Effect of Green Production Practices in Sustainable Development of Agro-Allied Small Businesses in Nigeria

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Abstract: The Nigerian market system particularly in the area of agricultural-related business has adversely been influenced by the environment. It has equally failed to deal with negative environmental externalities and undervaluing natural resources. This has led to its non-sustainability and low performance. This study evaluated the effect of green production practices on the continued survival of agro-allied businesses in Nigeria. This study was carried on 306 owners and managers of Agro-Allied small businesses within the study area. The primary and secondary data were respectively collected using questionnaire and literature and were statistically analysed. A null hypothesis was formulated that was tested using the Z-test statistical tool and the SPSS package. The findings revealed that green agricultural production would significantly affect the continued survival of agro-allied businesses in Nigeria. The study concluded that despite notable changes in legislation and regulations to protect the environment, Nigeria and various other countries are constrained with unprecedented environmental problems arising from climate change and established that environmental problems can only be solved through technological advancement by the input of ecopreneurship. The study recommended among other things, that the government of Nigeria should strengthen its external forces concerning establishing national standards for the quality of the environment and the implementation of environmental regulations; also, to provide an environment that shall strengthen the consumer movement in the country.

Keywords: Agro-Allied, Ecopreneurship, Green Production, Market System, Small Businesses, Sustainable Development

I. INTRODUCTION

In Nigeria, many indigenous agri-businesses, small and medium enterprises have failed to fully imbibe to the implementation of green production practices (Mamman, Aminu, & Adah, 2013). Only multinational enterprises have put this issue into concern in their want to satisfying operations (Ajani & Ighokwe, 2013). Most agriculture-related organizations complain lack of realistic estimates on how to successfully implement eco-practices (Akinbami, Olawoye, Adesina & Nelson, 2019) Market system particularly in the area of agricultural-related business has adversely influenced the environment. They fail to deal with negative environmental externalities and under-valuing natural resources. This has led to their over-exploitation and depletion. Government deals with the problem through a mix of command-and-control and market-based instruments with limited success (Adesina & Odekunle, 2011). Despite government actions, the business activities of agro-allied businesses in Nigeria are not without some inhibiting problems emanating from their various environmental factors such as land degradation, soil erosion, deforestation, industrial toxins, ozone depletion, climate change, nuclear radiation, and the destruction of biodiversity (Ghadeyan & Omolekan, 2008; and Adetayo, & Owolade, 2012). These problems pose serious challenges to the operational capabilities, survival, and performances of agro-allied businesses in Nigeria (Adesina & Odekunle, 2011). The environmental factors in the agro-allied industry in Nigeria tend to be harsh on indigenous firms and their operational activities nowadays. This has brought such consequences as low productivity, increasing risks, low profitability, and tensed competition, heavy investment on equipment, increased operational cost, and a high rate of business failures with many other threats. (Beveridge & Guy, 2005; and Gibbs, 2009).

Notably, green management has emerged as a viable solution to address environmental issues (IPCC, 2007) and market the product of the company at the same time. According to Adetayo and Owolade (2012) some factors impede organizations to go green. Despite the known factors, businesses in agro-allied industries have incorporated green marketing in their ambitious corporate social responsibility initiative. It integrates nicely with the strategies of the business. Companies have realized the need to behave in a more environmentally-friendly fashion. Going green provides a certain degree of competitive advantage to the business. Its products are ranked favorably among the customers and can be sold at a price higher than the industrial norm. The consumer is willing to pay more for green products (Anderson, & Leal, 2007; and Schaper, 2012). The increasing consumer concern towards green marketing signifies a very lucrative opportunity for the business. More than 25% of informed consumers prefer eco-friendly products. The company may design new products solely to capitalize on consumers’ conscience (Alvarez, 2011).
The government wants to protect consumers and society. This protection has a significant impact on green marketing implications. Government regulations on environmental marketing are designed to protect consumers in several ways. They include reducing the production of harmful goods or products; ensuring all types of consumers can evaluate the environmental composition of goods (Beveridge & Guy, 2005). Reduction of harmful waste may lead to substantial waste saving; sometimes, many firms develop symbiotic relationships whereby waste generated by one company is used as cost-effective raw materials by another company (Best, 2009). Some firms use green marketing to solve cost or profit-related issues (Atrill & McLamel, 2008).

This study evaluates the effect of green production practices on the continued survival of agro-allied businesses in Nigeria. In line with the objective of the study a null hypothesis was formulated to test the veracity of the relationship between the variables as thus:

Green agricultural products would not affect the continued survival of agro-allied businesses in North Central Geo-Political Zone, Nigeria.

II. LITERATURE REVIEW

Green Production Practices

According to Jones & Miskel, (2007) and Mamman, Aminu & Adah, (2013) green products are recyclable, reusable, and biodegradable and are produced with natural ingredients and containing recycled contents, non-toxic chemical. They are originally grown and manufactured under the approved chemical and do not harm or pollute the environment. They are referred to as environment friendly. Their product functions and ideas deal with the process of material retrieval, production, sales, utilization, reduced pollution, and waste treatment available for recycling, reduced pollution, and energy saving. Green product development addresses environmental issues through product design and innovation. Green products can be described as those that offer environmental benefits. They may include building materials, furnishing, consumer products, electronics, washing machines, air conditioner, fridge, health care products, organic and green foods. Schaper, (2012) posits that green products are regarded as environmental products that have an alternative design with less physical resources required during its life cycle, that represents product manufactured through green technology and are free from environmental hazards (IPCC, 2007). Therefore, the promotion of green technology is necessary for conserving natural resources and sustainable development (Aminu & Adah, 2013). According to Ghadeyan & Omolekan (2008) and Adetayo & Owolade (2012) observed that the characteristics to which green products are known with as originally grown, recyclable, reusable, biodegradable, natural ingredients, non-toxic chemicals, does not harm or pollute the environment, cannot be tested on animals, eco-friendly packaging and products contents under approved chemicals.

Tillery, (1999) found that the issue of production at a basic level is relative to the ratio of output to input for a specific situation. In a process of creating goods or services. Rising productivity implies either more output is produced with the same amount of inputs, or that fewer inputs are required to produce the same level of output. In either case, it is not difficult to understand the importance of productivity changes in agro-allied small businesses in consideration of environmental issues. The concept of productivity is linked closely to the issue of efficiency (Tillery, 1999; and Timmons, 1994). If a firm is efficient it is said to be operating on the production frontier (i.e. it is achieving 'best practice'), where the production frontier is defined at some point in time concerning a particular set of firms. Rising efficiency would therefore imply rising productivity. Equally, the shift outwards of a production frontier also imply productivity growth (Tillery, 1999; and Schaper, 2012). Productivity growth in agro-allied business encompasses both changes in efficiency and through the adoption of best practices (Ajani, Onwubuya, & Mgbenka, 2013).

Theoretical Framework

The theory of ecological modernization (Anderson & Leal, 2007) lends support to green production practices in Nigeria. The theory states that it is possible to promote economic growth giving higher priority to the environment (Tillery & Young, 2009). It is no longer necessary to trade-off economic growth for environmental quality. In this context, the capitalist system can develop sustainable solutions to environmental problems. The capitalist drive for innovation can be harnessed to produce environmental improvements (Beveridge & Guy, 2005). The environmental problems facing the world today act as a driving force for future industrial activity and economic development. This calls for the progressive modernization of the institutions of modern society. Entrepreneurs are the central agents of change in that process of transformation to avoid an ecological crisis (Gibbs, 2009; Tillery & Young, 2009). Entrepreneurial action is the best solution to persistent environmental challenges. In this instance, ecopreneurs are seeking to combine environmental awareness and conventional entrepreneurial activity to achieve entrepreneurial success. (Anderson & Leal, 2007).

Ecopreneurs possess the potential to be a major force in the overall transition towards a more sustainable business paradigm (Schaper, 2012). Also, the process effect of new technology on the world system of causality must include an array of different factors at every point. For example, changes in behaviour are affected by social relations and cultural values, as well as a complex of previously existing technological elements. A key mechanism for bringing about behavioural change is the drive to reduce the cognitive dissonance—the tendency to change values in response to new technology. When new behaviours respond to new technologies, it adversely affects previously held values which are no longer consonant with existing values. This mechanism is presumed to operate in agro-allied businesses, for example,
when a farmer's economic activities change as a cause of the inability of having sufficient income to maintain family living standard which they have valued over time. So also, is the perceived dissonance in agro-allied businesses as the absence of green production practices as against its sustainability. The way out of poor business performance to sustainable agro-allied business development could be by considering eco-innovation by indigenous businesses.

**Empirical Review**

More recently business historians have examined the role in the environmental issues of the businesses and other economies since after the second world war amongst them are Porter, & Van der Linde, (2005), Ghadayan & Omolekan (2008), Adesina & Odekunle (2011) and Adetayo & Owolade (2012). Yet the historical and management literature has been poorly used (Ajani, Onwubuya & Mgbenka, 2013) combined with a few works of literature on agro-allied businesses and green production practices (Jones & Miskel, 2007). This study highlighted some of the issues raised in the management literature by contributing a longitudinal case study of the use of eco-sustainability to build a sustainable business, especially on agro-allied small businesses.

Thus, in a study by Cohen and Winn (2007), on market imperfections, opportunity, and sustainable entrepreneurship in the Netherlands, that surveyed 332 samples of respondents in Holland through an administered questionnaire and interview schedules, it was found that ecopreneurs have the potential to resolve our environmental problems and to gradually improve the earth's ecosystem. Hamsa (2014), in a study titled: impact of innovation and managing the technology-based business for entrepreneurs; explained that both technological innovation and entrepreneurship embrace mainly two grouped areas. The first being the organization, development, and commercialization of technology-based innovation in existing firms. While the second group is, the formation, development, and growth of technology-based new enterprises. Technology and innovation businesses also cover a wide range of industries. The study was established based on secondary data collected which highlighted problems faced by the entrepreneurs globally, on stimulating small businesses to adopt technological innovation, that strengthens their role in meeting research and development needs and increase business participation.

In another study titled: “Ecopreneurship: As a solution to environmental problems” McEwen (2013) suggested that environmental problems facing the world can no longer be contained with using past strategies as the challenges have failed to prevent environmental degradation. It therefore, suggested paying attention to the role that entrepreneurs in solving environmental problems using technologies. It requested ecopreneurs to encourage more start-ups that would create the environmental technologies needed to address environmental problems and promoting entrepreneurship education through ecopreneurial behavior and possible integration of ecopreneurship course into college-level entrepreneurship education. The study was through exploratory design that focused on how to harness the innovative potential of environmentally conscious entrepreneurs.

The study by Oskamp (2000) suggests that environmental problems do represent entrepreneurial opportunities. It states that despite the changes in legislation and regulations to protect the environment, the United States and other various countries, have continued to encounter many environmental problems inherent in climate change such as population growth, overflowing landfills, water scarcity, fuel shortages, and water and air pollution. Also, Ghadayan & Omolekan, (2008) empirically examined the effect of green marketing on environmental degradation by employing the non-experimental research method. The study revealed 80% of the consumers of products prefer products that are recyclable, reusable, and biodegradable, products with natural ingredients using green technology. Products with an approved chemical that do not harm or pollute the environment caused no environmental hazards and do not pose dangers to the environment. The study advocated the production of ecological products which must not pollute the environment, but immensely contribute to sustain and even liquidate existing environmental damages.

Furthermore, in a study by Zainab and Shafaat (2015) titled: Green activities: environmental concern and customer satisfaction. The study empirically examined the level of awareness of green issues, as to ascertain if green products are fulfilling the needs apart from benefiting their living environment; and to create awareness about green products and green marketing. A quantitative research technique was employed in the study and questionnaire. The study revealed that green marketing is contributing to saving the environment as well as green products through the reduction of environmental problems. The study recommends companies to be more transparent in describing what they are doing in line with green marketing and imbibe in policies that are consistent with their work about environmental friendliness. Mutora, Nyairo, Nzangi, and Wambugu (2016) in a study titled: Impact of ecosystem management of manufacturing firms in Kenya. The study analyzed the determinants of eco-practices among smallholder dairy farmers in Lower Central Kenya. The logit regression model was used in the study to determine the likelihood of a household that introduce eco-practices in its dairy enterprise. The data for the study was collected from 288 smallholder dairy farmers surveyed in Kiambu County through a multistage sampling technique that was analyzed using SPSS version 20 and STATA version 12. Also, fixed investment cost, storage type, milk cost share, the percentage of milk sold, and dairy enterprise turnover were hypothesized to be key factors in explaining a household's likelihood of the adoption of eco-practices into its dairy enterprise. The result showed an increase in total fixed investments, turnover and volume of output contribute to the probability of a household integrating vertically.
It revealed that the adoption of green production practices and principles lead to the recorded high gross margins, influences the choice of marketing channel and improves market participation, encouraging commercialization of dairy smallholder farming in the area. Mamman, Aminu and Adah (2013), conducted a study that assessed the effect of ecosystem on the performance of SMEs in Kaduna State, titled: Strategic eco-practices in modern firms. The population of the study comprised all SMEs operating in Kaduna State with a sample size of 300 SMEs that was randomly chosen. It revealed no significant impact on their performance as there was no ecological involvement by SMEs operating within the state. Finally, Miskell (2007) postulated that there is considerable evidence that many businesses often fail, because of environmental problems in a study titled 'Environmental sustainability: Creating Unilever's ice cream and tea businesses.

III. METHODOLOGY

This study highlights some issues raised in the management literature on the effect and use of eco-sustainability or green production practices to build a sustainable business as it relates to agro-allied small businesses in Nigeria. It employed a survey method to evaluate the effect of green production practices on the survival of agro-allied businesses in Nigeria. The study was carried in six states and the Federal Capital Territory namely; Benue, Kogi, Kwara, Nasarawa, Niger, Plateau States, and Federal Capital Territory; known as the North-Central geo-political zone of Nigeria or loosely called the Middle Belt. The choice of the study area undoubtedly is their historical impact on agricultural practice and productivity in Nigeria. The population for the study constitutes 309 selected agro-allied business owners/managers that returned their questionnaire, randomly selected from the study area, after adopting Taro Yaman formula to determining the sample size (Yaman, 1967). The questionnaire was designed, in a simple way to elicit information from the owners/managers of the selected agro-allied firms that are relevant to the samples for the study. Since the respondents were of the same category, only one set of the questionnaire was developed. The opinions of the respondents toward the questions asked on those relating to the study objectives were rated on a 5-Point Likert scale to form the primary data. A simple average and frequency table was utilized to present the results of the questionnaire including the results collected for demographic and biographic data.

The secondary data was gathered from journals, magazines, newspapers, textbooks and other records that are relevant to the study. They were sourced from records of institutions in the agriculture sector as well as from other published sources. The secondary sources were extensively utilized in the analysis and with a review of extant literature that constituted a substantial part of this research work. In consideration of the objective of the study, a null hypothesis was formulated to test the veracity of the variables. The formulated hypothesis was tested using the Z-test formula with SPSS Vol.26 statistical package to aid the data analysis.

To statistically analyze the result, a model specification was used. The model specification adopted was the Regression Analysis method. The general formula for the Regression Analysis method is:

\[ Y = a + \beta X + e \]

Where;
\[ Y = \text{Dependent Variable} \]
\[ X = \text{Independent Variable} \]
\[ a = \text{constant} \]
\[ \beta = \text{coefficient of X} \]
\[ e = \text{error margin} \]

The model functionally estimation is stated as:

\[ ESC = f (\text{GAP, AAB, EST, EPR}) \]
\[ ESC = f (\text{GAP*COS, ESC*ABG, CRE\& INN*PRO, ESC*CAU, EPR*CMA}) \]
\[ \text{COS} = a1 + \beta\text{GAP} + e1 \]
\[ \text{GAP*COS} = \text{Interaction effect of green agricultural products and continued survival} \]
\[ \text{COS} = \text{Continuous Survival} \]
\[ \text{AAB} = \text{Agro-Allied Business} \]
\[ \text{EST} = \text{Environmental Sustainability} \]
\[ \text{ABG} = \text{Agricultural Business Growth} \]
\[ \text{CRE\& INN} = \text{Creativity and Innovation} \]
\[ \text{PRO} = \text{Productivity} \]
\[ \text{ESC} = \text{Ecosystem Control} \]
\[ \text{CAU} = \text{Capacity utilization} \]
\[ \text{EPR} = \text{Ecopreneurial practices} \]
\[ \text{CMA} = \text{Competitive advantage} \]

The decision rule was applied is to Reject H0 where \( p < 0.05 \) given the computed value of the coefficient for each of the independent variables in the model.

Furthermore, the formula for Z-test is presented as thus:

\[ Z = \frac{x - \mu}{\sigma} \]

where; \( x = \text{sample mean} \]
\( \mu = \text{population mean} \]
\( \sigma = \text{standard deviation} \]
**n** = sample size.

**Decision rule:** Reject H0 if \( p < 0.05 \) given the computed value of Z. otherwise, accept it.

### IV. RESULT AND DISCUSSIONS

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<tr>
<th>Table 1: One-Sample Statistics</th>
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<td>Variable</td>
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<td>Mean</td>
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<td>Std. Deviation</td>
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<td>Decisions on green product</td>
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<td>&amp; Survival</td>
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<td>309</td>
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<td>4.91221</td>
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Source: SPSS Analysis of Field Data 2019

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<th>Table 2: One-Sample Z-Test</th>
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<td>Variable</td>
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<tr>
<td>Df</td>
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<tr>
<td>Sig. (2-tailed)</td>
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<tr>
<td>Mean Difference</td>
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<td>Confidence Interval of the</td>
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<td>Difference - 95%</td>
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<td>Decisions on green product</td>
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Source: Source: SPSS Analysis of Field Data 2019

The analysis revealed that a grand mean score of 28.41 and a standard deviation of 22.12. In Table 2, the z-value was given as 27.910 with a significant value of 0.003. The significance of the Z change was assessed and significant at 0.003 as shown in the table. Based on the results, the null hypothesis was rejected, while the alternative hypothesis was accepted. This implies that green agricultural products affect the continued survival of agro-allied small businesses in Nigeria. Considering the data analysis, it further ascertained that green agricultural products had a significant effect on the continued survival of agro-allied businesses in the North Central Geo-political zone, Nigeria. This hypothetical assertion aligns with the findings of Cohen and Winn (2007), that the production of effective environmentally friendly goods has a multiplier effect on both the performance of a business to stimulate the development of business. Also, Ghadeyan and Omolekan (2008) studies, established that having a green product for society goes deeply in contributing to the continued operation of firms in a turbulent environment with novel implications for the development of business growth in an event of occurring uncertainties. Furthermore, Oskamp (2000); and Mutura, Nyairo, Mwangi & Wambugu (2016) posited that the business creation of green goods allows such organizations to build on their internal competencies and reliability. Moreover, other good numbers of literature such as Porter & Van der Linde (2005) states that ecopreneurs have the potential to improve the earth’s ecosystem; Mutura, Nyairo, Nwangi, and Wambugu on the impact of ecosystem management states that adoption of green production practices and principles lead to the recorded high gross margins, influences the choice of marketing channel and improves market participation. Finally, Jones & Miskel, (2007) opined that businesses often fail, because of environmental problems, they have a substantiated relationship between green agricultural products and organizational or firm survival. Conversely, Dorsey & Boland (2009); and Hamsa (2014) contended that green products may not necessarily determine the operational capabilities of any organization giving the reason that green products are not a strategic decision to consider in some situations.

### V. CONCLUSION AND RECOMMENDATIONS

This study sought to explain the role of eco-practices in the sustainable development of agro-allied small businesses in Nigeria. Despite notable changes in legislation and regulations to protect the environment, Nigeria and various other countries are constrained with unprecedented environmental problems arising from climate change such as population growth, overflowing landfills, water scarcity, fuel shortages, and water and air pollution. It is therefore established that environmental problems can only be solved through technological advancement of the input of ecopreneurship. This fact specifically applies to the sustainable development of the small agro-businesses in Nigeria to achieve food security. Further to the above considerations of the findings and discussions from this study the following recommendations suffices as follows:

i. The government of Nigeria should strengthen its external forces concerning establishing national standards for the quality of the environment and the implementation of environmental regulations.

ii. The government should provide an environment that shall strengthen the consumer movement in the country.

iii. Ecopreneurs, government, and society at large should connect into international standards to support the phasing-out of products and processes that are known to contribute to global warming and ozone depletion.

iv. Agro-allied businesses in Nigeria should build more on sustainability concerns as it affects agricultural goods.

v. Agro-allied businesses must consider continued invention, innovation, and creativity as the most viable method to get instant access to industry or operations-specific knowledge and keep abreast of the pace of technological change.

vi. Eco-practices must not just be a back-runner among agro-allied organizations anymore Nigeria. Rather it should be viewed as the critical aspect of organizational turn-around to be given rightful place during policy-making and strategic decisions in organizations.

vii. Agro-firms must therefore engage their managerial team to train and development to know, understand, and apply, the principles of ecopreneurship practices and ecological management in their daily decision making, especially as it concerns their operations.

viii. Producers, consumers, and regulators should commit to more environmental education that can pave way for major transformation of the agricultural industry.
to sustain competitive advantage to further strengthen sustainable agro development in Nigeria.

REFERENCES


