ANALYSIS OF GINGER AND CASSAVA MARKETING IN KAGARKO LOCAL GOVERNMENT AREA, KADUNA STATE.

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ABSTRACT

The uncertainty of marketing agricultural produce especially cassava and ginger among the cash crops produced in Kagarko Local Government Area of Kaduna state remains a major factor to be resolved if poverty is to be reduced. The study was aimed at analyzing the profitability of ginger and cassava marketing in the study area. Data for the study were acquired from the marketers through a structured questionnaire. Descriptive analysis, linear regression analysis and gross margin analysis were used to analyze the data acquired. The results of findings revealed that ginger and cassava marketing in Kubacha and Kenyi markets of Kagarko Local Government Area of Kaduna State is profitable. The findings further revealed that Kilometer covered, Time Spent and Transportation cost influences the cost of ginger and cassava based on locations as P values from Table 2-7 indicated (0.045, 0.045, 0.003, 0.049, 0.009, 0.002) at 0.05 alpha level was significant for ginger and cassava markets in Kubacha and Kenyi. The findings identified seasonal changes in the prices of the two commodities; poor market structure and transportation as factors militating against the smooth running of marketing in the two markets. The study recommended the intervention of government in improving transportation network, and the fprovision of cooperative loans to promote profitability and efficiency in marketing of ginger and cassava in Kagarko Local Government Area.

Keywords: *Ginger, Cassava, Marketing, Profitability and Kagarko.*

INTRODUCTION

Agricultural production plays an important role in the economic development of every country. An estimated 60 – 70% of Nigerians live in the rural areas and majority are engaged in small scale agricultural production (Akpan et al., 2014). Apart from contributing to the largest share of Gross Domestic Product (GDP), agriculture is the largest non –

oil foreign exchange earner, the largest employer of labour and a key contributor to wealth creation and poverty alleviation in Nigeria (Adamu et al., 2013). Market plays a vital role in any society as an exchange mechanism and with socio – political life of the people(Chron, 2019). The market is an essential part in the chain of commodity distribution. Market serves as a mechanism of information, ranging from local, national and international levels (Adeboye, 2011). Agricultural marketing ensures the supply and distribution of farm produce and inputs. For marketing to perform this noble role, adequate and accurate information about the supply and demand situation is needed and necessary if the products are to be moved to the place desired, at the proper time, in the desired form and at the appropriate price commensurate with the value of the product and or services (Ishaya, 2019).

In Nigeria, as in most developing countries, Cassava is one of the most important carbohydrate sources. A large population of Nigerians depends on Cassava on daily basis as their main dish such as *gari* and *fufu*, the leaves are consumed as vegetables and it serves as raw material to industries as well as been means of alleviating poverty (Nandi, Gunn and Yurkushi, 2011). This makes the market demand for Cassava to continue to be on the increase as estimates of industrial Cassava use in Nigeria suggest that approximately 16 percent of Cassava root production was utilized as chips in animal feeds, 5 percent was processed into a syrup concentrate for soft drinks and less than 1 percent was processed into high quality Cassava flour used in biscuits and confectionaries, dextrin, adhesives, starch, and hydrolytes for pharmaceuticals and seasoning (Ene, 1992).Anga (2005) observed that the trade promotion policy of the federal government in Nigeria created a very strong domestic demand and market for cassava and ginger. So strong that the demand that big – time Cassava farmers now earn almost as much money from the product produced locally than they could make if exported.

Southern Kaduna senatorial district still remain the largest producer of fresh ginger in Nigeria and Kagarko, Kachia, Jaba and Jema'a Local Government Areas lead in the production (KADP, 2017; Bernard, 2008). The varieties mostly produced in Nigeria are 'TaffiGiwa' and 'YatsinBiri' which are higher in monoterpene and oil, by their pungent aroma and pungency. This makes Nigeria to become one of the major exporters of ginger to the United Kingdom, Spain, Germany, Saudi Arabia, France and the United States of America among others. Ginger is the main cash

crop that smaller holder farmers in Kagarko Local Government Area are willing and deeply involved in cultivating due to its high profit (KADP, 2017). Marketing of agricultural produce plays an important role in providing opportunity to feed the expanding urban population who rely on agricultural produce as a means of livelihood (Ishaya, 2019). The prices of agricultural produce can be affected by organizational situation of the market in terms of structures, infrastructures, taxes, financing, information culture and other factors(Richard, 2019). Government policy on agriculture and implementation of such policies to ensure appropriate marketing of agricultural produce can also affect marketing of farm produce(Chron, 2019). Since agriculture stands as the major backbone of the economic activities in Kagarko Local Government Area, there is need to ensure that marketing of agricultural produce is efficient and effective to bring smiles to the smaller farm holders.

STATEMENT OF THE RESEARCH PROBLEM

Nigeria ginger market value has gained international recognition and demand but government have made little effort to regulate the trade practices in the commodity(Ezra et al, 2017). The Cassava market is even silent than the ginger due to its less demand in the industry as compared to ginger. Ishaya(2019) observed that ginger production in Jaba Local Government Area encountered a sharp drop in prices per bag in 2016 from ₦24,500.00 on the average from the months of August to October to as low as ₦8,000.00 in 2017 and 2018.This was due to interference by middlemen when they noticed that farmers were trying to organize the market structure in order to sell their products directly to foreign buyers. Comparatively, between 2019 to 2021 August, prices have improved steadily such that a bag of ginger now sells from ₦30, 000.00 to ₦40, 000.00. The marketing channels for Nigeria ginger are at best obscure. Onwueme (1988) pointed out that during the early 1980s when the Nigerian Groundnut Board was officially responsible for ginger marketing, the board handled only a very small fraction for Nigerian ginger. It is clear that this uncertainty with respect to market and marketing channels acts as a disincentive to farmers. Owueme further asserted that even in the late 1980s, when the board was abolished, prices improved but the uncertainties about the market structure still remain.

There have been more researches on ginger than cassava in Kaduna state (Obinatu, 2003; Ezra et al, 2017; KADP, 2018; Ishaya, 2019) on marketing, mapping of ginger production clusters and on trends in ginger production especially in Jaba Local Government Area. However,

information on ginger and cassava marketing in the study area is rare. This research is therefore, conducted to cover this gap of knowledge. It is hoped that the information derived from this study will shed light as to whether marketing of the two commodities is profitable or not.

Aim of the Study: This studyis aimed at analyzing the profitability of ginger and cassava marketing in Kagarko Local Government Area of Kaduna State.

Research Hypothesis: The following research hypothesis was proposed to test if there is a significant relationship between market location and profit after sales of commodities.

H_o: Market location of ginger and cassava has no significant impact on cost of sales of the two commodities in Kagarko Local Government area of Kaduna State.

The hypothesis was tested at Apha< 0.05 level of significance.

REVIEW OF RELATED LITERATURES
The Concept of Market
Market is an authorized public concourse of buyers and sellers of commodities meeting at a place more or less strictly limited or defined at an appointed time(Obinatu, 2003). From the conceptual view of market, it has pointed clearly that an efficient marketing sector does not merely link sellers and buyers and react to the current situation of supply and demand; it also has a dynamic role to play in stimulating output and consumption, the essentials of economic development.

Marketing Conduct and Performance: Different geographical market spaces have their own peculiar market conducts and performance that is mostly reflecting the characteristics of the people around and this explains marketing conduct as put by Ishaya (2014) as a pattern of behaviors which actors follow in adapting or adjusting to the market in which they buy or sell. The dimensions of market conducts include pricing behavior, product strategies, and seller-seller relationships, seller-buyer relationship buyer-buyer relationship, research innovation, and advertisements. This study focused on the pricing behavior of ginger and cassava buyers and sellers, transportation, seller-seller relationship and seller-buyer relationship.

Marketing Margins and Costs: The marketing margin of a product is the difference between what a company pays for the product and what it charges for the product (Chron, 2019). Many authors have described marketing margins in terms of retail and farm gate prices and in terms of provision of marketing services (Obinatu, 2003;Kanu, 1987). Olukosi and Isitor (1990) asserted that marketing costs are often erroneously assumed to be synonymous with marketing margin. The true relationship is that marketing margin includes marketing costs as normal profit (or loss) earned by the market intermediary's as the commodity passes through the marketing system. However, Marketing is said to be efficient, if the total marketing margin is reduced for a given marketing cost. In other words, among the marketing margins of the different channels, that with the lowest value would reveal a channel to be efficient (Achike and Anzaku, 2010; Richard, 2019).Marketefficiency can be measured as follows: - M.E. = Value Added by Marketing/Cost of Marketing Services x 100. Marketing system can be effective without being efficient. Effectiveness relates to the achievement of goods without considerations of the cost. While marketing efficiency is also the ratio of inputs to outputs as also put by Crawford.

Marketing Functions: Kohl and Uhl (1990), considered marketing function as a major specialized activity performed in accomplishing the marketing process. Marketing functions can be sub-divided into three; namely exchange functions, physical functions and facilitating functions.

The exchange functions: In general, marketing exchanges may exhibit one of the three classes of meanings: utilitarian, symbolic, or mixed (Richard, 2019).*Utilitarian Exchange* according to Richard (ibid), is an interaction whereby goods are given in return for money or other goods and the motivation behind the actions lies in the anticipated use or tangible characteristics commonly associated with the objects in the exchange.It has only been within the past decade or so that marketers have investigated this deeper side of marketing behavior in their studies of psychographics, motivation and research, attitude and multi-attribute models, and other aspects of buyer and consumer behavior (Richard, 2019).Kohl and Uhl (1990), see the exchange functions as those activities involved in the transfer of title to the goods. They represent the point at which the study of price determination enters the study of marketing.

The Physical Functions: The physical (marketing) function of transportation, storage and processing are capital intensive. These activities involve handling and physical exchange of the actual commodity.

They are involved in solving the problems of when, what and where in marketing (Kohl and Uhl, 1990). Radhila, 2019 and Samiksha 2019, defined physical distribution as the movement of the goods from the producer to the consumer. Transportation as a component of physical distribution is concerned with the movement of goods from the warehouse to customer destination. It includes loading and unloading of goods and their movement from one place to another. Transportation accounts for a major portion of the distribution cost and of the total price of the product (Richard, 2019; Radhila, 2019).

The Facilitating Functions: (Lanee, 2019) stated that facilitating functions are functions that make possible the smooth performance of the exchange and physical functions. These include sorting, grading, standardization, packaging, risk bearing, insurance, financing and market intelligence. Marketing Channels and Agencies:Marketing channels are the ways that goods and services are made available for use by the customers.

Marketing of Cassava
The marketing system for traditional crops like cassava and its products is characterized by fluctuations in supply and the law of supply and demand determines product prices (DAFMANR, 2011). The current marketing arrangements for cassava and cassava-based products are therefore devoid of government intervention, so the market as it were, operates without distortion. Marketing activities are carried out by private traders who operate in both rural and urban markets. To forestall early deterioration and also due to its bulky nature, cassava is usually traded in some processed form, generally *garri*or chips/flour. In other words, there is a limited trade in fresh cassava roots (DAFMANR, 2011).The marketing channel of *garri*, the most commonly traded cassava product, consists mainly of five alternative flow channels. First there is the movement from the producer through the rural wholesaler/assembler and rural market retailer to the rural consumers. The second channel is the movement from the producer through the processor to either the rural assembler or retailer. The third flow channel is the movement from the processor to the urban market wholesalers, retailers and even to the consumers, while the fourth possible channel is that arising directly from the producer to the rural or urban consumers. The fifth channel is from the producer directly to the rural retailers. Closer examination of the business of exporting cassava chips reveal that the viability of this venture is constrained by the pressure on cassava in Nigeria as a local main staple compared to other major exporters of cassava chips such as Thailand

where the commodity is not a major staple. Nigeria cannot benefit from the current international market price of cassava chips which sells at US$175/ton. A cost benefit analysis indicates an average of ₦3000/tonne of fresh roots and the requirement of 4 tonne of fresh roots and the requirement of 4 tonnes of roots for production of one tonne of chips, together with packaging and haulage costs. Nigeria may not be able to compete favorably with other countries (DAFMANR, 2011). Ginger marketing is mostly carried out in the savannah zone in southern Kaduna and less in some other spatially separated markets (KADP, 2017). It is transported in bags. The main markets in Samaru zone of Kaduna State include those at Kwoi, Kubacha, Kachia, Kafanchan and Zonkwa. Others include Walijo, Tsakiya, Ungwanrimi and buhder. A greater volume of ginger sales occur at the village markets mostly in split or dried firms (KADP, 2017). The market participants include farmer-traders, rural assemblers, commercial agents, wholesalers and retailers. The urban based wholesalers come from state capitals. They either sell to retailers (in the south) or to the industries and sometimes smuggle across the Nigerian border (Ezeagu, 2006).

METHODOLOGY
The study area, materials and methods used in achieving the above set objectives are discussed in this section.

The Study Area: Kagarko Local Government Area is located between Latitudes 9⬜27′00″ to 9⬜45′00″N and Longitudes 7⬜41′00″to 7⬜68′33″E. The Local Government Area has a land mass of 1,864km^2 and a total population of 239,058(Projected NPC, 2006).The local governmenthas atotal of eleven districts namely; Shadalafiya, Katugal, Kushe, Jere, Dogon Kurmi, Kenyi, Kurmin Dangana, Kubacha, Aribi, and Kagarko. The study area is underlain with basement complex rocks. The basement complex rocks are principally composed of metamorphic and igneous materials (Luka, 2015). The study area is drained by Rivers Ndishor and Shadalifiya from the north, Rivers Kukwi, Kimba and Itur from the northwest while Rivers Kpakuru and Guraradrain the western parts of the study area (Luka, 2015).Kagarko Local Government Area is situated in the Guinea Savanna (Koppen's A_w climate) with two seasons – wet and dry. Rainfall commence from April with maximum peak in August and finishes in October. The dry season also commence in November and finishes in March.

Table1: Distribution of Monthly Temperature, Rainfall and Relative Humidity in the Study Area.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Temp. (□)	28.2	32.2	30.7	29.9	27.5	24.3	27.0	25.2	30.0	27.5	27.7	29.3
Rainfall (mm)	0.0	0.0	0.0	25.9	90.7	126	159.4	200.4	43.0	34.0	0.0	0.0
R.H. (%)	38	47	47	38	55	70	66	77	60	49	45	40

Source: KADP, 2011.

Kagarko Local Government Area has a total population of 239,058 people with a population density of 129 per km². The population as projected in 2016 was 322,700 people. The population has a total number of 121,041 males and 18,017 females(National Population Commission, 2010). Kagarko is mostly inhabited by the Koro speaking people. The Jaba, the Hausa, the Fulani and the Gbagyi are also found in Kagarko. The Koro speaking people are made up of different dialects namely the Koro-*Zeni*, Koro-*Agweshi* and Koro-*Achi*(Luka, 2015).

Kagarko Local Government Area has a large proportion of its population engaged in farming activities and trading as their major source of livelihood. Cash and food crops are cultivated and their produce includes: cassava, hungry rice, rice, maize, beans, millet, sorghum, ginger, turmeric and groundnut.Manufacturing industries found in Kagarko Local Government Area includes cassava chips production, pure water manufacturing, leather belt and shoes production, metal work, groundnut oil, flour, and furniture products (Michael, 2011).

Sampling Frame: The targeted populations for the study were the marketers entering the two markets (Kubacha and Kenyi). The researcher makes use of the population of the people from 15 years and above due to the fact that, at these ages, most people enter into market transaction because this ages also corresponds with production ages. According to the National population Commission 2010, the population was 12,679.

Sampling Size and Sampling Techniques: The researcher makes use of Yamane 1973 formula: $n=N/ [1+N (e)^2]$ to determine the sample size. Based on this formula, the sampling size will be 204 at 7% degree of precision.

Where; n=sample size, N=Population size and e=Degree of precision.

$n= 126797 / 1+ 126797 (0.07)^2 =204.$

A simple random sampling technique was used in selecting respondents for the study. This was due to the reason that all the respondents will be present in the market. Finally, 51 copies of the questionnaire was given to ginger marketers and cassava marketers respectively to arrive at 102 copies of the questionnaire in each selected market which gives a total of 204 administered in the sampled markets.

Analytical Techniques: In order to achieve the objectives of this study, the following tools of analysis were employed; Descriptive statistics, Gross Margin Analysis and Linear Regression Analysis.

Gross Margin Analysis
The model is expressed as follows.
GM=GI-TVC -------------------------------- (1)
Where GM=Gross Margin, GI= Gross Income, TVC= Total variable cost
NMI=GI-TC (TFC + TVC) ---------------- (2)
Where; NMI = Net Market Income, GM = Gross Margin, TFC = Total Fixed cost,
TVC = Total Variable Cost.
To determine the profitability of ginger and cassava marketing, some ratios will be calculated using tie following:
GR = TC/GI ---------------------------------- (3)
Where;
GR = Gross Ratio, TC – Total Cost, GI = Gross Income.

Linear Model Regression Model
This model was used to test the Null hypothesis which states that market locations of ginger and cassava in Kagarko Local Government Area has no significant impact on the cost of sales ginger and cassava bags.
The implicit form of the regression model is denoted as:
Y = f(X1, X2, X3, U) ---------------------------- (4)
Where;
Y = Cost of Sales (in Naira)
X1 = Kilometer covered to Location A (in km)
X2 = Time spent to reach Location A (t)
X3 = Marketing Revenue in Location A (in Naira)
X4 = Cost of Transportation to Location A (in Naira)
U = Error term

RESULTS AND DISCUSSION

This section presents the results and discussionof the study on "analysis of ginger and cassava marketing in Kagarko Local Government Area, Kaduna State". The results were presented and discussed based on the findings from the Kubacha and Kenyi markets.

Socio-economic Characteristics of Ginger and Cassava Marketers in Kagarko Local Government Area.

Table 2 shows that in Kubacha and Kenyi markets, about 90% of the respondents were males while about 10% were females. This implies that most of those who are into ginger and cassava marketing were males. The result shows that men were more involved in ginger marketing specifically because of the high level of capital needed to venture into the business while that of cassava shows predominantly women due to less needed in the business. The ages of the business men and women in Kubacha and Kenyi markets shows an age range of 41-50 years of about 52% to be the highest while > 60 years of about 2% to be the lowest. The results show that a large proportion of the ginger and cassava marketers falls within an active age of 31 to 50 years. This age bracket is important especially in terms of coping with the drudgery associated with journeys associated with marketers and the necessary experience needed in the business.

Table 2: The Distribution of Ginger and Cassava Marketers by their Socio-economic Characteristics in Kagarko Local Government Area

Variables	Frequencies	(%)
Education level		
No Formal Education	16	7.8
Primary	73	35.8
Secondary	85	41.7
Tertiary	30	14.7
Total	**204**	**100**
Occupation of Respondents		
Farming	100	49.0
Civil servant	20	9.8
Business	84	41.2
Total	**204**	**100**
Number of Years in the Business		
≤10	29	14.2
11-20	124	60.8
21-30	42	20.6
>30	9	4.4
Total	**204**	**100**
Source of Capital		
Personal Servings	180	88.2

Cooperative	0	0
Bank	10	4.9
Money Lenders	14	6.9
Total	**204**	**100**

Source: Field Survey 2019.

The educational level as shown in Table 2 indicated that about 42% of the marketers had secondary level education which is the highest followed by about 36% of primary level education and about 15% with tertiary level of education. Only about 8% had no formal level of education. The study revealed that majority of the marketers (in Kubacha and Kenyi markets) had formal education which can help them in their business in terms of understanding and communicating effectively with their clients for efficiency in the marketing of ginger and cassava.

Table 2 further shows that the major occupation of the respondents in ginger and cassava market is farming which had 49%, while business men and women took about 41% and civil servant took about 10%. The findings imply that the farmers enter the ginger and cassava market directly to dispose their produce. However, this is mostly done at the farm gate level.

Table 2 also proves that the marketers have good years of experience as the highest range was 11-20 years which took about 60% of marketers. The longer a person dwells in certain lines of business, the more experienced the person should be because most of the business secretes is assumed to be acquired through the years and this can help in terms of making profit and succeeding in the business.

Table 2 revealed that about 88% of the markets source for money to start the business from their personal savings while none indicated getting money from a cooperative association. This further revealed that the sampled marketers did not belong to an active ginger or cassava market association. Marketers' membership to social organization can help provide loans and also encourage collective sales of the ginger and cassava products to manufacturing companies directly, thereby, promoting more revenue to the business.

Marketing Channels of Ginger
The bulk demand for ginger is mostly by the industrial users.Its market is one of the most dispersed of domestic agricultural products in Nigeria.

The result shows that ginger suppliers from the rural areas, which form the bulk of the ginger market move from the farm gates to the rural market from where they are conveyed to feeder markets and then to central market and urban primary channels. The main channels of distribution of ginger in the study area are illustrated in Figure 1.

i.   Farmers→Assemblers→wholesalers→Retailers→Consumers
ii.   Farmers→Wholesalers→Retailers→Consumers
iii.   Farmers→Assemblers→Retailers→Consumers
iv.   Farmers→Retailers→Consumers
v.   Farmers→Wholesalers→Consumers

Figure 1: Main Channels of Ginger Distribution in Kubacha and Kenyi Markets.

Marketing Channels of Cassava

The marketing channels identified for cassava products in Kubacha and Kenyi markets were shown in Figure 2 The processed cassava products moved from the producers to the wholesalers and from the wholesalers to the retailers and from the retailers to the final consumers (households, cooks, etc.). It can also follow the channel of processor to retailers and finally to the consumer.

Cassava processors → Wholesalers → Retailers → Consumers
Cassava Processors → Retailers → Consumers
Figure 2: Cassava Product Marketing Channel

The Efficiency and Profitability of Marketing Ginger in Kubacha and Kenyi Markets

Result from Table 3 revealed that on the average, the Gross Income (GI) in Kubacha and Kenyi markets for ginger is ₦26,000 and ₦24,000 respectively. The researcher observed that the market price for the cash crops was not stable throughout the year. The total cost for ginger marketing in Kubacha market was ₦14,627 while that of Kenyi was ₦10,220. This was due to variation in the market variables in terms of transportation, cost of "clean" per bag, loading and offloading, storage cost and revenue cost due to the size and location of the markets. Kubacha market has much number of ginger marketers and is well known for this business which means more revenue will be generated from the marketers than Kenyi market.

The Gross Ratio (GR) of ginger marketing in Kubacha and Kenyi markets is 0.56 and 0.42 respectively which shows that 56% and 42% of

the gross income went for total cost in marketing the product from the point of purchasing to the final point of disposing the product to the manufacturer or consumer. A ratio of less than one (<1) is always desirable for any business. The lower the ratio the higher the return per naira invested, however, any ratio greater than one (>1) is not healthy for any business. The return on naira invested in ginger marketing in Kubacha and Kenyi markets is ₦1.10 and ₦1.75 respectively. That is, for every one naira invested in ginger business, one naira ten kobo was a gain in Kubacha market while one naira seventy-five kobo was a gain in Kenyi market. Table 3 further shows that the cost of ginger bag in Kubacha market was higher than that of Kenyi, however Kenyi market has a higher returns on investment due to lower variables and fixed cost in terms of doing business, the findings shows that in both the two markets, ginger marketing is profitable.

Table 3: Efficiency and Profitability of Marketing Ginger

Variable cost	Kubacha Ginger Market	Kenyi Ginger Market
	Cost (₦)	Cost (₦)
Transportation cost	5588.2	4700
Cost of clean	4800	3200
Loading and offloading	2000	1000
Total Variable Cost (TVC)	**12388.2**	**8900**
Fixed Cost (FC)		
Revenue Cost	1800	1000
Storage Cost	439.5	320
Total Fixed Cost (TFC)	2239.5	1320
Total Cost (TC)	1467.7	10220
Gross Income (GI)	26000	25400
Gross Margin (GM)	13611.8	15600
Net Market Income (NMI)	11372.3	14280
Gross Ratio (GR)	0.56	0.42
Return on capital investment (RI)	0.10	1.75

Source: Field Survey, 2019

Table 3 revealed that on the average, the Gross income (GI) in Kubacha and Kenyi markets for cassava is ₦6,500 and ₦6,000 respectively. The total cost for cassava marketing in Kubacha market was ₦5,150 that of Kenyi was ₦4,400. The Gross Ratio (GR) of cassava marketing in Kubacha and Kenyi markets is 0.79 and 0.73 respectively which shows that 79% and 73% of the gross income went for total cost in marketing the product from the point of purchasing to the final point of disposing the product to the manufacturer or consumer. The return on naira invested

in cassava marketing in Kubacha and Kenyi markets is ₦0.80 and ₦0.82 respectively. That is, for every one naira invested in cassava business, eighty kobo was a gain in Kubacha market while eighty-two kobo was a gain in Kenyi market. The findings show that in both the two markets, cassava marketing is profitable.

Table 4: Cost of Marketing of Cassava in Kubacha and Kenyi Markets

Variable cost	Kubacha Ginger Market	Kenyi Ginger Market
	Cost (#)	Cost (#)
Transportation cost	3000	2500
Loading and offloading	600	600
Total Variable Cost (TVC)	**3600**	**3100**
Fixed Cost (FC)		
Revenue cost	1200	800
Storage Cost	350	300
Total Fixed Cost (TFC)	1550	1100
Total Cost (TC)	5150	4400
Gross Income (GI)	6500	6000
Gross Margin (GM)	2900	2700
Net Market Income (NMI)	1350	1600
Gross Ratio (GR)	0.79	0.73
Return on capital investment (RI)	0.80	0.82

Source: Field Survey, 2019

Challenges of Marketing of Ginger and Cassava in Kagarko Local Government Area.

The seasonal changes in prices of ginger occur within four main seasons of the year: November to January (season of harvest), February to April (season of processing and abundant sale), May to July (season of demand) and August to October (season of scarcity). There is a great difference between the prices of ginger at the season of harvest (November to January) from the season to scarcity (August to October). The implication of this response also agreed with Ishaya (2019) that, farmers can make more profit and further expand production if the can properly store their produce and sell it at the period of scarcity (August to October). However, due to inadequate storage facilities, seasonal changes have a great negative effect on the price of ginger. Also, excess supply of ginger products as against the demand for it, under perfect competitive market will make the price to fall. It often happens, especially when the price of ginger rises, it entices ginger farmers to increase ginger production in subsequent growing season which in most cases result in over production in relation to its market demand. During the raining season, producing

cassava chips and other products is always difficult due to poor drying facilities. This also has an effect on the marketability of the product.

Poor market structure also serve as a major challenge identified by the respondents. Poor storage facilities due to lack of modern facilities to preserve the products for better period before sales has a great effect on ginger market. The cassava market structure is so poor that most of the marketers mostly sell their produce locally with poor connection to other companies. The cost of marketing will reduce drastically if transportation is taken care of, this will reduce the time spent to convey the products to the market which will also make the business of both ginger and cassava to be more profitable. Inadequate credit facilities are limiting the expansion of the ginger and cassava market.

Regression Analysis of Market Locations of Ginger and Cassava in Kagarko Local Government Area.

In Table 5, the linear form of the specified regression model had the best fit based on the adjusted coefficient of multiple regressions (R^2), T – Statistics and the regression coefficients. The result in Table 5 shows that the independent variables (Kilometer, Time Spent, Market Revenue and Transportation) accounted for about 89% of the variability in marketing if ginger in Kubacha market (R^2 0.89). The F – value was significant at $p < 0.05$ level of probability.

Table 5 shows Kilometer, Time Spent and Transportation cost to be lesser than the P value at < 0.05 alphas indicating that market locations of ginger in Kubacha markets have a significant impact on the cost of sales of ginger. However market revenue was greater than alpha, indicating that the cost of revenue paid in the business has little or no effect on the business.

Table 5:Kubacha Ginger Market Regression Analysis

Variable	Regression Coefficients	Standard Error	P value
Constant	155095.811	91121.958	
Kilometer (X1)	-1422.631	582.875	.045
Time Spent (X2)	630.555	258.615	.045
Market Revenue (X3)	-1380.392	837.800	.143
Transportation (X4)	46.677	10.693	.003

Source: Field Survey, 2019. P= Significant at < 0.05

In Table 5, the linear form of the specified regression model had the best fit based on the adjusted coefficient of multiple regressions (R^2), T –

Statistics and the regression coefficient. The results in Table 5 shows that the independent variables (Kilometer, Time Spent, Market Revenue and Transportation cost) accounted for about 71% of the variability in marketing of ginger in Kenyi market (R^2 0.71). The F – value was significant at P <0.05 level of probability meaning that the model was well specified.

In Table 5, Kilometer, Time Spent, Market Revenue and Transportation were entered into the model but market revenue variable was removed due to having values that were constant. This was so because the cost of revenue for the markets remains the same during the period of the survey. Out of the three variables that were entered in the model, only transportation was significant at 0.05 alpha levels while kilometer ad time spent were not significant. This was against the apriori expectation. The implication of this is that, the kilometer covered and time spent had little impact to location of ginger market and cost of marketing.

Table 6:Kenyi Ginger Market Regression Analysis

Variable	Regression Coefficients	Standard Error	P value
Constant	513.707	19652.051	
Kilometer(X1)	845.344	541.680	.157
Time Spent(X2)	-682.183	1023.723	.524
Transportation (X4)	137.044	58.971	.049

Source: Field survey, 2019. P= Significant at <0.05

In Table 6, the linear form of the specified regression model had the best fit based on the adjusted coefficient of multiple regressions (R^2), T – Statistics and the regression coefficients. The results in Table 6 shows that the independent variables (Kilometer, Time Spent, Market revenue and Transportation) accounted for about 60% of the variability in marketing of cassava in Kubacha market ($R^2$0.60). The F – value was significant at 5% level of probability meaning that the model was well specified. In Table 6, Kilometer, Time spent, Market Revenue and Transportation were entered into the model but market revenue variable was removed due to values that were constant. This was so because the cost of revenue for the markets remains the same during the period of the survey. Out of the three variables that were entered in the model, only transportation was significant at 0.05 alpha levels while Kilometer and time spent were not significant. This was against the apriority expectation.

Table 7a:Kubacha Cassava Market Regression Analysis

Variable	Regression Coefficients	Standard Error	P value
Constant	4178.397	1693.673	
Kilometer (X1)	-76.086	60.382	.243
Time Spent (X2)	-40.763	23.721	.124
Transportation (X4)	**25.172**	7.328	.009

Source: Field Survey, 2019. P= Significant at <0.05

In Table 7a, the linear form of the specified regression model had the best fit based on the adjusted coefficient of multiple regressions (R^2), T – Statistics and the regression coefficients. The results in Table 7 shows that the independent variables (Kilometer, Time Spent, Market Revenue and Transportation) accounted for about 79% of the variability in marketing of cassava in Kenyi market (R^2 0.79). The F – Value was significant at p <0.05 level of probability meaning that the model was well specified.

In Table 7b, Kilometer, Time Spent, market revenue and Transportation were entered into the model but market revenue variable was removed due to having values that were constant. Out of the three variables that were entered in the model, kilometer covered to the market and transportation were significant at 0.05 alphas level while time spent was not significant. This was against the apriori expectation. The implication of this is that, the time spent to reach the market location had little impact to the cost of marketing.

Table 7:Kenyi Cassava Market Regression Analysis

Variable	Regression Coefficients	Standard Error	P value
Constant	63.752	1168.180	
Kilometer (X1)	-59.393	26.866	.058
Time Spent (X2)	14.324	46.672	.767
Transportation (X4)	31.713	7.207	.002

Source: Field Survey, 2019. P = Significant at <0.05.

DISCUSSION OF RESULTS

Women were mostly involved in cleaning and drying of ginger and young men provide loading and off-loading services. However, for cassava, women dominate as this agreed with Stella *et al.* (2013) who put that women play a central role in cassava production, processing and marketing, contributing about 58 percent of the total agricultural labor in the southwest, 67 percent in the southeast and 58 percent in the central zones.

The ginger marketing is predominantly a male business due to the limited resources for women to join the business. It was observed that about 88% of the marketer's source for money to start their business is derived from their personal savings. This could be due to ignorance on the importance of cooperative organizations as put by KADP (2017) that most cooperative groups are organized for the promotion of special interest or to meet certain needs that cannot be achieved by the individual efforts.

The marketing channel for ginger shows that suppliers from the rural areas, which form the bulk of the ginger market move from the farm gates to the rural market from where they are conveyed to feeder markets and then to central market and urban primary channels. The major links include the farm gate, wholesalers, retailers and the consumers. This agreed with Obinatu (2003), who put that it is estimated that about 60% of ginger passes through the wholesalers. They influence marketing practices and to a considerable extent prices. They perform such functions as bulking, transportation, storage, credit finance, sorting, grading and further processing. The major links for cassava is that of the processors, wholesalers, retailers and consumers. However, in the case of cassava, the retailers dominate in the market channels in which most consumers obtained the products from them. This is in agreement with Anga (2005) who observed that the trade promotion policy of the federal government has created a very strong domestic demand and market for cassava which encourage more of its local consumption.

The profitability of marketing ginger and cassava in Kubacha and Kenyi markets using the Gross margin model revealed that the products are profitable. This concurs with Ishaya (2019) in his studies that indicated that the return on capital investment in ginger production by the farmers and marketers in Jaba Local Government Area was ₦0.38. That is, for every one naira, 38 kobo was a gain, even though it was a marginal gain. Similarly, Ezra *et al.* (2017) on their studies on the socio-economic assessment of ginger production in Jaba Local Government Area of Kaduna State had 2.21 Kobo as gain to every naira invested in ginger production. Stella *et al.,* (2013) implied that for every naira invested in *garri,* flour and chip processing and marketing, it yielded the sum of 7.8 kobo, 9 kobo and 7.1 kobo respectively. Sequel to this consensus view, stressing the influence of the then presidential initiative on cassava in Nigeria as noted by Anga (2005) observed that the trade promotion policy of the federal government has created a very strong domestic demand and market.

The challenges in marketing of ginger and cassava in Kagarko Local Government Area shows seasonal changes in the prices of the market commodity to be the highest challenge while poor market structure and transportation had a great share. Taxes paid, inadequate credit facilities and inadequate storage facilities were also identified; these findings were similar with the challenges identified in the work of (Ishaya, 2014). The regression analysis in Tables 2-7of market locations of ginger and cassava in Kagarko Local Government Area indicated that there is a significant impact on the cost of sales of ginger bags. The variables entered in the model showed transportation to be highly significant from Table 4-7 (0.003, 0.049, 0.009 and 0.02 respectively). These findings are in agreement with the findings of Ishaya (2014), who put that the cost of transportation is considerably high and increasing every day.

CONCLUSION

This study concluded that ginger and cassava marketing in kubacha and Kenyi markets in kagarko Local Government Area, Kaduna State is profitable. The more the marketers manage their business in efficient way, the more the return on naira invested into the business in terms of positive profit will be recorded.

RECOMMENDATIONS

Based on the findings of this study, the following recommendations have been put forward:

1. Government should provide more capitals in form of loans with little interest percentage in order to help ginger and cassava marketers to have a better storage facility to control the market fluctuation in prices due to seasonal changes.
2. Better market structure should be provided for ginger and cassava market in Kagarko Local Government Area of Kaduna State.
3. Better transportation network should be provided linking the rural areas with the urban centers.
4. Farmers of cassava and ginger and their marketers alike should join cooperative societies / self-help groups to gain soft loans that will help boost their respective operations in this area.

REFERENCES

Achike, A.I. and Anzaku T.A.K. (2010) Economic Analysis of the Marketing Margin of Benniseed in Nasarawa State, Nigeria. *Journal*

of Tropical Agriculture, Food, and Environment and Extension* 9(1):47-55.

Adamu M.T., Biwe E.R., and Suleh Y.G. (2013) Socio – Economic Characteristics of Farmers under National Fadama Development Project in Billiri Local Government Area of Gombe State, Nigeria. *Journal of Agricultural Science Research* 1(2):7-21.

Adegboye R.O. (2011) *Land Agriculture and Food Security in Nigeria.* 3rd Faculty Lecture, Faculty of Agriculture, University of Ilorin, Kwara State, Nigeria.

Akpan S.B., Udoh E.J. and Udo U.J. (2014) Monthly Price Analysis of Cowpea (Beans) and Maize in Akwa Ibom State, Nigeria. *International Journal of Food and Agricultural Sciences* 2(2): 65-86.

Anga B. (2005) Demand for Cassava Production Equipment up by 500 percent: In Success Digest; May 2005 pp5.

Bernard A. (2008) Disease, Pest and other Factors Limiting Ginger (*Zingiber officinale rose*) Production in Rivers State. Being the text of a paper delivered during the Agricultural Production Development Strategy Workshop organized by Uptonville Foundation under the aegis of Rivers State Sustainable Development Agency (RSSDA); Available at :https//uptonvilleoginstu.org/ginger.htm.

Chron H. (2019) What is the Marketing Margin? Retrieved 17 June, 2019 at https://smallbusiness.chron.com/marketing-margin-20421.html.

DAFMANR (2011) Department of Agriculture Federal Ministry of Agriculture and Natural Resources, Nigeria. Cassava Development in Nigeria: A Country Case Study towards a Global Strategy for Cassava Development. Edited by Adeoye, A. and Lawrence, E.

Ene L.S.O. (1992) Prospects of Processing and Utilization of Root and Tuber crops: In; *National Root Crops Promotion of Root Crop – Based Industries.* Pp7-11.

Ezeagu W. (2006) Ginger Export. A paper presented at a 3-day National Workshop on Massive Cassava and Ginger Production and

Processing for Local Industries and Export; held at Fati Musa Hall, National Center for Women Development, Abuja.

Ezra D., Akinola M.O., Banta A.L., Makarau S.B. and Ali H. (2017) Socio – Economic Assessment of Ginger Production in Jaba Local Government Area of Kaduna State, Nigeria. *Asian Journal of Agricultural Extension, Economics and Sociology* 15(2): 1-11.

Ishaya P. (2019) Analysis of Trends in Ginger Production in Jaba Local Government Area, Kaduna State.An Unpublished Thesis Research in the Department of Geography, Kaduna State University.

Ishaya, P. (2014) Analysis of the Ginger, Maize and Soybeans Marketing in Kachia Local Government Area of Kaduna State, Nigeria. An MSc Thesis submitted to the School of Post Graduate Studies, Ahmadu Bello University, Zaria.

KADP (2017) Kaduna Agricultural Development Project: *Identification and Mapping of Ginger Production Clusters and Markets in Kaduna State Nigeria.*

KADP (2018) Kaduna Agricultural Development Project: *Identification and Mapping of Ginger Production Clusters and Markets in Kaduna State Nigeria.*

Kanu C.N. (1987) An Analysis of Margin in the Distribution of Pepsi Cola in Anambra State. Unpublished MSc Thesis in the Department of Marketing, University of Nigeria, Nsuka, Enugu State.

Kohls R.L., Uhl J.N. (1990) Marketing of Agricultural Products. (6th Edition), New York. MacMillan Publishing Co.

Lanee B. (2019) Types of Marketing Channels.Reviewed by Michelle Seidel.Retrieved 18th June, 2019 from: https//:smallbusiness.chron.com/types-marketing-channels-21627.html.

Luka J.L. (2015) The Administration of Colonial Taxation in Zaria Province: A Case Study Kagarko District, 1902 – 1960. A Thesis Submitted to the Post Graduate School, Ahmadu Bello University, Zaria.

Michael A.A. (2011) Evaluation of Farmers' Response to Extension Services on Ginger Production in Kagarko Local Government

Area of Kaduna State. *Scientific research and Essays*, 6(6): 1166-1171.

Nandi J.A., Gunn P., Yurkushi E.N. (2011) Economic Analysis of Cassava Production in Obubra Local Government Area of Cross River State, Nigeria.*Asian Journal of Agricultural Sciences* 3(3): 205-209.

Obinatu N.I.D. (2003) The Marketing of Ginger in Kaduna State, Nigeria. An Unpublished MSc Thesis Submitted to the Department of Agricultural Economics, University of Nigeria Nsukka.

Olukosi J.O., Isitor S.U. (1990) *Introduction to Agricultural Marketing and Prices; Principles and Application*: Abuja Nigeria. Living Book Series G.U. Publications.

Onwueme I.C. (1988) Towards Increasing Production and Export of Ginger in Nigeria. *Proceedings of First Nigeria Ginger Workshop, October* 17-21 Umudike, NRCRI.Pp16-21.

Radla I. (2019) Physical Distribution: Definition, Objectives, Importance and Components of Marketing. Retrieved on 18th June, 2019 from: https//:businessmanagementideas.com/physicaldistribution/17992.

Richard P.B. (2019) Marketing as Exchange.Retrieved 18th June, 2019 from: https//:fao.org/3/w3240e/w3240e.html.

Stella O.A., Agbugba K., Ikechi S. and Llyord J.S.B (2013) Processing and Marketing of Selective Cassava Products in South – east Nigeria. Journal of Economics 4(2): 105-111.