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Strategic Innovation at the Bottom of the Pyramid Small and Medium Scale Enterprises and Satisfaction of Customers Unarticulated and Unserved Needs in Rural Nigeria.

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Abstract

The study focuses on strategic innovation at the bottom of the pyramid small and medium scale enterprises and satisfaction of customers unarticulated and unserved needs in Nigeria, focusing mainly in the oil palm sector in the Niger Delta region of Nigeria. The research design adopted for the work is the survey method. A sample of 525 respondents were drawn from 20 SMEs in four oil palm clusters, one each from one Local Government Area from four selected Niger Delta States of Akwa-Ibom, Delta, Imo and Rivers. One research hypothesis was tested in the study applying simple regression with SPSS version 21. The research hypothesis was accepted as against the null hypotheses, indicating that the predictor variable (bottom of the pyramid Innovation) significantly affects the criterion variables of interest (customers unarticulated and unserved needs) The statement of finding and the corresponding statistical result shows that: customers unarticulated and unserved needs have significant effect on entrepreneurial growth of small and medium scale enterprises (SMEs) in the agricultural sector (Oil Palm produce) with a result of ($F(1, 523) = 8540.89, p < 0.05$); On the strength of the result of this hypothesis, the study concludes that customers unarticulated and unserved needs significantly affects entrepreneurial growth of SMEs in the agricultural sector particularly the oil palm sector. In the light of the foregoing conclusion, the following recommendations were made: 1) SMEs in the agricultural sector (Oil Palm produce) should be encouraged by different levels of governments and other stakeholders as well as donor agencies to think beyond the basic and non-frill innovative approaches. 2.) They should consider and explore improved but bottom of the pyramid technology that can help to search and facilitate the production of other products within the value chain in addition to the existing product line. 3.) They can as low hanging fruit redirect their focus to customers articulated and un-served needs in the interim and customers' unarticulated and unserved needs in the long-run. This will ultimately lead to the development of new products for new markets thus carving out an entrepreneurial niche and the associated growth for their organisations.

Keywords: Strategic innovation, Bottom of the Pyramid, Customers articulated and served needs, Customers articulated and unserved needs, Unarticulated and unexploited opportunities.

Introduction

1.1 Background to the Study

Small and medium scale enterprises (SMEs) and entrepreneurship have suffered tremendous setbacks over the years in Nigeria generally and in the Niger Delta region in particular. This may not be unconnected to decades of over dependence on oil and utter negligence of other productive sectors which the nation's economy once revolved around. This has left the nation in general and the Niger delta region in particular grossly under developed.

With the state of affairs in today's fast changing world, there is hardly any nation with close to single source of revenue that has been able to make remarkable progress. Similarly, nations that have weak and fragile entrepreneurial base are likely to face chronic development challenges. These two reasons to a great extent could be responsible for the massive development challenges facing Nigeria as is evident in the Niger Delta region.

Given this therefore, there is need for conscious and concerted effort by the government to develop economic policies and objectives that would fast track development in the Niger Delta region. The thrust of such renewed economic objective “must be on entrepreneurship development taking into account its (Nigeria’s) large human resource capability and in a manner that makes inclusive yet rapidly accelerated economic growth possible” (Osolor, 2009). As Amah (2007). Globalization and rapid technological advancements are unavoidably creating new strategic scenarios. These have left modern business owner and managers, with little or no other choice but to move beyond the realm of conventional processes to the realm of creativity, invention and most importantly, innovation.

Richters (1999) emphasizes that the global business landscape is marked by unprecedented levels of dynamism, complexity, and uncertainty, leading to rapid changes. For businesses to stay competitive in this chaotic environment, they must go beyond merely transforming new technologies into products or services. They should rather continuously seek to develop innovative business models that allow them to thrive. The task of advancing Nigeria to a point of global recognition is significant and requires the active involvement of both the government and various non-state actors throughout the country, including the Niger Delta region. To accelerate development in this area, entrepreneurship is essential. Individuals who can turn new ideas or inventions into successful innovations as noted by Schumpeter, (1950) and referenced by Hisrich and Peters, (2002) and Hisrich, Peters, and Shepherd (2008) are crucial. Their enterprises, whether small or medium-sized, should drive "creative destruction" in markets and industries while simultaneously generating new products and business models.

Creative destruction is the dynamic process inherent in a free market economy (or one that is largely so) of existing products (i.e., goods and services), production techniques, professions, companies and even entire industries becoming obsolete and dying out as a result of technological advances (including the development of new or improved products, more efficient production techniques and better distribution methods) (Linux Information Project, 2006).

To attain the entrepreneurial level needed to bring about desired change in this region, businesses in this region may urgently need to advance beyond the level of simple market philosophy of “satisfying our customers’ needs” to creating and satisfying the created needs for the customers. This can only happen in the domain of customers articulated and unserved needs and customers unarticulated and unserved needs which this study focuses.

Nigeria is endowed with avalanche of human and natural resources. Aside from the extraction industry which revolves around non-renewable resources like hydrocarbon and solid minerals, there are still other resources in other sectors of the economy which are grossly underdeveloped or even abandoned. The agricultural and allied resources sector generally and the oil palm produce in particular is one of such areas. If due attention is given to this area, it has the potential of turning around the economy and wellbeing of Nigerians. It is on record that oil palm had remained a very important commodity of trade between Nigeria and the outside world before, during and after the

colonization and once contributed significantly to the revenue of Nigeria before the oil boom (Usoro,1974; Umoti,2009) as in Ikuenobe (2010). Unfortunately, as it were today, this apparent major revenue earner in the past is now neglected. Available statistics shows that there is yawning gap between the global demand and available supply of oil palm produce. The Oil World (2008) as in Olukayode (2012) estimates that with a population of 140 million by the 2006 census, Nigeria would require annually 1,722,000 tons of vegetable oils & fats to meet the national requirement for food and non-food uses. Foundation for Partnership Initiative in Niger Delta Foundation for Partnership Initiative in Niger Delta (2012) note that it is difficult to assess the specific gap because of incomplete statistics, but according to the USDA in their analysis based on estimated production and import figures, the shortfall in supply (the supply gap) is about 150,000 MT of palm oil per annum. PIND (2012) further note that although the formal estimated gap is about 150,000 MT per annum (excluding palm kernel oil), there is also likely to be significant informal importation of palm oil (including SPO) from neighboring West African countries. It is on the strength of this that Omoti, (2009), presents an analysis which suggests that the demand – supply gap is currently estimated between 500,000 MT to 600,000 MT per annum. From the foregoing, there appear to be an obvious supply gap to bridge. This is as a result the failure of both the organized private sector participants, the State owned ventures and the small and medium scale enterprise in the oil palm business to meet up with the demand for the commodity in the international market. The SMEs participants in this sector could be an elixir if properly positioned with innovation as the springboard. This is the focus of this study.

1.2 Statement of the Problem

Governments at different levels in Nigeria over the years have made fantastic effort to promote small and medium scale enterprises (SMEs) and entrepreneurship across different sectors of the economy including, the agricultural (oil palm produce and other agro and allied products and services). These efforts were aimed at rapid industrialization, employment generation, poverty alleviation, skills acquisition, youth empowerment and wealth creation in Nigeria. They also sought through these efforts to change through diversification, the mono-dimensional nature of the nation’s economy which for over 30 years is almost solely dependent on oil and gas revenue for growth and development. In pursuance of this, different intervention agencies over time were set up for these SMEs and entrepreneurial development programmes with huge financial commitment. However, in spite of these significant efforts and contrary to all reasonable expectations, SMEs are apparently not doing better. Unemployment is still on the increase, a reasonable number of those employed are under employed. The level of poverty is growing higher by the year and wealth creation is at the lowest level. These are could be pointing to the fact that many SMEs have failed to achieve the objectives for which they were set-up.

SMEs in the oil palm produce sector may not be exempted from this. Empirical studies have shown that the oil palm produce sector has not been given due attention since the late 70’s and has thus lost its position as a significant

revenue contributor to the nation's economy. For instance, there are well documented evidences that between 1961 and 1965 world oil palm Production was 1.5 million tons, with Nigeria accounting for at least 43% (Partnership Initiative in Niger Delta, 2008). Conversely, since then oil palm production in Nigeria can at best be said to have stagnated. Olagunju, (2008), notes that in recent times, world oil palm production has amounted to 14.4 million tons, with Nigeria which is one of the largest producers in West Africa, accounting for only 7%. This has led to a global demand and supply gap for oil palm produce which both the major and minor oil palm producers in Nigeria have not been able to bridge. It is not known the role strategic innovation of SMEs at the bottom of the pyramid could play in the satisfaction of customers unarticulated and unserved needs and thus bridging the demand and supply gap. Fundamentally, this study therefore seeks to address the problem of SMEs' shift to explore the potential fallow ground that can be opened by leaving their comfort zone "customers' articulated and served needs" to brave and chart the uncharted course of customers' unarticulated and unserved needs through the application of strategic innovation in SMEs at the bottom of the pyramid. The focus of this study in the Niger Delta region is necessitated by the recurring youth restiveness and the threat to oil and gas exploration and exploitation activities.

1.3 Objective of the Study

The study has a single objective; to determine the effect of strategic innovation of SMEs at the bottom of the pyramid on satisfaction of customers unarticulated and unserved needs.

1.4 Research Question

Does strategic innovation of SMEs at the bottom of the pyramid have significant effect on satisfaction of customers unarticulated and unserved needs?

1.5 Research Hypothesis

Strategic innovation of SMEs at the bottom of the pyramid has significant effect on satisfaction of customers unarticulated and unserved needs.

1.6 Significance of the Study.

Study which focuses on Strategic innovation SMEs at the bottom of the pyramid and satisfaction of customers unarticulated and unserved needs is of great significance and relevance because it seeks to:

1. Add to the body of knowledge of what is known about strategic innovation, bottom of the pyramid, customers articulated and served needs, customers unarticulated and unserved needs small and medium scale enterprises (SMEs) in the agricultural sector. This will be seen through the robust and logical presentation of relevant literature which helped in painting a brighter and clearer picture of concepts, constructs, variables and theories in the area of entrepreneurship and innovation as well as the result of the findings.
2. Show the link between customers' need satisfaction and strategic innovation of bottom of the pyramid small and medium scale enterprises (SMEs). This was done through logical and articulate presentation of conceptual literature relating to variables that helped to establish the tissue of connection between them.
3. Provide a springboard upon which academics, governments, donor and other intervention

agencies can stand to provide support for BoP SMEs entrepreneurial development programmes.

1.7 Scope of the Study.

This study is delimited on the basis of geography, industry and subject matter. On the basis of geography, the study is delimited to agro-based SMSEs in the Niger-Delta region. The subject matter of the study impinges on strategic innovation, bottom of the pyramid, customers need articulation and satisfaction. On the basis of industry, the study is centered on bottom of the pyramid Small and Medium Scale enterprises in the Oil Palm production value chain.

2.0 Conceptual Review

The focus of the study as stated earlier is strategic innovation at the pyramid SMEs and satisfaction of customers unarticulated and unserved needs in Nigeria. The review in this section focuses on following concepts; (i) Strategic innovation (ii) bottom of the pyramid (iii) industry foresight (iv) customers / consumers foresight; customers articulated and unserved needs, customers' unarticulated and unserved needs (v) strategic alignment and (vi) entrepreneurial growth.

The principle of equifinality, is a general systems theory concept that recognizes that there are many ways through which an organisation can attain its goal or "there are many ways to skin a cat" (Ottih, 1997), best help to clarify the path an organization may tow in search of entrepreneurial growth. Organisations seeking to move from the level of conventional strategy formulation which can at best lead to incremental innovation are expected to explore different options in order to attain strategic innovation and by extension entrepreneurial development. Different authors have their own views of what dimension an organisation can take in pursuance of strategic innovation culminating in entrepreneurial development.

2.1 Meaning of Innovation

The concept of innovation has been defined severally by different authors. Thus, there is a plethora of definition of this concept as there are authors. Wikipedia (2010) notes the term innovation derives from a Latin word "innovation," the noun of action from "inovare" meaning to renew or change. Stanleigh (n.d.) defines innovation as a collaboration process by which organisations abandon old paradigm and make significant advancement. Shukla (2009) sees innovation as the exploitation of new ideas leading to the creation of new products, process or services. Shakla (2009) says it is not just the invention of a new idea that is important, but it is actually bringing it to market putting it into practice and exploiting it in a manner that add value or improve quality. Aside from Wikipedia (2010), Stanleigh (n.d.) and Shukla (2009), Invotech (2011) defines innovation as the application of fresh ideas that enables business to do better and compete in the future. Such idea can include any new or significantly improved processes.

2.3.1. Types of Innovation and Innovation Grid

There is no generally accepted classification and typification of the concept of innovation. This varies from one author to the other and their understanding of the concept.

Individuals and organisation have severally identified

different types of innovation. These definitions however are without any strong epistemological or ontological basis for each classification. Among the various types of innovation is strategic innovation which is central in this discourse. Govidarajan and Tremble (2009), Tushman et al (2010) and Palmer and Kaplan (2007) all identify strategic innovation in their works.

Of all these contributors, Palmer and Kaplan (2007) was

able to clearly differentiate strategic innovation from other types of innovation. This they did by not only presenting the classification in a grid, but also using factors such as; degree of change, revenue potential and other indicators to draw a line of divide between the different types of innovation. These factors which vary from one form of innovation to the other are summarised in the diagram below.

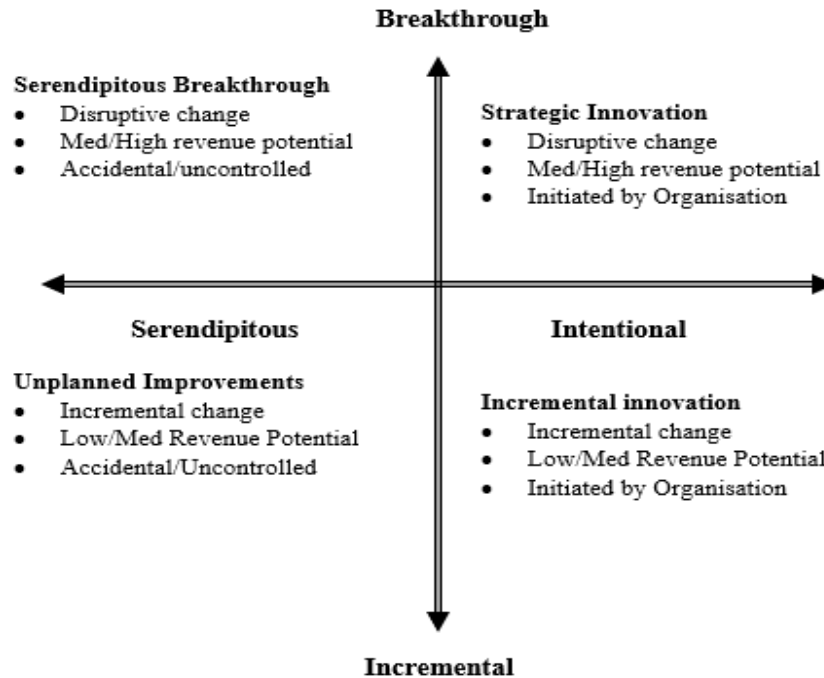


Figure 1.1 Innovation Grid.

Source: Palmer, D. and Kaplan, S. (2012). A framework for strategic innovation: Blending strategy and creative exploration to discover future business opportunities. www.innovation-point.com

From the foregoing diagram of the innovation grid, strictly speaking; innovation has been presented in two major polarities and dimensions of serendipitous and intentional innovation. These two forms of innovation can lead to either a breakthrough or incremental innovations and serendipitous or intentional innovation. The emphasis of this discourse is strategic innovation, which is hereunder presented.

2.3.5. Strategic Innovation:

From the innovation grid presented herein above, an intentional act from an organisation can also lead to a breakthrough, in product, market and technology. This kind of breakthrough may not be spontaneous, but a product of conscious and concerted research and development effort and sometimes value added benchmarking and other ethical intelligence gathering methods. This kind of innovation is known as strategic innovation.

In the view of Palmer and Kaplan (2007), the kind of change that strategic innovation brings about is “disruptive change”, its revenue potential ranges between medium and high and most importantly it is initiated by the organisation. The innovation grid helps to draw a line of divide between innovation that is consciously sought for using ethical intelligence gathering techniques which is strategic innovation and not innovation achieved by luck, providence or act of serendipity, which is serendipitous innovation.

As noted in the foregoing section there are plethora of classifications and typifications of innovation, one of which

is strategic innovation, Strategic innovation as a concept and as a discipline is relatively new within the field of strategic management. Sniukas (2012) notes that strategic innovation goes beyond the limitations of traditional, approaches and tools to enable new growth and competitive advantages by creating new markets, new value and new business models. This competitive advantage can also be sought for at the bottom of the pyramid.

2.3.2 Bottom of the pyramid

Aside from the foregoing expository on strategic innovation, there is another key concept that this study focuses on; the bottom of the pyramid (BOP). Bottom of the pyramid also referred to as base of the pyramid is fairly new and refers to the lowest socio-economic segment in the world. This concept became widely known through series of articles in practitioner journals by (Prahalad and Hart, 1999, 2002; Prahalad and Mammond, 2002; Prahalad 2002, 2004, 2006, 2010, 2012), but the idea was made popular through Prahalad’s book “Fortune at the Bottom of the Pyramid” (Ramdorai and Herstatt, 2023). Introduced by Prahalad and Hart (1999 and 2002), the bottom of the pyramid concept has undergone some significant discussion and change in perspective over the years. The socioeconomic and demographic dimension to the concept of BoP sees it from the income bracket paradigm of the global population that is of low income and living off of \$1-\$8 a day. There is no consensus about the range of income bracket that constitute BoP, Chikweche, (2013),

places it at \$ 1-\$2 or as much as US\$8.00 (Guesalaga & Marshall 2028). Beyond the income bracket dimension, is the marketing paradigm. Shelton (2023), notes that “bottom of the pyramid marketing is when a company designs a marketing plan that aims to provide products to low-income earners. The product, price, promotion, and place are focused on this group of consumers”.

Rafferty, Kirchgeorge and Winn, (2023), assert that the bottom of the pyramid comprises of over Four billion poor people and “constitute a staggering market opportunity, but without buying power (income) and transaction capacity (credit, infrastructure, distribution systems, and other institutional frameworks), the poor are locked into poverty”. Prahalad and Hart (1999 & 2002) and Prahalad and Mammond (2002), see BOP as a fallow ground, with potential market opportunities that multinational organizations can harness. They “contend that MNCs in particular have the incentive (growth opportunities), the financial resources, and the capabilities (low-cost mass production, marketing expertise, international experience) to produce and distribute appropriate affordable products at high volumes and razor-thin profit margins (Rafferty *et al*, 2023).

While Prahalad and his associates posit that there is a huge market opportunity at the bottom of the pyramid; that when harnessed by the MNCs could lead to great financial fortunes and also a great potential to simultaneously alleviate poverty at that level, other scholars are either skeptical, critical or have divergent views. In the light of the foregoing, a number of critiques and propositions that pose questions on the methodological adequacy of Prahalad’s BOP assertion have been made. Some of these critiques are (Bendell, 2005; Crabtree, 2006, 2007; Hopkins, 2005; Jenkins, 2005; Jose, 2006; Karnani, 2005, 2006a, 2006b 2007; Rost and Ydren, 2006; Walsh, Kresh, and Beyerchen, 2005) as in Landrum (2007). In all, Karnani (2005, 2006a, 2006b & 2007) had a radical departure from the conventional BOP approach. He notes that “the popular 'bottom of the pyramid' (BOP) proposition argues that large companies can make a fortune by selling to poor people and simultaneously help eradicate poverty. This in his words is at best, a harmless illusion and potentially a dangerous delusion” and Prahalad’s BOP argument is “riddled with inaccuracies and fallacies”. Karmani instead, proposes an alternative hypothesis on how the private sector can at best help alleviate poverty. He believes selling to the poor would appear to be weaponising their poverty and thus, the poor should be seen and supported as producers while emphasis should be on buying from them, rather than selling to them and this is the crux of this discourse.

2.1.2 Customer/Consumer Foresight

One of the dimensions, from which SMEs at the bottom of the pyramid can seek to serve customers unarticulated and unserved needs can be seen from consumer/customer foresight Palmer and Kaplan (2007) strategic innovation framework view. This begins with the understanding of the consumers/customers articulated and unarticulated needs. Conventionally most business organisations today have come to accept consumer-drivership philosophy as better way of attending to the needs of the consumers. Thus, they aspire to create products and services whose foundations are rooted on consumer’s needs.

While the foregoing paradigm still hold sway in the world of business, Palmer and Kaplan (2007) note that in reality, organisations often have scant understanding of consumers’ deep-seated behaviours, perceptions and needs. They therefore advocate a paradigm shift from consumer-drivership to product-drivership. Product drivership involves taking a more consumer/customer inspired approach, and this is the hallmark of consumer/customers foresight. This kind of move most times could be at variance with established organisations cultural norms. This becomes more difficult if the power and politics of the organisation are in favour of the technologist.

Palmer and Kaplan (2007) note that “Consumer/customer insight is a qualitative bottom-up approach that leverages insights into the behaviours, perceptions and needs of current and potential consumers/customers by involving them as true partners in the innovation process. It is a non-traditional imaginative approach to research that seeks a deep understanding of needs and the drivers of behaviour at a level well beyond what they consumer/customers are able to articulate themselves”.

This approach Invotech (2012), sees as non-traditional, and brings an organisation face to face with customers and consumers in order to glean fresh insight into both articulated and unarticulated problems and needs. These grass-root insight positions an organisation to innovate at an entirely new level.

The articulated customer needs are those needs that are recognized and communicated by the customers/consumers to the business organisation. These needs are often short-term focused and can at best lead to incremental opportunities, which can only translate to incremental innovation. The unarticulated customer needs on the other hand, are those needs by the customers; which when recognized and satisfied by the business organisation can lead to products and services that amaze their customers. Unlike the articulated need, the unarticulated needs often lead to breakthrough opportunities which can translate to breakthrough innovation. This in turn changes the rule of the game by causing creative disruption which manifests in the form of change on the basis of competition; industry transformation; and creation of whole new solution categories.

In the world of business today, most organisation feel very comfortable as achievers when they claim they are “customer-driven” and involve customers in a variety of ways in their product development processes. This in the view of Innovation Point (2012) may sound reasonable in the beginning. They note however that “most traditional “customer-driven” approaches do not seek out or reveal insights beyond those that a customer is able to verbalise. It is one thing to invite customers/consumers to talk about their needs and wants – it is quite another to purposefully seek out the unarticulated. Breakthrough innovation can only begin when an organisation is no longer satisfied with what customers actually say – these organisations open the door to extraordinary levels of innovation. They must think the future, by stepping out of the congested route that only leads to the delivery of customers articulated and served needs and reroute itself first to a real new destination of customers articulated and unserved needs. This however is not the ultimate destination but only a low hanging fruit that can at least lead to some incremental change in the organization, preparatory to the final destination which is

the arena of customers unarticulated and unexploited opportunities. This arena is in the future and for future minded organizations.

Hamel and Prahalad (1994) as in Carlsson and Kjellman (2002) present a visual representation of customers unarticulated needs.

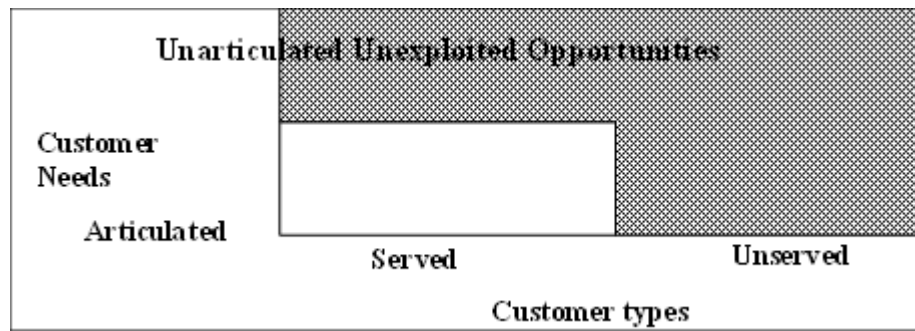


Figure 2.1 Customers Articulated and Unarticulated Needs.

Source: Carlsson, C. and Kjellman, A. (2002), *Industry Foresight – Management beyond Forecasting and Scenario Planning*. Institute of Advanced Management Systems Research. www.econpapers.repec.org/RePEc:amr:wpaper:471

The concepts of articulated and unarticulated customers' need have been explained earlier. The unexploited opportunities in the diagram represent the unarticulated needs and the unserved articulated needs. The term "customer" and "consumers" as used in the discussion of consumers/consumers insight means more than the literal customer and consumers, it includes other stakeholders like those in the distribution channel, manufacturing partners as well as other potential alliance partners. This term therefore in the view of Invoteh (2012) is used for the purpose of simplicity.

2.2 Theoretical Framework

The theory that set the foundation for the parameter or boundary of this study is the Schumpeter 1934 and 1991 innovation theory of entrepreneurship. This theory is presented and discussed herein below.

2.2.1 Innovative Theory of Entrepreneurship

The innovative theory has gradually gained ground among academics and practitioners in understanding the concept and practice of entrepreneurship and as Rajan (2012) notes; it is one of the most famous theories of entrepreneurship used all around the world. This theory was advanced by a renowned scholar, Joseph Schumpeter, in 1934 and 1991. The theory is the outcome of Schumpeter analysis and critique of the Neo-Classic theory proposed by Marshall, which he concluded was wrong. Schumpeter developed his own thesis but with a paradigm shift from knowledge only to creativity or innovation as a key success factors.

Schumpeter believes that creativity or innovation is the key factor in any entrepreneur's field of specialization. He argued that knowledge can only go a long way in helping an entrepreneur to become successful. However, Schumpeter viewed innovation along with knowledge as the main catalysts of successful entrepreneurship. He believed that creativity was necessary if an entrepreneur was to accumulate a lot of profits in a heavily competitive market (Rajan, 2012:1).

As noted earlier this theory seems to have more theoretical flavor and appeal to academics and practitioners and thus has apparently gained a wider support and popularity over other theories of entrepreneurship. It is on this note that this theory is adopted as the platform and springboard upon which this study is premised. Customers unarticulated and unserved needs which this study seek to explore in pursuance of entrepreneurial growth falls within the

domain of unarticulated and unexploited opportunities. Achieving growth through harnessing these unexploited opportunities will require an organisation wide innovation in any form strategic, incremental, serendipitous or serendipitous breakthrough.

2.3 Empirical review

Empirical literature on BOP is replete when the conversation revolves around the supply-driven trajectory. However, it is apparently scarce when taken from the demand-driven paradigm which this study focuses. Available empirical literature on strategic innovation and bottom of the pyramid focuses more multinational corporations producing or supplying services to the BOP as against BOP based organisations producing or rendering services for that segment of the market. Example of this, is the work of (Anderson & Markindes, 2007), "strategic innovation at the bottom of the Pyramid". That study focuses on strategic innovators in developing markets from a range of industries to understand the rationale behind their success, and as well as to explore how the success factors differed from what they have observed about innovators in the developed world. SI Drive (2019) in a study of social innovation and poverty reduction and sustainable development did note that "the overall conclusion is that social innovation is already playing an important role in meeting the needs of those in poverty, but the impact could be much greater". Kahle, Dubiel, Ernest, and Prabhu (2013) in a study, "the democratizing effects of frugal innovation: Implications for inclusive growth and state-building" which seek to examine the impact of frugal innovation in the fields of livelihood provision, education, infrastructure, and distribution networks on state-building in countries where a significant proportion of the population lives at the base of the pyramid (BoP) provides support for the notion that the creation of more inclusive markets through frugal innovation contributes to socio-economic development, which in turn strengthens democratization and state-building.

3.1 Method

The issues considered in this section are research design, characteristics of the population, sampling design and procedure data collection method and instrument, reliability and validity of the research instrument (Pilot testing of the instrument) and procedure for data analysis.

3.2 Research Design

Given the nature of this work and the instrument for eliciting primary data from respondents (the questionnaire), the researcher adopted the survey design. This survey method facilitates a systematic study of the population of interest through the use of questionnaire and to generate valid and reliable data for analysis.

3.3 Sources of Data

The data for this study are drawn from both primary and secondary sources. Data relating to the population and sampling frame are from secondary sources, while those elicited from the respondents through the use of questionnaire are from primary sources. The primary data particularly the ones elicited from the respondents through

the use of questionnaire formed basis for answering the research questions and hypotheses testing.

3.4 Population of the Study

The population of this study comprises of 20 small and medium scale oil palm production firms selected from four oil palm clusters, one each from one Local Government Area in four selected Niger Delta States of Akwa-Ibom, Delta, Imo and Rivers. Preliminary investigation by the researcher puts the target population of category of staff of SMEs in oil palm processing within the clusters in the selected states at about 3000 (Three thousand) from the four of the Niger Delta States that formed part of the study. The table below shows the population distribution across the selected clusters.

Table 3.1 Frequency Distribution of Population by Clusters.

| Clusters | Population Frequency |
|---|----------------------|
| Akwa-Ibom State (Etim-Ekpo Local Government Area) | 720 |
| Delta State (Ndokwa West Local Government Area) | 800 |
| Imo State (Ohaji / Egbema Local Government Area) | 750 |
| Rivers State (Ikwerre Local Government Area) | 730 |
| Total | 3000 |

Source: Moluno, S.U. (2024). Research Survey.

3.5 Target Population of the Study

The target population of the study comprises of both senior and junior literate staff of the selected firms. These include: the Directors, Owner Managers/ Managers, Supervisors, Foremen, Plant Operators, Marketers and Field workers.

3.6 Determination of Sample Size

The Bill Godden (2004) formula stated herein below was used for the determination of sample size for the study.

Given a population of 3000, “Z” 1.96 or (3.8416), “P”0.5 and “C” 0.04; the sample size “SS” is 600.25. Details of the calculation are as follows:

$$SS = \frac{3.8416 \times (0.5) \times (0.5)}{0.0016} = 600.25 \text{ (for infinite population).}$$

Applying the “SS” 600.25 as calculated to derive the “NSS” we have a new sample size “NSS” of 536 which is the actual sample size selected for the study. See details of the calculation below:

$$NSS = 600.25 / 1 + \frac{(600.25-1)}{3000} = 600.25 / 1 + \frac{(599.25)}{3000} =$$

500 (for finite population). The population of this study as stated earlier is a finite one hence the “NSS” calculated is 500. However, to make provision for poor response and improperly completed copies of the questionnaire, a provision of 0.10 is made thus the actual sample that formed basis for the study is 550 (500 x 1.10). This sample size was allocated proportionately to the four clusters in the four selected Niger Delta states using the following formula:

$$N^*/N (n)$$

Where: N* = Population of Oil Palm Clusters in the States (varies across States)

N = Population of the study (3000)

n = Calculated sample size for the study (500 x 1.10 = 550).

Summary of allocation based on calculation from the foregoing formula is as presented in table 3.2 below.

Table 3.2 Sample Allocation.

| Clusters | Sample Allocated |
|---|------------------|
| Akwa-Ibom State (Etim-Ekpo Local Government Area) | 132 |
| Delta State (Ndokwa West Local Government Area) | 147 |
| Imo State (Ohaji / Egbema Local Government Area) | 137 |
| Rivers State (Ikwerre Local Government Area) | 134 |
| Total | 550 |

Source: Moluno, S.U. (2024). Research Survey.

3.7 Sampling Technique

The systematic sampling technique, a type of probability sampling method was applied in the selection of the actual sampling units. This required the identification of the elements within the population in the selected firms in a sampling frame, from which the sample for the study was pulled out. It is on the strength of this, that the following formula was applied to determine the sampling/skipping interval or Kth term which determined the units that were selected given the earlier proposed systematic sampling.

$$K = \frac{N}{n}$$

Where: K = Sampling interval (skipping interval)

N = Population

n = Sample size

$$\text{While } \frac{n}{N} = \text{Sampling ratio} = \frac{n}{N}$$

Source: Agbonifoh B.A. and Yomere, G.O. (1999): Research methodology in social sciences and education.

Benin City, Centerpiece Consultants.

The sampling interval therefore is: $3000/550 = 5$, while the sampling ratio is $550/3000 = 18.3\%$. The population and sample size are 3000 and 550 respectively.

After determining the sampling interval, the simple random sampling a probability sampling technique using the lottery method was applied to determine the first sample from the first interval thereby giving every element within the first interval an equal chance and other intervals a relatively fair chance of being selected. The second and subsequent samples were obtained by simply adding the sampling interval to the number of the first element sampled.

3.8 Description of Research Instrument

Two major instruments were used for the study; the structured questionnaire and interview schedule.

3.8.1 Validity of the instrument

Factor analysis was also conducted for each of the subgroups in section of the instrument to ascertain the construct and content validity through PCA analysis using SPSS version 21. While the construct validity of the

instrument is 66.88%, the content validity ranges from 0.68 to 0.89.33%.

3.8.2 Reliability of the test instrument

The focus of the researcher here is to ascertain the degree of consistency of the measurement instruments if applied in the same circumstance and environment repeatedly overtime. The Cronbach’s alpha test was used to estimate the reliability coefficient resulting in an index of 0.995.

3.8.3 Questionnaire Administration

The final copies of the questionnaire made ready after the pilot testing of both instruments since the measure of consistency obtained from the test is acceptable. The questionnaire was deemed ready for distribution and thus 550 (five hundred and fifty) copies were made in line with sample size and distributed accordingly to the respondents.

4.0 Data Analyses

The summary of the data on the copies of questionnaire issued and retrieved were presented in simple percentages while regression analysis was applied for the hypothesis testing using SPSS version 21.

Table 4.1.1 Summary of Questionnaire Issued and Retrieved.

The following table (4.1) shows the summary of copies of questionnaire issued and retrieved from the respondents, represented in percentages.

| Questionnaire | Copies Issued | | Copies Retrieved | | Copies Unretrieved | | Total Retrieved / Unretrieved | |
|----------------|---------------|------|------------------|------|--------------------|------|-------------------------------|------|
| | No. | %. | No. | %. | No. | %. | No. | %. |
| Akwalbom State | 132 | 24.0 | 126 | 22.9 | 6 | 1.09 | 132 | 24.0 |
| Delta State | 146 | 26.6 | 137 | 25.0 | 9 | 1.63 | 146 | 26.6 |
| Imo State | 137 | 25.0 | 130 | 23.6 | 8 | 1.45 | 137 | 25.0 |
| Rivers State | 135 | 24.4 | 132 | 24.0 | 2 | 0.36 | 135 | 24.4 |
| Total | 550 | 100 | 525 | 95.5 | 25 | 4.5 | 550 | 100 |

Source: Moluno S.U. (2023) Survey Questionnaire

4.1 Hypothesis Testing

Table 4.1.2: Regression of strategic innovation at the bottom of the pyramid and customers unarticulated and unserved needs by small and medium scale enterprises (SMES) in the agricultural sector (oil palm produce).

| Model Summary | | | | | |
|---------------------------|--------|-----------|--------|----------|-------|
| | R | R2 | Adj R2 | SEE | |
| | 0.97 | 0.94 | 0.94 | 0.21 | |
| ANOVA | | | | | |
| | SS | Df | MS | F | P |
| Regression | 384.73 | 1 | 384.73 | 8540.89 | 0.00* |
| Residual | 23.56 | 523 | 0.05 | | |
| Total | 408.29 | 524 | | | |
| Variables in the Equation | | | | | |
| | B | Std Error | Beta | t- ratio | P |
| Constant | 0.27 | 0.03 | | 8.56 | 0.00 |
| BOP innovation | 0.19 | 0.00 | 0.97 | 92.42 | 0.00* |

Significance: P< 0.05

- a. Dependent Variable: Customers Unarticulated and Unserved needs
- b. Predictors: (Constant), Strategic innovation at the bottom of the pyramid innovation

Source: Moluno S.U. (2023) Survey Questionnaire.

5.0 Findings, Conclusion and Recommendations

The statement of finding and the corresponding statistical result shows that customers unarticulated and unserved needs have significant effect on entrepreneurial growth of small and medium scale enterprises (SMEs) in the agricultural sector (Oil Palm produce) ($F(1, 523) = 8540.89, p < 0.05$). The research hypothesis was accepted as against the null hypothesis, indicating that the predictor variable (Strategic innovation at the bottom of the pyramid) significantly affects the criterion variable of interest

(Customers Unarticulated and Unserved needs). It is on the strength of the result of this hypothesis that the study concludes that strategic innovation at the bottom of the pyramid significantly affects customers unarticulated and unserved needs in SMEs in the agricultural sector particularly the oil palm sector.

It is in the light of the foregoing finding and conclusion that the following recommendations were made:

- 1) SMEs in the agricultural sector (Oil Palm produce) should be encouraged by different levels of governments

and other stakeholders as well as donor agencies to think beyond the basic and traditional cliché of allowing the customers to drive their innovation, by deciding what they (customers) need as against creating needs for their products. 2.) They should consider and explore improved but bottom of the pyramid technology that can help to search and facilitate the production of other products within the value chain in addition to the existing product line. 3) They can, as low hanging fruit redirect their focus to customers articulated and un-served needs in the interim and customers' unarticulated and unserved needs in the long-run. This will ultimately lead to the development of new products for new markets thus carving out an entrepreneurial niche and the associated growth for their organisations.

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