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Research Article

MATHEMATICAL MODELING OF PRODUCTION CAPACITY PRACTICE FOR ACHIEVING SUSTAINBLE BUSINESS PRODUCTIVITY IN NIGERIA

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Abstract

There is a strong need for models that provide insight into the problems of production capacity facing start-up firms and help to identify strategies that ensure the long-term productivity and survival of such firms. The study seeks to determine the effect of production capacity on sustainable increase in productivity of agro-allied small businesses in South-South Nigeria. The instrument of data collection is the research questions structured in close-ended five-point Likert scale .The evaluation of the relationship between dependent of firm productivity and independent variables of production capacity practice was performed using the Ordinary Least Square regression technique. The study found that production capacity has a positive and statistically significant relationship with firm productivity. This implies thatproduction capacity has capacity to sustain increase in productivity among agro-allied small businesses in Nigeria. It was recommended that the government at various tiers should review business laws adverse to the survival and productivity of small businesses.; identify supportive infrastructures needed to stimulate agro-allied businesses in order to prioritise the execution of infrastructures needed to facilitate technological advancement, boost sustainable development of agro-allied small businesses and the economy as well as equipping intending investors with adequate knowledge of the agro-allied business due to the specialised and delicate nature of agricultural business in Nigeria to avoid losses of investment.

Keywords: Production capacity, sustainable Productivity, Business.

INTRODUCTION

Background of the study

Start-up firms make an important contribution to the success of a country's economy by creating jobs and increasing competition and innovation. However such firms face a high risk of failure during the start-up phase. Hence there is a strong need for models that provide insight into the problems facing start-up firms and help to identify strategies that ensure the long-term survival of such firms (Archibald, Possani and Thomas, 2008). Two decisions that have a significant effect on the chance of sustainable development and long-term survival of a start-up agro-allied SME are the choice of initial production capacity and the subsequent production ramp-up (increase of production capacity from its initial level).

Statement of the problem

Over the last two decades, owing to the rapid and steady decline in strategic and creative thinking, decline in proper decision making by entrepreneurs and policy makers, and the absence of the capacity of small business owners to simultaneous exploit opportunities innovatively to create competitive advantage for business sustainability, emphasis in entrepreneurship literature has centred on basic managerial skills for entrepreneurs; later came the advocacy for accounting skills needed to boost entrepreneurial competencies. However, reports of high rate of business failures owned by entrepreneurs with adequate funds, accounting and managerial abilities calls for further investigations. A review of extant literature showed relationship between production capabilities and development of small-scale manufacturing enterprises (Unam and Unam, 2013); entrepreneurial skills in resource acquisition strategies and profitability of SMEs (Mohammed and Nzelibe, 2014); however, there is no available literature within the strategic entrepreneurship management construct, focusing on resource mobilisation capacity as it affects productivity of agro-allied small businesses in Nigeria.

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Objective of the study

This study empirically determines the effect of production capacity on sustainable increase in productivity of agro-allied small businesses in South-South Nigeria. The significance of this study was premised on two major pedestals – first, that agriculture has remained the most crucial sector of the Nigerian economy upon which nearly all other sectors depend for growth and development; and secondly the contemporary nature of the study, since the government is presently seeking ways to improve the productivity of the sector and diversify the economy. Hence, the findings and recommendations of this study would be of enormous benefits to academic works, as it is a significant and major contribution to the body of knowledge, which fills the gap in contemporary literature on the strategic entrepreneurship management and development of sustainable agro-allied small businesses in Nigeria.

LITERATURE REVIEW

Conceptual framework: Production capacity describes the maximum possible output of a high-quality product, or the

volume of raw materials technologically processed in a unit of time (usually a year), which is determined by a plan based on the fullest utilization of production equipment, floor space, advanced technology, production process and organisation of labour. Production capacity also entails productive assets, operating schedules for equipment, progressive standards for quality of products and the skill of the workers. Thus, production capacity is a dynamic value that changes with improvements in technology, labour efficiency, the organisation of production and labour, and the workers' level of culture and skills. The level of technology infrastructure in a manufacturing firm is determinant on the sophistication, capability transfer and its content. However, SMEs with a low degree of information systems usage rely on operators' tacit knowledge for scheduling, planning and control (Adamides and Mead, 2006), with greater responsibility for measuring up production capacity despite the constraints. Optimizing production capacity depends on the type of knowledge that dominates the manufacturing firm, while Knowledge management orientation depends on the level of alignment of the manufacturing system with the market (customer focused), rather than on the nature of the manufacturing system itself (Adamides and Mead, 2006).

The more the system is misaligned the more the effort spent to rationalise operating processes through the development and use of formalised processes and standards. Capacity decisions abound in the business world, and balancing various capacities reflects how a company approaches business. Nikiforos (2011) opined that, production capacity deals with output and how a manufacturer balances raw materials, machinery, labour and storage to match demand for its products. Decisions about production capacity can be strategic and operational, long- and short term. Factors affecting production capacity interrelate to such a level that a change to one potentially affects all (Mills, Platts and Bourne, 2003). Materials need to be readily available in sufficient quantity to supply your production line. Your supplier's turnaround time on additional orders is also important. With long lead times, you must either schedule ordering or maintain sufficient quantities on hand (Pisano, 1997). The quality of raw materials may be an issue that affects production capacity. One reject per 10,000 parts may not affect production, but one reject per 100 parts may slow down the line as bad parts are removed (Nikiforos, 2011). When machinery is used for processes and fabrication, the speed and throughput of the equipment are limiting factors for production capacity. Equipment reliability impacts capacity, as does the effectiveness of your maintenance department (Scarso, 1999). A small business may not have the resources to afford backup machinery, so decisions about spare parts and ordering procedures affect production capacity (Nikiforos, 2011). Anything that affects the way equipment performs must be factored into capacity decisions. Electrical grid brownouts, for example, may affect work done on desktop computers. Staffing may be the most effective variable in short-term production capacity management. Adding or reducing staff varies output of a production line (Mills, et al., 2003). If a machine is capable of 1,000 units per shift, adding staff to run three shifts per day increases capacity to 3,000 units per day. In retail, adding a person to handle only a single function during rush periods, perhaps re-stocking shelves, improves the capacity of the main staff to handle the increased flow of customers (Nikiforos, 2011, Scarso, (1999). Warehousing affects capacity both inbound and outbound. Raw materials must be warehoused and similar considerations affect finished goods. Shelf life may also affect capacity (Hill, 2000). If a product cannot be stored indefinitely, it cannot be produced without considering losses to spoilage. An ideal sales condition would be that production output is sold prior to manufacture, so that shipping occurs for every unit as it is produced, relieving the need for finished goods storage. Kim (1999) described production capacity as consisting of production management, production engineering, maintenance of capital equipment, and marketing of produced output; investment capability which consists of project management, project engineering, procurement capabilities, and manpower training; and innovation capability which creates and carries new technical possibilities for profit-making purpose (Abdullah, 2008). Production capability refers to operating productive facilities; investment capability is, for expanding, capacity and establishing new productive facilities; and finally innovation capability is for developing technologies (Westphal *et al.,* 1999). Productivity is one of the key determinants of high and sustained growth and in fact a key determinant of long term growth. It remains a vital economic driver for developed and developing countries and would play a critical role in eradicating poverty especially in low-income countries. The agricultural sector generates a substantial level of revenue while increasing real income (Christiaensen and Demery, 2007). It not only employs an estimated 70 percent of the work-force in low income countries, but it is also a major contributor to Gross Domestic Product (GDP) estimated at approximately 30 percent (The World Bank, 2007).

It is largely assumed that technology development contributes to firms' competitiveness and growth, necessitating empirical approaches adopted by economists to measure technology and technical change in terms of their impact on "productivity" (Efendioglu, 2010). The application of strategic entrepreneurship and knowledge management to facilitate technology creation, adaptation and innovation are important, as new technologies such as information and communications technologies (Mile, 2010) and biotechnologies are cross-section technologies and their application to traditional agricultural (Badiru, 2010), manufacturing and service activities can revolutionize both production processes efficiency and business methods, increasing both productivity and competitiveness (UNCTAD, 2011). Achieving sustainable development Efendioglu (2010), asserted is largely dependent on the ability to consistently achieve high productivity by mobilising, deploying and utilising the firm's strategic resources; human capital (UNDP (2001), finance (Becchetti and Trovato, 2002), knowledge management (Calestous and Lee, 2006), alliance and other physical assets (Lumiste, Lumiste and Kilvits, 2004) in the most effective manner. According to Porter (2000), competitiveness promotes firm sustainable development, anchored on the increased productivity of an enterprises (continuous increases in value-added). To achieve these continuous increases in value-added, Chauvin, Mulangu and Porto (2012) posited that enterprises must transform their ways of competing: they must shift from comparative advantages (low-cost labour) to competitive advantages, namely the ability to compete on cost and quality (Porter, 2000), delivery and flexibility.

Theoretical framework

The Resource-based theory of entrepreneurship posits that access to resources by entrepreneurs and business owners is a significant indicator for business growth (Alvarez and

Busenitz, 2001). This theory stresses the importance of financial and human resources (Aldrich, 1999). Thus, access to resources enhances the individual's ability to detect and act upon discovered opportunities (Davidson and Honing, 2003). Financial, social and human capital represents three classes of theories under the resource – based entrepreneurship theories.

Empirical Review

Kipene, Lazaro and Isinika (2013) examined labour productivity performance of small agro-processing firms in Mbeya and Morogoro, Tanzania, focusing on the effect of human capital factors. A survey of 107 agro-processing firms was conducted in Mbeya and Morogoro Regions, Tanzania. Descriptive statistics and regression analysis was employed in estimating the effect of factors on labour productivity. Results show that the trend of labour productivity among different types of small agro-processing firms varies. Animal feed, cooking oil and milling firms tend to have higher labour productivity than bakeries and milk processing firms. Moreover, the experience of workers, education of managers and female managers has a positive effect on labour productivity in small agro-processing firms. Contrary to expectations, the number of workers with education above standard seven has a negative effect on labour productivity. Through these findings the study recommends investment in physical and human capital factors for the growth of labour productivity and employment creation. Mohammed and Nzelibe (2014) examined the skills required by entrepreneurs for the enhancement of the performance of SMEs, find solutions to the problems facing the SMEs in Nigeria and identify the option strategies needed by new ventures as demonstration alternatives. The study focused on the issues of resource acquisition strategies and challenges militating against prosperity and profitability of SMEs in Nigeria.

The study used simple t-test and survey methodology through questionnaire (administered) as an instrument of primary data collection from a stratified random sample of 250 owners and employees of SMEs in major industrial cities in Nigeria. Major findings include entrepreneurial skills, proper record keeping, access to financing, concessional taxation, longer period of operation and consistent policies were found to be significant factors required for business success and profitability in Nigeria. Seminars and workshops are recommended to improve SMEs entrepreneurs" capabilities, as well as the institutional co-ordination of the efforts of relevant agencies and institutions, and the streaming of the myriad of taxes stifling SMEs.

MATERIALS AND METHODS

Research design

The research design used in this study was the cross-sectional survey design, associated with the deductive approach used for descriptive research purpose, on the basis that it involves sampling of elements selected from the population of interest, collection of quantitative data to be measured at a single point in time.

Population of the study

The population of SMEs for this study consisted of all agro-allied SMEs in the selected States, of the South-South region, registered with the states' MSME development agencies and the states' Ministries of Trade Commerce and Industry; with a minimum capital base of one million Naira.

Sample and sampling techniques

For the purpose of determining the minimum returnable sample size from the given population, the Taro Yamane (1967) sample size estimation technique was employed. In order to achieve a minimum response rate of 65% as posited by Cochran (1977) and Bartlett, Kotrlik and Higgins (2001), the oversampling procedure is employed. Furthermore, for the purpose of this study, the multistage random sampling techniques were adopted. This was because the study captured multi-chain aggregate study groups which formed different clusters (firms in various stages of the value chain); hence, the multistage sampling technique.

Instrument of data collection

The questionnaire being an instrument of primary data collection based on stated research questions was structured in close-ended five-point Likert scale and sub-divided into four main sub-sections. The reliability of the items in the instrument was established using Cronbach's Alpha.

Table 1. Reliability Test Result

S/N	Questionnaire Constructs	Cronbach Alpha Reliability Result	Number of Items	Remark
1	Strategic Entrepreneurship Management (SEM)	0.776	6	Reliable
2	Sustainable Technological Advancement (STA)	0.825	5	Reliable
3	Sustainable Capacity Utilization (SCU)	0.769	5	Reliable
4	Sustainable Employment Generation (SEG)	0.792	5	Reliable
5	Sustainable Increase in Productivity Level (SIP)	0.920	5	Reliable
6.	Sustainable Financial Performance (SFP)	0.888	5	Reliable
7.	Sustainable Business Growth (SBG)	0.931	5	Reliable

Source: SPSS 22.0

The result indicated that all the variables are reliable and are certified for further analysis, as all the variables have values of the Cronbach Alpha above 0.7. A value of 0.7, Pallant (2004) asserted is generally recommended, however, Hinton, Brownlow, McMurray and Cozens (2004) stated that, an "Alpha score above 0.75 is generally taken to have a high reliability. Reliability or internal consistency of the items within the structure of this study was assessed by indication of Cronbach's alpha and gives the average value of 0.84 for the questionnaire. For the purpose of primary data collection, a total of five hundred and ninety five (595) copies of the structured close-ended questionnaire were administered in Akwa Ibom (214 copies), Delta (110 copies) and Rivers (271 copies) Statesin South-South, Nigeria

Analytical Tools

The evaluation of the relationship between dependent and independent variables was performed using the Ordinary Least Square regression technique. The first step involved defining

the variables of interest. Strategic Entrepreneurship Management (SEM) represents the independent variable which is indicated by Resource Mobilisation Capacity (RMC) *(a combination of Financial Capacity FIC, Human Capital Capacity HCC, Production Capacity PRC, and Raw Material Sourcing Capacity RMS)*; serves as the independent variable. The functional model for the independent variable is stated as follows:

Model specification

The functional model for the dependent variable is as follows:

$Y= f(X_1, X_2, X_n)$ ……..……. (1)

Where:
y= dependent variable of Sustainable Development of Agro-Allied Small Businesses;
f = a function to be specified
X = independent variable of Strategic Entrepreneurship Management

In specific form, equation 9 translates into equation 10 thus:

$Y = a + X_1 + X_2 + X_3 +……, + X_n +$ ……(2)

Where:
Y = dependent variable (Sustainable Development of Agro-Allied Small Businesses)
a = constant
$x_1, x_2, x_3,……,x_n$ are independent variables
e = residual or stochastic term (which reveals the strength of $x_1 … x_n$; if e is low, this implies that the amount of unexplained factors is low, then the residual R and R^2 will be high and vice versa.

RMC = f (FIC, HCC, PRC, RMS) …… (3)

Therefore, the functional model for the independent variable adopted is:

Where:
FIC_3 = Financial Capacity
HCC_4 = Human Capital Capacity
PRC_5 = Production Capacity
RMS_6 = Raw Materials Sourcing Capacity
SIP = Sustainable Productivity (Output and Efficiency)

This statistical model is presented below to empirically analyse the effect of strategic entrepreneurship management on development of sustainable small businesses involved in the agricultural value chain system.

$SIP = \beta_0 + \beta_1 FIC_1 + \beta_2 HCC_2 + PRC_3 + RMS_4 + u_1$ ……. (4)

Where:
β_0 = Unknown constant to be estimated
β_1 = Unknown coefficients to be estimated
Ui= Error Term
$\beta_1 > 0$

The 'a priori expectation' in the model is that the independent variable is expected to have a positive relationship and effect on sustainable development of agro-allied small businesses, measured by sustainable productivity (output and efficiency),. The mathematical expression is represented as; $\beta_1 - \beta_5 > 0$ implying that a unit increase in the independent variables will lead to increase in Sustainable Development of Agro-allied Small Businesses by a unit.

RESULTS

The analysis revealed that, 89% of the sample size agreed that, resource mobilisation capacityas an indicator of strategic entrepreneurship management can help achieve zero wastage level in operational process. On whether resource mobilisation capacityas an indicator of strategic entrepreneurship management can help production output meet market demand, the analysis indicates that, 92% of the sample size agreed that, resource mobilisation capacityas an indicator of strategic entrepreneurship management can help production output meet market demand. On resource mobilisation capacityas an indicator of strategic entrepreneurship management can ensure available personnel are skilled and competent to achieve optimum operational efficiency98% of the sample size agreed that, resource mobilisation capacityas an indicator of strategic entrepreneurship management can ensure available personnel are skilled and competent to achieve optimum operational efficiency. Also, on whether resource mobilisation capacityas an indicator of strategic entrepreneurship management canhelp maintain a minimum level of operational and overhead costs, 95% of the sample size agreed that, resource mobilisation capacityas an indicator of strategic entrepreneurship management canhelp maintain a minimum level of operational and overhead costs. Finally, on whether resource mobilisation capacityas an indicator of strategic entrepreneurship management canhelp to achieve quality and target output of products,93% of the sample size agreed that, resource mobilisation capacityas an indicator of strategic entrepreneurship management canhelp to achieve quality and target output of products.

SIP = 0.36 + 0.13 FIC + 0.2 HCC + 0.37 PRC + 0.05 RMS (6)
SEE = 0.31: 0.13, 0.24, 0.34, 0.02
t^* = 1.18: (3.6; 2.3; 8.9, 2.1)
F^* = 217: Prob. (F-statistic) = 0.0082
R^2 = 0.734: *Adj.* $R^2$0.2657

Interpretation of Results

From table 4.1, the calculated t-value for FICis 3.6, HCC is 2.3, PRC is 8.9 and RMS is 2.1 (SIP model); while the tabulated value is given as ±1.96, under 95% confidence levels. Since the calculated t-value (FIC 3.6 > 1.96; HCC2.3 > 1.96; PRC 8.9 > 1.96 and RMS 2.1 > 1.96) are greater than the tabulated value (1.96), which implies that,all the indicators (FIC, HCC, PRC and RMS) of resource mobilisation capacity individually have significant effect on sustainable productivity; we therefore, reject the null hypothesis ($H0_3$). Hence, we conclude that resource mobilisation capacity has significant effect on sustainable productivity of agro-allied small businesses in South-South Nigeria. Also, by examining the overall fit and significance of Sustainable Increase in Productivity (SIP) model, it can be observed that the model does have a good fit, as indicated by the relatively high value of the *F*-statistic, 217.8 and it is insignificant at the 5.0 per cent level; that is, the P Value (rho value) of 0.0082 being less than 0.05 probability levels implies that there is a 0.0082 chance that the equation as a whole is not significant.

Table 2. How Production Capacity increases productivity of agro-allied small businesses in South-South Nigeria

Variables	Agreement Scale				
	SA (%)	A (%)	UN (%)	D (%)	SD (%)
Production Capacityas an indicator of SEMcanhelp achieve zero wastage level in operational process	36%	53%	2%	6%	3%
Production Capacityas an indicator of SEMcanhelp production output meet market demand	38%	54%	2%	5%	1%
Production Capacityas an indicator of SEMcanensure available personnel are skilled and competent to achieve optimum operational efficiency	41%	57%	1%	1%	0
Production Capacityas an indicator of SEMcanhelp maintain a minimum level of operational and overhead costs	33%	62%	3%	1%	%
Production Capacityas an indicator of SEMcanhelp to achieve quality and target output of products	28%	65%	3%	2%	2%

Source: Field Survey (2020)

Table 3. Regression Result on resource mobilisation capacity of strategic entrepreneurship management and effect on sustainable productivity

Dependent Variable: SIP
Method: Least Squares
Date: 06/08/18 Time: 20:29
Sample: 487
Included observations: 487

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FIC	0.132630	0.136447	3.639007	0.0003
HCC	0.202404	0.243046	2.378915	0.0178
PRC	0.368742	0.341148	8.961455	0.0267
RMS	0.048259	0.024702	2.144025	0.2532
C	0.363193	0.306714	1.184139	0.2370
R-squared	0.734377	Mean dependent var		8.171548
Adjusted R-squared	0.265793	S.D. dependent var		3.130941
S.E. of regression	1.623890	Akaike info criterion		3.822062
Sum squared resid	1242.035	Schwarz criterion		3.883123
Log likelihood	-906.4727	Hannan-Quinn criter.		3.846068
F-statistic	217.0317	Durbin-Watson stat		1.754739
Prob(F-statistic)	0.008213			

Source: Author's Computation, 2020 (E-views 9.0)

More so, the R^2 (R-square) value of 0.734377 shows that the model does have a good fit too. It indicates that about 73.43 percent of the variation in Sustainable Increase in Productivity is explained by FIC, HCC, PRC and RMS, while the remaining 26.57 percent is captured by the error term. The test of hypothesis three as shown in Table 4.14, the calculated t-value for FICis 3.6, HCC is 2.3, PRC is 8.9 and RMS is 2.1 (financial capacity, human capital capacity, production capacity and raw material sourcing capacity, as indicators of resource mobilisation capacity of strategic entrepreneurship management); while the tabulated value is given as ±1.96, under 95% confidence levels. Since the calculated t-value (FIC 3.6 > 1.96; HCC2.3 > 1.96; PRC 8.9 > 1.96 and RMS 2.1 > 1.96) are greater than the tabulated value (1.96), which implies that,all the indicators (FIC, HCC, PRC and RMS) of resource mobilisation capacity individually have significant effect on sustainable productivity; hence, thenull hypothesis ($H0_3$) is rejected and the alternate hypothesis accepted, which states that,resource mobilisation capacity has significant effect on sustainable productivity of agro-allied small businesses in South-South Nigeria.

DISCUSSION

In respect to production capacity of firms, the findings agrees with the study of Amulu (2014), whose study revealed that, there is a relationship between entrepreneurial capacity, availability of capital and manpower resource and growth of small-scale industries; and aligns with the finding of Reichert and Zawislak (2014), whose study revealed that firms of lower technological (locally manufactured technology) intensity industries, performed above average in the economic performance indicators.

Furthermore, findings of hypothesis 3 also aligns with the findings of Siyanbola, Egbetokun, Olumuyiwa, Olamade, Aderemi and Sanni (2012), whose finding revealed that, indigenous knowledge (creativity and innovation) and indigenous technology (I-Tech) systems over the years have been employed in local production and agricultural processing in Nigeria.

Conclusion

Based on findings of hypothesis, the study concludes that, production capacity as indicators of resource mobilisation capacity of strategic entrepreneurship management, has significant effect on sustainable increase in productivity of agro-allied small businesses in South-South Nigeria. This is confirmed by the analysis of research question three which shows that, resource mobilisation capacitycan help achieve zero wastage level in operational processes, help production output meet market demand, engage skilled and competent manpower to achieve operational efficiency and help achieve target output of quality products.

Implications of the study

The educational implication of this study was multidimensional, as it among others. The study filled the existing gap in both literature and empirical studies regarding the absence of any study on the effect of strategic entrepreneurship management on development of sustainable agro-allied small businesses operating in South-South States of Nigeria. Prior to this study, extant literature variedly discussed the concepts of entrepreneurship and strategic management (concerned with growth and wealth creation (Amit and Zott,

2001; Hitt and Ireland, 2000; Hitt, Ireland, Camp and Sexton, 2002; Morris, 1998; Priem and Butler, 2001) and strategic entrepreneurship (concerned with entrepreneurial actions, strategic actions, entrepreneurial orientation and strategic renewal as listed by Singh, 2009); however, this study projected strategic entrepreneurship management as a new concept. Since there was no extant literature that completely integrated strategic entrepreneurship management as a concept, this concept was developed as an improvement on the works of Amit and Zott (2001), Hitt and Ireland (2000), Hitt, Ireland, Camp and Sexton (2002), Morris (1998), Priem and Butler ((2001) and Singh (2009), to successfully integrate risk propensity, innovation and creativity, resource mobilisation capacity, knowledge management, strategic alliances and marketing strategies as components of strategic entrepreneurship management concept, and thus lays foundation for strategic entrepreneurship management model and theory, which is a significant contribution to the body of knowledge. Furthermore, this study established the fact that, the trend in mortality rate and stagnant nature of agro-allied businesses in South-South Nigeria can be reversed to businesses with sustainable performance, growth and development in terms of technological advancement, capacity utilisation, employment generation, increasing productivity (output and efficiency), financial performance and growth, with the adoption and integration of strategic entrepreneurship management practices. This study serves as a reference point for students, researchers, scholars, consultants and practitioners who are desirous in carrying out further research to retest and deepen the validity of strategic entrepreneurship management as a new concept and model and to extend the research to areas not covered in this study. The policy implications of this dissertation on the empirical analysis of the effect of strategic entrepreneurship management on development of sustainable agro-allied small businesses in Nigeria, among others include; I ntegration of the strategic entrepreneurship management model into the training and capacity development modules for empowerment schemes prior to disbursements of loans and grants. This will help reduce mortality rate of businesses and foster increased collaborations to sustain development of agro-allied businesses in Nigeria; Reduce constraints to accesses to long-term agricultural loans needed for economic activities, promote technological advancement, encourage employment generation and boost productivity for sustained diversification and economic growth; Prioritise the provision of supportive infrastructures needed to drive the agro-allied sector, as this will provide a platform for sustainability of business productivity, growth and expansion; stimulate innovative and creative participation of youths in the agricultural sector to reduce the rising unemployment and insecurity in Nigeria.

Recommendation of the study

Since the finding of hypothesis three revealed that production capacity as positive and significant effect on sustainable productivity of agro-allied small businesses in Nigeria, the following recommendations are therefore proffered. Since the findings reveal the constraints being encountered in accessing long term finance to boost productivity, it is recommended that, efforts should be made to educate the small business entrepreneurs on the benefits of equity financing as a viable option towards business growth and expansion. Also, it is recommended that the government through the various intervention agencies should restructure the long-term loan policies to give access to more growth oriented agro-allied businesses, to increase their presently low capacity to procure heavy duty technology to increase productivity and achieve food security in Nigeria. Owing to the abundance but high cost of raw materials needed for uninterrupted operations, it is recommended that, small business owners should take advantage of the membership of cooperative societies and as well maintain good business relationship with suppliers; this will guarantee continuous supply of needed materials and uninterrupted operations of the business.

REFERENCES

Adamides, E. D. and Mead, I. L. 2006. Transferring capabilities in international manufacturing operations: The role of the home manufacturing knowledge management practices and attitudes: *Journal of Operations Management,* 16, 195-214.

Adios, A.I. 2018. Effect of ecopreneurship practices on innovative performance of selected agrallied businesses in Nigeria. Doctor of Philosophy Dissertations, Michael Okpara University of Agriculture, Umudike.

Alvarez, S. and Busenitz, L. 2001. The entrepreneurship of resource based theory: *Journal of Management,* 27, pp755-775

Archibald, T.W., Possani, E. and Thomas, L.C. 2008. Managing inventory and production capacity in start-up firms: *Journal of Accounting Research,* 6(2), pp. 221 - 240

Christiaensen, L. and Demery, L. 2007. Down to earth agriculture and poverty reduction in Africa, The World Bank Group.

Efendioglu, U. 2010. Technology development and capacity-building for competitiveness in a digital society: A concept note, UN Commission on Science and Technology: UNCTAD.

Elikwu M.I. 2018. An empirical analysis of the effect of strategic entrepreneurship Management on sustainable development of agro allied small businesses in South South, Nigeria. Doctor of Philosophy Dissertation. Michael Okpara University of Agriculture, Umudike.

Hitt, M. A., Ireland, R. D. Camp, S. M. and Sexton, D. L. 2001b. "Strategic entrepreneurship: Entrepreneurial strategies for wealth creation": *Strategic Management Journal,* 22: 479-491.

Ijeoma, N. and Aronu, C. 2013. Effect of human resources accounting on financial statements of Nigerian banking. *Journal of Advancement in Research and Technology,* Vol. 2(8), pages 23-35.

Kipene, V. Lazaro, E. and Isinika, A.C. 2013. Labour productivity performance of small agro-processing firms in Mbeya and Morogoro, *Tanzania: Journal of Economics and Sustainable Development,* 4(3), pp. 125 - 134

Lumiste, R. Lumiste, R. and Kilvits, K. 2004. Estonian manufacturing SMEs innovation strategies and development of innovation networks: Paper presented at the 13th Nordic Conference on Small Business Research, 10–12 June, Tromsø, Norway.

Mills, A. M., and Smith, T. A. 2011. Knowledge management and organizational performance: a decomposed view; Journal of Knowledge Management, 15(1), 156-171.

Muhammad, A.M. Riaz, A.M. and Chandan, L.R. 2009. Human capital a source of competitive advantage "Ideas for strategic leadership": *Australian Journal of Basic and Applied Sciences,* 3(4): 4182-4189,

Nikiforos, M. 2011. "On the desired rate of capacity utilization:" Economics Department Working Paper Series, 16/2011. New York, NY: The New School for Social Research.

Okpako P.O., Atube E.N. and Olufawaye O.H 2014. Human resources Accounting on firms performance. *Global Journal of Commerce and Management Perspective,* Volt 3(4).pages 232-237.

Unam, M.J. and Unam, F.J. 2013. Promoting production capabilities of small-scale manufacturing business through microfinance banking in Nigeria: JORIND 11(2)December, 2013,www.transcampus.org/journals; www.ajol.info/journals/jorind

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