



*Original Research Paper*

# **An appraisal of technological entrepreneurship development programmes on the performance of selected SMES in Lagos- Nigeria**

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Technological entrepreneurship development programme (TEDP) has been described as one of the instruments adopted by the Nigerian government to supports SMEs development in Nigeria. This paper assessed whether participation in technological entrepreneurial development programmes has positive impact on the performance of SMEs in Lagos state with a view to providing solution to issues and problems. Using multi-stage probability sampling technique, a sample of 240 respondent small businesses were selected from a list of 4,535 registered small businesses as provided by NASSMEs obtained from [www.businessdayonline.com](http://www.businessdayonline.com) as at 27<sup>th</sup> of September 2013. Data collected were coded and analyzed using frequency table, percentage and mean score while non-parametric statistical test, ANOVA was used to test the formulated hypothesis using STATA 10 data analysis package. The result of the analysis and the hypotheses tested showed significant (F-value of 1381.56.) positive impact of technology entrepreneurship development programmes on the performance of the participating small businesses. It was concluded that participation by SMEs in TEDP will significantly improve their performance in terms of improved income level, business turnover, volume of production, business contact, growth level as well as reduced operating expenses and cost of production. The study is expected to of great benefits to SMEs, development agencies and policy makers.

**Key words:** SMEs, technological innovation; Lagos-Nigeria; technological entrepreneurship

## **INTRODUCTION**

The importance of Small and Medium-sized Enterprises (SMEs) to national economies has been widely recognized and documented in the literature of finance and entrepreneurship. The general argument is that by their very nature, SMEs are highly innovative and extremely impactful as far as national economic development is concerned. Further to this is the observation of Bubou and Okrigwe, 2011) that entrepreneurship (especially technological entrepreneurship) and innovation (technological innovation) are the twin pillars of socioeconomic development in this modern era. To date, several informative studies have explored the subject of

innovation in SMEs but the extent to which technology innovation influence small business performance is a question for empirical investigation. Specifically, studies that explore the types of innovation that SMEs pursue are few and mostly based in the developed country context (Rizoni, 1991; Oke et al., 2004; Vitez, 2013). Few that exist (Aribaba et al., 2011; Bubou and Okrigwe, 2011) in developing economy like Nigeria have not adequately explored views of entrepreneurs on technological entrepreneurship development programmes (TEDP) innovation impact on business performance and their challenges in the Nigerian context.

Evidence from the literature indicate that business technology has revolutionised the way companies conduct business. Small business owners can use technology to reduce business costs, automate back office functions, such as record keeping, accounting and payroll and also create secure environments for maintaining sensitive business or consumer information. Small business owners should consider implementing technology in their planning process as this would allow owners to create operations using the best technology available and thus increase their employees' productivity through the use of technology. This is due to the fact that computer programs and business software technology usually allow employees to process more information than manual methods.

According to Aribaba, (2013) entrepreneurial development programmes have contributed significantly to small-scale business development and their impact includes increased business income, accelerated business growth, improved productivity and increased sales. Also the types of innovations that SMEs focus on will have a significant impact on their performance. For instance literature suggests that radical innovation is thought to have much more impact than incremental but there is little empirical evidence to support this for SMEs (Oke et al, 2004). Studies have shown that innovation drives competition and that an economy will only be able to survive if its entrepreneurs keep following the path of continuous innovation and that one of the mechanisms employed to support the growth of these businesses is 'technological innovative entrepreneurial development programmes (Egbetokun et al 2010, Aribaba, Asaolu and Olaopa, 2011). Entrepreneurs identify an innovation to seize an opportunity, mobilize money and management skills, and take calculated risks to open markets for new products, processes and services (UNDP, 2000; Adegbite, et al., 2007; Clouse, 2008). For instance Egbetokun et al (2010) explored the types of innovation that are predominant in SMEs in developing countries investigating the impact of these innovations on different dimensions of firm performance based on an industry-wide innovation survey carried out in Nigeria in 2007 and concluded that SMEs chooses to pursue such innovations that most fit their strategies and available resources.

Inventions and innovations have proven to be crucial components for the development of modern societies. The greatest economies of the world today and emerging nations are being driven by science, technology and innovation. In the African context, however, there is still a high dependence on African technology. There is an apparent dearth of science and technology entrepreneurship capital in Africa, a situation that has led to the near non-existent productive capacity of the continent, with very minimal potentials for value addition as observed by Bubou & Siyanbola, (2010).

Studies on technological entrepreneurship in a

developing economy like Nigerian have not been fully explored. Empirical investigation as to the perceived benefits of adopting technology entrepreneurship by the small and medium scale entrepreneurs in Nigeria will shed light on the impact of such on entrepreneurship development. This paper examines the impact of technology entrepreneurship development programmes on small business operations with a view to proffer solutions to problems and issues.

### Research questions

- i. What is the impact of Technological Entrepreneurship Development Programmes (TEDP) on small business operation?
- ii. How does Technological Entrepreneurship Development Programmes (TEDP) impact on SMEs performance?
- iii. What are the challenges of Technological Entrepreneurship Development Programmes (TEDP) adoption by the Nigerian SMEs?

### Research hypothesis

H0: There is no significant difference in the SMEs perception on the impact of participation in Technological Entrepreneurship Development Programmes (TEDP)

In order to achieve the objectives of the study, the paper is divided into five sections. Apart from section one that introduced the paper, section two discusses the literature review and conceptual underpinnings, section three described the methodology of the study, section four presented the results and section five is for conclusion and policy recommendation.

### Literature review and conceptual clarifications

Studies have shown that small businesses have some fundamental advantages. For instance they need low investment as compare to their large counterparts (Oladejo, 2008; Egbetokun et al 2010; Aribaba *et al* 2011; Onaolapo and Oladejo, (2011; Thaddeus (2012)). Other advantages evidenced from the literature are offer of employment to the local talents; flexibility and closeness to the customers; economies of scale and lower overheads. However despite the numerous advantages they also face resource limitations in terms of both human and financial resources. Further Hallberg (2000) noted that small- and medium-sized firms generally have a high failure rate. Although categorical figures about the average number of years for which SMEs may survive might not be readily available, it would make sense to assume that the majority of them in developing countries like Nigeria may not last longer than a few decades as opined Aribaba *et al* (2011). More so, the prevailing unfavourable ambience in developing countries

like Nigeria which might have relatively little influence on the productivity and costs of large enterprises, are extremely devastating for small- and medium-scale enterprises, thus making them much more vulnerable to failure (Aribaba, 2013).

Several attempts have been made in the literature as regards innovations in small business and their roles in economic development. The first category of research studies investigates the characteristics and entrepreneurial behaviour of owner-managers and how these relate to decisions concerning innovative activities in their organizations (Cosh and Hughes, 2000; Kickul and Gundry, 2002; Adegbite et al, 2007). Central to this body of studies is the finding that the entrepreneur/innovator is critical to the success of innovation efforts in the small- or medium-sized firm. Studies that investigate the importance of innovation in SMEs, their role as drivers of economic growth and policy issues relating to SMEs in national economies make up the second stream of the literature. Like Henderson (2002), Salami (2003) and Oyefuga et al (2008), Akiintoye and Oladejo (2008), Onaolapo and Oladejo, (2011), argued SMEs create jobs; increase wealth and incomes within their host domains; and promote industrial and economic development through the utilisation of local resources, production of intermediate goods and the transfer/transformation of rural technology. Henderson (2002) additionally noted that SMEs connect the community to the larger, global economy while Oladejo (2008) described them as agents of growth and economic development.

The third literature stream emphasizes how small firms actually manage the innovation or the process of developing new products and services (Motwani et al, 1999; Oliver et al, 2000; Keizer et al, 2002) in the developed country context, and (Abereijo et al, 2007; Sikka, 1999; Ilori et al, 2000) in the developing country context). A key trend in this body of literature is that both the way of managing innovation and the available supporting structure are important to innovation especially technological entrepreneurship. Specifically, the availability of innovation subsidies, linkages with knowledge centres, firm-level investments in research and development (R&D) and the firm's internal processes of capacity building are identified as crucial for successful innovation. A particular knowledge gap identified in the review of the literature is that most of the recent studies are unavoidably context-specific, making the knowledge on innovation in SMEs still limited. Also, studies which explore what types of innovations SMEs pursue are generally sparse. Thus, the knowledge about what types of innovation SMEs undertake, how they actually do it and the impact of their innovation efforts on different dimensions of firm performance remains limited (Oke et al, 2004) especially in the developing countries (Bala- Subrahmanya, 2005). However, given the resource constraints and weak/unstructured

National Innovation Systems (NIS) that characterized developing economies, it makes sense to assume that SMEs therein would focus on incremental innovations and that these would have some positive impact on firm performance (see for instance Bala-Subrahmanya, 2006).

Dorf and Byers (2005) described technological entrepreneurship, as a style of business leadership that involves identifying high-potential, technology-intensive commercial opportunities, gathering resources such as talent and capital, and managing rapid growth and significant risk using principled decision-making skills while Shane and Venkataraman (2003) defined technological entrepreneurship as the process by which entrepreneurs assemble organizational resources and technical systems, and the strategies by entrepreneurial firms to pursue opportunities.

### **Technological entrepreneurship and small business development**

Many economies, developed and developing have come to realize the value of small businesses. They are seen to be characterized by dynamism, witty innovations, efficiency, and their small size allows for faster decision-making process (Akabueze, 2002). SMEs are key generators of employment and income, drivers of innovation and growth. In the OECD area, "SMEs employ more than half of the labour force in the private sector. In the European Union, they account for over 99 % of all enterprises. Furthermore, 91 % of these enterprises are micro-firms with less than 10 workers". Given their importance in all economies, they are essential for the economic recovery. SMEs are increasingly being recognized as the principal means for achieving equitable and sustainable industrial diversification and dispersal "(Udechukwu, 2003). The contribution of technological entrepreneurship to national economic growth has been well documented in the finance and economic literature, (Aribaba et al 2011; Egbetokun et al 2010). Firms are the means for realising entrepreneurial ambitions of individual entrepreneurs. Entrepreneurial ventures work on the principle motto of profitability and growth with a long term desire of market dominance. This is based on innovation in products, processes or practices. The benefits of technological entrepreneurship cannot be overemphasized and the realization of this could be said to be the motivation behind government expenditure towards the programme (Aladekomo, 2004; Erik and Pages, 2006).

Similarly, a country's competitiveness as well as the economic performance of industry is determined by technological capability (Raghavendra & Bala Subrahmanya, 2006). The involvement of developing countries in producing new technologies and innovations is almost negligible (Juma & Agwara, 2006). High-technology incubators responsible for creating wealth and jobs worldwide have been particularly successful in the US,

Israel and China as incubators reduce the business failure rate by providing quality training and guidance to such companies in the initial stages (Khanduja et al., 2008). By nurturing SMEs' (Juma & Agwara, 2006; Stefanovic et al., 2008) and especially technology-based SMEs (Kark, 2003) most countries have improved their economies and perhaps moved a step closer to development. Such countries include China, Korea and India. For instance India country made deliberate efforts to encourage entrepreneurship, education, training and research (Khanduja et al., 2008). Technology (-based) businesses can be referred to as businesses that engage in technology related products, processes and services. They may be low-, medium- or high-technology. One area of the economy which has seen significant growth is that focused on new technology-based products and services and the high-technology sectors are perceived as major sources of future economic prosperity and employment growth (Cooper, 2006).

### **Technology entrepreneurship development programmes of Nigerian government**

Evidences from the literature show that small-scale business development is hindered by access to technical-know-how and technology skill required by the entrepreneurs to develop their enterprises (Egbetokun et al 2010; Aribaba 2013). According to Thaddeus, (2012), Government never loses sight of the tripartite relationship between entrepreneurship, industrialization and economic growth. For instance the Small and Medium Scale Development Agency (SMEDAN) has organized seminars, workshops at both local and international levels and encouraged the formation, registration and co-operation of micro, small and medium business associations. These associations (Nigerian Association of Small and Medium Scale Enterprises (NASME), International Council of Small Business (ICSB), Abuja Enterprises Agency (AED), Acadia Centre for Small Business and Entrepreneurship (ACSBE)) stimulate growth of businesses and industrial organization through cooperation, linkages and franchising of entrepreneurship activities. Other agencies and schemes through which government has assisted technology innovative entrepreneurship in Nigeria are as listed below:

- Youth Empowerment Scheme (YES)
- National Open Apprentice Scheme (NOAS)
- Small and Medium Enterprise Development Agency of Nigeria (SMEDAN)
- National Economic Empowerment and Development Strategy (NEEDS)
- Small and Medium Enterprise Equity Investment Scheme (SMEEIS)

Recently there is Nigeria Federal Government "YouWiN Project" that stands for "Youth Enterprise with Innovation in Nigeria". It is an innovative business plan competition

aimed at creating 110,000 jobs over a 4 year period to encourage and support aspiring entrepreneurial youth in Nigeria to develop and execute business ideas. According to Isaac on July 23, (2013), as part of the agenda on fostering industrialisation through invention and innovations, the Presidential Standing Committee on Innovation and Invention has given N18 million to 29 young Nigerian electrical and mechanical equipment inventors.

The various entrepreneurship development programmes of Nigerian government have greatly assisted SMEs. The major areas in which the entrepreneurship developments have helped as gathered from the literature (Bubou, & Egai, 2010; Thaddeus, 2012) are listed below:

- a) Agriculture/agro-allied activities: Foodstuff, restaurant, fast food vending etc.
- b) Solid mineral: Quarrying, germ stone cutting/polishing and crushing engineering.
- c) Power and transport: Power generation, Haulage business (cargo and passengers)
- d) Information and telecom business: Manufacturing and repairs of GSM accessories.
- e) Hospitality and tourism business: Hotels, accommodation, resort centers, film and home video production.
- f) Oil and gas business: Construction and maintenance of pipelines, drilling, refining/bye-products.
- g) Environmental and waste management business: Refuse collection/disposal, recycling, and drainage/sewage construction job.
- h) Financial and banking services: Banking, insurance and stock trading.
- i) Engineering and fabrication work: Machines and tools fabrication.
- j) Building and construction: Plan and design services, material sourcing.
- k) GSM business: GSM recharge- cards/credit sales, cybercafé/internet businesses, communication and computer systems etc

### **Radical innovation versus incremental innovation**

The type of innovation being pursued by an entrepreneur has impact on the level of performance of small businesses. For instance, Goedhuys (2007) showed with evidences from Brazil that minor and incremental rather than radical changes are at the heart of the innovation process in developing countries. The subject of innovation has risen in prominence to become a global policy issue. For instance Popadiuk and Choo (2006) presented a thorough review of the literature on innovation types; and averred that product and process innovations are sub- sets of technological innovation which can further be resolved into radical or incremental, depending on the degree of novelty. In the

view of Canadian Academy of Engineering (1997), technological entrepreneurship is a new enterprise formation based on innovative technology in response to clearly identified market needs. Ahmadi (2003); Aderemi (2006); Aderemi, et al., (2008) and Kraaijenbrink (2008) succinctly put into perspective the need for technological entrepreneurship and its process.

Research has frequently shown that firm success in technology-driven industries critically depends on the ability to invent and to bring innovative technology on the market (Katila, 2002; Katila and Ahuja, 2002). In this respect, firms with the ability to create new technological knowledge have been praised for generating and acquiring internal as well as external sources of new knowledge (Rosenkopf and Nerkar, 2001). However, the process of identifying knowledge to be integrated into the organizational knowledge base requires that firms deliberately search for and reach out to promising sources. Innovation capabilities can be characterized as being radical or incremental (e.g., Dewar and Dutton, 1986; Subramaniam and Youndt, 2005). In this respect, radical innovations are breakthrough or major changes of a firm's products, services or processes that may lead to obsolescence of existing designs and technologies (Chandy and Tellis, 2000). Perhaps that is why Norman, and Verganti (2011) concluded that human-centered design, with its emphasis on iterated observation, ideation, and testing is ideally suited for incremental innovation and unlikely to lead to radical innovation.

### **Challenges of adopting technology innovations by SMEs**

Klonowski (2007) observed that the key challenges confronting technology innovation like incubators in developing countries are related to locating capital for their own operations, difficult access to finance by tenants, finding suitable management for investee firms and their own operations, lack of support for SMEs, poor legal and taxation infrastructure, corruption, recruiting suitable staff and 'untested' markets. Another major challenge will be creating links between knowledge generation and business development as this has been one major challenge faced by African countries generally (Juma, 2006). Especially, in Nigeria, it has really been difficult to commercialise knowledge and ideas from researchers in the countries universities and other research institutes to value added innovative products, processes and services. Other problems as identified in the literature are:

- i. Credit access (Oyefuga et al 2008)
- ii. Untested markets
- iii. Staff recruitment
- iv. Knowledge and business development mismatch
- v. General state of the economy
- vii. Corruption rate
- vi. Political instability

- viii. Level of awareness for technology

### **METHODOLOGY**

The study made use of cross-sectional survey design. The study area was Lagos, Southwestern Nigeria; a choice based on its strategic location as the commercial nerve of Nigeria. Also, majority of registered small businesses that could be used for the study were located in this area. Using multi-stage probability sampling technique, a sample of 240 SMEs were selected from a list of 4,535 registered SMEs in Lagos state as at the end of September, 2013 ([www.businessdayonline.com](http://www.businessdayonline.com)) all which constitute the study population of the research. Multi-stage sampling techniques were used in which Lagos state was stratified into four identified zones (EPE-IKORODU, BADGRY, LAGOS ISLAND, IKEJA -AGEGE) from which the sample of various Associations of small medium scale enterprises was drawn through the simple random sampling procedure. Two hundred and forty (240) Questionnaires were administered and distributed to the members of National Association of Small and Medium scale Enterprises (NASMEs) across all the four (4) identified geo political zone in Lagos state. The 240 small and medium scale enterprises consist of manufacturing enterprises, with employment capacity ranging from 2-15 employees, in the area of bakeries, food and Juice, Sachet water and Block making industry. This was done in such a way that all the four categories of manufacturing firms were represented with each zone having sixty (60) SMEs each. Two hundred and forty (240) questionnaires distributed personally administered and duly completed were found useful for the purpose of the study. The questionnaire consists of questions that are related to technology innovative entrepreneurship programmes and SMEs Operation as identified in the literature. Likert five point scales ranging from 1-5 (1=strongly agree & 5=strongly disagree) were used as a basis of the questions.

Data collected were coded and analyzed using frequency table, percentage and mean score while non-parametric statistical test, ANOVA was used to test the formulated hypothesis using STATA 10 data analysis package. The items were designed, using the Likert scale format, to elicit responses on the impact of four independent variables and one dependent variable, profitability, used as the measure of small business performance.

### **RESULTS AND DISCUSSION**

The study attempted to examine the influence of technology entrepreneurship development programmes (TEDP) on the operations of selected SMEs in Lagos state between 2003

**Table 1:** Distribution of respondents on awareness and level of participation in technological entrepreneurship development programmes (TEDP)

Responses	Frequency	Percentage
<b>Awareness</b>		
Aware	240	100
Not Aware	-	-
Not Interested	240	100%
<b>Level of Participation</b>		
Very Regular	120	50
Regular	72	30
Irregular	36	15
Very Irregular	12	.5
Very Irregular	240	100%
<b>Reasons for Participation</b>		
Improved productivity	72	30
Learning new technique	96	40
Increased turnover	42	17.5
Improved Product Quality	30	12.5
Improved Product Quality	240	100%

Source: Computations and Output of STATA10 based on Authors' Field Survey (2013).

**Table 2.** Distribution of responses on Customers patronage After Participation in Technological Entrepreneurship Development programmes (TEDP)

Responses	YES	NO	TOTAL
High and increasing	213(88.75%)	27(11.25%)	240(100%)
Low but increasing	108(45.0%)	132(55/0%)	240(100%)
High but decreasing	30(12.5%)	210(88.5%)	240(100%)
Low but decreasing	48(20%)	192(80%)	240(100%)
Constant and steady	105(43.75%)	135(56.25%)	240(100%)

(The bracket Figures indicate the percentage & figure not bracket indicate the frequency) Source: Computations and Output of STATA10 based on Authors' Field Surve (2013).

and 2012 as well the perceived benefits of technology innovation adopted by SMEs. Table 1 presented the distribution of respondents as to the awareness and participation in TEDP. Finding showed that all the sampled 240 (100 %) of the respondents SMEs are aware of TEDP. This means that most entrepreneurs are interested and participated in TEDP. The level of participation among those who were aware was high and regular (80 %) with reasons including learning new technique; improved productivity; increased turnover and improved product quality, though 20 % were not as regular. This confirms the view of Thaddeus, (2012) that entrepreneurship development and innovation in Nigeria is at the peak of awareness, creation and participation by the people, the organized private sector and government at all levels. Table 2 showed the responses as to customers patronage as a result TEDP participation. Customers' patronage was high and increasing (88.75 %). Though some level of steady and constant patronage was experienced by some SMEs, none of

those who participate experienced declining customers' patronage.

The responses regarding observed effect of TEDP participation on selected performance indices were analysed in Table 3. Observations of the sampled SMEs showed rising performance indices like Income Level (63.3%); Business Turnover (60%); Volume of Production (67.5%); Business Contacts (56.7%); Growth Level (51.7%); Operating Expenses (40%); Cost of Production (27.5%). This means that operating expenses was rising more than the cost of productions. It is expected that operating expenses should fall at the same rate with cost of production. The falling rate of cost of production could be traced to new and improved method of doing things, new knowledge and skill acquisition associated with TEDP. Apart from the information provided on the observed effect of TEDP on selected performance indices the sampled SMEs were asked to rank their view in likert scale as to the perceived benefits of participation in TEDP. The result of

**Table 3:** Distribution of responses on performance indices after participation in technology innovative entrepreneurship programmes

Responses	Rising	Falling	Steady	Total
Income Level	152(63.3%)	37(15.4%)	51(21.3%)	240(100%)
Business Turnover	144(60%)	31(12.9%)	65(27.1%)	240(100%)
Volume of Production	162(67.5%)	15(6.25%)	63(26.25%)	240(100%)
Business Contacts	136(56.7%)	12(5%)	92(38.3%)	240(100%)
Growth Level	124(51.7%)	24(10%)	92(38.3%)	240(100%)
Operating Expenses	96(40%)	19(7.9%)	125(52.1%)	240(100%)
Cost of Production	66(27.5%)	115(47.9%)	59(24.6%)	240(100%)

(The bracket Figures indicate the percentage& figure not bracket indicate the frequency)

Source: Computations and Output of STATA10 based on Authors' Field Survey (2013).

**TABLE 4:** Distribution of responses on benefits of TIEP to SMEs operations

Question	SA	A	N	D	SD	TOTAL
Q1. TIEP has the power to improve skill acquisition.	74(30.8)	91(37.9)	18(7.5)	24(10.0)	33(13.75)	240(100)
Q2. New Technology are acquired from TIEP	72(30.0)	86(35.8)	40(16.7)	18(7.5)	24(10.0)	240(100)
Q3. Information technology as a form of TIEP has the capacity to increase the level of performance	60(25)	84(35)	30(12.5)	40(16.7)	26(10.8)	240(100)
Q4. New accounting and recording skill are acquired\from TIEP	86(35.8)	99(41.25)	15(6.25)	30(12.5)	10(4.2)	240(100)
Q5. Participation in TIEP will increase the rate of Industrialisatiion	63(26.5)	96(49.2)	6(2.5)	39(16.25)	12(5)	240(100)
Q6. Entrepreneurial skill acquired from TIEP has increased SMEs growth	24(10.0)	120(50)	10(4.2)	60(15)	26(10.8)	240(100)
Q7. Technical and vocational skill are core to SMEs development	84(30)	120(50)	12(5)	30(12.5)	6(2.5)	240(100)

(The bracket Figures indicate the percentage& figure not bracket indicate the frequency)

Source: Computations and Output of STATA10 based on Authors' Field Survey (2013)

the analysis as presented in Table 4 indicates that TEDP has the power to improve skill acquisition (68.7 %); new technology are acquired from TEDP (65.8 %); information technology as a form of TEDP has the capacity to increase the level of performance (60 %); new accounting and recording skill are acquired from TEDP (72 %); participation in TEDP will increase the rate of industrialisatiion (75.7); entrepreneurial skill acquired from TEDP has increased SMEs growth ;technical and vocational skill are core to SMEs development (80 %).

### Test of Hypothesis

H0: There is no significant difference in the SMEs perception on the impact of participation in Technological Entrepreneurship Development Programmes (TEDP)

The model undertakes an investigation into the impact of TEDP on SMEs operations in Nigeria. Findings were presented in Table 5 below. According to the result presented in Table 5 (a) and (b), a unit increase in questions1, 5 and6 responses over the study period resulted in a 25.8571429 per cent, 11.1917906 percent and .436363636 per cent increase on the impact of TEDP on

SMEs operations respectively. Furthermore in Table 5b the result of Breusch- Fagan/ Cook-Weisberg test for Heteroskedasticity result support that the model is significant since the Prob>Chi2 is 0.000 with Chi2 (4) =309.21. Individually, the questions are statistically significant since their Prob>F 0.0000 with F-value 95.64, 41.40 and 3.23 respectively. But, the statistical properties of the model, however revealed that, collectively the model is statistically significant since prob>F is 0.0000 with F-value of 1381.56. Collectively the statistical properties of the model indicate that the model is statistically significant since prob>F is 0.0000 with F-value 1200.00. Due to the observed level of significance and TEDP impact on SMEs operations through questions tested which make all the figures to be statistically significant with the probability of F = 0.000 we reject null hypothesis stated earlier there is no significant difference in the SMEs perception on the impact of technology innovations adoption in Nigeria. It was concluded that participation by SMEs in TEDP will significantly improve their performance in term improved Income Level, business turnover, volume of production, Business Contact, growth level as well as reduced operating expenses and cost of production.

**Table 5a.** Analysis of variance result for TIEP impact on SMEs operations in Nigeria

Source	Partial/ss	df	Ms	F value	Prob>f
Model	811.225	10	81.1225	1200.20	0.0000
<b>Q1</b>	25.8571429	4	6.46428571	95.64	0.0000
<b>Q5</b>	11.1917906	4	2.79794766	41.40	0.0000
<b>Q6</b>	.436363636	2	.218181818	3.23	0.0405
<b>Residual</b>	31.7	469	.067590618		
<b>Total</b>	744	479	1.75975992		

Number of obs = 240, R-squared = 0.9624  
 Root MSE = .259982, Adj R-squared = 0.9616  
 Source: Computations and Out-Put of STATA 10 based on Author's Field Survey ` (2013)

**Table 5b.** Heteroskedasticity Test

chi2(3)	309.21
Prob> chi2	0.0000

Breusch-Pagan / Cook-Weisberg test for Heteroskedasticity  
 Ho: Constant variance  
 Variables: Q1Q5 Q6  
**Source:** Computations and Out-Put of STATA 10 based on Author's Field Survey ` (2013)

**Conclusion**

The outcome of the study showed that participation in technological innovative entrepreneurial development programmes has positive impact on the performance of small-scale businesses. Also the programmes are beneficial to the development of small-scale business with full level of the awareness of its benefits. The level of participation among those who were aware was high and regular with reasons including learning new technique; improved productivity; increased turnover and improved product quality.

**RECOMMENDATIONS**

In view of the foregoing the following suggestions may be helpful to both the SMEs and the government:

- a) The SMEs should take participation in technological entrepreneurship development programmes as a matter of business to facilitate business development process for improved corporate performance.
- b) The government should increase the level of awareness and regular participation of SMEs in TEDP for increased rate of industrialization, growth and development

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