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ASSESSMENT OF ENTREPRENEURIAL INNOVATION IN CASSAVA PROCESSING FOR VALUE CREATION IN ABEOKUTA, NIGERIA

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Abstract

This research seeks to examine entrepreneurial innovation on cassava processing for value creation in Federal University of Agriculture, Abeokuta.

Keywords:

Business market coverage, Cassava, Entrepreneurial innovation, Product innovation, Service innovation, Value creation.

INTRODUCTION

Today, the amount of food available per person on a global basis is 18 percent higher than 30 years ago. Most developing countries benefited from this development with the result that their nutrition has witnessed very tremendous improvement. Cassava is the chief source of dietary food energy for the majority of the people living in the lowland tropics, and much of the sub-humid tropics of West and Central Africa. Therefore, its production and utilization must be given prime attention in food policy. Even though farmers have not yet attained the desired technical efficiency in cassava

The study examined the impact of process innovation on cassava yield, to ascertain the relationship between product innovation and customer patronage, the effect of service innovation on business market coverage and how creative thinking affects enterprise competitive advantage. The instrument for data collection was a structured questionnaire. The questionnaire was structures in line with Likert's six-point scale and was checked for reliability using a pilot survey method. The test of hypothesis revealed that there is statistically significant relationship between process innovation and cassava yield. (r =0.285, p<.002). The second hypothesis revealed that there is a significant relationship between product innovation and customer's patronage (r =.113, p<.0839). The third hypothesis reveled that there was positive relationship between Service innovation and business market coverage (r =0.423, r=0.068 p<.005) respectively. The study applied correlation and multiple regression approach and establishes empirical support for some conjectures made in the literatures. Given the importance of cassava which serves as a very important food for majority of the Nigeria populace, it then becomes inevitable to carry-out this study. This finding contrasted somewhat with results of comparable earlier studies which had shown that adding value to the production and processing of cassava help improve and increase the yield of the tuber. Since the tuber is one of the major food of an average Nigerian due to its cost. The study therefore has been able to find the different innovations that can be added to the production as well as processing of cassava so as to increase its value, create more jobs and make the economy to be buoyant.

production as a result of weak access to external inputs such as fertilizers and herbicides, the widescale adoption of high yielding varieties and the resulting increase in yield have shifted the problem of the cassava sector from supply (production) to demand issues, such as finding new uses and

markets for cassava. Agricultural economy in Nigeria is still largely characterized by production and direct sale of agricultural outputs in its raw form with very little capacity for transformation of produce from its raw form to other value-added products. The rationale for value addition is predicated on the need to increase rural incomes, employment and investment opportunities. Focusing on value addition by small scale operator is important. This will permit investment on additional processing facilities so that marketable surpluses can be pushed to processors and farmers can reduce post-harvest losses thereby increasing farm income. Value addition can help farmers to claim part of the unexploited profit going unclaimed in the manufacture of food, fiber and industrial or other product from agricultural produce.

Value addition is important for the agricultural sector for Nigeria to be able to actualize the economic agenda of different governments towards increasing agricultural Gross Domestic Product and diversification of economic activities away from the oil sector. Suffice it to mention, the FAO (2013) reported agriculture as a strategic component of the Nigerian economy contributing between 19.65% and 26.63% to real GDP in 2014. Crop production constituted an important activity in the agriculture sector and the main driver of growth in the agricultural sector contributing between 85.39% and 90.13% to growth in this sector between quarter one and three in 2014.According to OECD (2005); Chou, (2009) cited in Juliet et al, (2009) garri is the most popular form in which cassava is consumed by several millions of people in Africa, especially in the West Africa sub region. Garri is processed by peeling the cassava root, washing, grating, followed by solid state fermentation, pulverizing and roasting (Babaleye, 2004 cited in Oghenerioborue et al., 2016). Garri is a granulated, white or yellowish product, the colour depends on production methods. It is a dehydrated staple food with a high swelling capability and can absorb up to four times its volume in water. Cassava is also gaining prominence as an important crop for the emerging biofuel industry and, as opined by FAO. (2004), it is a potential carbohydrate source for ethanol production. A well planned strategy for the development and utilization of cassava and cassava products can provide incentives for farmers, crop vendors and food processors to increase their incomes. It can also provide food security

for households producing and consuming cassava and cassava products, Ganotakis and Love (2010).

Value addition simply implies the process of increasing the economic worth or value of a commodity by transforming it to another commodity termed as a value added commodity. Coltrain, (2000) added that the process should contribute to changing the current place, time and form characteristics of the commodity to characteristics more preferred in the market place. The value of the changed commodity is thus referred to as its added value. Other definitions of value added include that of the Bureau of Economic Analysis (BEA) that defines value added as the difference in the value of goods and services produced and the cost of inputs used to produce them. It also describes it as the industry's gross receipts and other incomes, commodities taxes and inventory changes minus expenditure for goods and services purchased from other firms. Therefore, the concept of improving value addition is intrinsically embedded in the concept of improving technical, allocative and scale efficiencies. Thus, factors that increase the aforementioned will optimize/maximize value addition to agricultural products. Studies have shown that when firms are inefficient in the production of their core product, increasing value addition can be addressed by correction of factors causing inefficiency. Commercial production of cassava can alleviate the poverty problem ravaging most of the countries in Africa since it tolerates wide range of soil. Cassava is consumed in variety of ways. It is locally consumed as flour of various form, tapioca, fried after fermentation (popularly called garri in Nigeria). Cassava can be pounded with yam to form a delicious food that is consumed with soup or stew especially among the old people. The practice of mixing yam with cassava to make pounded yam is common among the poor people who could not afford to buy yam for making pounded yam because of the high cost of yam. Cassava alone can also been sundried, mixed with water and pounded into paste called fufu in southern part of Nigeria and consumed with soup or stew. Fufu can be kept for about three days unlike pounded yam that is eaten immediately after preparation. The leaves are used to prepare soup especially in the easten part of Nigeria. The peel can be used as animal feed. It can also be processed into starch for textile use. Cassava is used in industries for baking bread, biscuits,

confectioneries and adhesive. It is used as biofuels in other countries. Cassava is a major source of carbohydrate (IPC and IITA, 1992, Oghenerioborue et al., 2016). Cassava plant grows to a certain particular height usually form canopies that conserve soil. The leaves that are shed from the cassava plants serve as organic manure while the canopies suppress weeds.

According to Susman et al., (2006), new products are the life blood of companies, large or small. Proficiency in new product development can contribute to the success of many companies. If companies can improve their efficiency at launching new products, they could double their bottom line. It is necessary that companies developed new products to replace those that have become outdated or introduce completely new products that will be captivating before larger market. Innovativeness is one of the fundamental instruments of growth strategies to enter new markets, to increase the existing market share and to provide the company with a competitive edge. Motivated by the increasing competition in global markets, companies have started to grasp the importance of innovation, since swiftly changing technologies and severe global competition rapidly erode the value added of existing products and services. Thus, innovations constitute an indispensable component of the corporate strategies for several reasons such as to apply more productive manufacturing processes, to perform better in the market, to seek positive reputation in customers' perception and as a result to gain sustainable competitive advantage.

Statement of Research Problem

Studies have shown that most of the discussion on value addition in agriculture focus on change in form of agricultural product, changes in production process or change in marketing strategies. The justification for focusing on value addition is that there are unexploited profits going unclaimed in the manufacture of food, fibre and industrial or other products from raw agricultural output/produce. (Susman et al., 2006). Most of the method of processing cassava has not been the right method or techniques and this has continued to lead to low yield of the product. Hence, effort needs to be made to improve the processing of cassava so as

to ensure high yield of the product. Evidence exist that there are economies of scale in food manufacturing (Ganotakis and Love, 2010; FAO, 2004). In many cases it does cost large firms less money per unit to produce a product than small firms. Because of economies of scales in food manufacturing farms are large and there are consequent few buyers of raw agricultural produce. Arising from this, buyers are able to dictate the price of raw agricultural produce. The argument therefore is that if farmers can invest in additional processing activities, they could bypass the monopoly power of large agribusiness firms and retain more of the value of the raw agricultural product by selling directly into the wholesale or retail markets. In order to solve the problem of hunger in the society, there is need to increase production of crops with minimum effort, find market for the produce and improves its quality for acceptability by the public. Cassava is one of such crops. It requires minimum management practices such as weeding and fertilizer application. This is as a result of inadequate capacity of primary producers to add value to their produce due to socio economic, economic, environmental and technological constraints. This has manifested in the form of low production efficiency and limitation in the diversity of goods produced. This perhaps has been responsible for poor wealth creation by farmers resulting in low farm and household incomes. While many of the challenges facing the cassava value chain are common to all agricultural products (weak extension services, poor access to credit, poor availability of input supplies, fragmented marketing, etc), addressing the needs of the processors to supply the processed food and industrial market needs coordinated strategies. Proper market based approach should be developed in addressing the challenges, initially focusing its efforts on those small farmers who are commercially oriented and on processors with a strong business foundation. These addressed cost reduction strategies for producing industrial cassava products to make them more competitive with imported products.

Research Questions

In order to address the problems stated above, this study proffered solutions to the following questions:

i. To what extent does process innovation affects cassava yield?

ii. Does product innovation enhance customer's patronage?
iii. What is the relationship between service innovation and market coverage?
iv. To what extent does creative thinking affects enterprise competitive advantage?

LITERATURE REVIEW

Process Innovation

This type of innovation embraces re-engineering the whole business-process and implementing new internal operations and capacities. This means that the business changing its production processes to new form. The main importance of process innovation is quite well understood especially in companies under threat since it may help improve their productivity (Babaleye, 2004). Process innovation is the introduction of a new method of production; one that is yet to be tested by experience in the branch of manufacture concerned. It is a process which can also exist in a new way of handling a commodity commercially (Schumpeter, 1934; Arogundade, 2011). Process innovation is an aspect crucial to the success of any business. It is an integrated concept that involves changes in the production process which is aimed at reducing the costs, wastes and lead time or at improving production efficiency. Process innovation means improving the production and logistic methods significantly or bringing significant improvements in the supporting activities such as purchasing, accounting, maintenance and computing (Polder, Leeuwen, Mohnen, Raymond, 2010). OECD (2005) defined process innovation as implementation of the production or delivery method that is new or significantly improved. This includes significant changes in techniques, equipment and software. Process innovations can be intended to decrease production unit costs, to increase quality, or to produce or deliver new or significantly improved products. Process innovation is the introduction of a new method of production; one that is yet to be tested by experience in the branch of manufacture concerned. It is a process which can also exist in a new way of handling a commodity commercially (Schumpeter, 1934; Arogundade, 2011). Process innovation is an aspect crucial to the success of any business. It is an integrated concept that involves changes in the

production process which is aimed at reducing the costs, wastes and lead time or at improving production efficiency.

Product Innovation

This type of innovation is often made by technology driven companies and it helps the companies in the competitive positioning while retaining market presence, not only in radically changed products, but also in differentiating the offering (Chou, 2009).Product innovation also greatly influences businesses today. Product innovation is the introduction of new functions, enhanced performance or the addition of new features into the existing products (Susman et al, 2006). Schumpeter (1934) defines product innovation as the introduction of a new good; one in which the consumers are not yet familiar with. It is a new quality of a good. It involves introducing the new or significantly improved products or services (Polder, Leeuwen, Mohnen, Raymond, 2010). For product innovation, the product must either be a new product or significantly improved with respect to its features, intended use, components and material. Change in design that brings significant change in the intended use or characteristics of the product is also considered as product innovation (OECD, 2005). It is also argued that the reason why firms aim product innovation is to bring efficiency in the business (Polder et al. 2010). SME's face unrelenting pressure from powerful customers to lower prices and accept shrinking margins on sales. SMEs are thereby seeking revenue growth from new products and services. Susman therefore recommends that companies must offer customers new products and services to allow for a more efficient and effective use of products that they currently sell.

Market Innovation

This innovation is concerned with the mix of marketing of the company and how chosen markets are best served while accurately interpreting buying preference. This directly influences the sales as well as the company's results. All these types of innovation can be classified by type, degree, impact, competence and ownership (Chou, 2009). Marketing innovation is defined as the identification of new markets and finding out how they are better served or how they may become more receptive to the available

products (Shergill and Nargundkar 2005). The objective of marketing innovation being to increase the sales and market share and opening new markets, it includes activities such as implementing new marketing method that involve significant changes in the packaging, design, placement and product promotion and pricing strategy (Chou, 2009). The distinctive feature for the marketing innovation from the other types of innovation is the implementation of new marketing method that the firm has never implemented before.

Organizational Innovation

Is defined as introduction of new practices of doing business, workplace organizing methods, decision making system and new ways of managing external relations (Polder et al., 2010). OECD (2005) defined the organizational innovation as implementing new ways of organizing business practices, external relations and work place.

Entrepreneurship

There exist different definition of Entrepreneurship in the extant literatures and it has been defined by different scholars of entrepreneurship. Drucker (1985) defines entrepreneurship as the perceptiveness to change and the entrepreneur is one, who always searches for change, responds to and exploits it as an opportunity. According to Lincht (2009), entrepreneurship is the process of creating something new with value by devoting the necessary time and effort, assuming the accompanying financial, psychic and social risks, and receiving the resulting rewards of monetary and personal satisfaction and independence. Stevenson and Arogundade (2011), posits that entrepreneurship is the process by which individuals pursue opportunities without regard to the resources within their control. The word entrepreneur derives from the French words ‘entre’, meaning “between”, and ‘prendre’ meaning “to take”. Babaleye (2004) affirmed that the word entrepreneurship was originally used to describe people who “take on risk” between buyers and sellers or who ‘undertake’ a task such as starting a new venture. Arogundade (2011) sees entrepreneurship as a process undertaken by the government to reduce the level of poverty in the

economy. It also encompasses creating innovation, promoting new sets of attitudes and culture for the attainment of future challenges and economic development. Entrepreneurship is defined by Chou (2009) as the identification of a new business opportunities and the mobilization of resources (material, manpower and money) to initiate a new business or regenerate an existing business, under the conditions of risks and uncertainties, for the purpose of maximizing profits under private ownership. Based on this definition, Entrepreneurship is concerned with creating not only short-term but also long-term value and creates regular cash flow streams on an individual or the group of individuals for the future through the process of imagination, initiative and innovation for the purpose of maximizing profits and minimizing risk associated with expansion on the long run.

Innovation

Early contribution to the classical innovation literature is a Schumpeter (1934; Arogundade, 2011). Schumpeter (1934) used the term "creative destruction" to describe the process of creation and reinvention to continually destroy the existing/old method or process of production and creating new ones. Therefore innovation can be related to the ability of the firms to seek new and better ways to identify, acquire and implement new ideas and tasks that come in different forms (Hjalager, 2010). Innovation manifest itself in many different ways and it is hazardous to predict, both in its timing and in its consequences, which can be envisaged as an incremental innovation. Innovation is complex because of its multi-dimensionality. Chou (2009) defines innovation as the purposive inflows and outflows of knowledge to accelerate internal innovation and expand markets for external use of innovations. Innovation is any idea, practice or material artifact, perceived to be new by the relevant unit of adoption as well as the generation, development and adoption of novel ideas on the parts of a firm (Chou (2009); Lincht (1991) The OCED Paper (2005) sees innovation as the successful production, assimilation and exploitation of novelty in economic and social spheres. Innovation is also the generalization, acceptance and implementation of new ideas, processes, products or services. Hence, innovation is a means by which the

entrepreneur creates wealth producing resources or endorses existing resources with enhance potentials for creating wealth. In other words, innovation is a catalyst to change. It is also the combination of marketable and creative ideas of producing desirable results in an organization and for the society at large.

Types of Innovation

There exist different types of innovation, but the most common according to authors include:

1. Process Innovation
2. Product Innovation
3. Market innovation
4. Organization Innovation

Value Creation

Value creation/addition is the process of increasing the economic value of a product/commodity by transforming it into another commodity termed as a value added commodity. Coltrain (2000) affirmed that the process should contribute to changing the current place, time and form characteristics of the commodity to characteristics more preferred in the market place. The new value of the changed commodity is thus referred to as its added value. Bureau of Economic Analysis (BEA) defines value added as the difference in the value of goods and services produced and the cost of inputs used to produce them. It stated that value addition must involve changes in the physical state or form of an agricultural product; changes in the production process that enhances the value of the final product; marketing a product based on his special physical characteristics through physical segregation. The two important ways of improving (influencing) value added include;

i. Improving production efficiency there by widening the gap between the gross value of output and the cost of intermediate input, and

ii. Changing the form, function, quantity or other product or process characteristics that increase the margin and cost of intermediate inputs

Cassava

Cassava (Manihot esculenta) is one of the most important food crops in West Africa but originated from Brazil. It is ranked the most important root crop in terms of world production (IITA, 2005) and Nigeria is it's the highest producer (Erhabor, Ejele and Nwauche, 2007). The roots are processed by various methods into different products, playing major role in alleviating poverty and food crisis. Some of the value-added forms in which it is utilized are garri, fufu, tapioca, ethanol, starch, cassava flour, cassava chips, glucose syrup, lafun, livestock feed, and a cassava-based adhesives. Cassava processing could be manually done or mechanized. Cassava is a woody perennial and branched shrub that can grow up to 5 metres in height. It has large, spirally arranged, lobed leaves of very variable forms. During growth, the shrubs produce several tuberous roots as reserves made of up to 35% starch which may reach up to 1 m in length and together may weigh up to 40 kg. Cassava produces small, regular female and male flowers in small clusters. The shrub produces a form of non-fleshy fruit capsule.

Nigeria cassava production is the largest in the world; a third more than production in Brazil and almost double the production of Indonesia and Thailand. Cassava is produced in 24 of the country's 36 states. Nigeria produced 33 million tonnes of cassava in 1999. In 2004, the estimated cassava output from Nigeria was approximately 34 million tonnes while in 2009; it produced approximately 45 million tonnes, which is almost 19% of production in the world. The average yield per hectare is 10.6 tonnes (FAO, 2013). The estimated per capita consumption of cassava in Nigeria is 238 Kcal (Cock, 1985). Furthermore, cassava generates income for its producers, processors, transporters and marketers and it serves as raw

material in industries such as bakery, textile, paper, plywood and confectioneries; (FA0, 2003; Babaleye, 2004). Cassava is thus an important commodity for intervention and for poverty alleviation as it provides food security. Cassava is the source of raw materials for a number of industrial products such as starch, flour and ethanol. The production of cassava is relatively easy as it is tolerant to the biotic and edaphic encumbrances that hamper the production of other crops. Cassava's roots are used only to store energy, unlike the roots of sweet potato and yam that are reproductive organs.

Cassava Processing

There are different ways of processing cassava, although the traditional method is predominant in the Nigerian context. Cassava processing using traditional methods is tasking, ineffective, time- consuming and also inefficient. Such difficulties arise in the grating and draining of the starchy fluid from the cassava dough since the conventional methods available involve processes that require a lot of labour and man hours. The problem is worsened when the quantities to be produced are very large (Chou, 2009). Cassava farmers are often unable to process harvested roots and have to sell their crops at a very low price to middlemen who are willing and able to reach them (Osunde and Fadeyibi, 2011). Cassava may be processed in different forms but before any processing, effort must be madeto select healthy, ripe, firm, freshly harvested cassava roots in order to obtain a quality (end) product. Cassava is a versatile crop and can be processed into a wide range of products such as garri, starch, flour, tapioca, beverages and cassava chips for animal feed. According to Ganotakis and Love, (2010); IITA, (2005) cited in Adeola and Raji (2012) garri is the most popular form in which cassava is consumed by several millions of people in Africa, especially in the West Africa sub region. Garri is processed by peeling the cassava root, washing, grating, followed by solid state fermentation, pulverizing and roasting (Babaleye, 2004). Garri is a granulated, white or yellowish product, the colour depends on production methods. It is a dehydrated staple food with a high swelling capability and can absorb up to four times its volume in water. Cassava is also gaining prominence as an important crop for the emerging biofuel industry and, as

opined by Chou (2009), it is a potential carbohydrate source for ethanol production. A well planned strategy for the development and utilization of cassava and cassava products can provide incentives for farmers, crop vendors and food processors to increase their incomes. It can also provide food security for households producing and consuming cassava and cassava products, Juliet et al. (2009).

The Production of Cassava Bread

Cassava bread, which is also called cassava in the francophone Caribbean countries and casaba in Spanish Caribbean countries, is a white, flat, circular, porous food product made by baking moist cassava mash. It is a very popular food in Spanish and Central America and the Caribbean

The bread is made by spreading a layer of non-fermented cassava mash, produced in the same process as garri, (peeling fresh roots, grating, pressing and sieving but not fermented), over a heated metal or ceramic plate and baking it on both sides at a temperature of about 160°C. Some processors sprinkle cassava mash on the metal plate and if it turns brown, then it is considered to be at the proper temperature. After baking the fresh cassava bread is sun-dried on raised platforms for few hours to improve its keeping quality, before packed in paper or polyethylene bags for marketing, which is frequently sold in the retail market directly from the bakers and trader vehicles. Some processors may add salt and peanut paste or garlic before baking (Rawel and Kroll, 2003).

Cassava Value Chain

The cassava value chain comprises input suppliers, farmers/farmers cooperatives, processors, traders, collectors, intermediate and final consumers within and outside the region. Cassava production is characterized by small holder subsistence farmers (who accounts for about 95% of total cassava farmers) planting 0.2-1 ha (usually intercropped with maize, melon, vegetables) with yield of 8-10 t/ha. The farmers who plant for commercial purposes usually have between 1-10ha and adopt the use of high yielding varieties, however a lot of them do not adopt good agronomic practices which results in an average yield of 11-15 t/ha instead of potential yield of 25-30 t/ha obtained for IITA/CEDP beneficiary farmers in the region. Large scale farmers are quite few in the

region with farm size accounting for more than 10ha and up to >1,000 ha, improved varieties and mechanized farming are adopted by these farms with output of about 27 – 35 t/ha, however the high cost of operating the farms is making some of these firms to scale down on investments. One of the major cost components of subsistence and commercial cassava production is labour cost, which accounts for about 70% of total production cost.

Nutritional Value of Cassava Roots

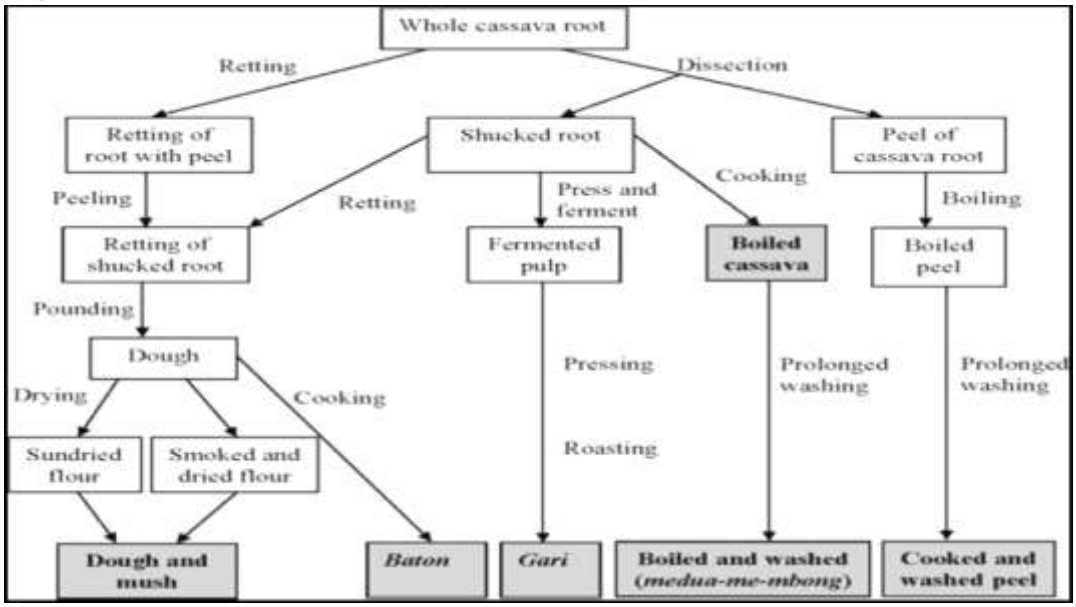
The nutritional composition of cassava depends on the specific tissue (root or leaf) and on several factors, such as geographic location, variety, age of the plant, and environmental conditions. The roots and leaves, which constitute 50 and 6% of the mature cassava plant, respectively, are the nutritionally valuable parts of cassava (Tewe and Lutaladio, 2004). The nutritional value of cassava roots is important because they are the main part of the plant consumed in developing countries. Cassava root is an energy-dense food. In this regard, cassava shows very efficient carbohydrate production per hectare. It produces about 250,000 calories/hectare/day (Julie et al., 2009), which ranks it before maize, rice, sorghum, and wheat. The root is a physiological energy reserve with high carbohydrate content, which ranges from 32 to 35% on a fresh weight (FW) basis, and from 80 to 90% on a dry matter (DM) basis (Julie et al., 2009). Eighty percent of the carbohydrates produced is starch (Gil and Buitrago, 2002); 83% is in the form of amyl pectin and 17% is amylose (Rawel and Kroll, 2003). Roots contain small quantities of sucrose, glucose, fructose, and maltose (Tewe and Lutaladio, 2004). Cassava has bitter and sweet varieties. In the latter varieties, up to 17% of the root is sucrose with small amounts of dextrose and fructose (Charles et al., 2005). Raw cassava root has more carbohydrate than potatoes and less carbohydrate than wheat, rice, yellow corn, and sorghum on a 100-g basis. The fibre content in cassava roots depends on the variety and the age of the root. Usually its content does not exceed 1.5% in fresh root and 4% in root flour (Gil and Buitrago, 2002). The lipid content in cassava roots ranges from 0.1 to 0.3% on a FW basis. This content is relatively low compared to maize and sorghum, but higher than potato and comparable to rice. Cassava roots

have calcium, iron, potassium, magnesium, copper, zinc, and manganese contents comparable to those of many legumes, with the exception of soybeans. The calcium content is relatively high compared to that of other staple crops and ranges between 15 and 35 mg/100 g edible portion. The vitamin C (ascorbic acid) content is also high and between 15 to 45 mg/100 g edible portions (Charles et al., 2004). Cassava roots contain low amounts of the B vitamins, that is, thiamine, riboflavin, and niacin (Table 1), and part of these nutrients is lost during processing. Usually the mineral and vitamin contents are lower in cassava roots than in sorghum and maize (Gil and Buitrago, 2002). The protein, fat, fiber, and minerals are found in larger quantities in the root peel than in the peeled root. However, the carbohydrates, determined by the nitrogen free extract, are more concentrated in the peeled root (central cylinder or pulp) (Juliet et al, 2009). Thus, cassava roots are rich in calories but low in protein, fat, and some minerals and vitamins. Their nutritional value is, consequently, lower than those of cereals, legumes, and some other root and tuber crops such as potato and yam.

Processing Techniques of Cassava Root

Fresh cassava roots cannot be stored for long because they rot within 48 h of harvest. They are bulky with about 70% moisture content (Hahn, 1994). Therefore, cassava must be processed into various forms in order to increase the shelf life of the products, facilitate transportation and marketing, reduce cyanide content and improve palatability. The nutritional status of cassava can also be improved through fortification with other protein-rich crops. Processing reduces food losses and stabilizes seasonal fluctuations in the supply of the crop. Traditionally, cassava roots are processed by various methods into numerous products and utilized in various ways according to local customs and preferences. Traditional cassava processing methods in use in Africa probably originated from tropical America, particularly north-eastern Brazil and may have been adapted from indigenous techniques for processing yams (Chou, 2009). The processing methods include peeling, boiling, steaming, slicing, grating, soaking or seeping, fermenting, pounding, roasting, pressing, drying, and milling as shown in Figure 1.

Figure 1. Different processing techniques for whole cassava root.



Source: Julie et al. (2009).

Storage techniques

The storage of agricultural raw materials is an essential aspect of food processing that ensures that food remains available even in time of scarcity (Osunde and Fadeyibi, 2011). Traditional marketing and storage systems have been adapted to avoid root perishability (Aristizabal and Sánchez, 2007). These adaptations include processing centered in proximity to the areas of production to ensure a daily supply of raw material, processing into storable forms (through sun drying, fermentation, etc.) at the farm level and the common practice of trading of small quantities of roots (Revi et al, 1996; Chou, 2009). A common way of avoiding root losses due to PPD is to leave the roots un-harvested in the soil after the period of optimal root development, until the roots can be immediately consumed, processed or marketed. Cassava roots are known to last in soil up to three years. This strategy has disadvantages because large areas of land are used by the standing crop, unavailable for additional agriculture production. Furthermore, even though the roots may increase in size they become more woody and fibrous, decreasing palatability and increasing the cooking time, respectively, if left longer than the optimal harvest time of 10

to 12 months after planting. Another negative effect occurring due to extensive in-field storage of cassava roots is their increased susceptibility to attack by pathogens as well as the reduction of extractable starch (Ravi et al., 1996). Fresh cassava roots cannot be stored for long because they rot within 24 to 48 h of harvest. They are bulky with about 70% moisture content, and therefore transportation of the tubers to urban markets is difficult and expensive. Good storage depends on the moisture content of the products and temperature and relative humidity of the storage environment. The moisture content of gari for safe storage is belong 12.7% (Osunde and Fadeyibi, 2011), when temperature and relative humidity are above 27°C and 70% respectively, garri goes bad. The type of bag used for packing also affects shelf life depending on the ability of the material to maintain safe product moisture levels. During the last twenty years there have been some developments in improving storage methods capable of extending the shelf life of fresh cassava roots by at least two weeks. These, amongst other advantages, make it possible to market the crop further and give an increased margin to the opportunity of holding stocks of fresh cassava, even for few days, at a processing plant. A joint project between the National Resources Institute, and Centro Internacional de Agricultura Tropical (CIAT) studied alternative storage methods to the traditional reburial procedures. These included storage in pits, in field clamps and in boxes with moist sawdust. All the storage methods investigated favoured curing conditions in a high humidity and high temperature environment in order to slow down the rates of physiological and microbiological deterioration (Osunde and Fadeyibi, 2011). However, to be successful they all require careful harvesting and selection of the roots prior to storage, since curing is not effective if root damage is extensive (Crentsil et al., 1995). Storage in boxes lined with moist sawdust or wood shavings involves putting alternative layers of sawdust and cassava roots, starting and finishing with a layer of sawdust. As an alternative to sawdust, wood shavings or any other suitable packing material can be used. However, the packing material must be moist but not wet. Physiological deterioration occurred if the material was too dry and microbial decay accelerated when it was too wet. In Uganda this storage method was tested in combination with the lining of box with plastic (Kehinde and Aboaba, 2016). The study

indicated that 75% of the roots remained healthy after four weeks in store, provided the roots were packed immediately on the day of harvest. With a delay of one day only 50% of the roots were rated as acceptable. This technique has been used for some export markets but the higher transport cost involved because of the box containers has precluded its use for domestic market (Osunde and Fadeyibi, 2011).

Storage in plastic bags or plastic film wraps appears to be the most practical and promising method of storing cassava roots intended for the urban markets. A number of studies have shown that cassava roots treated with an appropriate fungicide and kept in an airtight plastic bag or a plastic film wrap can be stored for two to three weeks (Osunde and Fadeyibi, 2011). Some modern methods, such as refrigeration, deep freezing, waxing, controlled atmosphere and chemical treatments, have been suggested for the storage of fresh cassava. Freezing and waxing have been used primarily for export markets in Europe and America, where the customers of African and Latin American origin are prepared to pay high prices. These techniques require specialized equipment and skills and are very capital intensive (Crentsil et al., 1995). A more common modern method of limiting PPD is covering cassava roots with paraffin wax by dipping the root in paraffin wax (at a temperature of 55 to 65°C for a few seconds) after treatment with fungicide. Use of wax has been reported to prolong shelf-life of cassava roots up to 2 months (Ravi et al., 1996; Aristizabal and Sánchez, 2007). Cassava roots can also be stored for 2 weeks between 0 to 4ºC without any internal deterioration. The most favourable temperature for storing fresh cassava is 3°C but after 4 weeks microbial infection takes place and will increase with subsequent storage time. However, even after 6.5 months of storage between 0 to 4°C, the part of the root without decay usually is in excellent condition and is suitable for human consumption (Ravi et al., 1996; Juliet et al., 2009). At temperatures above 4°C roots develop the PPD symptoms more rapidly and have to be discarded after 2 weeks of storage (Ravi et al., 1996). Alternatively, entire roots or more usually pieces of root can be stored frozen under deep-freeze conditions in polyethylene bags and the roots were quite palatable after thawing, although some sponginess was present,

and was able to be kept for a further 4 days. This technique is used at a commercial scale in many Latin American countries such as Brazil, Colombia, Costa Rica and Puerto Rico (Ravi et al., 1996).

Research Methodology

The research design that was employed for this research is both exploratory and survey research method. The study area for this study is Federal University of Agriculture, Abeokuta. The population of the study includes Agricultural students that are into production and processing of Cassava and indigenes of its environment. The estimated population of the study is about one hundred and fifty five (155). The sample size for this study comprises of small and medium enterprises in Abeokuta, Ogun state. The study adopted the sample size determination of Yaro-yamane The study employed the use of questionnaire as its research instrument. This research adopted descriptive analysis. Hypotheses was tested using t-test, Pearson moment correlation and ordinary least square regression so as to know the relationship that exists among various variables as well as to know if one variable affect the other. The cronbach alpha reliability test was adopted to measure the internal consistency for all variables.

Results and Discussion

Table 1: Distribution of the Respondents' Demographic Characteristics (N=113)

Variables	Categories	Frequency	Percent	Cumulative	Mean
Gender:	Male	55	46.9	46.9	
	Female	60	53.1	100.0	**1.52**
Marital status	Married	91	80	80	
	Single	22	20	100.0	**1.55**
Age (Years)	less than	25	6	5.3	5.3
	26 – 45years	53	46.9	52.2	
	46 and above	54	47.8	100.0	**3.11**
Education	SSCE	29	25.7	25.7	
	NCE/ND	16	14.2	39.8	
	HND/BSC	53	46.9	86.7	**2.99**
	MSC/PhD	15	13.3	100.0	
Work	Cassava Farmer	45	39.8	39.8	
	Producer/processor	56	49.6	89.4	**1.93**

Researcher	12	10.6	100.0

Source: Field Survey, 2019

The result on table 1 shows the process innovation adopted by cassava farmers, processors and researchers and level of cassava yield. Most of the respondents' belief that traditional method of processing cassava adds value to the product but some still belief that it does not and the only way the value can be increased is through innovation of the processing stages. Most of them also posit that cassava processing using traditional method is tasking, ineffective and inefficient compared to modern method because the problem is worsened when the quantities to be produced are very large (Onyenwoke and Simonvan, 2014). Majority also posit that most cassava farmers harvest the cassava roots then sell at a very low price for middlemen for further processing. It was also found that most of the respondents agree that new methods of processing cassava make it to be more efficient, less tasking and profitable. Furthermore, majority also concur that the use of new production techniques makes the end product to be of high quality. Most of the respondents affirmed that cassava generates income for its producers, processors, transporters and marketers. Majority also posits that cassava serve as a raw-material for industries such as bakery, textile, plywood. It was also confirmed that cassava is a source of raw-materials for a number of industrial products like starch, flour and ethanol. Respondents further agree that the use of modern processing method help in increasing the yield of cassava

Table 2: Distribution of Adoption of Process Innovation Related to the Respondents

S/N	ITEMS	SA		A		FA		FD		D		SD		Mean
		F	%	F	%	F	%	F	%	F	%	F	%	
B1.	The traditional method of processing cassava add more value to the product	66	58.4	33	29.2	10	8.8	2	1.8	-	-	2	1.8	1.61
B2.	Cassava processing using traditional method is tasking, ineffective, time consuming and inefficient.	42	37.2	54	47.8	15	13.3	2	1.8	-	-	-	-	1.79

B3.	Most cassava farmers harvest the cassava roots then sell at a very low price for middlemen for further processing	30	26.5	34	30.1	33	29.2	7	6.2	3	2.7	6	5.3	2.5
B4	New methods of processing cassava make it to be more efficient, less tasking and profitable.	38	33.6	36	31.9	30	26.5	7	6.2	2	1.8	-	-	2.1
B5	The use of new production techniques makes the end product to be of high quality.	39	34.5	41	36.3	27	23.9	5	4.4	-	-	1	0.9	2.0
B6	Cassava generates income for its producers, processors, transporters and marketers.	45	39.8	38	33.6	21	18.6	8	7.1	-	-	1	0.9	1.96
B7	Cassava serve as a raw-material for industries such as bakery, textile, plywood etc.	41	36.3	36	31.9	30	26.5	4	3.5	2	1.8	-	-	2.02
B8	Cassava is also a source of raw-materials for a number of industrial products like starch, flour and ethanol.	38	33.6	48	42.5	19	16.8	5	4.4	2	1.8	1	0.9	2.00
B9	Cassava roots are also used in storing energy	44	38.9	29	25.7	33	29.2	5	4.4	2	1.8	-	-	2.17
B10	The use of modern processing method help in increasing the yield of cassava	61	54.0	31	27.4	14	12.4	6	5.3	1	0.9	-	-	1.71

Source: Field Survey, 2019

Adoption of product innovation and level of customer satisfaction

The result on table 2 shows the adoption of product innovation and level of customer satisfaction. Most of the respondents affirmed that the most innovative product of cassava is garri which is consumed by several millions of people in Africa. Majority also posits that innovation practices in the production of cassava can provide incentives for farmers, crops vendors and food processor to increase their incomes. It was also confirmed that cassava innovation also provides food security for household producing and consuming cassava products. Respondents further agree that Cassava products have nutritional composition that serve as source of energy. Most of the respondents affirmed that the new cassava bread has continued to increase the customers' awareness on the diverse product that can be generated from cassava root. Majority also

posits that most consumers prefer the cassava bread to the normal bread due to its nutritional benefit. It was also confirmed that cassava products like starch, garri and bread have continued to enjoy greater patronage from the populace. Respondents further agree that the marketing method helps enhance continuous patronage of cassava and its products. Hence, using cassava to produce bread is efficient and effectively altogether. This follows the affirmation of Julie et al. (2009) that the nutritional benefits of cassava bread has made it a very popular food in Spanish and Central America and the Caribbean.

Table 3: Distribution of product innovation and customer satisfaction related to the respondents

S/N	ITEMS	SA		A		FA		FD		D		SD		Mean
		F	%	F	%	F	%	F	%	F	%	F	%	
C1.	The most innovative product of cassava is garri which is consumed by several millions of people in Africa.	72	63.7	26	23.0	10	8.8	3	2.7	1	0.9	1	0.9	1.57
C2.	Innovation practices in the production of cassava can provide incentives for farmers, crops vendors and food processor to increase their incomes	24	21.2	54	47.8	22	19.5	5	4.4	3	2.7	5	4.4	2.18
C3.	Cassava innovation also provide food security for household producing and consuming cassava products.	61	54.0	31	27.4	17	15.0	3	2.7	1	0.9	-	-	1.69
C4	The introduction of cassava bread is a new product from cassava that help increase the efficiency of production	44	38.9	40	35.4	19	16.8	5	4.4	4	3.5	1	0.9	2.00
C5	Cassava products has nutritional composition that serve as source of energy.	53	46.9	34	30.1	19	16.8	4	3.5	2	1.8	1	0.9	1.85
C6	The new cassava bread has continued to increase the customers awareness on the diverse product that can be generated from cassava root.	54	47.8	43	38.1	13	11.5	2	1.8	-	-	1	0.9	1.70

C7	Most consumers prefer the cassava bread to the normal bread due to its nutritional benefit.	40	35.4	57	50.4	12	10.6	2	1.8	1	0.9	1	0.9	1.84
C8	The presence of calcium, iron, potassium, magnesium, copper, zinc and manganese in cassava root makes it an irresistible food for consumers.	54	47.8	24	21.2	25	22.1	8	7.1	-	-	2	1.8	1.96
C9	Cassava products like starch, garri and bread have continued to enjoy greater patronage from the populace.	36	31.9	39	34.5	23	20.4	6	5.3	4	3.5	5	4.4	2.27
C10	The marketing method helps enhance continuous patronage of cassava and its products.	50	44.2	29	25.7	22	19.5	5	4.4	3	2.7	4	3.5	2.06

Source: Field Survey, 2019

Adoption of Service Innovation and business market coverage

The result on table 4c shows the adoption of service innovation and business market coverage. Most of the respondents affirmed that providing necessary storage services help ensure that the product remains available in time of scarcity. Majority also posits that good transport services enables cassava stored to get to their destination for proper processing. It was also confirmed that the adoption of required strategy renders cassava to be available at all time. Respondents further agree that when necessary innovative services are available it makes the product to reach the right market. Most of the respondents affirmed cassava (Garri) is one of Nigeria's major export to either countries of the world (raw or finished product).Majority also posits that Nigeria still remains the largest producer and consumer of cassava and its bye products in the world. It was also confirmed that the market for cassava products and by-products has continued to increase over-time. Respondents further agree that market for cassava includes products such as starch, garri, ethanol, cassava bread and other products .

Table 4: Distribution of Service Innovation and business market coverage by Respondents

S/N	ITEMS	SA		A		FA		FD		D		SD		Mean
		F	%	F	%	F	%	F	%	F	%	F	%	
D1.	Providing necessary storage services help ensure that the product remains available in time of scarcity	79	69.9	25	22.1	4	3.5	2	1.8	2	1.8	1	0.9	1.46
D2.	Good transport services enables cassava stored to get to their destination for proper processing.	43	38.1	55	48.7	12	10.6	2	1.8	1	0.9	-	-	1.79
D3.	The adoption of required strategy renders cassava to be available at all time.	59	52.2	32	28.3	17	15.0	2	1.8	3	2.7	-	-	1.74
D4	Improvement in the services to cassava producers has continued to increase the margin of opportunity of holding stocks of fresh cassava.	45	39.8	45	39.8	17	15.0	4	3.5	2	1.8	-	-	1.87
D5	When necessary innovative services are available it makes the product to reach the right market.	50	44.2	35	31.0	14	12.4	11	9.7	1	0.9	2	1.8	1.97
D6	Cassava (Garri) is one of Nigeria's major export to either countries of the world (raw or finished product).	36	31.9	41	36.3	26	23.0	7	6.2	2	1.8	1	0.9	2.12
D7	Nigeria still remains the largest producer and consumer of cassava and its bye products in the world.	60	53.1	29	25.7	16	14.2	2	1.8	1	0.9	5	4.4	1.84
D8	The market for cassava products and by-products has continued to increase over-time.	43	38.1	39	34.5	23	20.4	4	3.5	3	2.7	1	0.9	2.15
D9	Garri is the most popular finished product of cassava consumed in Nigeria and other African countries.	64	56.6	24	21.2	19	16.8	4	3.5	2	1.8	-	-	1.72
D10	Market for cassava includes products such as starch, garri, ethanol, cassava bread and other products.	43	38.1	38	33.6	27	23.9	5	4.4	-	-	-	-	1.94

Source: Field Survey, 2019

Distribution of Creative Thinking and competitive advantage

The result on table 4 shows the distribution of creative thinking and competitive advantage. Most of the respondents affirmed one of the latest developments by researcher is the production of cassava bread. Majority also posits that the ability of experts in the field of agriculture to conduct research has continued to increase the use of cassava for different purposes. It was also confirmed that cassava bread reduces the cost of production unlike when flour or wheat is utilized. Respondents further agree that producers and industrial users have continued to benefit from the work of researchers in cassava processing. Most of the respondents affirmed competitive edge increases the revenue and profit of the firms involved. Majority also posits that one of the way to have competitive edge over other firms in the same market is by being a low price producer of cassava and its products. It was also confirmed that one means of controlling large market share is through quality product and service delivery .Respondents further agree that most farmers that make use of the right method of production have edge over other producers.

Table 5: Distribution of Creative Thinking by Respondents

S/N	ITEMS	SA		A		FA		FD		D		SD		Mean
		F	%	F	%	F	%	F	%	F	%	F	%	
E1.	One of the latest developments by researcher is the production of cassava bread.	72	63.7	25	22.1	12	10.6	2	1.8	2	1.8	-	-	1.61
E2.	The ability of experts in the field of agriculture to conduct research has continued to increase the use of cassava for different purposes.	37	32.7	53	46.9	19	16.8	4	3.5	-	-	-	-	1.91
E3.	Cassava bread reduces the cost of production unlike when flour or wheat is utilized.	46	40.7	36	31.9	27	23.9	3	2.7	-	-	1	0.9	1.92
E4	Cassava bread is more nutritious than other type of bread.	48	42.5	46	40.7	13	11.5	6	5.3	-	-	-	-	1.79
E5	Producers and industrial users have continued to benefit from the work of researchers in cassava processing	50	44.2	30	26.5	19	16.8	10	8.8	4	3.5	-	-	2.00

E6	Competitive edge increases the revenue and profit of the firms involved	33	29.2	43	38.1	29	25.7	6	5.3	1	0.9	1	0.9	2.13
E7	The ability to make use of cassava root efficiently help increase products market share.	41	36.3	43	38.1	23	20.4	4	3.5	2	1.8	-	-	1.96
E8	One of the way to have competitive edge over other firms in the same market is by being a low price producer of cassava and its products	41	36.3	35	31.0	30	26.5	5	4.4	2	1.8	-	-	2.04
E9	One means of controlling large market share is through quality product and service delivery.	44	38.9	38	33.6	25	22.1	4	3.5	2	1.8	-	-	1.96
E10	Most farmers that make use of the right method of production have edge over other producers.	47	41.6	34	30.1	25	22.1	5	4.4	2	1.8			1.94

Source: Field Survey, 2019

Hypotheses Testing

Hypothesis One

Table 6: Correlations between process innovation and cassava yield

		PROCESS INNOVATION	CASSAVA YIELD
PROCESS INNOVATION	Pearson Correlation	1	.285**
	Sig. (2-tailed)		.002
	N	113	113
CASSAVA YIELD	Pearson Correlation	.285**	1
	Sig. (2-tailed)	.002	
	N	113	113

****. Correlation is significant at the 0.01 level (2-tailed).**

Table 6 shows the relationship between process innovation and cassava yield. It shows a statistically significant relationship between process innovation and cassava yield. Although the correlation value of 0.285 is weak but there still exist a significant relationship since the p-value of 0.002 is less than the significant level of 0.05. This implies that as

innovation of the cassava process is increasing, cassava yield will also rise and vice versa.

Hypothesis Two

Table 7 :Correlations between product innovation and customer's patronage

		PRODUCT'S INNOVATION	CUSTOMER'S PATRONAGE
PRODUCT'S INNOVATION	Pearson Correlation	1	-.019
	Sig. (2-tailed)		.839
	N	113	113
CUSTOMER'S PATRONAGE	Pearson Correlation	-.019	1
	Sig. (2-tailed)	.839	
	N	113	113

Table 7 shows the relationship between product innovation and customer'. It revealed a non-statistically significant relationship between process innovation and cassava yield. Although the correlation value of 0.113 is weak but was not significant with p-value of 0.839 which is more than the significant level of 0.05. This implies that exist no significant relationship between product innovation and customer's patronage.

Hypothesis Three

Service innovation does not significantly affect business market coverage. Standard linear regression was used to explore the effects of service innovation on business market coverage.

Table 8a Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.598[a]	.357	.352	.63519

a. Predictors: (Constant), SERVICE INNOVATION

The result of regression as contained in Table 8a: Model Summary, shows that the R Square gave a small value of 35.7 per cent. This means that service innovation explained about 35.7 percent of the variance in business market coverage.

Table 8b ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	24.908	1	24.908	61.734	.000[b]
	Residual	44.785	111	.403		
	Total	69.693	112			

a. Dependent Variable: BUSINESS MARKET COVERAGE
b. Predictors: (Constant), SERVICE INNOVATION

The result of regression as contained in Table 8b: ANOVA, shows that the F-test was 61.734, significant at 1 percent (< 0.00). This showed that the model was well specified.

Table 8c Coefficient's

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.602	.183		3.295	.001
	SERVICE INNOVATION	.767	.098	.598	7.857	.000

a. Dependent Variable: BUSINESS MARKET COVERAGE

Also, the result of regression as contained in Table 8c Regression Coefficients, tests the third hypothesis of this study. From the output below, there was positive relationship between service innovation and business market coverage such that a unit increase in positive service innovation caused about .767 unit increases in business market coverage which was statistically significant at 1 per cent with the aid of the p value (0.00). Based on the result, the null hypothesis is rejected; thus, there was positive relationship between service innovation and business market coverage.

Hypothesis Four

Creative thinking does not significantly affect enterprise competitive advantage. Standard linear regression was used to explore the effects of creative thinking on enterprise competitive advantage.

Table 9a Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.511[a]	.261	.255	.48367

a. Predictors: (Constant), CREATIVE THINKING

The result of regression as contained in Table 9a: Model Summary, shows that the R Square gave a small value of 26.1 per cent. This means that creative thinking explained about 26.1 percent of the variance in enterprise competitive advantage.

Table 9b ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	9.184	1	9.184	39.257	.000[b]
	Residual	25.967	111	.234		
	Total	35.151	112			

a. Dependent Variable: ENTERPRISE COMPETITIVE ADVANTAGE
b. Predictors: (Constant), CREATIVE THINKING

The result of regression as contained in Table 9b: ANOVA, shows that the F-test was 39.257, significant at 1 percent (< 0.00). This showed that the model was well specified.

Table9cCoefficient's

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.103	.152		7.277	.000
	CREATIVE THINKING	.490	.078	.511	6.266	.000

a. Dependent Variable: ENTERPRISE COMPETITIVE ADVANTAGE

Also, the result of regression as contained in Table 9c Regression Coefficients, tests the fourth hypothesis of this study. From the output below, there was positive relationship between creative thinking and enterprises competitive advantage such that a unit increase in positive creative thinking caused about .490 unit increases in enterprises competitive advantage which was statistically significant at 1 per cent with the aid of the p value (0.00). Based on the result, the null hypothesis is rejected; thus, there was positive relationship between creative thinking and enterprises competitive advantage.

Empirical Findings

Hypothesis one

These findings were derived from the data analyzed from the questionnaire and were backed up by past findings. These include:

Hypothesis one shows that their exist a significant relationship between process support and cassava yield. The null hypothesis is rejected and alternative accepted, this implies that the more the innovative practices in cassava process the greater the cassava yield. This correlates with the study of Juliet et al., (2009) which state that rural farmers can add more cassava products to what they offer to the market in order to make more money viz-a-viz cassava value added products. The increase in production arising from adoption of some of the value added technologies shows that with greater adoption of the technologies, more could be achieved. This implies that the processing of cassava into different products help increase the yield as well as adding value to the product.

Hypothesis two

Hypothesis two revealed the relationship between product innovation and customers' patronage. The null hypothesis was accepted and this implies that product innovation does not improve customers' patronage. This study found that product innovation does not bring about customers; patronage in the long run but only on short term basis.

Hypothesis three

Hypothesis three which revealed there is a significant relationship between service innovation and business market coverage. This correlates with the study of Onyenwoke and Simonyan (2014) found that the research in cassava processing has established the fact that there is a lot more in cassava than starch. The nutritional quality content in cassava can be enhanced by developing new varieties by biofortificaton, cassava could be source of raw materials for a number of industrial products example include, the starch, flour and ethanol.

Hypothesis four

Hypothesis four shows a statistically significant relationship between creative thinking and enterprise competitive advantage. This means that the ability of researcher to carryout research on the different bye products that can be generated from cassava and the various processes of cassava help improve competitive advantage for cassava processors and reduce cost of the products and other cost. This is in with Kehinde and Aboaba (2016) which affirmed that cost of labor, cost on machines and quantity of raw cassava processed were major determinants of value added to cassava tuber.

Conclusion

The aim of this empirical study is to examine entrepreneurial innovation on the value creation of cassava process. The study applied correlation and multiple regression approach and establishes empirical support for some conjectures made in the literatures. Given the importance of cassava which serves as a very important food for majority of the Nigeria populace, it then becomes inevitable to carry-out this study. This finding contrasted somewhat with results of comparable earlier studies which had shown that adding value to the production and processing of cassava help improve and increase the yield of the tuber. Since the tuber is one of the major food of an average Nigerian due to its cost. The study therefore has been able to find the different innovations that can be added to the production as well as processing of cassava so as to increase its value, create more jobs and making the economy to be buoyant.

Recommendations

It then becomes necessary to put forward some measures that would assist in improving the value of cassava tubers. The following recommendations were put forward;

1. A deliberate effort to focus on value addition to cassava tubers must be put in place so as to increase incomes generated by processors, increase employment and investment in machines.
2. The processor can also form a cooperative societies or group association which will assist in mobilizing funds for purchase of better machines and increasing working capital thereby creating a process for the transformation of present cottage processing units into small scale units.
3. Cassava processing and production should be properly managed by government since it boosts the economy and reduce poverty.
4. Researcher should not relent as more effort can be placed on how new products can be discovered from cassava or even from its bye-products.
5. Efforts should also be made by government agency who organizes training programmesin creating more awareness on cassava value added technologies and their attendant benefits to increase participation, and consequently the adoption of the technologies that recorded low adoption.

REFERENCES

Aristizabal J, Sanchez T (2007). Guíatécnica para producción y análisis de almidón de yuca. Boletindeserviciosagricolas de la FAO 130 FAO Rome., Italy P. 134.

Arogundade, B.B. (2011). Entrepreneurship Education: An Imperative for Sustainable Development in Nigeria, Journal of Emerging Trends in Educational Research and Policy Studies (JETERAPS). Vol.2 No. 1:Pp 26-29.

Babaleye, T. (2004). Cassava: A crop for hard times and modern times: The importance of cassava. International Institute of Tropical Agriculture, Ibadan, Statistical Handbook. 3(24):16-18.

Charles AL, Sriroth K, Huang TC. (2005). Proximate composition, mineral contents, hydrogen cyanide and phytic acid of 5 cassava genotypes. Food Chem. 92:615–620.

Chou, H. (2009), "The effect of market orientation intention and superiority on new product performance", The Journal of American Academy of Business, vol. 14, no. 2, pp.93-97.

Cock J. (1985). Cassava new potential for a neglected crop. West view.191.

Coltrain David, David Barton, Michael Boland (2000) Value Added: Opportunities and Strategies http://www.agecon.ksu.edu/accc/kcdc/pdf%20Files/VALADD10%202col.pdf

Crentsil D., Gallat S. and Bancroft R., (1995). Low Cost Fresh Cassava Root Storage Project Achievement to date.In: Proceeding of the Workshop on Postharvest Experience in Africa, Accra 4-8 July, 1995. Edited by FAO, Rome.

Drucker, P.F. (1985).Innovation and Entrepreneurship. New York: Harper & Row Publishers

Erhabor O, Ejele O. A, and Nwauche, C. A. (2007). Epidemiology and management of occupational exposure to blood borne viral infections in a resource poor setting: The case for availability of post exposure prophylaxis. Niger J Clin Pract. 10(2): 100–104.

FAO (2013)-Food and Agriculture Organization of the United Nations. Statistical Database _ FAOSTAT, http://faostat.fao.org/; 2013

FAO (Food and Agricultural Organization) of United Nations (2004). AnnualStatistics. Rome, Italy.

Ganotakis, P. and Love, J. (2010) The Innovation Value Chain in New Technology Based Firms: Evidence from the UK. Journal of Product Innovation Management.Forthcoming.

IITA (International Institute of Tropical Agriculture (IITA) (2005). CompetitivenessWorkshop. In opportunities for Cassava in Nigeria: Bookanga, IITA,Ibadan.

International Potato Center& International Institute of Tropical Agriculture (1992), p. 55. IITA. Retrieved 25 September 2013.

Julie AM, Christopher RD, Sherry AT (2009). Nutritional value of cassava for use as a staple food and recent advances for improvement. institute

of food technologists. Comprehensive reviews in food science and food safety 8:181-192.

Kehinde A.L. and K.O. Aboaba (2016).Analysis of value addition in the processing of cassava tubers to "garri" among cottage level processors in southwestern Nigeria;Invited poster presented at the 5th International Conference of the African Association of Agricultural Economists, September 23-26, 2016, Addis Ababa, Ethiopia

Lincht F.O., (2009). World Fuel Ethanol Production. Renewable Fuels Association.

OECD (2005). The Measurement of Scientific and Technological Activities: Guidelines for Collecting and interpreting Innovation data: Oslo manual, 3rd edition. Paris: OECD

Oghenerioborue, O.J, Akinbani, A. S and Ayeni, L. S (2016).Assessment of Cassava Production, Utilization and Marketing among the Rural Farmers of Ondo East and West Local Governments of Ondo state, Nigeria; American Journal of Research Communication, 2016, 4(8): 70-78

Osunde, Z. D and Fadeyibi, A (2011). Storage Methods and Some Uses of Cassava in Nigeria; Continental J. Agricultural Science 5(2), 12 – 18.

Polder, M, Leeuwen, G. V, Mohnen, P, and Raymond, W. (2010), "Product, process and organizational innovation: drivers, complementarity and productivity effects", Maastricht: UNU-MERIT (Working Paper Series, 2010-035).

Ravi V, Aked J, Balagopalan C (1996). Review on tropical root and tuber crops I. Storage methods and quality changes. Critical Rev. Food Sci. Nutr. 36:661-709.

Rawel HM, Kroll J (2003). Die Bedeutung von Cassava (Manihotesculenta, Crantz) alsHauptnahrungsmittel in tropischenL¨andern. Deutsche Lebensmittel-Rundschau 99:102-110.

Schumpeter, J.A. (1934). The Theory of Economic Development, Cambridge, Mass.: Harvard

Shergill, G, and Nargundkar, R. (2005), "Market orientation, marketing innovation as performance drivers: extending the paradigm", Journal of Global Marketing, Vol. 19, No. 1, pp.27-44.

Susman G, A. Warren and D. Min (2006) Product and Service Innovation in Small and Medium sized Enterprises. US Department of Commerce, USA

Tewe OO, Lutaladio N (2004). Cassava for livestock feed in sub- Saharan Africa. Rome, Italy: FAO.