampled firms were drawn from the Nigerian business directory published by [87]. Albeit, only manufacturing SMEs belonging to the International Standard Industrial Classification (ISIC) Rev.3 code 15-37, were selected for the study. This was based on the definition of SMEs by the [79] in terms of employee number as one between 11 and 200 employees.

A total number of 521 completed questionnaire representing 52.1% response rate were used in this work. The numbers of firm that fall into this category of SMEs in this study were 365. The Least Squares method of multiple regressions is adopted in estimating the model as a result of more than one independent variable the model possesses. This statistical technique seeks to determine the nature of relationship among the selected variables [88]. The model examines whether each of the technological, non-technological and size of the firms have significant impact on the performance of the sampled small and medium manufacturing firms and also whether they jointly have impacts on firms' performance. The number of employees in the firm was used to proxy size of firm; product and process innovations were used to capture technological innovation; marketing and organisation innovations were used to capture

non-technological innovation. The model further shows the direction of relationship between innovations and firms' performance. The statistic aims to examine whether changes in one or more variables lead to changes in other variable(s). The attention of this paper is central on both technological and non-technological innovations.

The firms were asked whether they introduced new or significantly improved goods or services within the period of study with a binary response of yes or no which represents product innovation in the survey. Also, the firms were asked whether they introduced new or significantly improved methods of manufacturing goods or services as well as improved logistics and supporting activities for their processes.

On the other hand, the firms were asked whether there were major changes to the organisation of work within the firms such as changes in management structure or integrating departments/activities within the period of the study with a binary response of yes or no which represent organisational innovation in the survey. More so, the firms were asked whether they introduced new or significant changes in sales or distribution methods such as internet sales, franchising, direct sales or distribution licences.

Table 1 shows that 45% of the firms sampled claimed that they engaged in process innovation by introducing new or significantly improved methods of manufacturing goods or services whereas 51% of the firms asserted that they engaged in product innovation by the introduction of new or significantly improved goods. On the other hand, it was observed from the survey that 48% of the firms engaged in

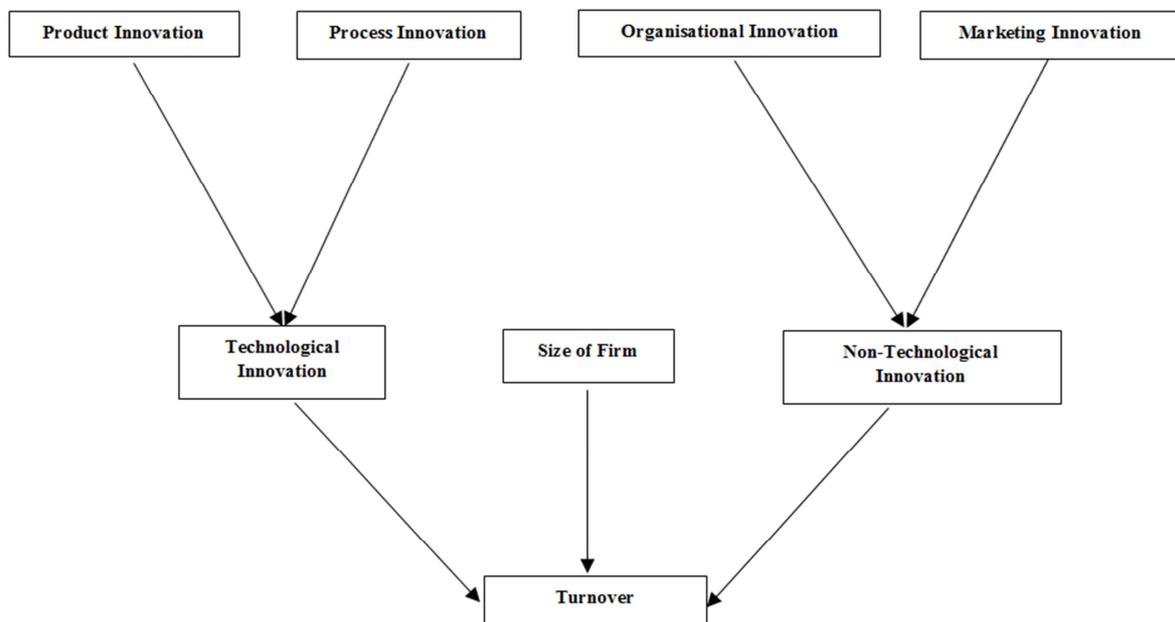
organisational innovation by introducing major changes to the organisation of work within the firms while 61% of the firms declared that they engaged in marketing innovation by introducing new or significant changes in sales or distribution methods.

Table 1. Innovation in Nigerian Manufacturing SME firms.

Nature of Innovation	% of Manufacturing SME firms
Product Innovation	51.4
Process Innovation	45.1
Organisational Innovation	48.0
Marketing Innovation	60.5

4.1. Conceptual Framework for the Study

This model investigates the relationship between the SME's performance and the product and process innovations. The turnover of the SMEs is used as a proxy for firm's performance while information on new or significant improved products/services and new or significantly improved methods of production were used as proxies for product and process innovations which represent technological innovation. Information on firm's introducing major changes to the organisation of work within the firms and introducing new or significant changes in sales or distribution methods were used as proxies for organisational and marketing innovation respectively which represent non-technological innovation. The number of employees in each firm was used to capture the size of firms. This framework is shown in Figure 2 below.



Source: Authors

Figure 2. Conceptual Framework of the study.

4.2. Model and Hypothesis

This section provides the model for the conceptual framework in Figure 2. The model of the framework can be

written as:

$$TNO = f(MRK, ORG, PROC, PROD, SIZE) \quad (1)$$

Where LTNO = log of Turnover of the firm
 MRK= Marketing Innovation
 ORG= Organisational Innovation
 PROC= Process Innovation
 PROD= Product Innovation
 SIZE= Size of firm

Equation (1) can be logged, so as to reduce the stochastic error term and expressed as

$$LTNO = \alpha_0 + \alpha_1 LMRK + \alpha_2 LORG + \alpha_3 LPROC + \alpha_4 LPROD + \alpha_5 LSIZE + U_t \quad (2)$$

Where α_0 = Constant factor
 $\alpha_1, \alpha_2, \alpha_3, \alpha_4$ and α_5 = Coefficient of marketing, organisational, process and product innovations and size of firm respectively, while
 U_t = Error terms.

Six hypotheses were formulated to examine the impact of the marketing, organisational, process and product innovations and size of firm on the turnover performance. These are stated below:

- Hypothesis 1 $H_0: \alpha_1 = 0; H_1: \alpha_1 \neq 0$
- Hypothesis 2 $H_0: \alpha_2 = 0; H_1: \alpha_2 \neq 0$
- Hypothesis 3 $H_0: \alpha_3 = 0; H_1: \alpha_3 \neq 0$
- Hypothesis 4 $H_0: \alpha_4 = 0; H_1: \alpha_4 \neq 0$
- Hypothesis 5 $H_0: \alpha_5 = 0; H_1: \alpha_5 \neq 0$

Hypothesis 6 $H_0: \alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5 = 0; H_1: \text{At least one } \alpha_k \neq 0, \text{ where } K = 1, 2, 3, 4 \text{ and } 5.$

From Hypothesis 1 to 5, H_0 is the Null hypothesis and it states that each independent variable has no significant impact on the firm's turnover while the Alternative hypothesis H_1 means that each independent variable has a significant impact on firm's turnover. Meanwhile, H_0 in Hypothesis 6 shows that the independent variables are not jointly significantly important in explaining changes in SME's turnover while H_1 in Hypothesis 6 illustrates that at least some variables in the model are jointly significant in explaining the SME's turnover. The result is shown in below.

Table 2. Regression Results for the study.

Dependent Variable	LTNO			
Sample	365			
Variable	Coefficient	Std error	t-statistic	Prob (p-value)
LMRK	0.6300	0.3688	1.7083	0.0885
LORG	0.1226	0.3622	0.3385	0.7351
LPROC	-0.7500	0.3645	-2.0564	0.0405
LPROD	0.6956	0.3694	1.8833	0.0782
LSIZE	1.9628	0.1377	14.2553	0.0005
C	9.2958	0.5324	17.4601	0.0000
R ²	0.5918			
F-statistic	3.9200			
Prob. (F-statistic)	0.0005			

Source: Authors' Analysis (2015) using Eviews 7.1

The result shows that marketing, organisational and product innovations have direct relationship with the firms' turnover while process innovation has an inverse

relationship. More so, size of firm has a direct relationship with firm's turnover performance. This implies that one unit increase in marketing, organisational and product innovations will increase the firms' turnover by 0.63, 0.12 and 0.70 units respectively, and if the process innovation increases by 1 unit, the firms' turnover reduces by 0.75 units. More so, as the size of the firm grows by 1 person, the firm's turnover will increase by 0.6% as well. The direction of relationship between process innovation and firm's turnover was negative as against the a priori expectation. It is not impossible that this was due to the low investment of Nigeria's manufacturing SMEs in their production process. In addition to this, the little investment requires a time lag before the process could have effect on the performance of such firm. This result corroborates the study carried out in Lao garment industry by [89]. Using 10% level of significance, the probability values (P-value) of 0.09, 0.04, 0.08 and 0.0005 which are less than 10% significant level show that marketing, process, product innovations and size of firm respectively have significant impact on the firms' turnover.

However, organisational innovation did not have a significant impact on the firm's turnover as its P-value of 0.74 is greater than the 10% level of significance. Moreover, the P-value of the F-statistics (0.0005) shows that all the independent variables jointly have a significant impact on the firms' turnover. The coefficient of determination (R^2) showed that the proportion of variation in firms' turnover that can be explained by marketing, organisational, product and process innovations as well as the size of firm is 59%. This implies that there are few other variables that explained the firms' turnover which are not considered in this paper. These variables might include strategic behaviour of the firms, large capital base, and customers' loyalty among others. However, these results have been able to show that technological innovations and non-technological innovations have a significant impact on the turnover of SMEs in manufacturing sector operating in Nigeria except the organisational innovation which was not significant. Size of firms of the manufacturing SMEs have also shown that the larger the number of qualified employees, the larger the turnover of the firm.

5. Conclusion

This paper has been able to explore the concept of technological and non-technological innovations in Nigerian manufacturing SMEs. The paper showed the relationship among technological innovation (product and process), non-technological innovation (marketing and organisational), size of firm and firms' turnover. Based on the outcome of the study, it can be concluded that product, process and marketing innovations as well as the size of firms with p-values of 0.0782, 0.0405, 0.0885 and 0.0005 respectively have significant impact on SMEs turnover at 10% level of significance while organisational innovation with p-value of 0.7351 was not significant. It becomes necessary for SMEs in the manufacturing industry to intensify their innovation

activities so as to create a competitive environment which will further improve their turnover and profitability. The firms are encouraged to spend more on research that relates to the improvement of their products, production process, marketing activities as well as employing high quality members of staff to enhance their productivity. Any enterprise that refuses to engage in innovation activities will find it very difficult to compete with its rivals in the industry. Nigerian government can provide tax rebate and other forms of incentives for the SMEs that engage in both technological and non-technological innovations so as to break even in the short run. Therefore, the paper concludes that technological and non-technological innovations as well as size of the firm are vital for SMEs in Nigeria to grow and achieve profitability.

References

- [1] Becheikh, N., Landry R., and Amara N. (2006). "Lessons from Innovation Empirical Studies in the Manufacturing Sector: A Systematic Review of the Literature from 1993-2003". *Technovation*, 26(5/6), 644-664.
- [2] Luisa C., Teresa, C., and Simone, G. (2012). Innovation and Internationalization of IT Companies-Comparative Case Studies in Brazil and Portugal. 7th European Conference on Innovation and Entrepreneurship (ECIE), 57-67.
- [3] Sawhney, M., Wolcott, R. C., and Arroniz, I. (2006). "The 12 Different Ways for Companies to Innovate". MIT Sloan. *Management Review*, 47(3).
- [4] Battisti, G., and Stoneman, P. (2007). "How Innovative are UK Firms?" Evidence from the CIS4 on the Synergistic Effects of Innovations, Report for the Department of Trade and Industry.
- [5] Youtie J., and Roper S. (2008). "Innovation and Profitability in Georgia Manufacturers". International Workshop on New Directions for Innovation Measurement and its Use for Strategy and Policy, Atlanta, Georgia, May 12-13.
- [6] Marius-Dan Dalotă (2011). "Small and Medium Enterprise's Growth and New Technologies Implementation". *Romanian Economic and Business Review*, 6(2), 7-18.
- [7] Abereijo, I. O., Adegbite, S. A., Ilori, M. O., Adeniyi, A. A., and Aderemi, H. A. (2009). "Technological Innovation Sources and Institutional Supports for Manufacturing Small and Medium Enterprises in Nigeria". *Journal of Technology Management and Innovation*, 4(2), 82-89.
- [8] Organisation for Economic Co-operation and Development (OECD) (2007). Innovation and Growth: Rationale for an innovation strategy.
- [9] Frenz M., and Lambert R. (2008). "Exploring non-technological and mixed modes of innovation across countries". Birkbeck, University of London and UK Department for Innovation, Universities and Skills. Retrieved March 2013 from: <http://jvi.wiwi.ac.at/index.php?action=filedownloadandid=568>.
- [10] Akinwale, Y. O., Adepoju, A. O., and Olomu, M. O. (Forthcoming). The Impact of Technological Innovation on SME's Profitability in Nigeria. *International Journal of Research, Innovation and Commercialisation*.
- [11] Akinwale Y., Dada A., Oluwadare A., Jesuleye O., and Siyanbola W. (2012). "Understanding the Nexus of R&D, Innovation and Economic Growth in Nigeria". *International Business Research*, 5(11), 187-196.
- [12] Egbetokun, A. A., Siyanbola, W. O., Olamide, O. O., Adeniyi, A. A., and Irefin, I. A. (2008). "Innovation in Nigerian SMEs: Types and Impact". Paper presented in the IV Globelics Conference at Mexico City, September 22-24.
- [13] Lee, C., and Lee, C. G. (2007). "SME Innovation in the Malaysian Manufacturing Sector", *Economics Bulletin*, 12(30), 1-12.
- [14] Roberts, P. W. (1999). Product innovation, product-market competition and persistent profitability in the US Pharmaceutical industry, *Strategic Management Journal*, 20, 655-670.
- [15] Keizer, J. A., Dijkstra, L., and Halman, J. I. M. (2002): Explaining innovative efforts of SMEs. An exploratory survey among SMEs in the mechanical and electrical engineering sector in the Netherlands. *Technovation* 22(1), 1-13.
- [16] Ambuj, D. S., and Zwaan, B. (2006). 'Technological Innovation in the Energy Sector: R&D, Deployment, and Learning-By- Doing', 34(17), 2601-3366.
- [17] Hall, L. A., and Bagchi-Sen, S. (2007). "An analysis of firm-level Innovation strategies in the US biotechnology industry". *Technovation*, 27, 4-14.
- [18] Jegede, O. O., Egbetokun, A. A., and Siyanbola, W. O. (2012). Assessment of technological innovation in selected indigenous oilfield servicing firms in Nigeria. *African Journal of Science, Technology, Innovation and Development*, 4(2), 69-91.
- [19] Adeyeye, A. D., Jegede, O. O., and Akinwale, Y. O. (2013). The impact of technology innovation and R&D on firms' performance: An Empirical Analysis of Nigeria's Service Sector. *International Journal of Technological Learning, Innovation and Development*, 6(4), 374-395.
- [20] Bala-Subrahmanya M. H., (2012). "Technological Innovation in Indian SMEs: Need, Status and Policy Imperatives". *Current Opinion in Creativity, Innovation and Entrepreneurship*, 1(2). Retrieved July 2013 from: <http://www.cuocient.com/index.php/cl/article/view/co5/10>.
- [21] Armbruster, H., Bikfalvi, A., Kinkela, S., and Lay, G. (2008). Organisational Innovation: The challenge of measuring non-technical innovation in large-scale surveys, *Technovation*, 28, 644-657.
- [22] Cristina P., and Romero, F. (2012). "Non-technological Innovation: Conceptual Approaches, Impacts and Measurement Issues". International Conference on Industrial Engineering and Operations Management, July 9-11.
- [23] Oluwatope, O. B., and Adeyeye, A. D. (2012). Impact of non-technological innovation on firm's innovation performance: a study of manufacturing and service sector in Nigeria. *International Journal of Application or Innovation in Engineering and Management*, 1(2), 246-253.
- [24] Schmidt, T., and Rammer, C. (2006). The determinants and effects of technological and non-technological innovations – Evidence from the German CIS IV. Shortened version, 1-26. Retrieved March 2015 from: <http://www.oecd.org/dataoecd/10/43/37450197.pdf>.

- [25] Schmidt, T., and Rammer, C. (2007). "Non-technological and Technological Innovation: Strange Bedfellows?" Centre for European Economic Research, ZEW Discussion Paper 07-052.
- [26] Ali-Yrkkö J. A., and Martikainen, O. (2008). "The impact of technological and non-technological innovations on firm growth". ETLA Working Paper, 1165. Retrieved November 2013 from: <http://hdl.handle.net/10419/44487>.
- [27] Mothe, C., and Nguyen-Thi, T. U. (2010). "The impact of non-technological innovation on technological innovation: do services differ from manufacturing? An empirical analysis of Luxembourg firms". IREGE, Research Institute in Economics and Management, University of Savoie, France and CEPS/INSTEAD-Enterprises, Luxembourg.
- [28] Oyelaran-Oyeyinka, B. (2003). "Innovation and Learning by Firms in Nigeria: The Role of Size, Skills and Ownership", *International Journal of Business and Society*, 4(1), 1-22.
- [29] Oke, A., Burke, G., and Myers, A. (2007). "Innovation types and performance in growing UK SMEs". *International Journal of Operations and Production Management*, 27(7), 735-753.
- [30] Aberejio, I. A., Ilori, M. O., Taiwo, K. A., and Adegbite, S. A. (2007). "Assessment of the capabilities for innovation by small and medium industry in Nigeria". *African Journal of Business Management*, 1(8), 209-217.
- [31] Schumpeter, J. (1912). "The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest and Business Cycle". Cambridge Harvard University Press.
- [32] Damanpour, F. (1992). "Organisational Size and Innovation". *Organisation Studies*, 13(3), 375-402.
- [33] Lumpkin, G. T., and Dess, G. G. (1996). "Clarifying the Entrepreneurial Orientation Construct and Linking It to Performance". *Academy of Management Journal*, 21(1), 135-72.
- [34] Tidd, J., Bessant J., and Pavitt, K. (2001). "Managing Innovation: Integrating Technological, Market and Organisational Change". 2nd Edition, Chichester Wiley.
- [35] Cozzarin, B., and Percival, J. (2006). "Complementarities between organisational strategies and innovation". *Economics of Innovation and New Technology*, 15, 195-217.
- [36] Beaver, G. (2002). "Small Business, Entrepreneurship and Enterprise Development". Pearson Education Ltd, United Kingdom.
- [37] Sandvik, I. L. (2003). "The Impact of Market Orientation on Product Innovativeness and Business Performance". *International Journal of Research in Marketing*, 20(4), 255-376.
- [38] Bakar, L. J., and Ahmad, H. (2010). "Assessing the Relationship between Firm Resources and Product Innovation Performance". *Business Process Management Journal*, 16(3), 420-435.
- [39] Jong, J. P. J., and Vermeulen, P. A. M. (2006). "Determinants of Product Innovation in Small Firms: A Comparison across Industries". *International Small Business Journal*, 24(6), 587-609.
- [40] Anderson, A. (2009). "Firm performance: An Analysis from the Theory of Innovation" Australian Graduate School Entrepreneurship. Retrieved July 2012 from: <http://www.swinburne.edu.au/lib/ir/onlineconferences/age2009/000162.pdf>.
- [41] Romero, F. (2010). "The social dimension of the integration of manufacturing systems: the role of institutions". *International Journal of Computer Integrated Manufacturing*, 23(8/9), 806-818.
- [42] Schumpeter, J. (1939). "Business Cycles: A Theoretical, Historical and Statistical Analysis of the Capitalist Process". New York: McGraw-Hill.
- [43] Jiayi, F., Quan, Y., Jian, G., and Jiayiao, L. (2000). "Impact of Technological Innovation". Tsinghua University Press, 21-23.
- [44] Jiang W. (2001). "Research on Strategy Perfection of Dynamic Mechanism of Technological Innovation". *Scientific Management Research*, 5(1), 4-6.
- [45] Xiaoqiang Lv. (2005). "The Evaluation and Application Research about Technological Innovation Capability of an Enterprise Based on BP Neural Network". Northwestern Polytechnical University, (01), 52-56.
- [46] Mytelka, L. (2000). "Local Systems of Innovation in a Globalized World Economy". *Industry and Innovation*, 7(1), 33-54.
- [47] Feifei, Y., and Li, M. (2007). "Research on the Sustainable Development of Technological Innovation in Small and Medium Enterprises".
- [48] Organisation for Economic Co-operation and Development (OECD) (2005). Oslo Manual: "Guidelines for collecting and interpreting innovation data".
- [49] Danneels, E., and Kleinschmidt, E. J. (2001). "Product Innovativeness from the Firm's Perspective: Its Dimensions and their Relation with Project Selection and Performance". *The Journal of Product Innovation Management*, 18, 357-373.
- [50] Vonortas, N. S., and Xue, L. (1997). "Process Innovation in Small Firms: Case Studies on CNC Machine Tools". *Technovation*, 17(8), 427-38.
- [51] Dougherty, D. (1992). "A Practice-Centered Model of Organisational Renewal through Product Innovation". *Strategic Management Journal*, 13(1), 77-92.
- [52] Danneels, E. (2002). "The Dynamics of Product Innovation and Firm Competencies". *Strategic Management Journal*, 23, 1095-1121.
- [53] Rust, R. T., Ambler, T., Carpenter, G. S., Kumar, V., and Srivastava, R. K. (2004). "Measuring Marketing Productivity: Current Knowledge and Future Directions". *Journal of Marketing*, 68, 76-89.
- [54] Day, G. S. (1994). "The Capabilities of Market-driven Organisations". *Journal of Marketing*, 58, 37-52.
- [55] Slocum, A., and Rubin. E. S. (2008). "Understanding Radical Technology Innovation and Its Application to CO₂ Capture R&D". Pittsburgh.
- [56] Dewar, R. D., and Dutton, J. E. (1986). "The Adoption of Radical and Incremental Innovations: An Empirical Analysis". *Management Science*, 32(11), 1422-1433.

- [57] Roberts, P. W., and Amit, R. (2003). "The Dynamics of Innovative Activity and Competitive Advantage: The case of Australian retail banking, 1981 to 1995". *Organisation Science*, 14(2), 107-122.
- [58] Organisation for Economic Co-operation and Development (OECD) (2009). "Working Party on Innovation and Technology Policy-New Forms of Innovation: Challenges for Policy Making". OECD Headquarters, Paris.
- [59] Roper, S. (1997). "Product Innovation and Small Business Growth: A Comparison of the Strategies of German, UK and Irish Companies". *Small Business Economics*, 9, 523-37.
- [60] Camison C., and Lopez A. V. (2010). "An Examination of the Relationship between Manufacturing Flexibility and Firm Performance: The Mediating Role of Innovation". *International Journal of Operations and Production Management*, 30(8), 853-878.
- [61] Bayus, B. L., Erickson, G., and Jacobson, R. (2003). "Financial Rewards of New Product Introductions". *Management Science*, 49(2), 197-210.
- [62] Espallardo, M. H., and Ballester, E. D. (2009). "Product Innovation in Small Manufacturers, Market Orientation and the Industry's Five Competitive Forces: Empirical Evidence from Spain". *European Journal of Innovation Management*, 1(4), 470-491.
- [63] Alegre, J., Lapiedra, R., and Chiva, R. (2006). "A Measurement Scale for Product Innovation Performance". *European Journal of Innovation Management*, 9(4), 333-346.
- [64] Nemetz, P. L., and Fry, L. W. (1988). "Flexible Manufacturing Organisations: Implications for Strategy Formulation and Organisation Design". *Academy of Management Review*, 13(4), 627-638.
- [65] Morone, P., and Testa, G. (2008). "Firms Growth, Size and Innovation an Investigation Into: The Italian Manufacturing Sector". *Economics of Innovation and New Technology*, Taylor and Francis Journals, 17(4), 311-329.
- [66] Varis, M., and Littunen, H. (2010). "Types of Innovation, Sources of Information and Performance in Entrepreneurial SMEs". *European Journal of Innovation Management*, 13(2), 128-154.
- [67] Ar, I. M., and Baki, B. (2011). "Antecedents and Performance Impacts of Product versus Process Innovation: Empirical Evidence from SMEs Located In Turkish Science and Technology Parks". *European Journal of Innovation Management*, 14(2), 172-206.
- [68] Rosli M. M., and Sidek S. (2013). Innovation and Firm Performance: Evidence from Malaysian Small and Medium Enterprises". *Entrepreneurship Vision 2020: Innovation, Development Sustainability and Economic Growth*.
- [69] Johne, A., and Davies, R. (2000). "Innovation in Medium-Sized Insurance Companies: How Marketing Adds Value". *International Journal of Bank Marketing*, 18(1), 6-14.
- [70] Otero-Neira, C., Lindman, M. T., and Fernández, M. J. (2009). "Innovation and Performance in SME Furniture Industries: An International Comparative Case Study". *Marketing Intelligence and Planning*, 27(2), 216-232.
- [71] Michael, P., George, V. L., Pierre, M., and Raymond, W. (2010). "Product, Process and Organisational Innovation: Drivers, Complementarity and Productivity Effects". United Nations University-Maastricht Economic and social Research and training centre on Innovation and Technology (UNU-MERIT) Working Papers Series, 2010-035. Retrieved April 2013 from: <http://www.merit.unu.edu/publications/wppdf/2010/wp2010-035.pdf>.
- [72] Leslie, H. V., Bharadwaj, S. G., and Challagalla, G. N. (2005). "Antecedents, Consequences and the Mediating Role of Organisational Innovation: Empirical Generalizations", 20th September.
- [73] Michael, T. M., Smith, K., Wood, W., Westerman, R. C., Wendy, G. O., Smith, K., and Reilly, C. O. (2006). "Organisational Designs and Innovation Streams". Harvard Business School, Morgan Hall 313, Boston, MA.
- [74] Sohail, A., Sabir, M. S., and Zaheer, A. (2011). "Link between Product Innovation and Non-Technological: Organisation Performance". Department of Management Sciences, Iqra University Islamabad Campus, Pakistan. *Asian Journal of Business Management* 3(4), 287-293.
- [75] Li-An, H. (2011). "Meditation, Learning, Organisational innovation and Performance". *Industrial Management and Data Systems*, 11(1), 113-131.
- [76] Oyelaran-Oyeyinka, B. (2006). 'Systems of innovation and underdevelopment: an institutional perspective', *Science, Technology and Society*, 11 (2), 236-269.
- [77] Oshagbemi T. A. (1983). "Small Business Management in Nigeria". London, Longman.
- [78] Owualah, S. (2000). "Entrepreneurship in Small Business". Ikeja, GMAG Investment Ltd. Educational Publishers.
- [79] National Bureau of Statistics (2015). "Micro, Small and Medium Enterprise National Survey. Retrieved June 2015 from: https://www.google.com.ng/url?sa=tandrc=jandq=andesrc=sandsource=webandcd=1andcad=rjaanduaact=8andved=0ahUKEwjYucmr8tPLAhWFShQKHWZ2CCwQFggBMAAandurl=http%3A%2F%2Fwww.nigerianstat.gov.ng%2Fpages%2Fdownload%2F289andusg=AFQjCNEgrhZ83XXIUMU_MQ1ScOKzvRBdA.
- [80] Oluba, M. (2009). "Outlook for Nigerian SMEs: The Challenges of the Global Economic Crisis and CBN's Exchange Rate Management".
- [81] Small and Medium Enterprises Development Agency of Nigeria (SMEDAN) (2010). Survey Report on Small and Medium Enterprises (SMEs) in Nigeria. National SME Collaborative Survey between National Bureau of Statistics (NBS) and the Small and Medium Enterprises Development Agency of Nigeria (SMEDAN).
- [82] Bala-Subrahmanya, M. H., Mathirajan, M., and Krishnaswamy, K. N. (2010). Importance of Technological Innovation for SME Growth: Evidence from India. United Nation University-World Institute for Development Economic Research (UNU-WIDER) Working Paper No. 2010/03.
- [83] National Planning Commission (2009). "Nigeria Vision 20:2020: Economic Transformation Blueprint. Retrieved October 2013 from: http://appar.com.ng/images/File_downloads/Nigeria%20Vision%2020%202020%20Economic%20Transformation%20Blueprint.pdf.
- [84] Central Bank of Nigeria Statistical Bulletin (2012).

- [85] Siaka Momoh (2012). "Manufacturers' Association blueprint set to energize enterprise". Retrieved August 2013 from: <http://www.businessdayonline.com/NG/index.php/entrepreneur/entrepreneur-news/40395-manufacturers-association-blueprint-set-to-energise-enterprise>.
- [86] Alli, F. (2008). "Nigeria: 9 Years of Manufacturing with Tears - Any Hope in Sight?" Vanguard, Lagos. Retrieved September 2013 from: <http://allafrica.com/stories/200805290133.html?page=2>.
- [87] Manufacturers Association of Nigeria Members Directory (2009). Retrieved July 2013 from: <http://www.manufacturersnigeria.org/>.
- [88] Brooks, C. (2008). "Introductory Econometrics for Finance". 2nd ed. London: Cambridge University Press.
- [89] Kongmanila, X. and Takahashib, Y. (2009): Innovation, Export Performance and Profitability of Lao Garment Exporters Int. Journal of Economics and Management 3(2): 225–236.