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RESEARCH ARTICLE

INVESTMENT CLIMATE AND MANUFACTURING FIRM'S PERFORMANCE IN NIGERIA

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Abstract

This study examined the impact of investment climate on the performance of manufacturing firms in Nigeria. The theoretical and empirical information gathered from the study points to the fact that Performance of manufacturing firms is largely influenced by the investment climate of an economy. This study is motivated by the fact that manufacturing sector is the key to development and growth of every economy. However, one of the vital determinants of this sector is the investment climate and environment for doing business. The specific objectives of the study are: to ascertain the impact of infrastructure on the manufacturing firms' performance in Nigeria, to analyze the extent to which governance and institutions affect manufacturing firms' performance in Nigeria, to examine the impact of taxation on manufacturing firms' performance in Nigeria and to examine the extent to which manufacturing firms' access to credit and how it contributes to their performance in Nigeria. The objectives were examined with the aid of principal component analysis, instrumental variable estimation and the propensity score. The data employed were determined from the World Bank Investment Climate Survey in Nigeria in 2009. The results of this study suggest that infrastructure; governance/institutions and tax are significant deterrents to firm performance. Also, the average treatment effect of accessing credit on manufacturing output is significant. The study therefore recommends that more effort be made to minimize the effects of infrastructural deficiency, governance and institutional constraints and government ensuring that tax burden is not completely transferred to customers, as well as increasing access to credit in other to improve firm performance

Key words: Manufacturing Firms, Investment Climate, Principal Component Analysis. Instrumental Variable Estimation, Propensity Score

1 | INTRODUCTION

The Gross Domestic Product (GDP) of Nigeria has increased steadily over the past decade. However, Growth in poverty levels has been equally strong, with absolute poverty up from 54.7 percent of the population in 2004 to 60.9 percent in 2010 (National Bureau of Statistics, 2012). It is alleged that part of the reason for the paradox of high growth and poverty rates is due to the economy's over-reliance on its crude oil proceeds, as it relatively does not involve a good percentage of its labour given that it is capital intensive (Akinlo 2012; Onodugo, Ikpe and Anowor 2013; Akujuru 2015). The World Bank estimates that 80 per cent of energy revenue in Nigeria benefits only 1 per cent of the population (Baghebo and Atima 2013; Ogbonna and Ebimobowei, 2012). It has therefore been a major reform by the government to diversify the economy and improve the non-oil sector.

To stimulate the non-oil sector and the economy at large, the investment climate must be suitable enough to attract investments from abroad and moti-

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INVESTMENT CLIMATE AND MANUFACTURING FIRM'S PERFORMANCE IN NIGERIA

vate new ones or motivate existing enterprises to attain new heights. That is, the economic and financial situation of an economy reflects the degree in which individuals and businesses units are willing to lend money or/and invest in the businesses operating there. The prevailing outlook and general mood of the investing public and institutions of a place or economy is referred to as the investment climate of that place or economy (Mutuku, 2015). It could simply be referred to as the institutional, policy and regulatory environment in which firms operate. The investment climate is largely dependent on the current and anticipated economic situation, yet shaped by political and social factors. The better the investment climate, the healthier the economy is in doing business.

There exist several factors that affect investment climate and hence the interest of doing business, some of them include: poverty, criminal activities, physical and economic infrastructure, available workforce, national security, political instability, regime instability, taxes, rule of law, property rights, government regulations, government transparency and government accountability (World Development Report, 2015; Yang, Wang, Chen and Yuan 2011; Fankhauser & Lavric 2003). These factors tend to attract or discourage firms into the economy or to affect the performance of existing enterprises in the course of doing business.

The variations in the investment climate have significantly contributed in explaining differences in competitiveness levels, growth and prosperity across economies (Investment Climate Assessment, 2004; Bakare 2013). Enhancing the investment climate of client countries is one of the two pillars of the World Bank Group's (WBG's) methods of enhancing effective development and is central to the 2002 Private Sector Development Strategy (Operations Evaluation Department, 2004; Hallberg 2005). Due to the factors that determine investment climate, it tends to vary from one place to another. The figure below shows the investment climate across some selected countries; using the percentage of firms expected to bribe to get an operating license and the cost of starting a business.
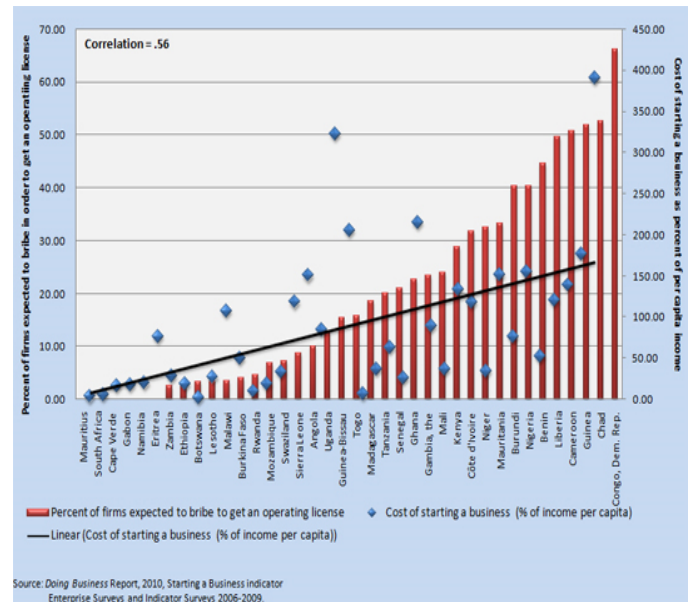

Fig. 1: InvestmentClimate Across some selected countries

Source: Motta, Oviedo and Santini, (2010).

Figure 1.1 above shows that 40% of firms are expected to bribe to get an operating license in Nigeria, while firms spend 25% of their income per capita to start business. Nigeria is 32nd of the 38 developing countries sampled above, in terms of the percentage of firms that bribe to get an operating license.

Nigeria is Africa's most populous country estimated to be about 173.6 million in 2013(World Bank, 2014). This huge population makes it difficult for the public sector to employ a good percentage and improve welfare on its own. This therefore implies that for the welfare of the nation to be desirable the private sector must be vibrant which is in turn highly dependent on the investment climate of the economy. Nigeria, like several other developing countries have faced stringent setbacks in boosting their investment climate. Their performance in several indicators has been a call for concern over the years. This is illustrated below;

Table 1. Nigeria'sSelected Indices and Rankings -2013 Investment climate Statement

Measure	Index/Ranking
Transparency International Corruption Index	139 (out of 176 countries)
Heritage Economic Freedom Index	116 (out of 184 countries)
World Bank Doing Business Index	131 (out of 185 countries)
Millennium Challenge Corporation Govt. Effectiveness	35%
Millennium Challenge Corporation Rule of Law	33%
Millennium Challenge Corporation Control of Corruption	25%
Millennium Challenge Corporation Fiscal Policy	21%
Millennium Challenge Corporation Trade Policy	37%
Millennium Challenge Corporation Regulatory Quality	58%
Millennium Challenge Corporation Business Start-up	43%
Millennium Challenge Corporation Land Rights Access	10%
Millennium Challenge Corporation Natural Resources Management	65%
Millennium Challenge Corporation Access to Credit	88%
Millennium Challenge Corporation Inflation	36%

Source: U S Department of State Diplomacy in Action

Note: where MCC is the U.S *government's Millennium Challenge Corporation* fact sheet

Table 1.1 above suggests that Nigeria's ranking of the first three indicators (transparency international, World Bank doing business index and Heritage economic freedom index) is very poor considering its resource potential. The other indicators all show a performance that is less than 50%, apart from the quality of regulation (58%), Natural resource management (65%) and access to credit (88%). On the other hand, access to land still faces serious setbacks as it is only 10% performing. These indices therefore show an overall unattractive investment climate. All these indicators play various roles on investment decisions to invest in Nigeria and the performance of already existing firms. However, other challenges impacting on the Nigerian investment climate include; high rate of unemployment, dependence on oil revenue, overdependence on imports, huge infrastructure deficit, security concerns, low capacity in Public Private Partnership (PPP) management, lack of access to long-term fund, incidences of corruption. These challenges reduce investment attractiveness to foreign investors and therefore worsen her chances with her competitors.

The importance of a good investment climate to every nation is very significant as it affects firm's performance and growth. It affects manufacturing firms more significantly as they face these challenges in the course of their day-to-day production.

"The state of a country's business and investment climate is a key factor in that country's ability to attract foreign investment and develop small and medium enterprises. Transnational enterprises prefer to invest in enterprises in countries with a healthy business climate – where cost, delay, and risk are minimized. In addition, SMEs are more likely to flourish in a climate where they are not overburdened by taxes and regulations…the investment climate is a critical factor and should not be underestimated"(Organization for Security and Co-operation in Europe, 2006).

Investors often search for a predictable and satisfactory return on their investment in order to attain a competitive return (OSCE, 2006). They further posit that a poor investment climate as a result of the nature of taxes, fees, fines, corruption and added need for services (lawyers, accountants, consultants, etc.) increases the cost of the investment transaction; an investor may seek investment opportunity elsewhere, while existing firms might fold or just manage small profit margins. Dollar, Hallward-Driemeier and Mengistae (2003) show that firm level accumulation and growth is higher where investment climate is good. While Okafor (2010) equally posits that a good investment climate is key to poverty reduction and growth. However, variances in the investment climate of different countries/economies could be highly attributed to the reforms and policies put in place.

Nigeria has pursued several economic reforms over the years that directly or indirectly aimed at improving the business or investment climate of the nation. Some of them include the Structural Adjustment Programme (SAP) aimed at liberalizing the economy to attract foreign investors, The National Economic Empowerment and Development Strategy (NEEDS), Millenium Development Goals (MDG), 7 POINT Agenda, Vision 20-2020 amongst others. Nige-ria has also set up commissions and institutions to improve the investment climate of the nation. The Nigerian Investment Promotion Commission (NIPC) has been in the fore front on investment promotion in Nigeria.

INVESTMENT CLIMATE AND MANUFACTURING FIRM'S PERFORMANCE IN NIGERIA

The Nigerian Export–Import (NEXIM) Bank was established in 1991 as Nigeria's export credit agency. Apart from promoting diversifica-tion of production in Nigeria for exports, the bank also attracts foreign investment capital for the devel-opment and growth of specific targeted industries and key sectors of the economy (Nigerian Export Import Bank, 2015). Also, the Infrastructure Con-cession and Regulatory Commission (ICRC) was established to smooth the progress of private sec-tor infrastructural funding. Nevertheless, the invest-ment climate remains relatively unattractive accord-ing to the statistics shown above.

The importance of the manufacturing sector in every economy cannot be overemphasized as developed nations are said to have exploited their manufactur-ing sector to gain local and foreign markets hence making gains in international trade. The manufactur-ing sector projects the industrial strength of a nation and leads it to a stage of high mass production char-acterized with developed economies. However, the general performance of manufacturing firms in Nige-ria has been discouraging over the years. The fig-ure below shows the contribution of the manufactur-ing sector to National GDP between 1990 and 2012 according to the central bank annual statistical Bul-letin (CBN).
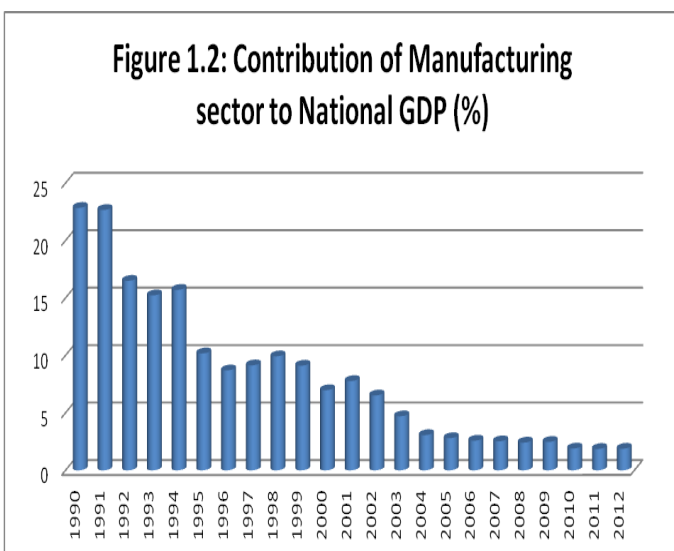

Fig. 2: Author'sComputation of data from Central Bank of Nige-ria (2012)

Figure 1.2 shows a persistent decrease in the contri-bution of the manufacturing sector to national GDP from about 23% in 1990, 3.67% in the year 2000

to about 1.88% in 2012. This shows a very serious problem with this sector. Amongst several factor that might influence the performance of a manufacturing sector, the most important and most encompassing is the investment climate of that economy.

1.2 Statement of the Problem

To a great extent, the performance of firms in any economy is determined by certain environmental factors which include macroeconomic policy, infras-tructure, finance, taxes, corruption, political stabil-ity, economic stability amongst others; the behaviour of these factors have recently gained center stage in explaining variances in the investment climate that have significantly contributed in explaining dif-ferences in competitiveness, growth and prosperity across economies/countries/regions (Bakare, 2013; Okafor 2010). It is therefore imperative for develop-ing countries such as Nigeria to use this instrument to attract more firms and boost existing ones hence enhancing prosperity and ensuring growth.

Despite the numerous policies instituted by the Fed-eral government of Nigeria the statistics of invest-ment climate are not favorable, especially when compared to other developing countries. Nigeria is at present considered as a risk-bound market for invest-ment destination due to poor political governance system, unsecured macroeconomic policy, corrup-tion and inadequate infrastructures among others and several investors have recently begun to relocate their investments and portfolios away from Nigeria apparently due to the unsustainable investment cli-mate (Chea 2012; Bakare 2013). Nigeria was ranked 170th in 2015 and 169th in 2016 out of 189 economies in terms of the World Bank's ease of doing business ranking (World Bank, 2016).

Furthermore, The World Bank in 2015 ranked Nige-ria 187th out of 189 countries for ease of obtaining electricity for business. Also, Nigeria scored 26% in Transparency International's 2015 Corruption Per-ception Index (CPI), placing it in the 136th posi-tion out of the 167 countries ranked (Transparency International, 2015).All these paint a negative image for intending investors, but more importantly, it lim-its the current efforts by the government on diver-sification and revamping of the private sector. The problems with the investment climate of Nigeria are numerous and can be regrouped into macroeconomic

policy, infrastructure, finance, corruption, political situation, economic stability. This is evident with the statistics quoted above. It is therefore important to ascertain to what extent these investment climate indicators affect Manufacturing firms.

This therefore forms the economic problem which this study aims to investigate. Several studies have however shown interests in examining the general behaviour of the investment climate and how it affects firms in Nigeria. However, these studies used time series analysis, and therefore did not exploit the specific outcome of a cross sectional micro survey as is the case with this study. Adebisi and Gbegi(2013) and Nwosu, Orji, Nnetu and Nwangwu (2014) did micro-cross sectional studies, however, while Adebisi and Gbegi (2013) examined the effect of multiple taxation on SMEs survival, Nwosu et al., (2014) examined female discrimination to credit access. The scarcity of micro studies on the subject is undoubtedly due to the paucity of such data in the country. This study therefore uses the World Bank investment survey to analyse the impact of the investment climate on the manufacturing firms in Nigeria, with specific focus on the infrastructural indicator of investment climate, governance and institutions as well as the access to finance of enterprises in Nigeria.

1.3 Objectives of the study

The broad objective is to examine the impact of the Nigerian investment climate on manufacturing firms. The study employs the following specific objectives to address the broad objective:

i) To estimate the impact of infrastructure on the manufacturing firms' performance in Nigeria.

ii) To estimate the effects of governance and institutions on manufacturing firms' performance in Nigeria.

iii) To ascertain the impact of taxation on manufacturing firms' performance in Nigeria

iv) To ascertain the effect of access to credit on the performance of manufacturing firms in Nigeria

1.4 Justification of the study

A market friendly investment climate would attract higher investment and develop faster than their peers (Veeramani and Goldar 2004). It is on this premise

that this study seeks to ascertain to what extent its investment climate has affected the performance of its manufacturing sector and proffer recommendations from the findings to boost the sector and limit the constraints. The findings of this study will therefore go a long way to inform administrators of the current status of the significant indicators of the Nigerian investment climate and to what extent they affect manufacturing firms. This study should also be able to guide policy designers and implementers on the extent to which manufacturing firms access finance, and help them appreciate the existing policies in that regard with the intent of readjusting where necessary. The research work will also aid researchers as it contributes to existing knowledge on the subject and then suggest areas for further research.

1.5 Scope of the study

According to OSCE, (2006) the investment climate could be described by three wide-ranging sets of variables: Macroeconomic policies (for example; fiscal, monetary and trade policies), Governance and institutions; and Infrastructure. However, due to the nature of this study and data, only two of these broad definitions were taken into consideration. The data used was the World Bank Investment Climate Survey of Nigeria carried out in 2009. The governance and institutional aspects were proxied by policy uncertainty, political instability, corruption and security (such as crime, theft and disorder). While the Infrastructural aspects were determined with the aid of: the telecommunication indicator, electricity, transportation and availability of infrastructure. The access to finance indicator will be examined as one of the investment climate indicators as designated in other studies. Tax was also considered as an independent indicator in the investment climate of manufacturing firms. The World Bank Investment Climate Survey to be used covers 26 states of the Federal Republic of Nigeria, which constitutes the study's area of concentration. The study is a Nigerian based study, employing a cross sectional survey of 26 states.

2 | LITERATURE REVIEW

2.1.1 Conceptual Literature

INVESTMENT CLIMATE AND MANUFACTURING FIRM'S PERFORMANCE IN NIGERIA

There exists no clear cut definition of investment climate as it encompasses several issues and is affected by many macroeconomic and microeconomic risks. However it could be referred to as the institutional, policy and regulatory environment in which firms operate. Key determinants of the investment climate include economic and political stability, rule of law, infrastructure, approaches to regulations and taxes, functioning of labor and finance markets, and broader features of governance. A good investment climate fosters productive private investment and economic growth by creating opportunities for the private sector to invest, create jobs, and lay the foundations for long-term business success (World Bank, 2005). The investment climate depends largely on the current and anticipated economic situation but is also shaped by political and social factors. If the outlook is positive, the investment climate is said to be bullish; if it is negative the climate is bearish. From another perspective, an investment climate is composed of location-specific factors (incentives and opportunities) that determine if investors will risk their capital in financing a particular project.

Investment climate is affected by many factors, including: poverty, crime, infrastructure, workforce, national security, political instability, regime uncertainty, taxes, rule of law, property rights, government regulations, government transparency and government accountability. An unfavorable investment climate is one of the many hindrances faced by underdeveloped nations. Regulatory reform is often a key component of removing the barriers to investment. A number of nonprofit organizations have been established for the purpose of improving the investment climate and spurring economic development in these countries. Also, some investors are willing to take on the high level of risk and volatility associated with investing in an unfavorable climate because of the potential that the high risk will be rewarded with high returns. The South Africa Investment Climate Assessment (2005) show that the investment climate is made up of the many location-specific factors that shape the opportunities and incentives for firms to invest productively, create jobs, and expand. These factors include macroeconomic and regulatory policies; the security of property rights and the rule of law; and the quality of supporting institutions such as physical and financial infrastructure.

In this study however, these indicators of investment climate are grouped into three broad sets: Macroeconomic policies, Governance/institutions; and Infrastructure. This is in line with OSCE, (2006) who defines investment climate by these three broad sets of variables. However, given the nature of the study – cross sectional micro analysis, the study concentrates on Governance and institutions; and Infrastructure, while macroeconomic policies are left out. Nevertheless, these two broad sets are composed of most of the indicators that give a firm grasp of the general investment climate. The indicators are further discussed below;

2.1.2 Governance and institutions

This indicator is formed by a composite of variables which include: taxes, policy uncertainty, political instability, corruption and security.

- Policy Uncertainty:

Policy uncertainty is a class of economic risk where the future path of government policy is uncertain, raising risk premia and leading businesses and individuals to delay spending and investment until this uncertainty has been resolved (Baker, Bloom and Davis 2011). Policy uncertainty may refer to uncertainty about monetary or fiscal policy, the tax or regulatory regime, or uncertainty over electoral outcomes that will influence political leadership. Policy uncertainty is often also referred to as regime uncertainty. Alao and Adebawojo (2012) Ricco, Callegari and Cimadomo (2014) use empirical evidences to show that there exist a relationship between policy uncertainty and investment.

- Political Instability

Political instability could be referred to a situation where by a country or economy is currently going through political turmoil. It may also involve the death of people within that country and in many cases the country detoriates in terms of its economic progress. Examples of political instabilities include political wars, coups, power tussles, amongst others. Noteworthy is the fact that such political instabilities usually affect the smooth functionalism of the

There exist empirical evidence that political instability affects economic growth, other macroeconomic indicators and most especially investments (Alesina, Roubini, Ozler and Swagel 1992; Berthelemy, Kauffmann, Renald and Wegner (2002). Berthelemy J., Kauffmann C., Renald L. and Wegner L. (2002). Political instability, political regimes and economic performance in African countries. OECD Development Centre.

- Corruption

Corruption could be defined as the misuse of public power by elected politician or appointed civil servant for private gain. Corruption affects firms in terms of hindering its smooth operations. Most firms in corrupt nations including Nigeria experience setbacks in terms of processing documents at government institutions for one reason or another and so increase their cost of production.

- Taxation

Taxation refers to the practice of a government collecting money from its citizens to pay for public services. Without taxation, there would be no public libraries or parks. Taxation in itself is not bad, as several governments have recorded success stories from the proceeds of taxation. Nevertheless, the manner and worth of taxation may be a major setback on manufacturing firms. If the tax is higher than the firm's ability to pay, then the manufacturing firm will experience a downturn in output.

2.1.3 Infrastructural Vector

- Telecommunication

Telecommunication is the exchange of information over considerable distances by electronic means. Today telecommunication is much advanced due to the huge technological progress. Telephones for private and corporate bodies have made business easier and operationalization of firms easier. However, these also depend on several factors that are often not stable such as the electricity amongst others.

- Electricity

Electricity is another significant infrastructural indicator as it might not only discourage investors, but

will lead existing firms to possible bankruptcy due to over dependence on the alternatives; in most cases fuel-engineered generators. In Nigeria, generators are almost in every household and most especially firms which increases the cost of production and may affect output if the firm tends to ration consumption of fuel on the generator.

- Transportation

Is a key infrastructural indicator in investment climate? Transportation connects raw materials to industries and then the industries to markets and so every investor. This therefore warrants that every investor would investigate the accessibility of both inputs and markets before establishing its firm.

2.2 Theoretical Literature

2.2.1 The Neoclassical Theory

The neoclassicaltheory of optimal capital accumulation is often referred to as a theory of investment behavior based on a great number of alternativeversions of the theory. Reduced to its barest essentials,the theory requires only that capital accumulation be based on theobjective of maximizing the utility of a stream of consumption.The neoclassical theory states that a firm starts from an optimization behavior. Its main objective is to maximize the present value of its net cash flows subject to technological constraint summarized by the production function. This theory can be divided into two stages, the earlier version or approach developed by Jorgenson derives the optimal capital stock under constant returns to scale and exogenously given output. To

investment. This neoclassical theory of investment has a couple of draw backs.

Assumption of exogenously given output (which makes optimal capital stock determinate) is inconsistent with perfect competition. The theory itself cannot determine the rate of investment since it relies on an ad hoc stock adjustment mechanism. Some sort of adjustment costs were introduced implicitly through the distributed lag function for investment.

These points were discovered by Lucas (1971), Gould (1968), Uzawa(1969) and Treadway (1969) their solutions were to introduce the cost of installing

new investment goods in the firm's optimization problems.

In their formulation, capital stock is given to the firm at each movement of time because of the adjustment costs in changing capital stock, what the firm can control at each movement of time in the rate of investment not the capital stock.

2.2.2 Jorgenson's Model

Jorgenson (1963) consider the problem of a firm that produces output using capital (k) as its only input. The Jorgenson theory assumes that fixed asset investment is described as a process of optimal capital stock adjustment, showing that capital-labour ratios adapt to relative factor price changes, where the relative factor price of capital is measured as the user or rental cost of capital. This model is also seen as the user cost of capital model. It concentrates on the average long term behaviour of investment as determined by the requirement that the expected returns over the life of a project exceeds its cost (Zarnowitz 1985).The Jorgenson theory is established with the relationship,

$$y = f(k)$$

Jorgensen opines that, in a case with no taxes and no capital market frictions of any kind, an investor must be indifferent between putting his money in the bank and earning interest at rate, and buying a unit of capital, renting it out, and then reselling it the next period.

Jorgenson assumed capital stock adjustment to be instantaneous, adjustment cost are zero and investment decisions are completely reversible. This means that investors do not have to look to the future because they can respond so quickly and effectively when the time comes and so their expectations are essentially static. This approach was subject to wide spread criticisms from all camps and also from orthodox theories. A lag range of empirical testing was carried with this model but most didn't perform well for a wide range of reasons. One of the most fundamental problems came in specifying the lag structures: it is difficult to separate the impacts on lag structure of expectations about the future versus other factors such as delivery, adjustment, installation lags. In addition, the rate of investment over time is undefined in jorgenson's models

given instantaneous capital stock adjustment and no adjustment cost (junanker 1972).

2.2.3 Tobins Q Theory and Adjustment Cost Theories of Investment

The Q theory is a theory of investment behaviour developed by the US economist James Tobin, commonly referred to as Tobin's Q theory. According to Brainard and Tobin (1968), the formula is purported to relate the market value of shares issued by a company to the replacement cost associated with the company's assets. Tobin opines that the market value and the replacement cost would be more or less equal, creating a state of equilibrium. In Tobin's Q theory, the market value of the existing shares issued by the company is divided by the replacement cost of the share capital. Tobin was of the opinion that if a firm can freely change its capital stock, then it will continue to increase or decrease its capital stock until Q is equal to infinity.

The Tobins "Q" measures the performance for firms in the capital market. It is seen as the ratio of the market value of a firm's assets (as measured by the market value of its outstanding stock and debt) to the replacement cost of the firm's assets. This measure of performance is not used as often as either rates of return or price cost-margins. Tobin reasoned that if the market value physical capital of a firm exceeds its replacement cost, then capital has more value in the firm than outside the firm. The Q theorist begins by incorporating positive adjustment cost into the models. Abel (1983) defines internal adjustment cost as the output losses that arise within a firm as a result of adapting to flow of new investments.

If the market value reflected solely the recorded assets of a company, Tobin's q would be 1.0.

If Tobin's q is greater than 1.0, then the market value is greater than the value of the company's recorded assets. This suggests that the market value reflects some unmeasured or unrecorded assets of the company. High Tobin's q values encourage companies to invest more in capital because they are "worth" more than the price they paid for. Tobin's Q is defined as the market value of the firm divided by the replacement cost of capital represented as:

$$Q = \frac{\text{Market value of installed capital (M)}}{\text{Replacement cost of capital (K)}}$$

If a company's stock price (which is a measure of the company's capital market value) is $2 and the price of the capital in the current market is $1; the company can issue shares and with the proceeds invest in capital, in this case Q>1.

On the other hand, if Tobin's q is less than 1, the market value is less than the recorded value of the assets of the company. This suggests that the market may be undervaluing the company, so the theory proposes the sales of some assets at this point, since they are not used to the best advantage. The idea therefore is that, selling of assets that are not directly related to profit generation will help to move the company closer to a state of equilibrium.

2.2.4 Keynesian Investment Theory

According to Fazzari (1989) John Maynard Keynes emphasized the central role of investment in the theory of aggregate output and employment. His ideas differed from traditional views in two fundamental ways;

> [noitemsep,nolistsep,topsep=5pt]The importance of investment did not result only from its long run effect on capital stock growth. It resulted from investment as its driving force of aggregate demand and short run fluctuations in economic activity. Keynes rejected the micro foundation of investment that was based exclusively on technological conditions of capital productivity by stressing uncertainty, finance and monetary factors as fundamental determinants of investment.

A major contribution to the investment theory by Keynes was to develop conditions under which money broadly conceived, mattered for the real performance of the macro economy.

Keynes theory opines that, investments are not determined by some underlying optimal capital stock rather, genuine or radicaluncertainty takes a central position. Keynes believed that human beings were dominated by their "animal spirit" combined with irrational and volatile expectations thereby, making the thought of investment as an adjustment process toward equilibrium futile. One of Keynes' fundamental contributions was to develop conditions

under which "money", broadly conceived, mattered for the real performance of the macro-economy. These two major aspects of the theory that have been emphasized in post-Keynesian research are the Lender's risk and borrower's risk.

The Lender's risk is that situation in which Keynes states that, as investment rises, "lenders" become more and more reluctant to finance marginal projects. Minsky (1975) refers to this risk as an increase of the marginal supply price of investment facing firms. That is, the effective cost of capital goods but it also incorporates the present value of the debt service commitment set up to finance the investment project. As the cost of finance rises, the supply rises (Fazzari and Mott, 1986). Minsky argues that this kind of risks actually shows up in contracts as higher interest rates when borrowing increase or as collateral requirements or other restrictive covenants in debt contracts.

These circumstances therefore explain a link between a firm's financial structure and its investment. Firms with good investment projects face a higher cost of external capital than their opportunity cost of using internal funds because the cost of external funds include a premium to compensate lenders for the risk of inadvertently funding bad projects.

The lender's risk might be the most obvious manifestation of the intrusion of financial effects on real decision making, but the borrower's risk explain the situation in which financial conditions have an impact on real decisions. Minsky (1975) describes this risk as "doubts in the mind of the entrepreneur" and argues that this is the only relevant financial factor if a man ventures his own money. Similarly Kalecki (1937) explains an increase in the marginal opportunity cost of investment, or, equivalently a reduction in the marginal demand price for investment goods, because the more of one's wealth tied up in a particular fixed investment, the more danger one is exposed to in the event of failure. If borrower's risk arises from entrepreneurs' risk aversion then diversification seems to provide the obvious solution. Systematic un-diversifiable risk may affect economic performance, but this effect is untimely rooted in exogenous preferences, and therefore does

not change the taste and technology view of neoclassical thought.

2.3 Empirical Literature

2.3.1 Global Evidence

Empirical literature on the assessment of investment climate abound. Those that have been investigated outside Nigeria include; Eifert Gelb and Ramachandran (2005) examined the comparative advantage of the business environment in Africa. This paper ties together the macroeconomic and microeconomic evidence on the competitiveness of African manufacturing sectors. The estimates confirm that Africa is high-cost relative to its levels of income and productivity. They compare this finding with firm-level evidence from surveys undertaken for Investment Climate Assessments in 2000-2004. These confirm a pattern of generally low productivity, and also suggest the importance of high indirect costs and business-environment-related losses in depressing the productivity of African firms relative to those in other countries. There are differences between African countries, however, with some showing evidence of a stronger business community and better business climate. Also, the authors adopt a political-economy perspective on the prospects for reform of Africa's business climate, considering African attitudes to business and the fractured nature of African business sectors as between indigenous, minority and foreign investors. The latter have far higher productivity and a greater propensity to export; however, Africa's difficult business climate and the tendency to overcome this by working in ethnic networks slows new entry and may decrease the incentives of key parts of the business community form constituting an aggressive pressure group for reform. Even though reforms are moving forward in several countries, this slows their impact and raises the possibility that countries settle into a low-productivity equilibrium.

Moreover, Kinda, Plane and Veganzones-Varoudakis (2009) investigates the relationship between firm-level technical efficiency and the investment climate for 22 developing economies and eight manufacturing industries. They used descriptive and econometric analysis to show that, on average, enterprises in the Middle East and North Africa have performed poorly compared with other countries in the sample. The exception is Morocco, whose various measures of firm-level productivity rank close to the ones of the most productive economies. The analysis also reveals that the competitiveness of countries in the region has been handicapped by high unit labor cost, compared with main competitors like China and India. The analysis reveals that some industries, more exposed to international competition, are more sensitive to investment climate deficiencies. For some industries, this is also true for small and medium domestic enterprises that do not have the possibility to influence their investment climate or choose their location. These findings bear clear policy implications by showing that increasing firms' size and improving the investment climate (in particular of small and medium firms and industries more exposed to international competition) could constitute a powerful means of industrial development and competitiveness, in the Middle East and North Africa region in particular.

Also, Kinda, Plane and Veganzones-Varoudakis (2011) examined the firm productive performances in five Middle East and North African (MENA) economies and eight manufacturing industries are compared to those in 17 other developing countries. Their findings suggests that, although the broad picture hides some heterogeneity, enterprises in MENA often performed inadequately compared to MENA status of middle-income economies, with the exception of Morocco and, to some extent, Saudi Arabia. Firm competitiveness is a more constant constraint, with a unit labor cost higher than in most competitor countries, as well as investment climate (IC) deficiencies. Their results also shows how IC matters for firm productivity through the quality of infrastructure, the experience and education of the labor force, the cost and access to financing, and different dimensions of the government-business relationship. These findings bear important policy implications by showing which dimensions of the IC, in which industry, could help manufacturing in MENA to be more competitive in the globalization context.

And, Balchin and Edwards (2011) investigates whether high business and trade costs associated with Africa's trade-related infrastructure, trade institutions and the regulatory environment have contributed towards its mediocre trade performance. They focus on eight African countries; Egypt, Kenya, Madagascar, Mauritius, Morocco, South

Africa, Tanzania and Zambia. The authors employed the World Bank's investment climate surveys. The results of the study suggest that the business climate, as measured using principal components for micro-level supply constraints, macroeconomic conditions and the legal environment, is closely associated with firm-level export propensity. Improvements in domestic policy may therefore have a considerable positive impact on manufacturing export performance in Africa.

From a cross country perspective Aterido, Hallward-Driemeier and Pages (2007) examined the impact of the investment climate on employment growth. Using firm level data on 70,000 enterprises in 107 countries, this paper finds important effects of access to finance, business regulations, corruption, and to a lesser extent, infrastructure bottlenecks in explaining patterns of job creation at the firm level. The study opines that, the differences across size categories come from two sources. First, objective conditions of the business environment do vary systematically by firm types. Micro and small firms have less access to formal finance, pay more in bribes than do larger firms, and face greater interruptions in infrastructure services. Larger firms spend significantly more time dealing with officials and red tape. Second, even controlling for these differences in objective conditions, there is evidence of significant non-linearities in their impact on employment growth. The results suggest strong composition effects: A weak business environment shifts downward the size distribution of firms. In the case of finance and business regulations this occurs by reducing the employment growth of all firms, particularly micro and small firms. On the other hand, corruption and poor access to infrastructure reduce employment growth by affecting the growth of medium size and large firms. With significant differences between firms with less than 10 employees and SMEs, these results indicate significant reforms are needed to spur micro firms to grow into the ranks of the SMEs.

In addition, Investment Climate Assessment (2004) investigated the investment climate of India as it relates to the manufacturing industry. They use firm-level data from the joint World Bank CII Investment Climate survey of Indian manufacturing companies in addition to the Indian government's Annual Survey of Industry. The results show amongst many other findings that, the labor productivity and total factor productivity are much higher in the better climate, higher FDI states. Labor productivity (defined as value added per worker) is more than 20 percent higher in the six states that have attracted practically the whole of FDI to India; the so-called high-FDI states. This is also true for the better climate states. Better climate, high FDI states have attracted more investment in plant and equipment than other parts of India. The rate of net fixed-capital formation in better climate states is 5.2 percent, against less than 0.4 percent in other states; it is 6.3 percent in high-FDI states, compared with 1.6 percent in low-FDI states. The cumulative outcome of these differences in capital formation? The average employee is better equipped with machines and tools in high-FDI states or in low-cost cities than in other states and cities. Yes, workers in better climate or high-FDI states are more skilled or better equipped. Those advantages aside, labor productivity is still higher in these states than elsewhere in India because total factor productivity (TFP) is also higher for the better climate states and high-FDI states - higher by 50 percent.

And, Ahiawodzi and Adade (2012) examined the effect of access to credit on the growth of Small and Medium Scale Enterprises (SMEs) in the Ho Municipality of Volta Region of Ghana by using both survey and econometric methods. The survey involved a sample of 78 SMEs in the manufacturing sector from the Ho Municipality. The specified econometric model has firm growth as the dependent variable, and the independent variables include access to credit, total current investment, age of the firm, start-up capital, education level and annual turnover of the firm. Both survey and econometric results show that access to credit exerts a significant positive effect on growth of SMEs in the Ho-Municipality of Ghana-the main policy implication of the study therefore is that the government should try hard to meet the credit needs of the SMEs in the country for a speedy economic growth

2.3.2 Nigerian Evidence

The significance of this study has motivated several other researchers to examine different aspects in Nigeria. Some of the studies that address firm performance include: Ocheni and Gemade (2015) examined the effects of multiple taxation on the performance of small and medium scale enterprises

INVESTMENT CLIMATE AND MANUFACTURING FIRM'S PERFORMANCE IN NIGERIA

(SMEs). The study involves a survey research design with a population of 91. The researchers derived their sample size to arrive at 74 and a self-administered questionnaire was used to collect data. This data was quantitatively analyzed with simple percentages and the research hypotheses were tested with ANOVA. Findings revealed that multiple taxation has negative effect on SMEs' survival and the relationship between SMEs'size and its ability to pay taxes is significant. The research recommends that government should come up with uniform tax policies that will favour the development of SMEs in Nigeria and government should put into consideration the size of SMEs when formulating tax policies.

Furthermore, Ohaka and Dagogo (2015) examined the influences of tax incentives on cash flow of manufacturing corporations in Nigeria. Sixty quoted manufacturing companies in Nigeria constituted the sample of this study and secondary data from Nigeria Stock Exchange fact book were complemented with ordinal data collected via questionnaire. The stated hypotheses were statistically tested with paired t-test of two means from the same sample. T-test was eventually used because of the ordinal data, which might not satisfy the condition of normal distribution. The findings revealed that tax incentives significantly increased the mean cash flows from financing, investing and operating activities of Nigerian manufacturing corporations. It was therefore recommended that Nigerian government should provide adequate tax incentives for manufacturers in Nigeria, if vision of becoming one of the top twenty nations by the year 2020 must be realized.

In addition, Olowu and Hamza (2013) examined the impact of investment climate reforms on business operations in Nigeria. The study is qualitative and descriptive in nature and used secondary data to test the efficacy of some of these reforms in some small, medium and large manufacturing sector to see whether or not reforms in Nigerian investment climate have or otherwise improved the level of Foreign Direct Investment (FDI) which will translate to economic growth and development, and reduces the cost of doing business in Nigeria.

Moreover, Gado (2015) investigated the impact of the Nigerian business environment on company performance of 20 most capitalised companies in Nigeria. This research uses the Ordinary Least Square and simple multiple correlation methods to show the impact of the Nigerian business environment on the performance of these companies. Collectively, the variables of the environment have significant and positive impact on the companies' performance. Government expenditure and inflation have positive impact while exchange rate and interest rate have negative impact but on the whole there was a positive and significant impact. Amongst the recommendations are that Government should pay more attention to capital expenditure on vital sectors like infrastructures and education while maintaining fiscal stability. The private sector should partner with Government in infrastructural investment instead of each company providing its own infrastructures.

Abiodun (2014) examined the problems and prospects of Small and medium scale enterprises in Nigeria. The researcher examined small and medium scale enterprises in Nigeria in relation to those challenges which affects SMEs from developing capacity to realizing its full potentials as well the prospect for improvement and development for employment generation, economic growth and national development. The study used qualitative tools to show that invigorating SMEs with strengthened commitment to economic reform would offer a turning point in facilitating the recovery of Nigeria economy and national development.

Meseko (2015) examined the investment climate of Nigeria and the effect it could have on economic development. Primary data were gathered randomly form investors and quantitatively analyzed using Likert scale and T-test to determine the authenticity of the hypothesis proposed in the questionnaire. The result shows that the Nigeria culture and value system have positive impact on Nigeria investment climate, the financial institutions in Nigeria are efficient and able to drive a positive investment climate, the Nigeria stock exchange is efficient, it is not difficult to acquire real estate for business purpose in Nigeria at affordable prices, communication channels like email, telecommunication etc. are efficient, the possibility of natural disaster is very low, and it's not difficult to get credit facilities. On the negative front, security threats is an impediment to free movement, infrastructures like roads, railways, airports, sea-ports and electricity are inadequate, corruption is prevalent and a lot is still expected as

regards rule of law. Recommendations includes, transparency and reduction of bureaucratic process in governance as well as more involvement of the private sector through project financing to provide necessary infrastructures that are needed to drive the economy.

Ajagbe and Ajetomobi (2015) examined the influence of investment climate on the total factor productivity (TFP) of food industries in Nigeria relative to other ones. The study was conducted in two phases namely (i) an estimation of the firm-level productivity is carried out and, (ii) differences in TFP across firms are statistically related to indicators of investment climate, taking into consideration firms characteristics. The data used the most recent World Bank Enterprise survey data on Nigeria. In the first phase, three measures of firm-level productivity are explored, namely, labour productivity, total factor productivity and technical efficiency. The results show that productivity of food industries differ significantly from others in most cities in Nigeria. In terms of firm level efficiency, food industries are less efficient than others in all cities. The empirical results also indicate that investment climate matters to productive performance of all industries in Nigeria apart from food.

Most of the reviewed studies examined the challenges of the Nigerian investment climate while some others used time series analysis to examine the relationship between particular investment climate indicators and manufacturing output as well as economic growth, apart from Adebisi and Gbegi (2013) that did a survey analysis. These macroeconomic studies do not permit the exploitation of the specific outcome of enterprises of the cross sectional micro survey. This study therefore uses the World Bank investment survey to analyse the three main factions of an investment climate on the manufacturing firms in Nigeria. It employs principal component analysis, propensity score matching (PSM) model and multiple regression analysis to ascertain its objectives.

3 | METHODOLOGY

3.1 Theoretical Framework

This study adopts the Cobb Douglass model for its theoretical framework. The Cobb Douglass pro-

duction function is the most popularly applied in research. The Cobb Douglass production function establishes the relationship between the input of the production factors and the outputs or income. The Cobb Douglass model emphasizes the significance of investment (i.e. capital) and labour effectiveness in promoting production. The functional form of the Cobb Douglass production function is given as:

$$Q = AK^{\beta 1}L^{\beta 2} \dots \dots \dots \dots \dots \dots \dots \text{ (3.1)}$$

where Q is the output, K represents capital resources employed and L is labour. A is a constant term while β_1 and β_2 are the coefficients of capital and labour respectively. For the purpose of this study, the capital component of the model is proxied with the value of fixed assets while labour will be proxied by number of workers or employees. The theoretical framework is therefore specified mathematically when linearized as;

$$\log Q = A + \beta 1 \log K + \beta 2 \log L \dots \dots \dots \dots (3.2)$$

Equation (3.2) could further be specified econometrically as;

$$Q = A + \beta 1K + \beta 2L + \mu \dots \dots \dots \dots \dots (3.3)$$

where μ is the error term.

The Cobb Douglass production function as used by many studies to examine the behavior of firms, is suitable for this study as it relates the most important inputs to outputs in the production process of a firm and is a fundamental theory of the firm. This theoretical relationship is therefore the framework upon which this study is been built.

3.2 Model Specification

To investigate the impact of the various dimensions of investment climate, the study develops two vectors to measure investment climate- a vector of governance and institutional indicator (giiv) and a vector of infrastructural indicator (iiv). The governance and institutional indicator will be made up of; procurement process, access to land, policy uncertainty, political instability, corruption and security (crime, theft and disorder). While the Infrastructural indicator will be determined with the aid of: the telecommunication indicator, electricity, transportation and availability of adequate buildings. The individual variables are first of all ordered in increasing order of it as a constraint before the principal component is done.

INVESTMENT CLIMATE AND MANUFACTURING FIRM'S PERFORMANCE IN NIGERIA

The two vectors shall be formulated with the aid of the principal component analysis. The principal component analysis as specified by Ifelunini et al., (2013) is presented thus,

Given variables (Xs represent the various factors used to develop each of the three composite indices) X1,…, Xp measured in n firms, while Z1,…,Zp are the principal components which are uncorrelated linear combinations of the original variable, X1,…, Xp, given as;

$Z1 = \alpha11X1 + \alpha12X2 +…+ \alpha1pXp$

$Z2 = \alpha21X1 + \alpha22X2 +…+ \alpha2pXp$

· · · ·

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· · · ·

$Zp = \alpha p1X1 + \alpha p2X2 +…+ \alpha ppXpz$

This matrix of equations can be expressed as z =Ax, where z=(Z1,…,Zp), x= (X1,…, Xp) and A is the matrix of coefficients. The coefficients of the first principal component, $\alpha11,…, \alpha1p$, are chosen in such a way that the variance of Z1 is maximized subject to the constraint $\alpha211,…, \alpha21p = 1$.

The variance of this component is equal to the largest eigen value of A. The second principal component is completely uncorrelated with the first component. This component explains additional but less variation in the original variable than the first component subject to the same constraint. Each principal component is uncorrelated with all the others and the squares of its coefficients sum to one. The principal component analysis involves finding the eigen values and eigen vectors of the correlation matrix

The study equally includes a variable to capture the impact of taxation on firms' performance in Nigeria that constitutes the third objective. Equation (3.3) could therefore be developed with the investment climate indicators as:

$Q = A + \beta_1K + \beta_2L + \beta_3\text{giiv} + \beta_4\text{iiv} + \beta_4\text{Tax} + \mu$…………………………..………..……...(3.4)

Where β_3, and β_4 are the coefficients of the governance and institutional indicator vector and the infrastructural indicator vector respectively, and β_4 is the coefficient of the tax variable. And Q is the output of the firm that is used to proxy manufacturing firm performance given that it represents the general sales and productivity of the firm.

Due to the endogenous nature of capital as an explanatory variable the researcher stated the instrument of capital to be capacity utilization as found in the data. This is in order to proffer the instrumental variable approach which according to McFadden (1999) is required where explanatory variables happen to be correlated with the dependent variable and the error term. In such a case the Ordinary Least square (OLS) approach is no longer suitable as its basic assumptions are violated. The study therefore employed the instrumental variable approach that permits the suitable substitution of variables that does not necessarily correlate with the error term. Equation four will therefore be estimated with the instrumental variable estimation technique to ascertain objectives; 1, 2 and 3 of the study.

3.3 Model Specification for Propensity Score Matching

To determine the extent to which manufacturing firms access finance and how it affects the performance of manufacturing firms, the study employs the propensity score matching model(PSM). The propensity score matching is a statistical matching technique that attempts to estimate the effect of a treatment, policy, or other intervention by accounting for the covariates that predict receiving the treatment, which was first published by Paul Rosenbaum and Donald Rubin in 1983. PSM attempts to reduce the bias due to confounding variables that could be found in an estimate of the treatment effect obtained from simply comparing outcomes among units that received the treatment versus those that did not (Rosenbaum, P. R., Rubin, R., and Donald B., 1983).The treatment effect is estimated by comparing a particular outcome between two sub groups, as it attempts to control for these differences to make the groups receiving treatment and not-treatment more comparable.

The Propensity score matching model however, has two basic assumptions as stated by Heinrichet al., (2010). The first is the Conditional Independence Assumption (CIA). The CIA states that there is a set X of covariates, observable to the researcher, such that after controlling for these covariates, the potential outcomes are independent of the treatment status: That is, $(Y_1,Y_0) \perp D \mid X$. This is simply the

mathematical notation that implies that the potential outcomes are independent of the treatment status, given X. Or, in other words: after controlling for X, the treatment assignment is "as good as random". Nevertheless, Heinrichet al., (2010) opine that this condition may be relaxed when the parameter of interest is the Average treatment effect on the treated (ATT), and this is the case with this study. The second assumption is the Common Support Condition. The assumption states that for each value of X, there is a positive probability of being both treated and untreated, such that $0 < P(D = 1 | X) < 1$. This implies that the probability of receiving treatment for each value of X lies between 0 and 1. By the rules of probability, this means that the probability of not receiving treatment lies between the same values. In order words, there must be observations for both the treated group and the non-treated group such that any enterprise chosen at random falls into any of the two categories. This is the case with the data proposed for this study as there exist enterprises that accessed credit and those that did not.

The propensity matching model is a two stage model with the first stage being the logit or probit model, wherein the first stage is often a probit or logit. However this study is interested in the second stage that assesses the average treatment on the treated. The second stage ascertains the treatment effect of access to finance on the performance of manufacturing firms. The entrepreneurs that accessed finance are taken to be the treatment group (D=1) while the entrepreneurs that do not access finance are the control group (D=0). And the outcome variable will be the performance of manufacturing firms- the output of the manufacturing firms. This would aid the study in determining to what extent access to finance has affected the performance of manufacturing firms.

Given that the outcome is dichotomous, the effect of treatment can be estimated as the difference between the proportion of subjects experiencing the event in each of the two groups (treated vs. untreated) in the matched sample. Following Chen and Zeiser (2008), in order to calculate the average treatment effect on some outcome (*Y*) experienced by units in the population of interest, let

Y_{1i} be the outcome of unit *i,* if *i* were exposed to the treatment.

Y_{0i} be the outcome of unit *i,* if *i* were not exposed to the treatment.

$D_i \varepsilon \{0,1\}$ be an indicator of the treatment actually received by unit i

Yi = Y0i + D(Y1i − Y0i) be the actually observed outcome of unit i

X be the set of pre-treatment characteristics

The average treatment effect is given by:

$E(Y_1 − Y_0 | D=1) = E(Y_1| D=1) - E(Y_0| D=1)$ ………………………………………(3.6)

The average treatment effect on the treated (ATT) is given by:

$E(Y(=(Y1 – Y0)= E(Y1) - E(Y0)$ ………….. (3.7)

where the counterfactual $E(Y_0| D=1)$ is the outcome participants would have experienced, on average, had they not participated.

While the ATT for the untreated is given by:

$E(Y_1 − Y_0 | D=0) = E(Y_1| D=0) - E(Y_0| D=0)$ ………………………………………(3.8)

3.4 Hosmer and Lemeshow's Goodness of Fit Test

The goodness of fit post estimation test for binary outcome models will be used to ascertain if the logit model; the first stage estimation of the model, has an appropriate goodness of fit. This is in order to avoid wrong specification issues and spurious regressions. The study therefore employs the Hosmer and Lemeshow's goodness of fit test. By default the command works with covariate patterns. The test compares observed and fitted frequencies in each group using Pearson's formula and, therefore, yields the same value as the Pearson chi-squared (Rodriguez, 2013).

3.5 Link Post Estimation Test

This study performs the link test to test the specification capacity of the model used. The link test verifies if the predictors chosen are meaningful and shows if there exist specification errors. The idea behind linktest is that if the model is properly specified, one should not be able to find any additional predictors that are statistically significant except by chance.

3.6 Data Source

The study is principally a micro analysis and will therefore employ the World Bank Investment Climate Survey in Nigeria in 2009. The data consisted

INVESTMENT CLIMATE AND MANUFACTURING FIRM'S PERFORMANCE IN NIGERIA

of a series of structured, face to face interviews with key senior managers/owners of a sample of 3,157 establishments across 26 states (Adamawa, AkwaIbom, Bayelsa, Benue, Borno, Delta, Ebonyi, Edo, Ekiti, Gombe, Imo, Jigawa, Katsina, Kebbi, Kogi, Kwara, Nasarawa, Niger, Ondo, Osun, Oyo, Plateau, Rivers, Taraba, Yobe, Zamfara) representing most sectors of activity and firm sizes. The data covers medium and small scale enterprises with about 1,718 firms in the manufacturing sector. The survey instrument has information explaining several institutional/governmental and infrastructural indicators of investment climate such as taxes, telecommunications, electricity, transportation, availability of infrastructure, customs and trade regulations, labour regulations, inadequate education workforce, policy uncertainty, access to finance, political instability, corruption, security (crime, theft and disorder) and electricity. Also the data gives provision for examining manufacturing firms separately from services and other firms.

4 | PRESENTATION OF RESULT, ANALYSIS AND INTERPRETATION

4.1 Characteristics of the Sample Data

The data used for this study is collected from the World Bank Investment Climate Survey in Nigeria. The survey consists of a series of structured, face to face interviews with key senior managers/owners of a sample of 3,157 establishments across 26 states. The study examined the distribution of the sample by firm size, exporting status, education, and ownership status, sex of firm head, legal status and access to credit.

The illustration below shows that only 3% are large enough - employing more than 100 persons, 29% employing between 20 and 99. Meanwhile majority of the firms (about 68%) employ less than 20. This implies that most of the firms in Nigeria remain low scale and in dire need for expansion. On the other hand, the ratio of exporting to non-exporting firms is about 1:99. Only 1% of the firms sampled are exporters which further buttresses the fact that export the capacity of most of the firms are still very low.
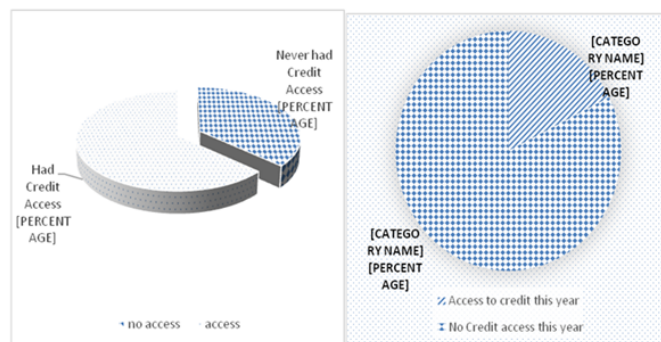

Fig. 4: Distributionof Sample by Firm Size and Exporting Status

Source: Author's Computation 2020

Furthermore, the ownership status suggests that less than 1% of the firms are owned by foreign persons/bodies while about 99.27% of the firms are owned by domestic bodies or individuals. There is need to improve the investment climate so as to invite foreign investments for the sake of exchanging ideas and technology as well as increasing competition in the sector. On the other hand female owned firms are relatively very low. Only about 14.06% of the female headed firms and about 85.94% are male owned or have the highest shares.
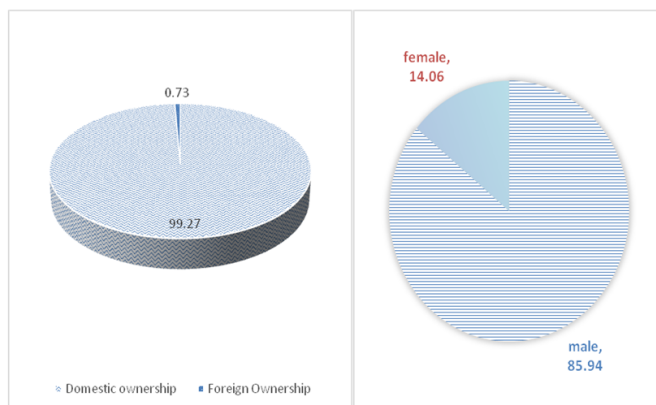

Fig. 5: Distributionof Sample by Ownership Status and Sex of firm Owner/highest shareholder

Source: Author's Computation 2020

Figure 4.3 shows that 84.86% of the firms are sole proprietors. Again, this further justifies why very few of the firms are exporters and a majority of the firms employing less than 20 persons. Meanwhile, 12.86% of the firms are private held limited companies, 2.1% are partnerships and about 0.17% are public listed companies. This implies that the capacity of most of the firms are limited to the sole proprietors and therefore prevents warranted expansion and growth.
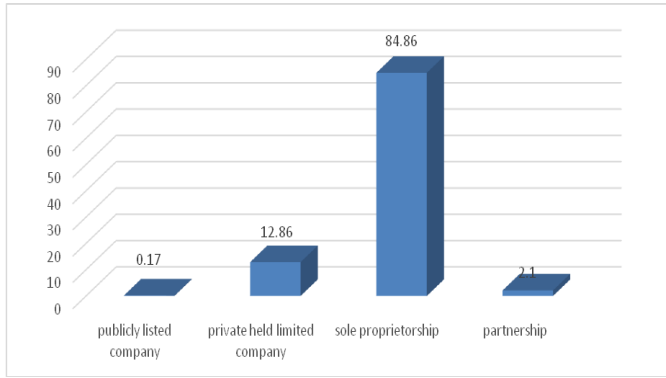
Fig. 6: Distribution of Sample by Firm's Current Legal Status

Source: Author's Computation 2020

The chart below suggests that, though there exists only 3.7% of the sample with absolutely no education, 7.88% did not complete primary school and 8.35% only completed primary school. Meanwhile, a stunning 22.76% did not complete secondary education and 16.03% completed secondary education. This means more than 50% of the owners or highest shareholders did not attain any form of tertiary education, and hence could determine their level of exposure. Only 3.94% of the sample completed university education as against 18.97% who didn't get to finish. Then only 2.27% of the sample has an MBA that should actually certify them.
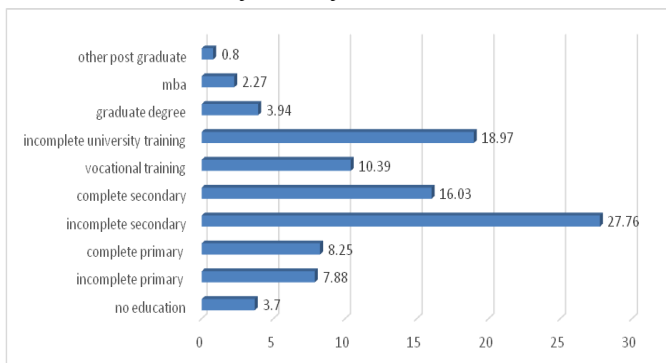

Fig. 7: Highest level of Education of Owner/Highest Shareholder

Source: Author's Computation 2020

In terms of access to credit, the study shows that, while 63% have had access to credit from all sources, about 37% of the sample has never had access to credit. Furthermore, only 19% has had access to credit during the year of this survey (2009) as against 81% who did not access credit that year. This implies that only a small proportion of the firms that apply for credit from different sources actually access credit annually. This is below expectation as every firm needs credit as much as possible to be able to attain maximum capacity of production and hence performance.
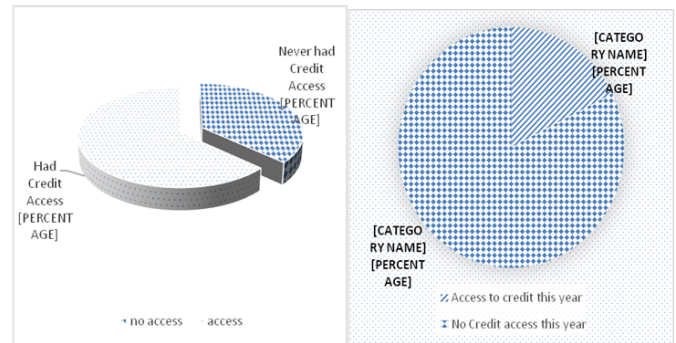

Fig. 8: Access to Credit from all Sources

Source: Author's Computation 2020

Some of the descriptive statistics are presented on Table 4.1 below as follows;

Table 2. Table of Summary statistics

Description	Mean	Std Deviation	Minimum	Maximum
Experience (years)	12.04348	7.9633	1	58
Longest number of days to clear customs	25.68966	53.38345	5	301
Annual Sales (₦)	70,700,000	676,000,000	10800	23,000,000,000
Capital (₦)	155,000,000	2,480,000,000	143,200	88,600,000,000
Labour	20	71.32512	1	3500
Number of hours of weekly labour supply	62.35128	16.34638	1	168
Proportion of exports	.3289913	3.87755	0	100
Total Losses incurred	1402482	16900000	3900	432000000
Number of applications for credit submitted	1.795455	1.424847	1	22
Number of applications rejected	1.762346	1.053816	1	8
Total cost of raw materials (₦)	30,010,000	274,000,000	17,000	8,000,000,000
Total annual cost on labour (₦)	6,163,489	45,900,000	22,000	2,170,000,000
Total cost of rental land buildings and equipment (₦)	1,297,193	1330000000	2000	500,000,000
Annual electricity expenditure (₦)	362,197	1191540	3000	27,500,000
Annual fuel expenditure (₦)	2,703,742	2.07e+07	12000	450,000,000
Annual expenditure on water (₦)	411,596.3	3843216	200	100,000,000

Source: Results from Author's Analysis 2020

Table 4.1 above suggests that the average experience of the firm head/ highest shareholder is about 12 years, with a maximum of 58 years.

INVESTMENT CLIMATE AND MANUFACTURING FIRM'S PERFORMANCE IN NIGERIA

However, the study notes that the standard deviation is high and shows the variation in years of experience. The Table further shows that it takes averagely about 26 days to clear customs for those that imported, with the maximum being 301 days.This scenario greatly impacts on the investment climate of a soci-ety as it slows the business. The average annual volume of sales is about □70,700,000, and ranges between □10,800 and □23 billion as least and largest annual sales respectively. On the other hand, the mean capital is □155 million with least capital of about □143,200 and largest capital about □87 bil-lion. However, the standard deviation of capital is much more than that of annual sales. This implies that though there exist huge variations in the capi-tal base of the firms, the sales tend to have a rela-tively lower standard deviation. The average labour employed by the firm is given as 20 and the most employed firm sampled, employs about 3,500 per-sons.

4.2 Impact of Tax, Infrastructure and Governance/Institutional Indicators on the output of Manufacturing Firms

To ascertain objectives 1, 2 and 3, the study employs an instrumental variable estimation technique as explained in Chapter three above. However, principal components were made for two of the key variables: governance and institutions as well as infrastructure indicator. The components with eigen values above 1 was retained according to the rule of thumb; both components showed that only one component had an eigen value above one as shown in the appendix. Nevertheless, the components explained more than 40% of the variation in both cases, moreover there exist a significant break between the first component that is greater than one and the second component. The nature and description of the variables used for the components are shown on the table below:

Table 3. Principal Components and its Make-up

Composite Variables for principal components	Variables used for PCA	Nature of variable	Definition
Governance and institutions indicator	Access to Land	Ordinal (5 point likertscale)	Constraint in decreasing order of severity
	Policy Uncertainty	Ordinal (5 point likert scale)	Constraint in decreasing order of severity
	Political Instability	Ordinal (5 point likert scale)	Constraint in decreasing order of severity
	Corruption	Ordinal (5 point likert scale)	Constraint in decreasing order of severity
	Crime Theft and Disorder	Ordinal (5 point likert scale)	Constraint in decreasing order of severity
Infrastructure Indicator	Telecommunication	Ordinal (5 point likert scale)	Constraint in decreasing order of severity
	Electricity	Ordinal (5 point lihert scale)	Constraint in decreasing order of severity
	Transportation	Ordinal (5 point likert scale)	Constraint in decreasing order of severity

Source: Results from Author's Analysis 2020

The variables are all ordinal in nature representing a 5-point scale, connoted as 0 for very severe con-straint and 4 for no constraint. According to Cornish (2007), "Principal components analysis, like factor analysis is designed for interval data, although it can also be used for ordinal data (e.g. scores assigned to Likert Scales)". It is based on this that the study employed the PCA analysis which is meant to reduce a set of components into principal components.

The study further estimated the variables with the aid of instrumental variables with alternating set of variables, as well as the OLS estimation technique to compare with the results of the instrumental variable regression. The key regression to be considered is however the third instrumental regression (Instrumental Regression III). The results are shown below:

Table 4. Impactof Tax, Infrastructure and Governance on Manufacturing Output

Variables	Instrumental Variable (I)	Instrumental Variable (II)	Instrumental Variable (III)	OLS Regression (I)	OLS Regression (II)
Capital	0.7314843** (5.23)	0.6360439** (3.83)	0.6396039** (4.04)	0.8558513** (29.38)	0.8589258** (30.26)
Labour	0.0096723** (2.32)	0.0124879** (2.54)	0.0123998** (2.74)	0.0059907** (4.97)	0.006159** (4.79)
Govt/Institution Indicator		0.039832** (2.17)	0.0396512** (2.35)	0.0208744* (1.74)	0.0225951* (1.86)
Infrastructure Indicator		0.0481678** (3.30)	0.0486202** (3.33)	0.0476748** (3.64)	0.0491163** (3.75)
Tax	0.0574303** (3.69)	0.0632439** (3.73)	0.0633009** (3.72)	0.0496767** (3.76)	0.048921** (3.62)
Experience of the firm head			0.0001023 (0.05)		-0.0015388 (-0.89)
Sex of the firm head			-0.0061137 (-0.11)		-0.0623729 (-1.13)
Constant	3.674214* (1.65)	5.202835* (1.96)	5.144743** (2.05)	1.690723** (3.64)	1.668068** (3.64)
R square	0.8592	0.8484	0.8491	0.8696	0.8699
F probability	0.0000	0.0000	0.0000	0.0000	0.0000
Number of Observations	1362	1361	1359	1361	1351
Mean VIF				1.52	1.41

Source: Results from Author's Analysis 2020

** Significant at 5% significant level, * Significant at 10% significant level (t-values in parentheses)

Table 4.3 shows three instrumental variable regressions and two multiple regression (using OLS technique) for varying set of variables. All models show statistical significant F statistics at 5% significant level implying that the overall model is significant for all the alternating set of variables, given the F statistical probability value of 0.000. The models equally show that the explanatory variables signifi-cantly explain the dependent variable given the high R square of above 80% in all cases.The multi-ple regressions were run with the aid of the auto-matic heteroscedastic check – robust to ensure its validity.Meanwhile, the mean Variance Inflation Factor (VIF) employed to tests for multicollinearity shows that they are less than 2 for both models,which equally applies with the variables. Therefore both multiple regression models were free from the estimation problems of heteroscedasticity and multicollinearity.

Capital and labour are significant for all the instru-mental variable regressions as well as the multiple regressions. This is evident as its t-values are higher than 1.96 in all cases hence significant at 5% sig-nificant level. This is expected according to sev-eral theoretical and empirical evidence; the Cobb Douglass theory particularly states capital and labour as the key determinants to output of a firm. Nev-ertheless, it is worth noting that capital which is instrumented in the instrumental variable regression appear to have a very high t-values in the multiple regressions, which buttresses the need for the instru-mental variable regression.

The first objective investigates the impact of infras-tructure on the manufacturing firms' performance in Nigeria. However the infrastructural variable con-stitutes a matrix of indicators as stated earlier to be the telecommunication indicator, electricity and transportation perception of constraints. The results suggest that infrastructure significantly affects total sales for all the instrumental variable regressions as well as the multiple regressions as the t-values are higher than 1.96 in all cases hence significant at 5% significant level. This implies that as the infrastruc-tural constraint become less severe, the sales increase positively and significantly. This is expected apri-ori as increasing constraints on infrastructure should translate to poor productivity and hence poor sales and vice versa.

The second objective analyses the extent to which governance and institutions affect manufacturing firms' performance in Nigeria. Again, the gover-nance and institutions was considered as a vector of variables that include; access to land, policy uncer-tainty, political instability, corruption and security (crime, theft and disorder). The result shows that the governance and institutional indicator is posi-tive and a significant determinant of firm perfor-mance. The t-values are greater than 1.96 for all the instrumental regressions hence significant at 5%

significance level. However, both multiple regression results suggest that it is not significant at 5% significant level, though significant at 10%. It is therefore a significant determinant of firm performance and equally shows that as the governance/institutional constraints diminish, firm performance increases significantly.

Bakare (2013) in a similar study found that empirical constraint to the performances of industrial sector in Nigeria is corruption and political instability while poor infrastructure and macroeconomic instability have played positive and significant roles. This study therefore agrees with Bakare (2013) as the findings suggest that infrastructure and governance and institutions indicator constraints both hinder performance of the industrial sector.

The third objective examines the impact of taxation on manufacturing firms' performance in Nigeria. The tax variable was considered as a single variable and the result suggests that tax is positively related and has a significant impact on firm performance. The absolute t-value which is greater than 1.96 in all cases suggests that the tax constraint significantly affects performance positively. This is contrary to Adebisi and Gbegi (2013) who examined the effect of multiple taxation on SMEs survival and show that multiple taxation has negative effect on SMEs' survival rate, though not significant. this result is inconsistent with the a priori expectation and is equally surprising as high taxes should translate to poor performance and output. Nevertheless, this could be possible if the burden of tax is transferred to the customers thereby transferring the supposed 'negative effect'.

4.3 Impact of Credit Access on Manufacturing Output in Nigeria

The fourth and last objective aims at examining the extent to which manufacturing firms' access to credit and how it contributes to their performance in Nigeria. To ascertain this, the study employed a propensity score analysis that has an advantage over other impact analysis in that it matches individuals of identical or similar characteristics from both the treated and untreated groups while calculating the impact analysis. The analysis was made for the total population, the manufacturing sector and then other subsets of different sizes and different products being manufactured were considered. The study employed two matching strategies which are the nearest neighbor and equal weight as well as nearest neighbor and random draw strategies. Then two performance indicators were equally employed; total sales and profit. The results are presented on Table 4.4 below;

Table 5. Propensity Score Resultsof the impact of Credit Access on Firm performance using the Average TreatmentEffect on the Treated (ATT)

Description\Performance Indicator	Performance Indicator	ATT – Nearest Neighbour and Equal Weight	ATT – Nearest Neighbour and Random Draw
Overall	Total Sales	0.486 (1.001)	0.011 (0.018)
	Profit	0.485 (0.877)	0.051 (0.068)
Manufacturing	Total Sales	0.476 (1.200)	0.036 (0.069)
	Profit	0.612 (1.490)	0.136 (0.249)
Small Firm size	Total Sales	0.871** (2.617)	0.979** (1.999)
	Profit	0.710 (1.839)	0.999 (1.927)
Medium Firm Size	Total Sales	0.613** (2.386)	0.573 (1.631)
	Profit	0.537 (1.609)	0.605 (1.213)
Large Firm Size	Total Sales	0.277 (0.598)	0.338 (0.613)
	Profit	0.166 (0.303)	0.436 (0.639)
Manufacturing food related products	Total Sales	0.783 (1.651)	0.456 (0.818)
	Profit	0.852 (1.691)	0.438 (0.726)
Manufacturing non-metallic minerals	Total Sales	0.536 (1.493)	0.345 (0.777)
	Profit	0.859 (2.182)	
Manufacturing wood product and furniture	Total Sales	0.523 (1.753)	0.223 (0.579)
	Profit	0.785** (2.511)	
Manufacturing other products	Total Sales	1.009** (2.099)	1.059 (1.697)
	Profit	1.112** (2.283)	

** Significant at 5% significant level, * Significant at 10% significant level (t-values in parentheses)

The results on table 4.4 shows that for almost all the subsections analysed the results are similar for both matching strategies. The results on the overall sample and for manufacturing firms only, show that the effect of credit access on total sales and profit is not significant at 5% significant level. The results show t values which are less than 1.96 implying that they are not significant. This is however not the case when the firms when examined in different sizes; the analysis for the sample of small firms show that the effect of access to credit on total sales is significant at 5%significance level for both matching strategies, given their t-values which are greater than 1.96. However, the effect of access to credit on profit of small firms is not significant at 5% significance level, though sig-nificant at 10% significance level.

Meanwhile the sample of the medium and large firm sizes reflect that of the overall sample in showing that the effect of access to credit is not significant on both performance indicators, though that for total sales is significant when considering the nearest neighbor and equal weight strategy, it is not with the near-est neighbor and random draw strategy. This result could be explained by the fact that the access to credit may be insufficient to have a significant impact on the firms or may have short gestation periods espe-cially with the case of large and medium firm sizes. However, small firms may not need too much credit assistance to record significant impact on their sales as well as profit, hence the significant effect for small firm sizes.

In the same trend, further analyses were made on subsets of different manufactured products that had sufficient sample sizes. Subsets for those manufac-turing food related products, non-metallic, wood and metallic were analysed. The results show that, credit access had no significant effect on total sales and profit at 5% significant level for the sample man-ufacturing food related products for both matching strategies. This is however not the case with the other s the subset manufacturing non metallic products and wood related products. But it is significant for those manufacturing metallic products at 5% and

10% for the nearest neighbor equal weight and nearest neigh-bor and random draw strategies respectively.

It is worth noting however that the effect of access to credit on manufacturing firms is not significant on profit and total sales as a whole, though significant for some subsets of the sample. This might be due to the fact that most finance institutions give out loans after studying the turn-over rates and other indica-tors which might favour some firms and not favour others. However, microfinance firms are known to give out more loans to trade related enterprises due to their short turnover periods and shy away from man-ufacturing firms of agricultural firms for their long gestation periods.

5 | SUMMARY, CONCLUSION AND RECOMMENDATIONS

Summary of Findings

This study is motivated by the fact that manufactur-ing sector is key to the development and growth of every economy. However, one of the vital deter-minants of this sector is the investment climate and environment for doing business. It is on this premise that this study examines the effect of investment cli-mate on manufacturing firm's performance in Nige-ria. The following specific objectives were; (i) To ascertain the impact of infrastructure on the man-ufacturing firms' performance in Nigeria. (ii) To analyse the extent to which governance and insti-tutions affect manufacturing firms' performance in Nigeria. (iii) To examine the impact of taxation on manufacturing firms' performance in Nigeria. (iv) To examine the extent to which manufacturing firms' access to finance and how it contributes to their per-formance in Nigeria. These specific objectives were examined with the aid of principal component analy-sis, instrumental variable estimation and the propen-sity score matching.

The socioeconomic characteristics suggests that majority of the firms (about 68%) employ less than 20 persons, only 1% of the firms sampled are exporters, less than 1% of the firms are owned by foreign persons/bodies, 14.06% of the firms female headed and about 85.94% are male owned or have

INVESTMENT CLIMATE AND MANUFACTURING FIRM'S PERFORMANCE IN NIGERIA

the highest shares, 84.86% of the firms are sole propri-etors, more than 50% of the owners or highest share-holders did not attain any form of tertiary education, 63% have had access to credit at one time or another, but only 19% of the firms had received credit that year.

Furthermore, the descriptive statistics show that, the average experience of the head of the enterprise is 12 years, the mean of the longest number of days to clear customers is about 26 days, the mean of annual sales is □70.7 million, the mean capital is □155 mil-lion, average number of labour is 20, average number of hours of weekly labour supply is about 62 hours, average proportion of exports is 0.32%, average total losses incurred is about □1,402,482, average number of applications for credit submitted is 1.795, aver-age number of applications rejected is 1.76, average total cost of raw materials is □30,010,000, average total annual cost on labour is □6,163,489, average total cost of rental land buildings and equipment is □1,297, 193, average annual electricity expenditure is about □362,197, average annual fuel expenditure is □2,703,742 and average annual expenditure on water is □411,596.3 .

However the results of the specific objectives are that infrastructure significantly and positively impacts on firm performance in Nigeria, given the absolute t-values for both IV regressions and OLS regressions are all greater than 1.96. Governance and insti-tutional indicator is equally a significant determi-nant of firm performance as the absolute t-value are higher than 1.96 for the iv regressions hence signifi-cant at 5% significant level and higher than 1.65 for the multiple regression s therefore significant at 10%. Taxation is significantly but positively impacts on firm's performance. Capital and labour are equally significant, while experience and sex of the firm head were not significant.

Lastly, the average treatment effect of accessing credit on manufacturing output and profit is not sig-nificant at 5% significant level. However when anal-ysed by sub samples, the results infer that firms with smaller sizes turn to experience significant impact on sales and profit while those with medium and large sizes do not.

5.2 Policy Recommendations

The main purpose of this study is to proffer policy options as regards investment climate and its impact on manufacturing output in Nigeria. The results of the study therefore inferred several recommenda-tions which are discussed below;

i) The study shows that majority of the firms (about 68%) employ less than 20 persons. This means that the manufacturing sector employs much less than expected. Meanwhile in most developed nations, a greater proportion of the employees are employed by the private sector and more importantly the manufacturing sector. There is need for expansion of manufacturing firms to increase absorption capacity of employers, essentially to reduce the huge current unemployment in Nigeria.

ii) The fact that the study equally finds that only 1% of the firms sampled are exporters is worrisome, and calls for immediate attention of policy makers and government administrators at all tiers of government. Besides providing finances or easing the process; there is need to expose firm owners to exporting processes and opportunities as well as easing the channel for this.

iii) The study also shows that about 14.06% of the firms female headed and about 85.94% are male owned or have the highest shares. This implies that more sensitization campaigns on how to start manufacturing firms have to be done to encourage more women into the industry as well as formulating policies that actually pulls women into this adventure.

iv) The results suggest that 84.86% of the firms are sole proprietors which imply that a huge proportion of the firms are limited to their private funds or what they can borrow as an individual. However, the study recommends that manufacturing firms be encouraged to use legal means and open up to partners so as to increase the scope of their businesses, increase ideas, improve efficiency and most importantly improve finance.

v) The fact that more than 50% of the owners or highest shareholders did not attain any form of tertiary education is a limitation to the sustainable growth of the firm.

There is need for short courses, workshops and other training programs that improves the expertise of firm owners or highest shareholders so as to improve efficiency and to boost their visions of growth.

vi)   The result finds that, while 63% of the firms have had access to credit from all sources, only 19% has had access to credit in 2009. This implies that the number of firms that actually access credit after application is very low. There is need for the government to re-examine the process and find out from the firm owners themselves, what issues and challenges they face in accessing credit and make conscious effort to address the situation.

vii)   The result shows that the average of the longest number of days to clear customs is about 17 days which is relatively very long for continuity of business. Meanwhile some of the firms spent up to 301 days to clear goods from the customs. This period is so long and does not speak well of the investment climate of the manufacturing sector of Nigeria. The government therefore needs to redress this situation and shorten the process at the customs and for processing other documents to enhance the smooth functionality of the firms.

viii)   The study also shows that infrastructure significantly impacts on firm performance. This is not surprising following the nature of telecommunication, electricity and roads in the nation, there is need to improve considerably, not only in terms of availability but in terms of its cost-effectiveness so as to enable Nigerian firms compete in the international markets. There is need for a more radical response to the infrastructural facilities so as to minimize its deterrents on manufacturing firm's performance.

ix)   Also, the result suggests that governance and institutions are all significantly and positively impacting on firm performance. This directly relates to the policies put in place that drives the manufacturing process. There is need to sustain and uphold governance and institutions in order to enhance its effectiveness on firm performance.

x) Access to credit significantly treats or impacts on manufacturing firms output for small firms. This could mean that for matched samples of similar characteristics, those who finally receive credit significantly contribute to firm output. This is however worrisome considering that only 19% finally access credit. Moreover, access to credit has no significant effect on larger firms and the total firms implying that monetary authorities need to sort ways to encourage large firms to develop further and export, especially because only 1% of the firms in Nigeria export. Therefore more efforts need to be done to improve the quantity of credit assistance assessed as well as the frequency such that manufacturing firm's get credit on request.

xi)   The positive relationship between tax and firm performance suggests that the brunt of tax is largely transferred to the customers and thereby neutralizing the negative effect that it is expected to have. Therefore there is need for the government to regulate firms and ensure that tax burden is not completely transferred to customers.

5.3 Conclusion

There exists a general consensus that a market friendly investment climate would attract greater investment and grow faster while others lag behind. It is however more important that this investment climate do not act as a deterrent to the manufacturing sector as it stands as the industry of growth for every economy. The manufacturing sector if well managed should boost employment, welfare, output, sales, exports and reduce overdependence on imports. The results of this study suggest that infrastructure and governance/institutions are significant deterrent to firm's performance. Also, the average treatment effect of accessing credit on manufacturing output is not significant for all the firms but significant for small firms and firms producing wood product and furniture. The study therefore recommends that infrastructure and governance institutions be strengthened to enhance their positive effect on firm performance while access to credit be improved for large firms as well to enable them export more. There is also need to regulate firms to ensure that the taxes are not completely transferred to the customers.

5.4 Suggestions for further Research

The relevance of the manufacturing sector in the Nigerian economy cannot be neglected as it stands as a principal pillar to Nigeria's long term vision 20-2020. Most studies geared towards examining the effect of credit access or investment climate on manufacturing firm performance employed macroeconomic – time series data. Meanwhile cross sectional data has the edge of meeting the stakeholders via interviews or questionnaires to ask them the peculiar questions they might face. Therefore, further studies in this light could concentrate on the use of cross sectional data. This study with its parameters could therefore be replicated in other economies and nations to investigate the effect of the investment climate on manufacturing firm performance.

Furthermore, the effect of the investment climate can also be examined in other sectors such as the commercial sector, service and agricultural sector in order to get the specific issues arising from each sector. Also, further studies could focus on other investment climate indicators that this study might not have address, in other to improve the holistic view of empirical evidence on the subject of investment climate in Nigeria, as well as other economies. In addition, other methodologies could be employed in other to compare with the existing stock of knowledge and improve the knowledge base.

5.5 Limitations of the Study

This study like every other empirical study was not void of limitations. However, it is important to note that the limitations did not affect the credibility and robustness of the study. The researcher originally intended to analyse the effect of 'firm clusters' as an aspect of investment climate as it affects manufacturing firms' performance. This was not incorporated into the nation-wide data set that was employed. Furthermore, a comparison of these investment climate indicators and their relationship with the performance of manufacturing firms would have been better appreciated if comparisons are made with other countries, however the researcher could not access a panel of country data that used the set of instruments in the same year.

Finally, the study had no financial bourse or scholarship of any sort which would have rendered the program less stressful.

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