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2016-2017 RECESSION: PERSPECTIVES OF WOMEN'S VULNERABILITY TO CASSAVA CONSUMPTION AND CULTIVATION IN NIGERIA'S SUB-URBAN SPACE

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ABSTRACT

Women are an important factor of livelihood in every household especially in the African traditional society. As recession stretches their resilience, the perception of women's vulnerability to cassava consumption and cultivation was revealed in the purposively sampled Epiri Nsukara suburban space of Uyo. A sample size of 384 exposed 81% respondents earn below the minimum wage with a prevailing rising cost of cassava, 75% acknowledged that family income does not encourage savings nor investments as purchase of food Cassava being paramount. Out of the 91% women farmers 63% identified high cost of cassava as their motivation for farming. These women were exposed to limited access to scientifically improved species of the crop stems, fertilizers, disease outbreaks, pest damage, and limited farm space. A community based approach to this emergency response should be carried out where concern institutions and stakeholders provide improved cassava stems, fertilizers and other farm inputs through an easily accessible value chain. Also, subsidies should be granted these farmers to encourage their purchase of these improved species. An active community-agriculture extension agent relationship should be in place to bridge the knowledge gaps that exist for adopting modern models and methods of cassava cultivation to increase cassava yield at a limited possible time.

Contribution/Originality: This study reveals resilience of women to recession in consumption and cultivation of Cassava staple. It contributes to the existing literature on urban farming by revealing on the vulnerabilities and opportunities available to women smallholders, investors and Government in appropriately increasing productivity.

1. BACKGROUND

Nigeria's sole dependence on crude oil as its national output and the interplay of other forces influence the nation's economic recession of 2016. The impact is appreciable in all sectors of the economy particularly unemployment rose to 13.9% in December, 2016 and inflation rate peaked at 18.72% in January, 2017 the highest since 2005 (Trending Economics, 2017). This influenced an outrageous increase in price of food which affects every household in the nation's urban space which prompted a hike in inflation rates. Cassava is arguably the number one Nigerian household staple (chow) and consumed in different forms not limited to; garri, fofo, amala, iwa, abacha to mention but a few. Women occupy an important segment of the traditional African society and their responsibilities are not limited to gathering and processing food for the family. The Niger delta women retain certain economic responsibilities within the family as wives, mothers and farmers. They are the principal care-givers of their children and the aged, social influencers food producers, procurers and preparers, they are also expected to be significant

wage earners (Ihayere *et al*., 2014). This study examined the degree of vulnerability of women to cassava consumption as influenced by high cost and cultivation.

Nigeria ranked low at 152nd out of 188 countries surveyed in the United Nations development program 2016 global human development index report (United Nations Development Program, 2016). This report focused on communities that have been left behind. These groups according to this report include Women, girls, rural communities and people with disabilities. Nigeria has about 62.6% poverty rate with a human development of 0.527 out of one. As influenced by the increased cost of cassava, there was a reactionary intensity in urban cultivation of crops to meet the cities growing demand for food. Smallholder farmers constitute a significant portion of the world's population, with an estimated 450–500 million smallholder farmers worldwide, representing 85% of the world's farms (Nagayet, 2005). Available space was taken especially in urban sprawl locations. Here, households converted fallow land into small holding farmlands where mixed cropping is carried out. Even land spaces with incomplete buildings are not left out as every available land space is utilized.

Traditionally, men's role basically involve clearing, burning, tilling and making the farmland ready for planting while women plant crops, weed and nurture them to maturity. This study reviewed the perspectives of women in urban farming. It was specifically aimed at accessing the vulnerability of women to recession as impacted by cassava cost and cultivation. It reviewed the extent to which women are exposed to hazards by the impact of cassava cost and cultivation.

This work sought to achieve the following by asking these questions:

1. What is the level of vulnerability of women to high cassava cost in Uyo suburb?
2. What is the degree of vulnerability of women to smallholding cassava cultivation?

This work sought to answer the above questions and fulfill its aim by identifying the following objectives.

2. OBJECTIVES

1. To identify the various effects of high cost of cassava on women.
2. To reveal the degree of exposure of women to harm in cassava cultivation.
3. To access ways of mitigating the effects of high cost of cassava and cultivation on women.

3. LITERATURE AND FRAME WORK

There is a growing concern of food insecurity among the urban poor in sub Saharan Africa. Baiphethi and Jacobs (2009) explained that the urban poor are mostly dependent on the market, unlike their rural counterparts who are able to exploit natural resources to provide for food or to generate income. Middle income households in the urban areas basically have to utilize earned income which value has been diminished by the rising rate of inflation to purchase food. Therefore, the efficiency of the marketing and distribution systems, household purchasing patterns, ability to produce own food, and access to public transfers (food subsidies or food aid) or private transfers (exchange with rural relatives) are some of the important factors affecting the cost of food, especially for urban households (Baiphethi and Jacobs, 2009). Kohn (2014) explains that governments role in the allocating resources among the population has been a source of contention with questions raise not only on how it redistributes resources but also on the extent to which it should do so.

In less developed countries as in Europe, the poor are accommodated in the suburbs as well as in a sector extending from the center (Rubenstien, 2008). The Peripheral or Galactic model explains that an urban area consist of an inner city surrounded by large sub-urban residential. Chauncey Harris (creator of the multiple nuclei model) calls the peripheral model an urban area consisting of an inner city surrounded by large suburban residential and business areas tied together by a beltway or ring road (APHG Class Wiki, 2016). While this model was used to describe developed American cities, most of its contents apply to the developing cities taking Uyo urban area for instance. The city has as its core at the Ibom plaza and its surroundings which in turn influence suburbs like the

high income residential area of Shelter Afrique, Osong ama Estate, Ewet Housing Estate and the middle/low income of 100 Units, Ekpiri Nsukara to mention but a few. The edge city evolves as sub-urban residences for people who work in and around the Central Business Area. The Uyo suburb of Epiri Nsukara, is basically characterized by low rent residential apartments with limited built up land use due to its proximity to the Ikpa river valley. While people (mostly the male gender) commute to work around the city center, others (the unemployed and women folks) engage in livelihoods that evolve around urban gardening, farming and agro sales.

Von Thunen's elaborate model explaining the spatiality of choice of crops based on proximity to market which peaks at the city centre predicts the intensity of cultivation of perishables near the city centre. Though this has been predominantly true in Uyo urban, the cultivation of Cassava crop has observably increased in intensity in spaces with close proximity to the city centre. This phenomenon can be explained as a means to satisfy the cities growing demand for cassava. The Malthusian theory relates the increase in size and growth of population on food supply and agricultural methods. It argues that population grows more rapidly than the earths food supply because it increases geometrically while food supply increases arithmetically. Thus exerting high pressure on small holding farming systems in Uyo urban.

Ester Boserup added to resource management literature as she proposed a relatively applicable Population theory that surmises agricultural methods depending on the size of the population. Marquette (1997) reveals how Ester Boserup relates population increases, technology and land resources. Where subsistence farmers have to increase the supply of food through intensification of production which declines fallow land and less productive methods of farming via the adoption of scientific and technological advances to get the food supply to meet the growing needs of the population. In the context of Uyo, with an annual population growth rate of 3.5% (National Populations Census, 2006) and an undocumented intensity in immigration due to rapid urbanization, there is an observable high utilization of land for farming. Uncompleted buildings, Streets unpaved sidewalks and fallow land have been converted to farmlands. The question of adoption of scientific and technological advances will be reviewed subsequently in our analysis.

Martha Fireman's Vulnerability theory as reviewed by Kohn (2014) expounds that all human beings are vulnerable and prone to dependency and the state therefore has a corresponding obligation to reduce, ameliorate and compensate for that vulnerability. While it is unjust and unreasonable to expect equal treatment, the state must create equal access to the societal institutions that distribute social goods such as healthcare, employment, and security. She further elucidates that our vulnerability, the need for connection and care it generates makes us reach out and form society where it is the identification and experience of human vulnerability that brings individuals into families, families into communities, communities into societies, nation states and international organizations. Fireman clarifies that it is the state that gives power to the social institutions that increase resilience for some while undermining the resilience of others and should accept responsibility for the 'effects and operation' of these institutions. This theory was developed as an alternative to theories of social justice and responsibility that focus on achieving formal equality.

4. STUDY AREA

Uyo is a model urban center in Nigeria. It is the capital of Akwa Ibom State in the Niger Delta area created in 23rd September, 1987, located between latitude 4°52'N and 5°01'N and longitude 7°47'E and 8°03'E. It evolved from a commercial village in the Offort clan and was assigned District Administrative headquarters for Calabar province around 1914. In 1967, Uyo local government area was created from Offot, Etoi, Oku and Ikono clans. Uyo urban has developed into a rapidly evolving center currently developing into local governments around it. It enjoys a humid tropical climate with heavy rainfall, high temperature and humidity all favourable to the cultivation of Cassava.

It has an appreciable intensity of socio economic activities and urban expansion. Its local traditional but growing markets include but not limited to Urua Akpan Andem, Itam, Ifa, Ekpiri Nsukara, Nwaniba have developed into modern markets. There is an observable high level immigration into the center as witnessed in the mobile retail activities of Hausa/Fulani food commodity retailers, cattle nomads, Ibo and Yoruba traders and Federal civil servants to mention but a few inclined by the availability of averagely good urban infrastructures. Uyo is generally a plain level land with a growing built up area except around the very significant level of undulation in the north eastern part where the Ikpa river of about 50m deep exist (Udosen, 2008) and flows in a south eastern direction empting itself in lower Cross River.

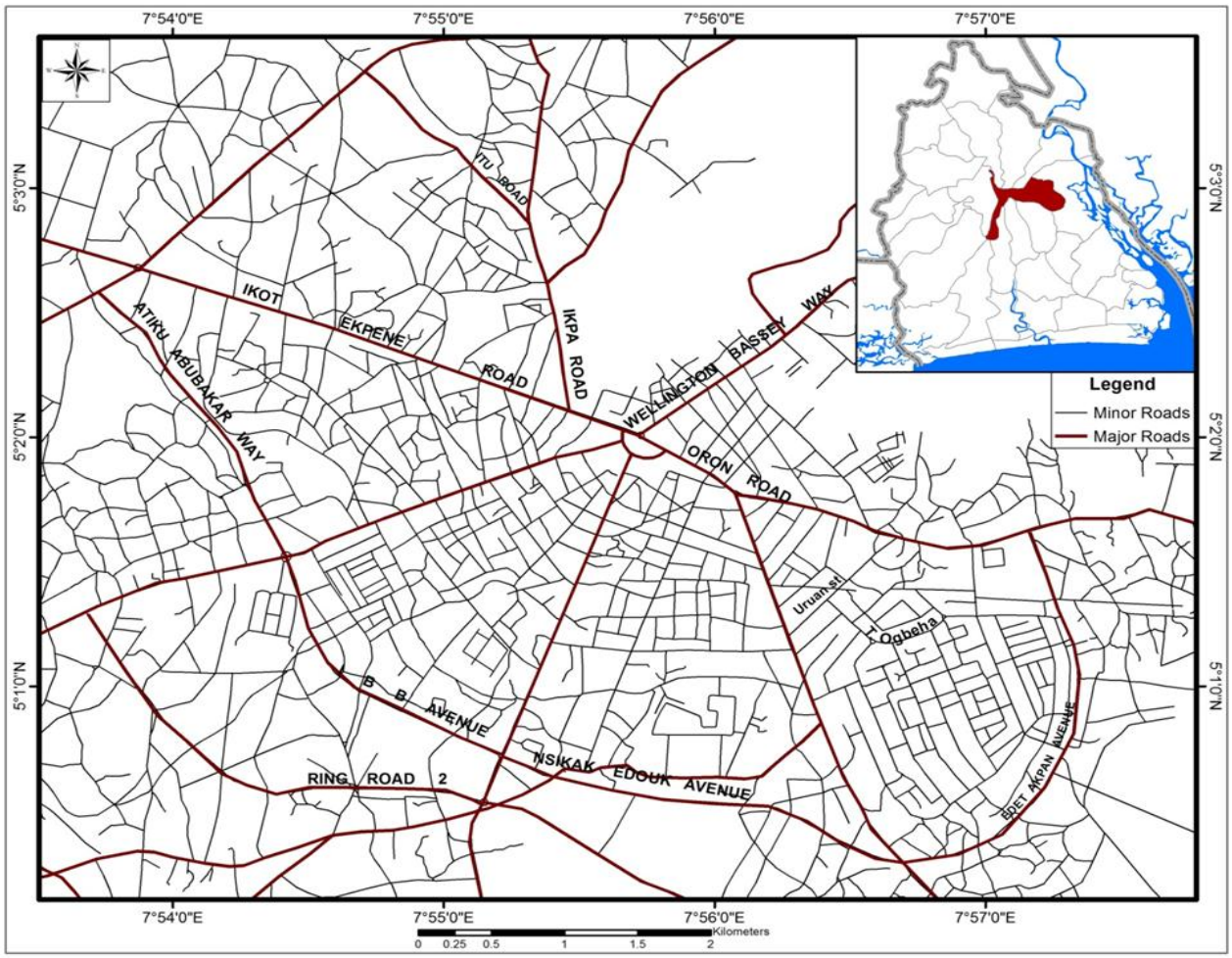

Figure-1. Uyo Urban showing transport connectivity insert Akwa Ibom State Map.

The Figure 1 reveals the street map of Uyo, the capital city of Akwa Ibom State. The map reveals the centrality of the city growing from the central business district outwards into the suburbs easily identified by the limited network connectivity as compared to the centre. The map inserted shows the map of Akwa Ibom State and Uyo urban delimited in red.

5. METHODOLOGY

Ekpiri Nsukara, a part of Offot clan and a suburb in Uyo was purposively targeted. This urban village consists of Ikot Ntuen, Ikot Oko Idio, Ikot Ayan and Ekpiri Nuskara. This choice was influenced by its geographic position along the Ikpa river valley, limited built up area due to active erosion activities, and a high intensity of sub-urban farming. Field observations, visits, in-depth interview with women cultivating cassava and women in different households were utilized to understand the processes of cultivation, hazards experienced and their degree of vulnerability to it. Furthermore, women in different households were interviewed to reveal their degree of

vulnerability to cassava cost. Utilizing the 2017 projected population of 446,693 Persons from the 2006 population census (see Appendix), the determination of the sample size was based on Cochran (1977) formula.

This gave a sample size of 384 respondents for the study. A total of 192 plots of smallholding farmland were visited and 192 Respondents (Women) were chosen randomly from household along streets (most with no names) across the sampled area. The survey was conducted between seven weeks from March to April when the cultivation of the crop was intensive. Women found on those plots and in different household were encouraged to discuss their experiences in cassava consumption and cultivation. They were also asked to elaborate the impact of increase in cassava cost on their livelihood. The interviews were conducted in the dominant local language (Ibibio) and English where immigrant women were involved. This discussion evolved around women's experiences as affected by cassava consumption cost and cultivation processes. As a way of balancing view, and given the aim of this study, a Staff of the Ministry of Agriculture (extension office) along Ekpiri Nsukara road was also interviewed. All information from the interview was recorded manually in data sheets by the interviewer. To protect the respondent's pseudo names were used except those that accepted to be named.

6. ANALYSIS OF DATA/RESULTS

Women were respondents for this study. Majority of respondents were between the Middle Ages of 18 to 45 while 28% were aged 45 and above. The education level of women on the field indicated that 19% had no formal education, 27% had primary education, 33% attended secondary school while 21% had tertiary education. Due to poor record keeping, the daily income for 81% of women interviewed was difficult to peg but they acknowledge that it was well below the state civil service workers monthly minimum wage of NGN 18,000.(USD 45.57 at the conversion rate of NGN 395 to USD 1). 19% of women respondent affiliated to working in the civil service indicated that their monthly income was above the USD 45.57 mark. Limited Women in this locality belonged to a family size of less than 5 persons, 61% to a household size of above 5 persons in number while 28% came from households above 10persons.

Responses on the daily frequency of consumption of cassava revealed that 43% consume cassava at least two times daily, 16% once a day, 21% acknowledged consuming three times daily while 20% explained that their level of consumption depends on their ability to afford cassava. An interesting observation was that the group that admitted consuming cassava three times daily had a large family size of above 10persons. All respondents acknowledged the high frequency of their consumption of cassava over other food products. The cost of Cassava locally consumed as garri rose in 2016 from N8000 (USD20.3) per 100kg bag to fluctuate between N28,000-N32,000 (USD70.9-81) in the local market. The price for retailing this product goes at 3cups for N200 (USD 0.51). Only 9% of respondents identified their inability to farm due to various reasons. Out of the 91% women farmers, 63% identified the high cost of cassava as their motivation for the cultivation of same crops (i.e. they are cultivating the crops for strictly for consumption) in the available space in the sub-urban area while 28% for sales and other reasons. About 75% of the women explained that the income their husband brings back home does not encourage savings or other projects as all is spent in the purchase of food, Cassava being paramount. A middle aged woman with a family size of six explained in ibibio that they are even into debts just to sustain their living, "we would have returned to the village if not for the electrical generator repairs jobs my husband carries out which declines daily in patronage."

Table-1. Uyo Suburban women's vulnerability to cassava consumption.

Vulnerability	Exposure	Affected frequency	Degree
Cassava consumption	High cost	99%	High
	Non availability	1%	Low
	Health consequences	2%	Low
	Intensity in consumption	98%	High

Source: Field interview, 2017.

The Table 1 divulges the degree of vulnerability of the sampled suburban women's exposure to consuming Cassava. The variables chosen to reveal this includes; high cost, scarcity, health effects and overdependence. As exposed by the women, 99% of them perceived that the current cost of cassava they consume is high. All others but 1% of the respondents accepted that Cassava was readily available and accessible. Only 2% agreed that they encountered health challenges from the consumption of Cassava. The women interviewed in the study area showed their vulnerability in overdependence to consumption of cassava as 98% admitted high consumption rates.

A woman among the farming group explained that their land laid fallow for a while but the high cost of cassava propelled the utilization of this land for farming. An elderly woman in her late 60s explained in vernacular when interviewed reacted: I have not used fertilizers before…who do you know? She asked. Another responded: "they say it's costly…I don't know who or where to ask…" A visibly educated young woman in her mid-30s explained that the only addition she gives to her cassava is the manure gotten from weeding her small farmland. She mentioned that fertilizer is not accessible and even if it was she would not be able to purchase it for her farm at the present cost of (N8000.00 (USD20.3)). She identified that fertilizers could be purchased from the local markets.

An experienced farmer Mary explained that the Cassava stem utilized takes about a year for maturity to harvest. She acknowledged availability of the six months maturity Cassava species of TMS30572 and NR8082 but insisted that sub urban women have no access to them due to their limited finances. Ekaette explained the concept of political farmers to the interviewer where the large scaled farmers hijack the available farm incentives and whatever is left is taken by business middle men because of their government "connections". "Whenever we can afford purchase of farm inputs we have to do from the same market with these political farmers" explained Eka-Ndi a smallholder in her late 50's.

Table-2. Uyo Suburban women's vulnerability to cassava cultivation.

Vulnerability	Exposure	Affected frequency	Degree
Cassava cultivation	Limited access to scientifically improved species.	88%	High
	No access to agricultural inputs like fertilizers, insecticides, e.t.c.	82%	High
	Disease outbreaks.	23%	Low
	Pest damage to crops.	39%	Low
	No access to new methods/knowledge through agricultural agents.	100%	High
	Limited land space for cultivation.	100%	High

Source: Field interview, 2017.

Table 2 discloses the degree of suburban women's vulnerability to Cassava cultivation. It revealed that 88% of women identified the utilization of the local Cassava stems gotten from the past year's harvest for cultivation. The respondents insisted that they are limited to re-cultivating indigenous stems as they have limited access to the improved species. 82% of the respondents mentioned their challenge in gaining access to agricultural farm inputs like fertilizers, pesticides, insecticides to mention but a few. 23% complained how disease outbreaks affected their crop yield and 39% indicated the incidence of pest damages to crops. All of the respondents acknowledged the utilization of indigenous mixed cropping systems to cultivate their crops. They explained that 'no government person' has visited their farms to educate them on more means of farm productivity which further reveals their vulnerabilities. All respondents intentioned their desire to increase cultivation of the crop but are faced with limited farm spaces. 100% of Cassava farming women are intensely exposed to limited land space for cultivation.

As identified from the small suburb farmlands visited, the high level of consumption of Cassava is not proportional to the cultivation of the crop. About 91% of the farms visited had Cassava cultivated in a mixed cropping form with other crops prominent amongst being Cocoyam, sweet Yam, (perishables) vegetable like fluted pumpkin (Telfaira occidentalis), Okra (Abelmoschus esculentus), Plantain, Corn to mention but a few. The 4% had

perishable vegetables like waterleaves (Talinum triangulare). This may continue to affect the prices of Cassava even when we will have a better food harvest season this year ceteris paribas. Uyo has a growing population with a high cassava consumption rate. Large Cassava production centres in Cross River, Benue States and some rural areas of Akwa Ibom State will meet the unending demand, diverse market forces may still influence its sales at an exorbitant price.

Lest we forget, Cassava is growing to become an important crop for the production of ethanol and subsequently biomass energy. The recent high cost may be connected with the diversification of its use from being only a food crop. Ben-Iwo *et al.* (2016) explained that there is an adverse effect of first generation biomass feedstock (majorly cassava) on food prices. They also reveal that the emerging biomass projects in Nigeria are majorly focused on Cassava conversion, creating more problems for food availability. It is also important to add that there is a growing international demand for cassava. In order to have an equitable system there is the need to focus on the right agro methods of perfecting Cassava production.

A Staff of the Ministry of Agriculture Engineering workshop at Epiri Nsukara was interviewed. He explained that the office was strictly designated to repairs of Agriculture equipment like tractors. When quizzed on the availability of farm extension agents, fertilizer supplies, and other agro inputs, he explained that the repair centre was initially a rallying point for government interactions with suburban farmers in the early 90s but policy shifted due to a high level of corruption and funds mismanagement. He revealed that all information is channeled to the Ministry of Agriculture State secretariat which have limited response rate.

7. CONCLUSION AND DISCUSSIONS

The Dakada (Stand up) theme of the State Government is working on identifiable agro projects like rice cultivation training, corn distribution, state owned Cassava mechanized farm in Okobo local government area and the recent project for the importation of 2000 improved species of cattle from Mexico as advertised by the media. This projects are focused on empowering high capital entrepreneurs. While these efforts are appreciable, these programs are yet to impact on the grassroots and where it matters the most as there remains a large gap between the supplies of scientifically improved Cassava stems, fertilizers, advice from farm agents to women that cultivate in the above area of study. It is assumed that though there is an increased intensity in the cultivation of these crops, there might still be scarcity of the product due to the various exposures highlighted in cassava cultivation. This is because while time and labour are involved, the yield/output may not be synonymous to the input. Cassava should be given more attention as the main target when compared to the intensity of consumption. While farming is predominantly done in the rural areas, this work was achieved its focus on the sub-urban areas of Uyo and on the degree of vulnerability of women who occupy about 86% of the active small holding farmers in the State.

Government especially the Ministry of Agriculture has a lot to do to keep effectively impact the population on successful models of cassava cultivation by constantly monitoring farmers through their agents. An effective media campaign should be carried out directing these small scaled farmers on where to access their agro inputs. Bottom line remains that the government should be more accessible. The non-functional mechanical workshop at Epiri Nsukara should be converted into fertilizer and other agro distribution units where all and sundry farmers will be able to access these goods easily. Furthermore, the effect of political farmer's high jacking agro goods should be constantly monitored and checked. Although the high cost of Cassava did not evolved into a full blown food scarcity disaster, it should be treated as an emergency and well thought out emergency operation plans should be carried out by stakeholders to mitigate the dangers of Cassava scarcity. Innovations in Cassava processing and storage should be encouraged which would create jobs for the teaming youths. A state of emergency for Cassava should be declared by government agro agencies, not for profit agro organizations, international agro inclined organizations for the appropriate mitigation of Cassava scarcity. Though communities are coping by adjusting to intensive

cultivation of the crop, without the right techniques and technological aids, this situation may continue or even evolve into a full blown disaster if not checked appropriately.

A community based approach to this emergency response should include but not be limited to; The appropriate provision of improved Cassava stem cutting, fertilizers and other farm inputs through an easily accessible value chain of retailers resident in these communities. Also subsidies should be granted to farmers to encourage their purchase of these improved species. An active community-agriculture extension agent relationship should be in place to bridge the knowledge gaps that exist for adopting modern models and methods of Cassava cultivation to increase Cassava yield at a limited possible time. This active relationship will aid reduce the incidences of 'Political Farmers'. A concept where agro lobbyist highjack government input for farmers and in turn sale same to commercial farmers at a higher cost.

Women farmers in the suburban area are particularly vulnerable to any reductions in Cassava crop productivity for a variety of reasons. They cultivate very small parcels of land (most less than 1 ha) and dedicate most of their land to crop production for household consumption and obtain low crop yields, which are insufficient to meet household needs, let alone provide surplus for sale (Harvey *et al*., 2014). They are mostly vulnerable and limited to their existing traditional knowledge of Cassava cultivation which may have been sustainable but due to the changes in the market untenable. As such, there is need to adopt an effective system that will enable Cassava abundance in our centre's market.

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APPENDIX

Population of the Study

This study was focused on Uyo urban area and the entire retail outlets in the sample area. The 2017 population of the study area was projected from the 2006 National Population Commission, (NPC) 305,961 persons using the formula;

$$Po = Pt\left(1 + \frac{r}{100}\right)^{n}$$

where: Po = Projected population.

Pt = Population of the base year.

r = rate of growth (3.5).

n = 11 years.

Applying the formula $Po = 305{,}961\left(1 + \frac{3.5}{100}\right)^{11}$

gave a projected population of 446,693 persons for the study area.

$$No = \frac{(t)^2 * (p)(q)}{(d)2}$$

Where t = value for selected alpha level of .025 in each tail = 1.96

(p)(q) = estimate of variance = .25

d = acceptable margin of error for proportion being estimated = .05

No = determination of sample size.

$$No = \frac{(1.96)^2(.5)(.5)}{(.05)^2} = 384 \text{ respondents}$$