ANALYSIS OF COWPEA MARKETING AND PRICE TRENDS IN SOME SELECTED RURAL AND URBAN MARKETS IN KADUNA STATE, NIGERIA

BY

Joshua, YOHANNA
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A DISSERTATION SUBMITTED TO THE SCHOOL OF POSTGRADUATE STUDIES, AHMADU BELLO UNIVERSITY, ZARIA, IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF SCIENCE DEGREE IN AGRICULTURAL ECONOMICS.

DEPARTMENT OF AGRICULTURAL ECONOMICS AND RURAL SOCIOLOGY, FACULTY OF AGRICULTURE
AHMADU BELLO UNIVERSITY
ZARIA, KADUNA STATE
NIGERIA

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DECLARATION

I hereby declare that this dissertation titled "**Analysis of Cowpea Marketing and Price Trends in Some Selected Rural and Urban Markets in Kaduna State, Nigeria"** has been written by me and it is a record of my research work. No part of this work has been presented in any previous application for another Degree or Diploma or any other institution. All borrowed and sources of information have been dulyacknowledged in the text and a list of reference provided.

_____ _____

Joshua YOHANNA **Date**
Student

CERTIFICATION

This dissertation titled '**Analysis of Cowpea Marketing and Price Trends in Some Selected Rural and Urban Markets in Kaduna State, Nigeria,** by Joshua YOHANNAmeets the regulations governing the award of the Degree of Master of Science in Agricultural Economics of the Ahmadu Bello University, Zaria and is approved for its contribution to scientific knowledge and literary presentation.

_____ _____

Prof S. A. Sanni **Date**
Chairman,Supervisory Committee

_____ _____

Prof Ben. Ahmed **Date**
Member, Supervisory Committee

_____ _____

Prof Z. Abdulsalam **Date**
Head of Department

_____ _____

Prof K. Bala **Date**
Dean, School of postgraduate Studies,

DEDICATION

This dissertationis dedicated to my Father Late Cpl. YohannaNyama for laying the foundations of my academics and to my mother MaaZipporahYohannaNyama for all her endeavors to see that I am alive and well, and for JaduaDoyinYohannaNyama for the love he shared withmefor the brief moment he spent on this planet earth.

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ABSTRACT

The study analyzed cowpea marketing and price trend in some selected rural and urban markets in Kaduna State, Nigeria. A multi-stage sampling technique was used for sample selection. The first stage was purposive selection of Maiganaagricultural zone in Kaduna State; namely Ikara, Makarfi, Giwa, Shika, Galadimawa and Tudunsaibu. The second stage involved purposive selection of Giwa market as a reference market while Ikara, Makarfi, Shika, Galadimawa and Tudunsaibu markets as the supplying markets from Maiganaagricultural zone markets. A simple random techniquewas employed to select 15% of the sample Frame (1474) of thecowpeamarketers obtained from the list of Marketers' Associations/Union. Primary and secondary data were used for the study. Primary data were collected from 221 respondents with the aid of structured questionnaire.Secondary data were obtained from the Kaduna Agricultural Development Programme Office (KADP)and National Agricultural Extension Research and Liaison Service (NAERLS), Zaria which covered the wholesale monthly prices for 96 months (2007-2014). The statistical tools used to analyze the data were descriptive statistics, spatial price model and temporal price model. The results of the study shows an average age of the respondents 34 yearsand majority of the markets about 70% had formal education with an average household size of 8 persons which makes them have appreciable number of persons for family labour and marketingactvities. About 63.8% of the respondents do not join any cooperative association and the majority 71.4% of the respondents are married while 77.8% of the cowpea marketers do not have access to credit to finance their business. Analysis of spatial aspects of pricing efficiency show that the expected and actual price spreads between Giwa and five selectedsupplying markets, the positiveprice spread is substantially high, even after considering plausible levels of unmeasured transaction costs. Analysis of temporal price relationships indicated that seasonal price increases commonly exceeded cost of storage forcowpeawhich provided the opportunity to make more than normal profit. Considerable risk was involved in storage operations to achieve high profits. The constraints identified in the study area, were lack of access to credit (93.2%), inadequate market information (89.1%), inadequate market infrastructure (81.9%), provision of quality product (58.4%) and poor storage facilities (40.3%). It is recommended that marketers should form cooperatives or association that can assist them in provision of physical facilities and better dissemination of market intelligence and information.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Agricultural production plays an important role in the economic development of Nigeria. An estimated 60-70% of Nigerians live in the rural areas and majority is engaged in small scale agricultural production (Okunneye, 2001; Adegboye, 2011; 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). Yet several problems associate the various activities that are involved in the production and marketing activities in this great enterprise. The sound management and conservation of this resource is one of the priority issues of the global strategy for sustainable development (Kolosov*et al.*, 2012). The pivotal role of marketing in enhancing rural income and in the overall development of any economy of the world cannot be overemphasized. In fact, one of the major functions of Agricultural marketing is to bring items of trade from surplus to deficit areas. Cowpea, (*Vigna unguiculata*) is one of such items of trade in the Nigerian Agricultural sector. Cowpea marketing entails all the activities involved in moving cowpea from the point of production to where it is needed by the final consumer. It involves series of transaction costs which are reflected in the size of the marketing margin. These margins vary among brands, types, location and over time (Akpan *et al*., 2014).

Cowpea (*Vigna unguiculata*) is one of the most ancient crops known to man. Its origin and subsequent domestication is associated with pearl millet and sorghum in Africa. It is now a broadly adapted and highly valued crop, cultivated around the world primarily for seed, but also as a vegetable (for leafy greens, green pods, fresh shelled green peas,

and shelled dried peas), as a cover crop and for fodder (Adeola *et al.*, 2011). Cowpea is considered more tolerant to drought than soybeans and better adapted to sandy soils. Many cowpea cultivars have a vining growth habit, but modern plant breeding has also led to more upright, bush-type cultivars, (Abah *et al.*, 2012). It is indigenous to Africa but also widely grown in other continents of the world. In Nigeria, cowpea is grown widely in the North West and North Central geo-political zones while substantial quantities are also grown in the other four geo-political zones of the country (Davis *et al.*, 1991).

Cowpea is an important source of plant protein in the developing world and most especially in West Africa; it is the most important economically and nutritionally indigenous African legume crops, especially in West and Central Africa (WCA). Cowpea is rich in protein and constitutes a staple food for people in rural and urban areas (Baributsa *et al*., 2010). It can be consumed alone when cooked or mix with other foods such as rice, maize, millet, plantain, yam, gari, etc. Large quantity of cowpea is also consumed as deep oil fried product called "akara" and a steamed product called "moi-moi' in most parts of Nigeria.

The need for the marketing system of cowpea to be well structured and efficiently organized cannot be over emphasized. It enhances the pace of economic development by encouraging specialization, generation of foreign exchange earnings, development of an exchange economy, provision of income and employment opportunities for marketing agents, (Olukosi *et al*., 2005).

In performing the role of marketing, products pass through various marketing agents or intermediaries called market channels. These market intermediaries are the wholesalers and retailers and both play an important role in the marketing system (Girei *et al*, 2013). Instability in commodity prices among markets could be detrimental to the marketing system and the economy as a whole. It could cause inefficiency in resources allocation among sellers and consumers depending on the source of variability. It could also increase poverty level among low income earners in the society (Polaski, 2008: Akpan *et al.*, 2014).

Price of cowpea is highly unstable between seasons and consumers pay different amounts for the same product in different markets separated by just a few kilometers (Akpan *et al.*, 2014). Post-harvest pricing and marketing, suggested that agriculture, like any other private enterprise, is propelled by entrepreneurs who are motivated by profits from their investments and entrepreneurship. Therefore, in order to ensure maximum returns, farmers must make their production decisions considering the most favourable place, time and form in which their products could be marketed (Ayinde and idris, 2004). Consequently, prices of agricultural products vary from month to month and even from day to day. Prices also differ between various grades of a product and also differ between alternative markets.

Grain marketing is organized in formal and informal places. Formal market places are designated locations managed by public organizations. Informal markets are not officially recognized and therefore, not subject to most government controls. An informal market may be a group of women who assemble every week in the centre of a village or who buy from farmers on roadsides. Farmers usually accept lower prices

because they are not aware of the market prices or because they lack the time, money or means to transport cowpea grains to the market (Faith *et al*., 2011). Cowpea passes from farmers to consumer through various market channels. Farmers usually sell their surpluses to rural assemblers, who in turn sell to urban wholesalers directly or through commission agents. Large wholesalers hold large stocks for sale to retailers when prices are high enough to pay for cost of procurement, storage, handling and a margin for profit. Small wholesalers handle smaller volumes and use markets in their homes neighborhoods and acquire the grains from wholesalers and commission agents for sale to consumers in smaller quantities, (Mishili *et al*., 2007). In Nigeria, Ghana, Burkina Faso, Togo and Benin grain traders constitute themselves into commodity-based associations to promote better marketing conditions and discuss general guidelines for grain prices. Traders discuss grain pricing during association meetings but prices are fixed by individual traders. Factors influencing price setting are: grain quality, selling time, transport, storage, market tolls, taxes and taxes (Gomez, 2014).

In Nigeria the organization of traders in Kano's Dawanau market -the largest cowpea market in the world - differs from other trading organizations. Traders are organized into a formal market union. "Dawanau Market Development Association" comprised of smaller associations such as Dawanau Farm Produce Merchant Association, Restaurant Owners Association, Transport Operator Associations, etc. The main role of the major association is to negotiate with the government over issues such as taxes and market infrastructure. (Langyintuo *et al*., 2003)

1.2 Problem Statement

Sustainability of agricultural activities is hinged on effective price system. In the recent past, the market for agricultural commodities in Nigeria has shown a pattern of long-term price fall and short-term price instability (IMF, 2010; Akpan*et al*., 2014). The volatility in price of agricultural commodities in Nigeria has been attributed to various factors including variances in bargaining power among consumers, cyclical income fluctuation among sellers and consumers, seasonality of production, natural shocks such as flood, pests, diseases, and inappropriate response by farmers to price signals (Gilberts, 1999; Udoh and Sunday, 2007; Adebusuyi, 2009).

Short-run fluctuations in agricultural commodity prices occur between production seasons (Cashin and Pattillo, 2000). During harvesting periods, prices of farm product are generally low due to surpluses; in the off season, prices rose due to reduced production and seasonal changes (Akpan, 2002;Akintunde*et al.,* 2012). Hence, agricultural commodity price is one of the major determinants of quantity of commodities supplied by farmers and demanded by consumers. Product price instability among agricultural commodities is a regular phenomenon in markets across Nigeria (Akpan, 2007;Akintunde*et al.,* 2012). Instability in commodity prices among markets could be detrimental to the marketing system and the economy as a whole. It could cause inefficiency in resources allocation among sellers and consumers depending on the source of variability. It could also increase poverty level among low income earners in the society (Polaski, 2008). On the order hand, a unified product price among markets is not a rational policy to pursue in a developing country like Nigeria. This is because of the deteriorating marketing infrastructures, increase in cost of externalities and the nature of most agricultural products which often resulted in significant

differences in the total variable costs incurred by sellers and consumers in these markets.

Information on agricultural commodity price and its trend in both developed and developing countries like Nigeria is important to both producers and consumers. Prices vary almost throughout the year and understanding the trend of such variations is therefore essential for good planning by the producers, consumers and policy makers. (Zoellick, 2008).Poor market knowledge and other structural imperfections have been asserted to cause inefficiency in agricultural commodity markets but the role of information in pricing, the dynamic process of information trans-mission between markets in price discovery and its implications for marketing efficiency is very important (Mendoza and Rosegrant, 1995; Adekoya et al., 2013)

In view of the above, the study will seek to address the following questions related to marketing of cowpea:

i. What are the socioeconomic characteristics of cowpea marketers in Kaduna state?

ii. What are the marketing channels of cowpea in Kaduna?

iii. What is the price trend of cowpea in rural and urban markets of Kaduna state?

iv. Are cowpea markets in the rural and urban areas of Kaduna state integrated?

v. What are the constraints encountered by marketers in marketing cowpea in Kaduna state?

1.3 Objectives of the Study

The broad objectives of this study was to analyze cowpea marketing and price trends in some selected rural and urban markets in Kaduna State, Nigeria and the specific objectives were to:

i. describe the socio economic characteristic of cowpea marketers in the study area;

ii. determine the marketing channels of cowpea in the study area;

iii. examine the trend in price of cowpea in rural and urban markets;

iv. analyze market integration of cowpea between rural and urban markets in the state;

v. describe the constraint encountered in the marketing of cowpea in the study area.

1.4 Justification for the Study

The extent of market integration has often been used to measure the success of market liberalization and structural adjustment policies in developing countries (Mushtaq, 2006). As part of several ways to increase agricultural production and economic growth of the state, efficient marketing policy based on sound empirical facts is one of the prerequisites. Hence, understanding the direction and magnitude of grain price transmission between the rural and urban markets in the state will provide indispensable input to policy makers to formulate workable policies for the agricultural sector.

Seasonal price comportment of cowpea is as a result of its production sequence. The two periods of glut and shortage nature of cowpea production prompted a research of

this type. Maisamari (2002) observed that widespread interregional and inter-seasonal variations in prices tend to hamper adequate planning of farming, industrial operations and output expansion plans. Ayinde and Idris (2014) recorded that seasonal price patterns can be used as a guide for developing a marketing plan when they are examined along with supply, demand, information and other marketing concepts. This research will therefore go a long way to improve cowpea marketing as it relates to inter market and seasonality of price trends.

CHAPTER TWO

LITERATURE REVIEW

2.1 Economic Importance of Cowpea

Cowpea is a global legume whose cultivation is believed to have begun from Africa more than 5000 years ago (Davies *et al*., 2005; Jafferson, 2005). At present, it is the second important grain legume in Africa (NRC, 2006; Tadele (2013). However, the largest part of the world's production come Africa. More than 5.4 million tonnes of dried cowpea are produced worldwide, with Africa producing nearly 5.2 million. Nigeria, the largest producer and consumer account for 61% of production in Africa and 58% worldwide and more than 4 million tonnes of peas of all sorts are consumed worldwide, with 387,000 tons consumed in Africa. The grains contain 25% protein, and several vitamins and minerals (IITA, 2013).

The grain is rich in protein up to around 30%, it contains micronutrients such as iron and zinc which are necessary for healthy living (Boukar *et al*., 2010). The leaves, green pods, green peas and the dry grains are consumed as different dishes; these parts are nutritious, providing proteins, vitamins and minerals especially micronutrients. The grains are rich in the amino acids lysine and tryptophan making it better than cereals. This makes cowpea a good supplement for cereal and root-and-tuber-based diets characteristic of many coastal and forest communities. It is the food value of the grain and cowpea pod that gives the economic value of the crop. The cowpea hay on the other hand provides good fodder that significantly supports the livestock industry especially that of dry savannas of West and Central Africa. The combination of food and fodder potential of cowpea has resulted in a stable food security drive in many parts of the globe. (Anon, 2012).

Cowpea is the most economically important indigenous African legume crop. (Langyntuo *et al*.,2003). In Nigeria, cowpea is grown widely in the North West and North Central geo-political zones while substantial quantities are also grown in the other four geo-political zones of the country (Girei *et al.,* 2013). Economically, cowpea has a great value in the internals trade in the country because it promotes trade between the production area and non-producing area. It also serves as a source of income for middlemen who embark on transportation from one place to another. The returns from cowpea marketing like any other business firm ensure sustainability of the system through enhanced revenue generation to both marketers and producers. However, the challenge that marketers face is to satisfy consumer's wants at a reasonable profit level and in a socially acceptable manner (Kotler, 1990).

According to Dugje *et al.* (2009), Cowpeas are an under-utilized indigenous crop, which have many advantages for both small-scale and commercial farmers. As food for humans, cowpeas can be used as a spinach, green bean, protein-rich seed, meat or coffee substitute. For livestock, cowpeas can be used as grazing, or baled for hay or silage. Cowpeas are also an excellent cover crop and soil improver since they add nitrogen to the soil and improve soil structure. Abrah and Tor (2012) pointed out that economically, cowpea has a great value in the internal trade in the country because it promotes trade between the production area and non producing area. It also serves as a source of income for middlemen who embark on transportation from one place to another. If production potentials will be properly harnessed in the study area, it will improve the livelihood and standard of living of the people in the area.

The proper strategy for growth has often been conceived as one of a more or less gradual shift from agriculture to industry, with the onus on agriculture to finance the shift in the first stage. This view, however, no longer appears to be appropriate. On the one hand, the role of agriculture in the process of development has been reappraised and revalued from the point of view of its contribution to industrialization and its importance for harmonious development and political and economic stability. On the other hand, agriculture itself has become a form of industry, as technology, vertical integration, marketing and consumer preferences have evolved along lines that closely follow the profile of comparable industrial sectors, often of notable complexity and richness of variety and scope. This has meant that the deployment of resources in agriculture has become increasingly responsive to market forces and increasingly integrated in the network of industrial interdependencies. Agricultural products are shaped by technologies of growing complexity, and they incorporate the results of major research and development efforts as well as increasingly sophisticated individual and collective preferences regarding nutrition, health and the environment. While one can still distinguish the phase of production of raw materials from the processing and transformation phase, often this distinction is blurred by the complexity of technology and the extent of vertical integration: the industrialization of agriculture and development of agro processing industries is thus a joint process which is generating an entirely new type of industrial sector (FAO, 1997).

2.2 The Concept of Marketing and Markets

Abba (2009) defined marketing as all the necessary activities that take place along the trajectory which a commodity describes from the place it is produced to where it is ultimately consumed. Such activities are physical, social, economic, organizational,

legal and institutional in nature. He also defined markets as an area or setting in which price making forces operates. It can also be any arrangement that brings buyers and sellers together, it could be physical contact between buyers and sellers or by letter writing and telephone calls.

Agricultural marketing does not only mean going to the market to buy or sell agricultural products or inputs, you can stay in your farm and advertise your products by electronic marketing (Orient, 2013). Agricultural products when harvested usually cannot go direct to the consumers. They must be transported. Getting the farm produce to the consumers in the market involve more than passable roads, farmers need affordable and available means of transport on these roads with storage facilities. From the farm-gate, the small village farmers walk to the market with the products on the head. Thus the issue of getting produce to the market is a problem in Nigeria. Farmers can only sell what they can carry to the market considering the availability of transport, storage and other facilities. Other features of agricultural marketing environment include seasonality in production, which requires storage to adjust supply to demand and need for processing to ensure consumer acceptability. Information for instance helps participants in agricultural marketing to balance supply and demand in particular markets and thus avoid gluts and surpluses with the corresponding fluctuation in prices. The traditional agriculture marketing system encourages the participation of a large number of individuals at the various types of markets and exchange points where marketing services assembly, storage, transportation and break-of-bulk are performed. The process is highly dependent upon the structure of production, which is characterized by many widely – scattered small farmers who each have small quantities to market (Foin, 2006).

2.3 The Concept of Price Trends

The concept of trend is absolutely essential to the technical approach to market analysis. All of the tools used by the chartist-support and resistance levels, price patterns, moving averages, trend lines, etc. have the sole purpose of helping to measure the trend of the market for the purpose of participating in that trend. Markets don't generally move in a straight line in any direction. Market moves are characterized by a series of zigzags. It is the direction of those peaks and troughs that constitutes market trend. An uptrend would be defined as a series of successively higher peaks and troughs; a downtrend is just the opposite, a series of declining peaks and troughs; horizontal peaks and troughs would identify a sideways price trend. Most technical tools and systems are trend-following in nature. They usually work very poorly, or not at all, when markets enter these lateral or 'trendless' phases (Ninestocks, 2012). During harvesting periods, prices of farm product are generally low due to surpluses; in the off season, prices rise due to reduced production and seasonal changes (Akpan, 2002).

2.4 Cowpea Marketing in Nigeria

Agriculture is recognized as one of the most challenging and risky enterprises. Hence, maximizing long-term profitability of farms is of utmost importance to farmers' well being and competitiveness as well as the related people who engaged in this business to a larger extent, (Behjat andOstry 2013). Prices for agricultural products in different markets are largely influenced by seasonality in production, fluctuations in production and the general economic growth within a country. As such price variability becomes a common phenomenon in agricultural outputs due to stochastic nature of the products. The stochastic nature of agricultural outputs is heavily linked to natural factors such as weather and economic factors such as structural transformation in markets, length of different marketing channels, transport and other marketing infrastructure. Demand

factors such as consumer habits, substitution between products and per capita income also influence prices (Katengeza, 2009; Ddungu *et al.,* 2015).

2.5 Market Structure

Market structure relates especially to the degree of competition in a market. It tends to consider whether the number of firms producing products is large or whether the firms are of equal sizes or dominated by small group. It is concerned with whether entry for new firms is easy or not. Structure also relate to the degree of market knowledge which is available to these firms (Olukosi *et al*., 2005) While Market performance on the other hand, is the assessment of how well the process of marketing is carried out and how successfully its aims are accomplished (Giroh, *et al.,* 2013). Market structure relates especially to the degree of competition in a market. It tends to consider whether the number of firms producing products is large or whether the firms are of equal sizes or dominated by small group. It is concerned with whether entry for new firms is easy or not. Structure also relate to the degree of market knowledge which is available to these firms (Olukosi *et al*., 2005). While Market performance on the other hand, is the assessment of how well the process of marketing is carried out and how successfully its aims are accomplished (Giroh *et al*, 2013).

2.5.1 Marketing Channels of Cowpea

Marketing is concerned with all stages of operation, which aid the movement of commodities from the farms to the consumers. These stages include assembling of goods, transportation, processing, grading and financing of all these activities (Abba, 2009). Boone and Kunz (2006) and Imam (2014) define a marketing distribution

channel as an organized system of marketing institutions and their interrelationship that promotes the physical distribution and ownership of goods and services from producer to consumer or end user. Kotler and Armstrong (2003) and Imam (2014), see marketing channel as a set of independent organization involved in the process of making a products or service available for use or for consumption by the consumer or business end-user. In a distribution channel, all the members are necessarily expected to perform at least one value added function which the ultimate consumer pays for. Looking at the role of each intermediary/channel member in the agricultural produce market, there is a gap between the expected and the actual role performed (Mangison, 2000). Imam (2014) however added that the choice of a distribution channel depends not only on the economic objectives i.e. how to put a product to the market at a lower cost. It also depends on the specific constraints of each market and of each channel operating in the market.

In a study conducted by Abba (2009), seven types of market participants (intermediaries) were identified stretching between the producers and consumers. These intermediaries include: rural commission agents, rural assemblers, rural wholesalers, rural retailers, urban regional commission agents, urban regional wholesalers and urban regional retailers. These participants play various roles in the movement of cowpea from producers to ultimate consumers. They perform the marketing functions necessary to create the utilities of time, place, form and possession.

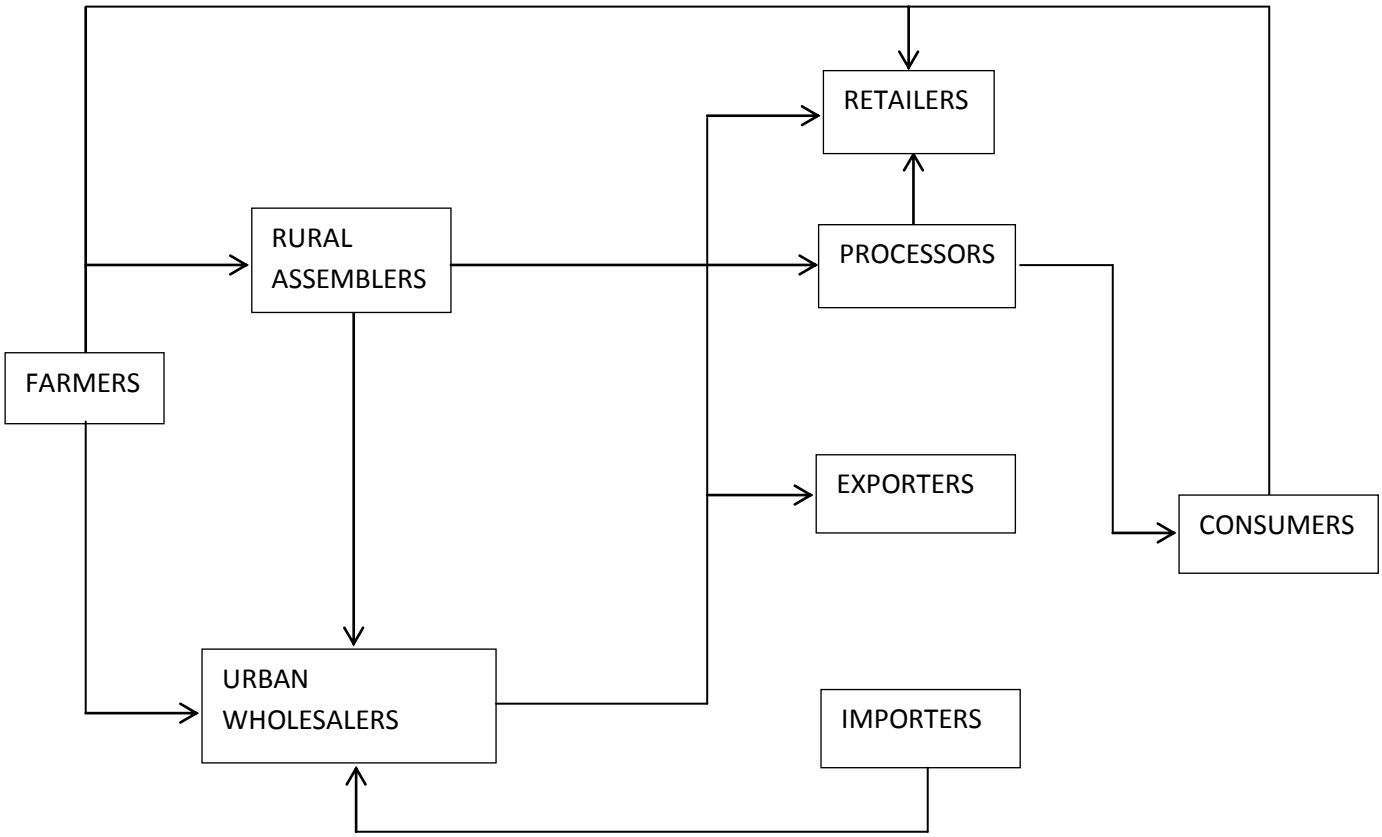


Fig. 1: Typical market outlets of cowpea value chain in Nigeria. (Mishili *et al*., 2007).

Market participants engage in moving, storing, grading and processing cowpeas in expectation that this will augment their value to consumers as they will be able to supply or serve the market segments with needed produce at a particular time of the year. (Mishili *et al*., 2007)

2.6 Market Integration

Spatial Market Integration refers to co-movements of prices, and more generally, to the smooth transmission of price signals and information across spatially separated markets. It provides the basic data for understanding how specific markets work. A link among spatially separated market will lead to efficient price formation (Adenegan and Adeoye 2011). Bopape and Christy (2002) alleged that there are three forms of market

integration: Integration across space, Integration across product and Integration across time.

Markets are integrated across space if, when trade takes place between them, price in the importing market equals price in the exporting market plus transportation and other costs of moving the product between the two markets. When integrated across product form, markets are vertically integrated and the price differential between two related commodities should not exceed transportation and processing costs. Markets are said to be integrated across time (inter-temporally integrated) when the expected price differential does not exceed the cost of storage.

Without spatial price integration of market, price signals will not be transmitted from food deficit to food surplus areas; prices will be more volatile; agricultural producers will fail to specialize according to long-term comparative advantage, and the gains from trade will not be realized. However, government's intervention in the pricing and marketing of food and poor marketing infrastructure may impair the role of market mechanism in price transmission between surplus and deficit areas. (Ifejirika *et al.*, 2013). They went on to assert that the distance between spatial markets, and access to telephone are important determinants of market integration behaviour.

2.7 Price Volatility

According to Loy and Weaver (1998) price volatility refers to the variation, instability or fluctuation in prices. There are two types of price volatility or variability and there is need to distinguish between price variation across different locations (spatial variation)

and price variation over time (temporal variation). Although the process of arbitrage is similar in both cases, but the causes of price variation differ.

2.7.1 Spatial Variation in Food Grain Prices

Minot *et al.,* (2009) were of the option that the patterns of spatial variation in food prices in a country depended partly on whether or not the commodity was internationally traded: For non-tradable food commodities, areas producing large surpluses of the commodity (those with good agricultural potential relative to the size of the population) tend to have the lowest prices. In contrast cities and other deficit areas have higher food prices in order to cover the cost of shipping food grain from the surplus zones.

For tradable commodities, prices generally depend on distance from the point of entry or exit. Imported food will be least expensive near the port of entry or along the main transport routes. For example in sub-Saharan Africa rice and wheat are generally least expensive at the port city or in places with good market access. Since transport costs are a major factor in trade and marketing then, spatial arbitrage refers to the process in which traders buy in low price locations and sell in higher priced locations. In competitive markets, spatial arbitrage has three implications: Spatial arbitrage ensures that the price difference between two markets will be, in the long-run, no greater than the transport cost, defined as the full cost of shipping the commodity from one market to another including profit and compensation for risk. If the difference between the price in the market A (P_{α}^{A}) and in market B(P_{α}^{B}) is greater than the full cost of transportation between the two markets (C), including taxes, risk premium and normal

profit, then trade will be profitable. Divergence in prices occurs because the good are

$$P_B^{\alpha} - P_A^{\alpha} > C \quad ----------(1)$$

not competitive. In other words, if) then it will be profitable to ship the commodity from A to market B. Trade will reduce the supply and raise the price in the exporting market (market A) and increase the supply and reduce price in the importing market (market B), thus causing the price in the two market ($P_A$and P_B) to move toward each other. Equilibrium is reached when:

$$P_B - P_A \quad ----------(2)$$

Where

$$P_B \leq P_B^{\alpha} and P_A \geq P_A^{\alpha} \quad ----------(3)$$

In this situation, any small change in the price in one market would be reflected in an equivalent change in the price of the other market. On the other hand, if the difference between the price in market A and in market B is less than the full cost of transportation, then it is not profitable to trade between the two markets, it means there is price convergence due to competitive nature of the commodity in the markets. Trade will remain unprofitable if prices remain in the following ranges:

$$P_A + C > P_B > P_A - C \quad ----------(4)$$

This implies that:

$$P_B + C > P_A > P_B - C \quad ----------(5)$$

Secondly, spatial arbitrage implies that, if there is a flow between two markets the price difference will be approximately equal to the transportation cost. To keep the flow

going, the price difference must be larger enough to cover the cost of trading. And finally, spatial arbitrage implies that, if the price difference between two markets is less than transport costs, there will be no private trade of the commodity between the two markets.

2.7.2 Temporal Variation in Food Grain Prices

Minot (2009) explained that the variation in Food grain prices over time (temporal variation) also depends on whether or not the commodity is internationally traded: For tradable food commodities, the variation in price over time is largely determined by world prices, trade policy, and the exchange rate, if trade policy and the exchange rate remain unchanged, the domestic price of a tradable commodity will generally track the international price of the commodity. For non-tradable food commodities, the variation in prices over time is primarily caused by the seasonal harvest calendar and by weather-related differences in production from year to year. Seasonal prices are lowest during the harvest and rise throughout the post-harvest period in order to cover the cost of storage. Similarly, year-to-year variation in food grain prices is inversely related to the harvest. Because both farmers and consumers can switch between food grain prices in response to price variation, the prices of different food grains often move together over time.

Temporal arbitrage where refers to the process of storing a commodity when the price is low in order to sell it when the price is high. The implication of temporal arbitrage are quiet similar to those of spatial arbitrage: First, temporal arbitrage ensures that the expected price increase between two time periods will be, in general, no greater than the full cost of storage, including profit and compensation for risk. If the expected price

increase were temporarily greater than the storage cost, traders would have an incentive to buy and store more of the commodity, thus raising the current price (when the commodity is less scarce) and lowering the expected later price (when it is more scarce). This reduces food grain variability over time. Second, temporal arbitrage implies that, if there is storage between two time periods, the expected price increase will be approximately equal to the storage cost. To maintain the incentive to store, the monthly price increase must be enough to cover the monthly cost of storage. And finally, temporal arbitrage implies that, if the expected price increase from one time period to another is less than storage costs, there will be no storage undertaken by private traders because storage would not be profitable.

According to Cochrane (1958), there are two types of price volatility or variability: seasonal and cyclical price variation. The seasonal price fluctuation or instability is regular patterns of fluctuation that occur within a year, because of heavy dependence of agricultural production on climate. There are periods of high and low production for different commodities. Seasonal crops record low price during harvest or peak production periods. The activities of speculative middlemen do influence seasonal price variability in that they buy agricultural commodities at harvest time when they are cheap, store them and release them to the market when prices rise. Their activity often results in the artificial scarcity, which forces food grain prices up.

2.8 Constraints in Cowpea Marketing in Nigeria

Inefficiency of agricultural marketing system and Inadequate marketing of agricultural produce has been a major problem limiting agricultural expansion (Care, 2004). Domestic traders are constrained by a number of factors like (Ifejirika *et al.*, 2013),

inadequate capital, low profit, high cost of transportation, bad road network, high taxes, inadequate market information and lack of standard measure. Insect pest infestation, inadequate storage facilities, poor credit facilities, inadequate market infrastructure and lack of uniform measure and long chain of distributors (Girei, 2013). Ajetomobi and Abiodun (2010), added that drought, flooding, salt stress and extreme temperatures, all of which are expected to worsen with climate change which could subsequently reduce crop productivity and marketing activities.

Farmers incapacity to produce, limited input and poor input delivery systems, low acceptability of cowpea, low acceptance of new formulation of chemicals and improve post-harvest technologies, negative or neglected position of the developing countries' government to restore the problems associated with development of post-harvest systems are problems identified with cowpea production (Singh *et. al*, 1987; Abah and Toh, 2012).

2.9 Empirical Studies on Price Transmission and Market Integration in Nigeria

Several researchers have dealt on food crop price transmission and market integration issues in Nigeria. For instance, Amusa, (1997) in her study of the trend analysis of agricultural food prices in Nigeria reported that, food items such as vegetable oil, Garri, brown beans, ripe plantains, fresh tomatoes, green vegetables, onion bulbs, shelled melon seeds, experienced increase and fluctuations in their prices. Okoh and Egbon (2005) adopted the Mendoza and Rosegrant (1995) methodology, to study price transmission and market integration of agricultural commodities in Nigeria. The study showed that cassava root and Garri markets in the study area were weakly associated. The study also showed the presence of some

form of price leadership in the market system. Okoh and Egbon (2005) examined the integration of Nigeria's rural and urban foodstuffs markets. The study concludes that, the rural and urban foodstuffs markets were well integrated. The result further suggested that, the urban market price of food stuffs drive their corresponding rural market price. The size of the adjustment coefficient for the rural foodstuffs price revealed that, the speed of adjustment from disequilibrium was moderate. The persistence profile further showed that, it would take about five months for the effects of a shock on the market system to die out. Ohen *et al*., (2007) studied the vertical and horizontal price linkages for live catfish in Nigeria. The price variables used in the analysis were non -stationary and therefore were made stationary by first difference. The Johansen co-integration analysis was used to test for the long run relationship between the prices. Results indicated that producer and export prices were co-integrated. Furthermore, the Granger causality Wald test suggested that, the retail prices do have a causal relationship with producer prices.

The dynamic regression analysis of prices also revealed that, the markets for live catfish have strong price linkages and thus are spatially integrated. Adeoye *et al*., (2011) examined the price transmission and market integration of banana and plantain in Oyo state in Western Nigeria. Six market links rejected their respective null hypothesis of no Granger causality ($P>0.05$), two of the market links exhibited bi-directional Granger causality or simultaneous feedback relationship; while four market links exhibited unidirectional Granger causality at 5% and 10% level of significance. Urban plantain market occupies the leadership position in the commodity price formation and transmission in the markets investigated. The Index of market concentration (IMC) indicated that the markets exhibit low short run market integration.

Adenegan and Adeoye (2011) examined the level of market integration in tomato markets in rural and urban markets of Oyo State, western Nigeria. Secondary data on tomato price spanning from 2003 to 2010 were sourced from Oyo State Agricultural Development Programme (OYSADEP). The results of the analyses revealed that, prices of tomato were stationary at their level. Also, the urban price of tomato market did not Granger causes rural tomato market ($P > 0.05$), while rural tomato market Granger causes urban tomato market ($P< 0.05$). None of the markets links exhibited bi-directional Granger causality or simultaneous feedback relationship. Ojiako *et al.*, (2012) studied the spatial integration and price transmission in selected cassava products' (Lafun) markets in Nigeria. The study employed vector error correction model (VECM) methodology that revealed the presence of the long-run equilibrium following exogenous shocks in the markets. Also, the result discovered unilateral Granger causality that runs from the rural to the urban market. The impulse response analysis revealed that the rural price was more responsive to shocks emanating from the rural market compared to the reverse action.

The study further discovered that, the effects of rural prices' shock on urban price were very negligible at 3.2% after 10 weeks. The error correction model revealed significant causality link between the peripheral and central markets, suggesting a clear trend in price leadership. Akintunde *et al.*, (2012) studied the long run price integration of grains in Oyo state, western Nigeria. Empirical results revealed that the price series in all the markets were non stationary at their levels at 5% significance level. The integration test showed that none of the markets examined had prices tied together in the long-run. The Index of market concentration (IMC) indicates that the markets exhibited low short run market integration.

In the South-South region, Akpan *et al*., (2014) examined the price transmission and market integration of local and foreign rice in rural and urban markets of Akwa Ibom State. The findings showed that, price of local and foreign rice in rural and urban markets had constant exponential growth rate of 0.59%. Also, the Pearson correlation coefficient matrix revealed that, the rural price of local and foreign rice has linear symmetric relationships with their corresponding urban prices. The Granger causality test revealed bi-directional relationship between rural and urban price of local and foreign rice. The results of the co-integration test revealed the presence of co-integration between the rural and urban prices of local and foreign rice as well as support the hypothesis of perfect price transmission between the two markets. The results of the error correction (ECM) model also confirm the existence of the short run market integration between the rural and urban prices of local and foreign rice in the study area. In addition, the result shows that, the price of local rice in both rural and urban markets adjusted faster than prices of foreign rice once there is an exogenous shock in the marketing process of rice. The index of market connection (IMC) supported the high short run market integration between prices in rural and urban markets for local and foreign rice commodities in the study area.

More evidence of transmission arose within the domestic market, where long run parameters are significant between the wholesale and the retail prices of maize, sorghum, palm oil, imported rice, and cassava, whereas this is not the case for groundnut. For maize, these results are consistent with the conclusions of other studies (Badiane and Shively, 1998; Abdulai, 2000), indicating that the domestic market is relatively well integrated.

In principle, the lack of transmission with the world price may be related to the policy framework that the government was operating until the 1980s, which included price support through intervention. After that period, several changes in the institutional framework have been taking place in country, particularly with the implementation of the Economic Recovery Programme 1983, and with the related change in the exchange rate regime that took place over the 1983 to 1985 period (Badiane and Shively, 1998). The inclusion of a dummy variable accounting for a break in that period, and also the break of the sample into two periods did not yield improvements in the relation with the world reference prices, neither before nor after the mid-1980s.

The VAR model employed is a framework in which movements between time series can be defined by considering the auto regressive structure of the series. The variables p^1 and p^2, represent prices of the same good in two markets which are geographically separated. A co-integration relationship exists if there is a linear relationship between the prices that links the movements of the variables in a stable long-run equilibrium. This linear relationship is known as the co-integration vector, and can be used to test the Law of One Price, in either the strong or the weak form, depending on the exogeneity properties of the relationship.

Prices often contain a stochastic trend (for instance, inflation), making prices non-stationary over time. In a VAR model framework, one can utilize the non-stationarity of two variables to investigate common driving trends to the variables ("the system"). The idea is that the non-stationarity of the data might be caused by common shocks from other variables. This is the concept of price transmission as it is used to investigate market integration. In this framework, divergence from the long-run is transitory, based on the spatial arbitrage condition (Rapsomanikis *et al*. 2004). If such a long-run

relationship exists, the short-run parameters will describe the speed of convergence. The Law of One Price will have empirical support if a co-integrating relation of exactly this form is found to exist. These aspects will be investigated in the vector autoregressive (VAR) model framework, as described in Juselius 2006. The existence of a long-run equation will provide evidence that Ugandan prices are linked to world market prices, and the short-run parameters will describe in what ways the prices adjust to one another.

CHAPTER THREE

METHODOLOGY

3.1 The Study Area

The study was conducted in Kaduna state. The State is one of the 36 States of the Federal Republic of Nigeria. It is made up of 23 Local Government Areas (LGAs). Kaduna State occupies part of the Central position of the Northern part of Nigeria (with Kaduna as its capital) and shares common borders with Zamfara, Katsina, Niger, Kano, Bauchi and Plateau States. To the South-West, the State shares a border with the Federal Capital Territory, Abuja. The global location of the State is between longitude 30^{o} east of the Greenwich meridian and also between latitude 09^{o} and 11^{o} 30^{I} North of the equator. The State occupies an area of approximately 48,473.2 square kilometers and has a population of 6,066,652 (NPC, 2006). About 80% of this population engages in peasant farming. There are two marked seasons in the State, the dry windy season and the rainy (wet) seasons. The wet season is usually from April through October with great variations as one move northward. On the average, the State enjoys a rainy season of about five months. There is heavy rainfall in the southern parts of the State like Kafanchan and northern parts like in Zaria with an average rainfall of about 1016mm/per annum. (Issa *et al.,* 2014).

Generally, the soils and vegetation are typical red brown to red yellow tropical ferruginous soils and savannah grassland with scattered trees and woody shrubs. The soils in the upland areas are rich in red clay and sand but poor in organic matter. However, soils within the "fadama" areas are richer in kaolinitic clay and organic matter, very heavy and poorly drained, characteristics of vertisols. Fringe forests

("Kurmi" in Hausa) in some localities, and especially in the southern LGAs of the state, are presently at the mercies of increasing demands for fuel wood in the fast growing towns and urban centers. (Anonymous, 2013)

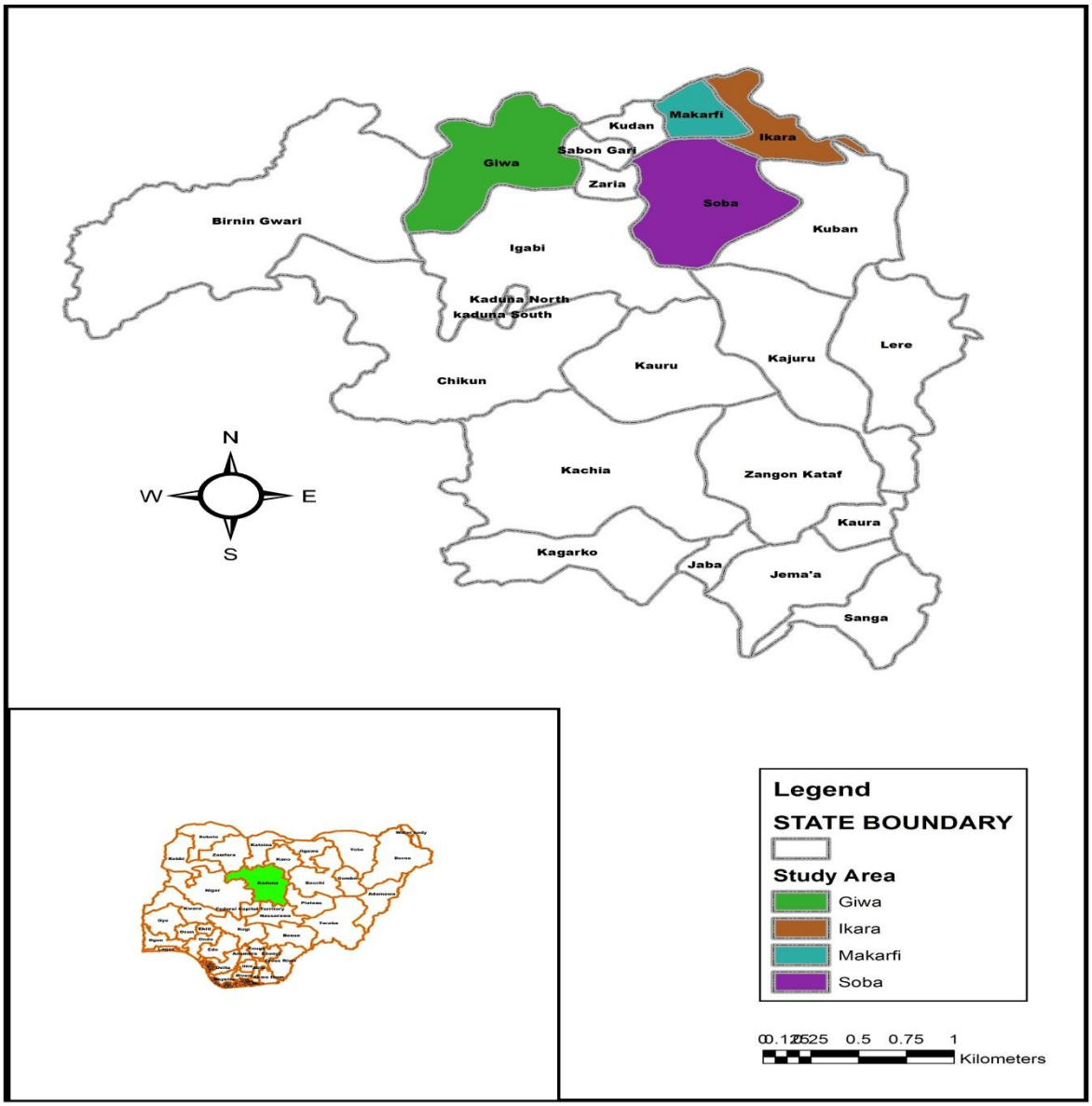


Fig. 2: Map of Kaduna State showing the study areas.

The state is mostly populated by Gbagyi, Hausa, Adara, Ham, Bajju, Ninkyob, Kurama, Koro, Atyap, Mada and Agworok ethnic communities. It is divided into 23 local government areas (Anon 2015). Local government areas in Kaduna state include : Birnin Gwari, Chikun, Kajuru, Giwa, Igabi, Ikara, Kubau, Jaba, Jama'a, Sanga, Kachia,

Kagarko, Kaduna North, Kaduna South, Kaura, Kauru, Lere, Makarfi, Kudan, Soba, Zangon Kataf, Sabon Gari and Zaria. (NPC, 2006; Ajibade and Adija 2009). The state falls within the savannah region where cowpea production is prominent (Adeola *et al.,* 2011). Agriculture is the main stay of the economy of Kaduna state with about 80% of the people actively engaged in farming. Cash and food crops are cultivated and the produce includes: yam, cotton, groundnut, tobacco, maize, cowpea, guinea corn, millet, ginger, rice and cassava. In a study conducted by Adeola*et al.,* (2011) it was concluded that cowpea production in Kaduna state is profitable with a return of 45 kobo on every naira invested in cowpea production.

Cowpea is an important source of plant protein in Nigeria and most especially in Kaduna state; it is the most important economically and nutritionally indigenous legume crops, especially in Nigeria. Cowpea is rich in protein and constitutes a staple food for people in rural and urban areas, (Baributsa, *et al.*,2010).

Economically, cowpea has a great value in the internals trade in country because it promotes trade between the production area and non-producing area. It also serves as a source of income for middlemen who embark on transportation from one place: to another. The returns from cowpea marketing like any other business firm ensures sustainability of the system through enhance revenue generation to both marketers and producers. However, the challenge that marketers face is to satisfy consumer's wants at a reasonable profit level and in a socially acceptable manner (Kotler, 1990).

3.2 Sample Size and Sampling Procedure

A multi-stage sampling technique was used for sample selection. The first stage involves the purposive selection of Maigana agricultural zone in Kaduna State due the availability of secondary data on the monthly wholesale price of cowpeaand high marketing of cowpea. The second stage involved purposive selection of Giwa market as a reference market while Ikara, Makarfi, Shika, Galadimawa and Tudun saibu markets as the supplying markets from the selected agricultural zone. Finally, a simple random technique was employed to select 15% of the sample Frame (1474) of the food grains marketers obtained from the list of Marketers' Associations/Union. In all, a total of two hundred and twenty-one (221) marketers were used as sampled size.

Table 3.1: The distribution of the sampling size for the study

Agric. zone	Reference market	Selected market	*Sample frame	Sample size 15%
A		Ikara	329	49
		Makarfi	105	16
B	Giwa	Giwa	357	54
		Shika	118	18
C		Galadimawa	234	35
		T/Saibu	331	50
Total			**1474**	**221**

*Source: Market Survey of Food Grain Marketers' Association in the study area (2014)

3.3 Data Collection

Primary and secondary data was used for the study. Primary data was be obtained through structured questionnaires, interviews and market surveys to generate

information on a) marketers' socio-economic characteristics such as age, gender, household size, educational status, marketing experience, years spend in the business, business size, b) Constraints faced by the marketers, c) Mode and Costs of storage, Source of supply, Mode and Costs of Transportation and other Handling cost. These data was obtained based on a list of registered members of Food Grain Marketers Association/Unions in the study area. Secondary data covered the wholesale of monthly prices for 96 months (2007-2014) which was obtained from the Kaduna Agricultural Development Programme Office (KADP).

3.4 Analytical Techniques

The tools of analysis used to achieve the objectives of the study were; Descriptive statistics, spatial price model and regression model.

3.4.1 Descriptive statistics

Descriptive statistics such as percentages, frequency distribution tables, trend analysis, standard deviation, coefficient of variation was used to achieve objectives (i), (ii), and (v).

3.4.2 Spatial Price Model

A model of spatial price relationship developed by Hays and McCon (1977) was adopted and use to achieve objective (iii). In the model, Giwa market was considered as the central market (a border town and consuming centre); a parity price was calculated at Giwa Market.

The price spread was then computed as follows:

$$PP_{ij} = P_i - \left(HC_{ji} + TC_{ji} + AS_{ji}\right) - (6)$$

Where:

PP_{ij} = The calculated parity price of one ton of grain from the i^{th} market (Urban Markets: i.e. Giwa) in relation to the j^{th} markets (1, 2, 3, 4and 5 which are Ikara, makarfi, Giwa, Shika, Galadimawa and Kafanchan markets respectively).

P_i = The actual wholesale price of one ton of grain at the i^{th} market.

HC_{ij} = Handling costs involved in moving one ton of grain from the j^{th} to the i^{th} market.

TC_{ij} = Transport cost for moving one ton of grain from the j^{th} to the i^{th} Market.

AS_{ij} = The charge for the assemblers' service in moving one ton of grain from the j^{th} to the i^{th} market.

The actual prices spread between any two markets were:

$$PS_{ij} = PP_{ij} - P_j \quad \text{---------- (7)}$$

Where:

PS_{ij} = The price spread for one ton of grain between the i^{th} and the j^{th} market.

P_j = The actual wholesale price of one ton grain in the j^{th} market.

3.4.3 Regression model

The regression model was used to examine the significance of storage cost as a factor in explaining seasonal price variation of selected food grains under study, in the study

area, following Afolami, (2000). This was used to achieve objective (iv) of the study. The Model was specified as:

$$P_t = \alpha + \beta T + U_t \quad \text{---------- (8)}$$

Where

P_t = Price per kg of selected food grains under study at time t,

T = trend variable for months, which was serially numbered as 1, 2, 3 … starting from the month with the lowest index number.

$\propto$ and β are the intercept and slope parameter of the model. And U = Error term.

Storage costs per ton/month for selected food grains were estimated from the primary data to be collected. The average storage costs that were obtain from the five selected markets in the study area were compare with the price rise per month, estimated from equation (8). The element of storage costs in ₦/ton consider were: rentage on storage facilities; cost of preserving commodity; loss due to pest, disease and shrinkage; loss of handling and cost of sack used for storing the selected grains under study.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Socio-economic Characteristics of Cowpea Marketers

4.1.1 Age distribution of cowpea marketers

Age is one of the demographic factors that are useful to describe traders experience and networking. The age of sample traders ranged from 19 to 65 years. The average age of 34 years obtained for the cowpea marketers indicate that they were still in their active productive years which could lead to high level of market efficiency and this youthful age positively influence the respondents' participation in cowpea marketing. This implies that the marketers are strong, agile, and active and can participate adequately in marketing activities. This agrees with the findings of Muhammed (2011) opined that the average age of all sample traders was 40.3 years and standard deviation was 11.33 years. This agrees with the findings of Bassey *et al* (2013) who conducted a study on rice posited that rice marketers were at their youthful age, a situation which can promote market efficiency.

Table 4.1: Age distribution of the respondents

Age	Frequency	Percentage
<20 Years	3	1.36
20-29 Years	85	38.46
30-39 Years	71	32.13
40-49 Years	41	18.55
50-59 Years	15	6.79
60-69 Years	6	2.71
Total	**221**	**100**
Min	19	
Max	65	
Mean	34	
S.E	0.72	

4.1.2 Household size of cowpea marketers

The significance of household size in agriculture hinges on the fact that there is appreciable number of persons and availability of labour supply to accomplish various farm operations for cowpea production and marketing, the amount of farm produce retained for domestic consumption and the marketable surplus are all determined by the size of the farm household.

Table 4.2 shows the distribution of cowpea marketers by household size. Majority of the marketers 44.34% had household size that ranged from 1-5 persons in their family. The maximum family size observed was 25 persons with a minimum of 1 person and average of 8 persons (Table 4.2). This implies that the marketers in the study area might have advantage of family labour availability if many household members participate in marketing activities. According to Okoruwa and Ogundele (2006) large family size

does not necessarily translate to higher use of family labour because some of the young able bodied family member may prefer other jobs than marketing.

Table 4.2: Distribution of cowpea marketers according to their household size

Household size	**Frequency**	**Percentage**
1-5	98	44.34
6-10.0	56	25.34
11-15.0	40	18.10
16-20.0	22	9.95
21-25.0	5	2.26
Total	**221**	**100**
Min	1	
Max	25	
Mean	8	
S.E	0.38	

4.1.3 Membership of cooperative society

The result in Table 4.3 revealed that about 64% of cowpea marketers do not participate in any cooperative association. The average years of marketing association was 9 years. The effect of this result that majority (64%) do not belong to any cooperative is that most of the cowpea marketers in the study area do not enjoy the assumed benefits accrued to co-operative societies through pooling of resources together for a better expansion, efficiency and effective management of resources and for profit maximization. This finding is in line with Odebiyi (2010) that cooperative groups ensure that their members derive benefits from the groups such as they could not derive individually.

Table 4.3 Membership of cooperative society

Cooperative membership	Frequency	Percentage
Non member	141	63.80
1-10	3	1.36
11-20	70	31.67
21-30	2	0.90
31-40	5	2.26
Total	**221**	**100**
Min	1	
Max	35	
Mean	9	
S.E	0.48	

4.1.3 Educational level of cowpea marketers

The level of education determines the level of opportunities available to improve livelihood strategies, enhance food security, and reduce the level of poverty. It affects the level of exposure to new ideas and managerial capacity in marketing and the perception of the household members on how to adopt and integrate innovations into the household's survival strategies.

The result presented in Table 4.4 revealed that about 30% of cowpea farmers had no formal education, about 8% of the respondent had only primary education, and 27% had secondary education while about 35% had tertiary education. However, altogether about 70% of the farmers had formal education. This indicates that the farmers' educational level is high. This finding is in line with Amaza (2009), who found that marketers are literate which could have increased their marketing efficiency.

Table 4.4: Distribution of cowpea marketers according to their level of education

Educational level	Frequency	Percentage
No formal education	68	30.15
Primary education	18	8.14
Secondary education	57	25.79
Tertiary education	78	35.29
Total	**221**	**100**

4.1.4 Marital Status of cowpea marketers

In rural communities, marriage is a respected and prestigious institution that bestows social status and recognition on people. The result in Table 4.5. shows the distribution of the marital status of household heads in the study area. The significance of marital status on agricultural production and marketing can be explained in terms of the supply of agricultural family labour. It is expected that family labour would be more available where the household heads are married.

The majority 71.4% of the cowpea marketers are married, 27.6% of the cowpea marketers were single while 1.34% were divorced. This implies that about 71% of the marketers interviewed in the study area have family responbilities, which shows that majority were married and have children which would help in appreciable number of family labour supply to accomplish various market operations.This finding is also in line with Solomon (2008) and Banmeke (2003), which indicates that large household size assists more on agricultural activities.

Table 4.5: Marital status of cowpea marketers

Marital status	Frequency	Percentage
Single	61	27.60
Married	157	71.04
Divorce	3	1.36
Widowed	Nil	Nil
Separated	Nil	Nil
Total	**221**	**100**

4.1.5 Credit obtained by cowpea marketers

Adequate funding is required by marketers to finance all cowpea marketing activities. However, a large number of marketers face serious shortage of funds to finance their cowpea marketing activities. They obtained their funds through formal and informal sources as presented in Table 4.6.

The results indicated that the majority 77.83% of marketers had no access to credit to finance their cowpea marketing activities while about 22.17% had access to credits. This low access to credit could be attributed to the fact that government seldom grants financial credit to large numbers of marketers. Ekong (2003) asserts that credit is a very strong factor that is needed to acquire or develop any enterprise; its availability could determine the extent of production capacity. This agrees with the findings of Bassey*et al.,* (2013), who found that most of the rice marketers have their finance through personal savings and does not borrow from any commercial banks even though his finding varies with this one at the issue of other financial institution.

Table 4.6: Distribution of cowpea marketers according to access to credit

Access to credit	Frequency	Percentage
No access	172	77.83
Access	49	22.17
Total	**221**	**100**

4.2 Marketing Channels of Cowpea in the Study Areas

Cowpea is an important agricultural commodities and source of plant protein. Marketing of cowpea channels is therefore, key to the success of many farmers and commodity marketing organizations. Cowpeas are produced mainly by small-scale farmers in the study area.

This study found out that a typically farmer in the study area will sell less than one bag of 60-80 kg (the wholesale unit) at a time. Sales are made initially to farm-gate middlemen or local assemblers who perform most of the bulking activity. Farmers have full sacks; they may sell directly (or through commission agents) to either rural assemblers or to rural-urban wholesalers. These two groups of traders also act as commission agents. Sometimes farmers sell to other farmer-traders. When farmers live close to urban centers, they sell the crop directly to urban consumers or to urban retailer commission agents who, in turn, sell to consumers. This implies that the principal players in cowpea marketing channels in the study areas are producers (farmers), Village Merchant, Wholesalers, Retailers, and Consumers. Farmers also sale directly to wholesalers and retailers which in turn they sale to consumers or urban markets or from farmers directly to consumers in some cases.

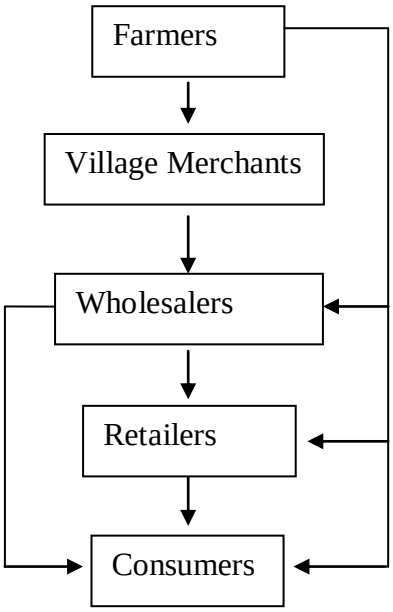


Figure 2**:** A Typical Cowpea Marketing channels in the study area.

4.3 Trend Analysis of Cowpea Marketing

Price trend helps to predict the future movement of a stock based on past data. It is based on the idea that what happened in the past years gives traders an idea of what will happen in the future. The price trend showed the pattern of price variability of agricultural produce across the markets selected in the study area. One important thing to note is that their pattern of price variation is seasonal in nature. The figure (4) depict the nature and patterns of the variability of cowpea marketing in selected markets over the specified period of eight years (2007-2014).

The result showed undulated fluctuations in the price of cowpea (Beans) during the period of investigation. There is harmony in price dispersion of beans in rural and urban market. This means that, the pattern of fluctuations in price of beans is almost similar for urban and rural markets. This can be attributed to the fact that the crop has so many uses. The price is highest during the off-season and lowest during the harvest

period in most cases. Also, the period of festivity makes the price of cowpea to be very high. The price of cowpea is lowest in those markets that are closer to the production side of the crop. In 2008 the price of cowpea sharply increases in the area under study as can be seen by the rise in price from ₦14,000 to ₦16,000 per ton. Following this nature of fluctuations in the price of Beans in the rural and urban markets; it is suggested that, there is a strong evidence of symmetric price transmission mechanism or market integration in the prices. Akpan *et al*. (2014) has reported similar behaviour in rural and urban price of rice in Southern Nigeria. Taru (2012) documented that such price variation among markets in Nigeria is necessary for the existence of a market, as it create incentives that attract market actors to engage in trade. In his opinion, excessive variability and no variability of staple food prices should rather be a point of concern.

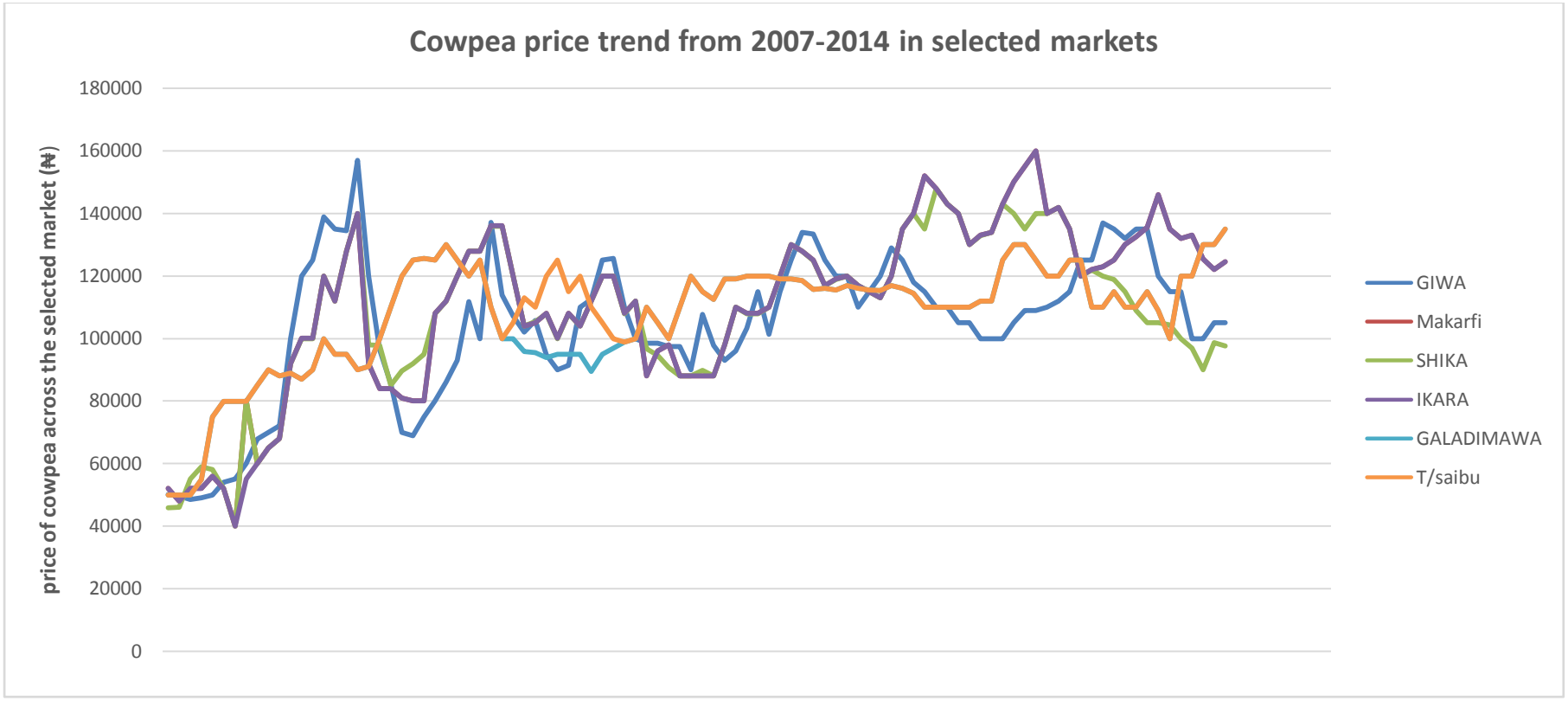


Figure 3:cowpea price trend from year 2007-2014 in selected markets of Kaduna State

4.4 Analysis of Spatial and Temporal Pricing Efficiency

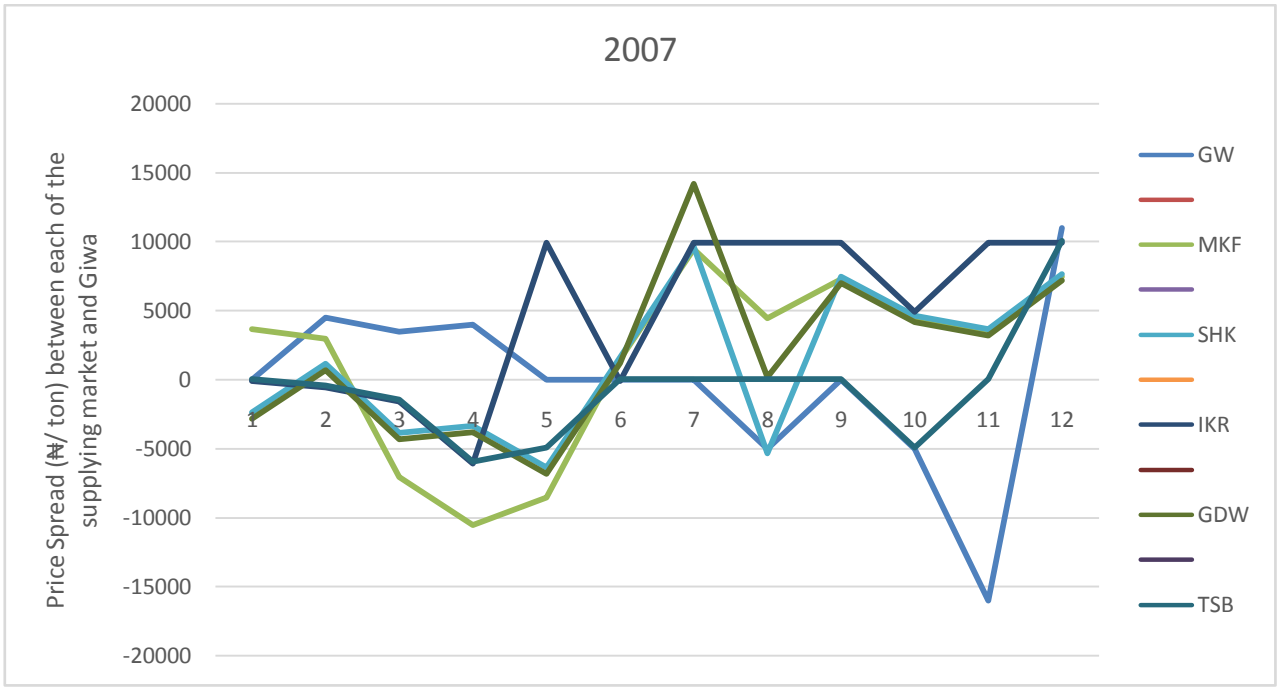
4.4.1 Analysis of Spatial Price Spread

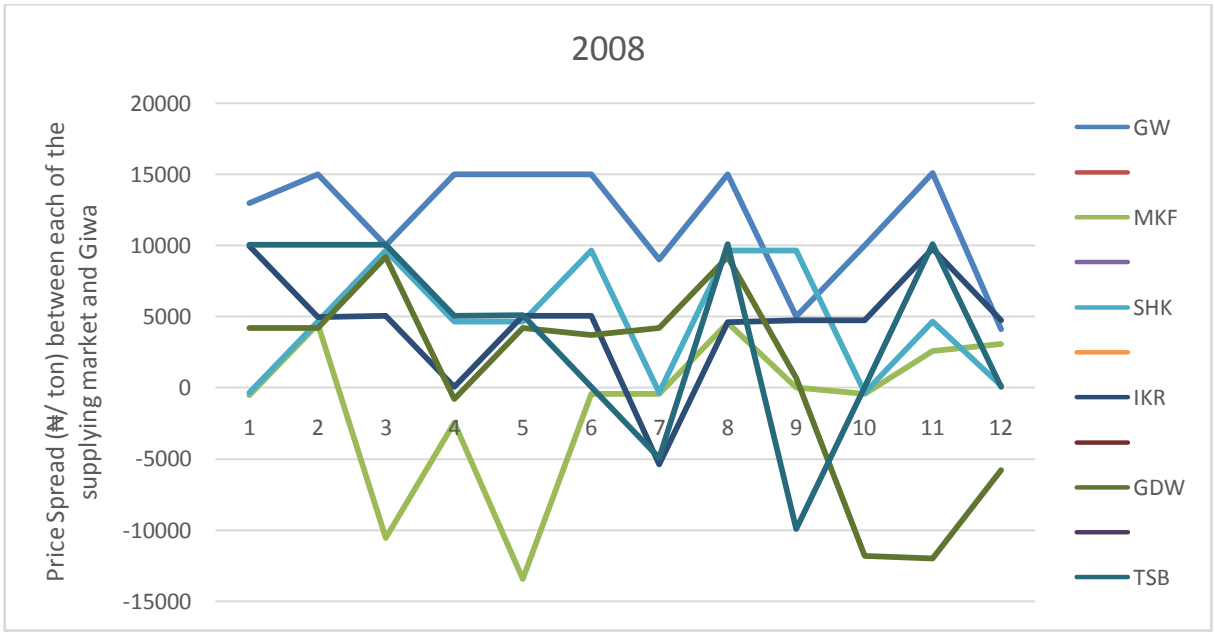
Spatial price relationships are determined largely by transfer cost between regions. Transfer costs, which include loading or handling cost, assemblers' charges as well as transportation charges, are often high in relation to the farm value of agricultural commodities. Farm prices differ depending on whether the production area is near or far from the principal market areas. Producer prices are invariably lower and tend to be more unstable in distant areas.

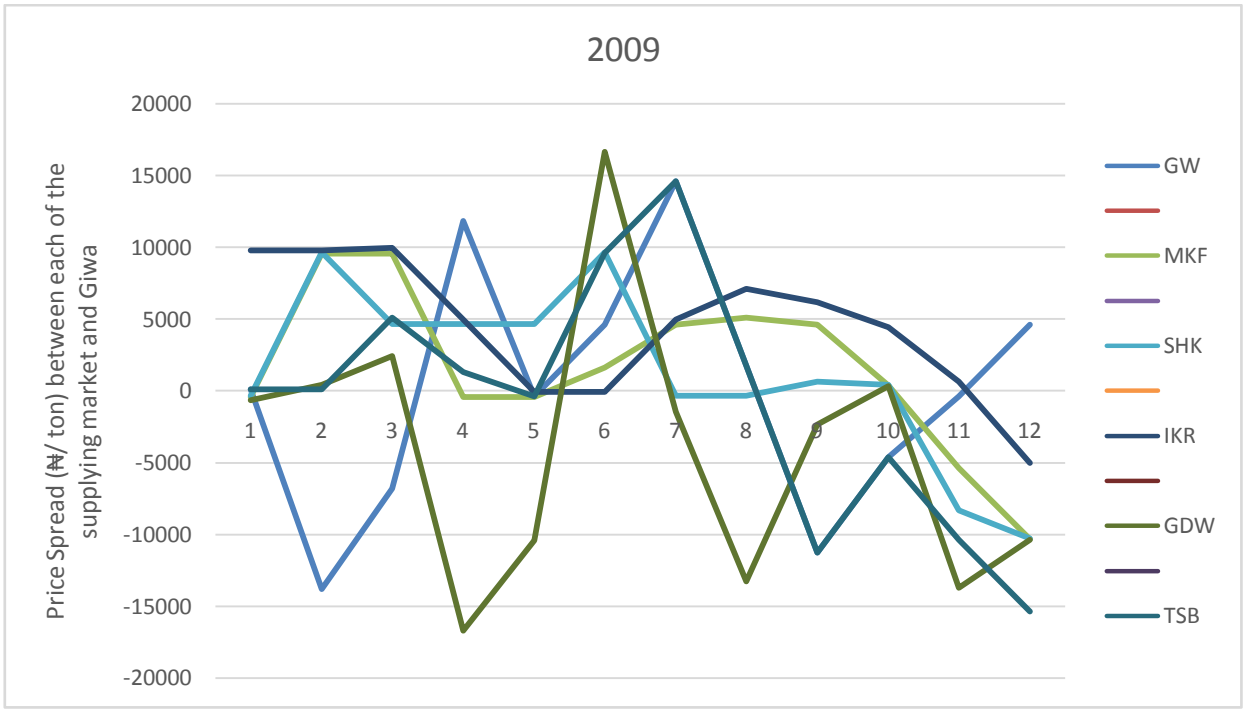
The results of the spatial price relationship or the ability of the marketing system to allocate cowpea over space from the selected supplying markets to Giwa for cowpea are presented in Table 4.7. The value of positive price spreads for cowpea across the market studied was lowest for the markets in Ikara and Galadimawa (₦13,950) and the highest for market Giwa (₦17,350). Table 4.7 also revealed both the negative and the positive values of price spreads from the lowest to highest value ranged from (−₦16,740, 28th and 37th months) to (₦16,670, 30th and 37th months), (−₦16,990, 37th months) to (₦16,350, 85th and 87th months), (−₦16,940, 37th months) to (₦13,950, 96th 9months), (−₦8,150, 48th months) to (₦13,950, 82th months), (−₦16,000, 11th months) to (₦17,350, 59th months) and (−₦16,600, 72th and 78th months) to (₦16,650, 59th months) in Giwa, Makarfi, Shika, Ikara, Galadimawa, and Tudun saibu markets respectively. The least price spread all through the investigated markets was recorded in Galadimawa market (--₦8150, 48th months). This implies that the prices in the rural markets were higher than that of urban markets. The plausible explanation for this might be because few quantity of cowpea is supplied in the area due to transportation cost, since the area is located several kilometers away from the reference markets or

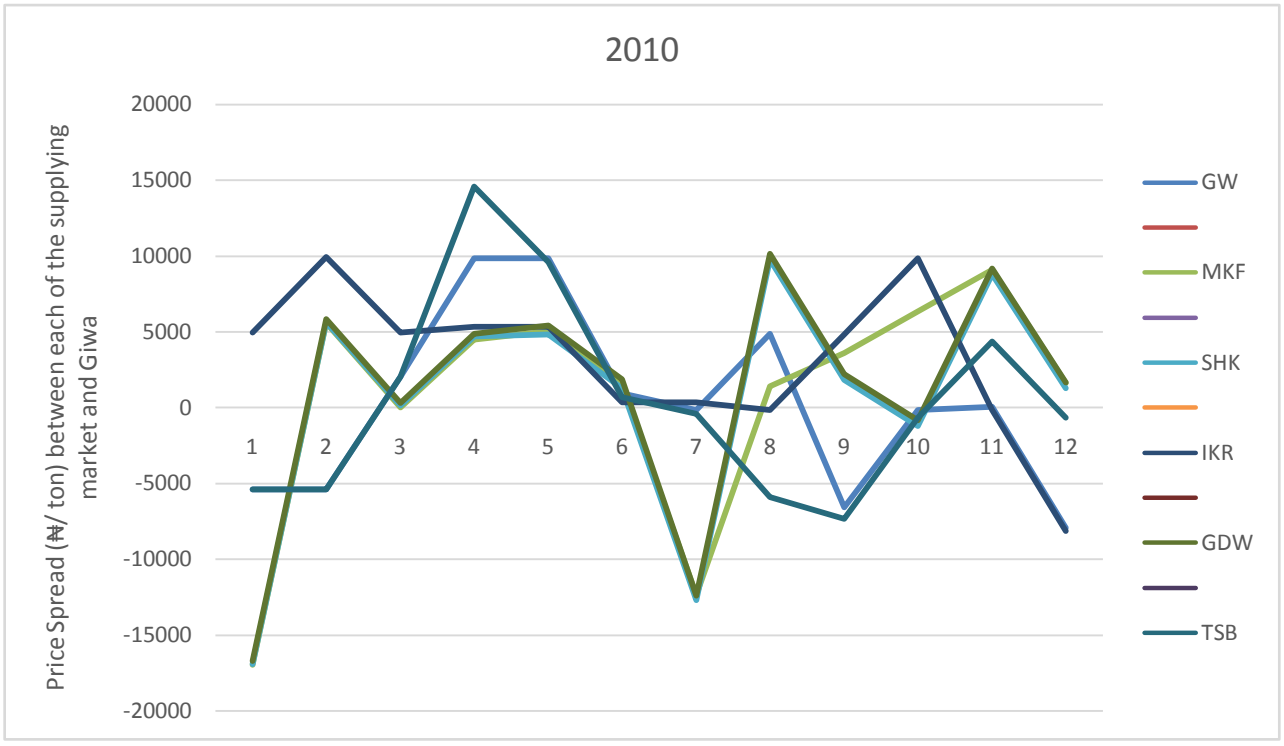
farms. This finding corroborates with that of Olapado (2007) who reported that prices in the urban markets were higher than rural markets in his study on marketing margin and spatial pricing efficiency of pineapple in Nigeria.

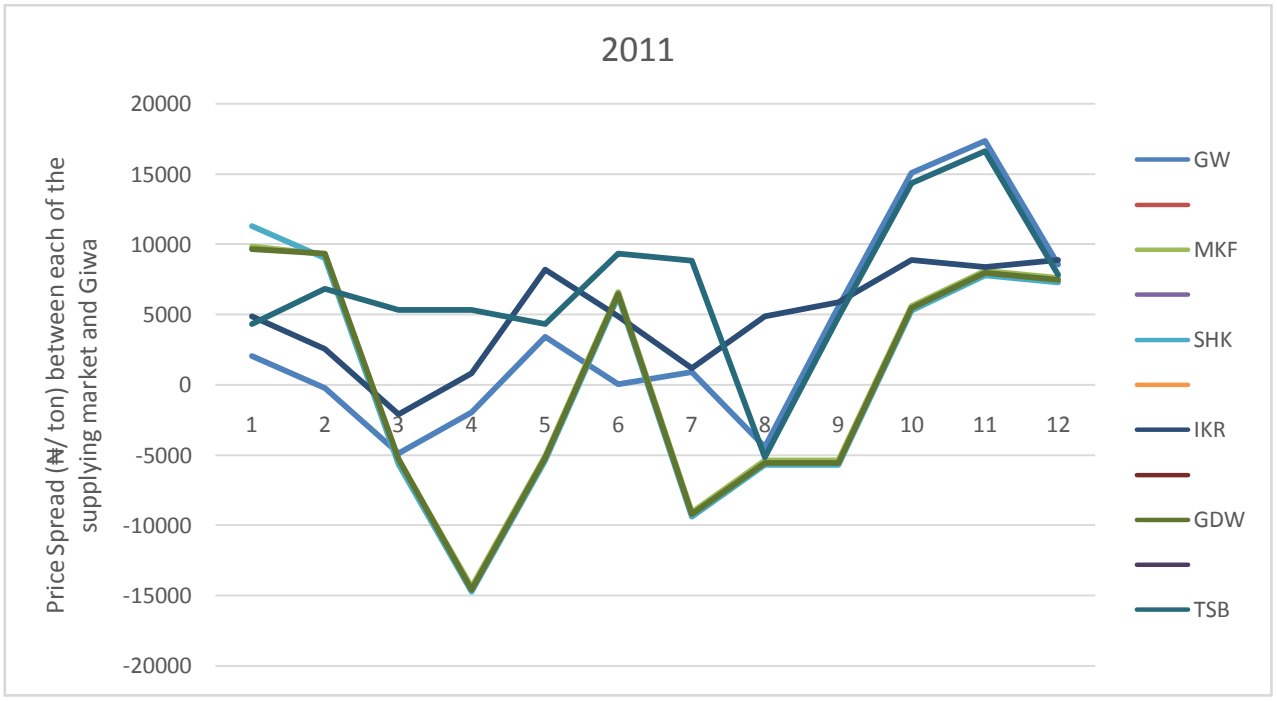
The average positive spreads stood from the lowest value of (₦77) in Makarfi market to the highest value of (₦4342) in Galadimawa market. These results strongly suggest that the excess prices differences between the Giwa market and other supplying markets did not result from planned manipulation under monopolistic conditions. It is rather a result of imperfection inherent in the system which is due to certain characteristics of ineffective information and lack of specialization in production of the crop which leads to lack of concentration in supply. This inefficiency may be attributed to several factors including some degree of market domination by traders, lack of adequate market information, institutional barriers to the smooth flow of cowpea between markets, traditional buying and selling practices that condition traders to buy and sell cowpea only in specific markets and period regardless of prevailing prices, high market risk in moving cowpea. This tends to indicate that on the average, markets price differentials are relatively greater than transfer costs in most cases. These positive price spreads imply imperfections in the market and a departure from competitive condition.

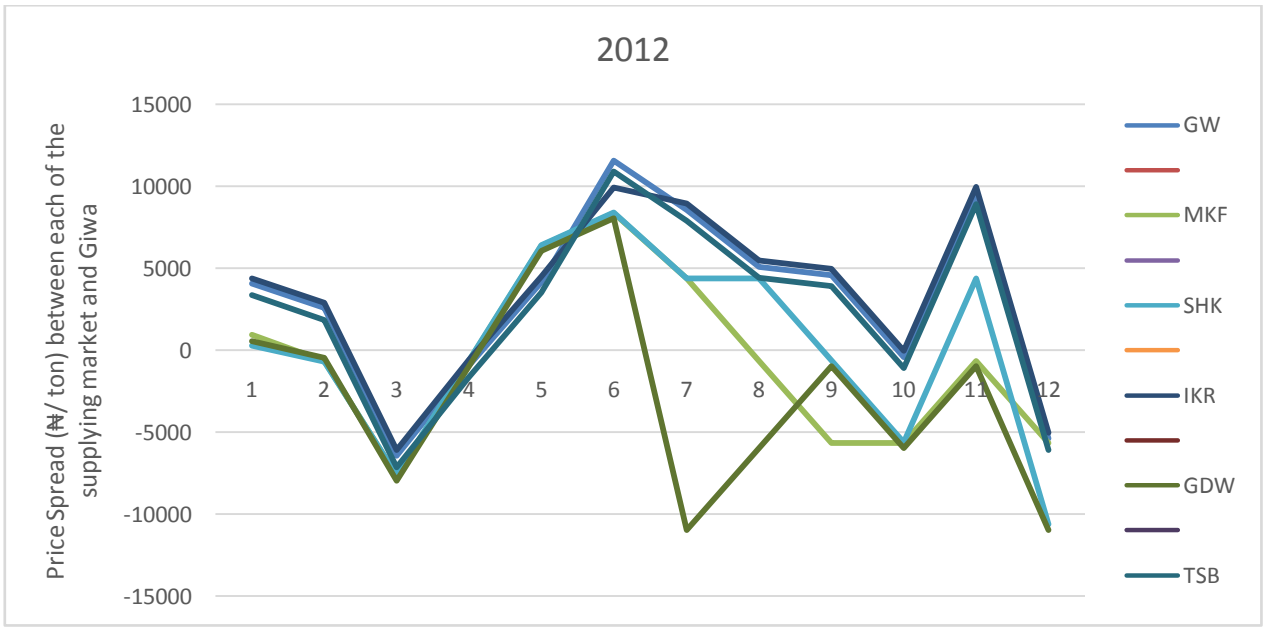

2007
Price Spread (₦/ ton) between each of the supplying market and Giwa
20000
15000
10000
5000
0
-5000
-10000
-15000
-20000
1
2
3
4
5
6
7
8
9
10
11
12
GW
MKF
SHK
IKR
GDW
TSB

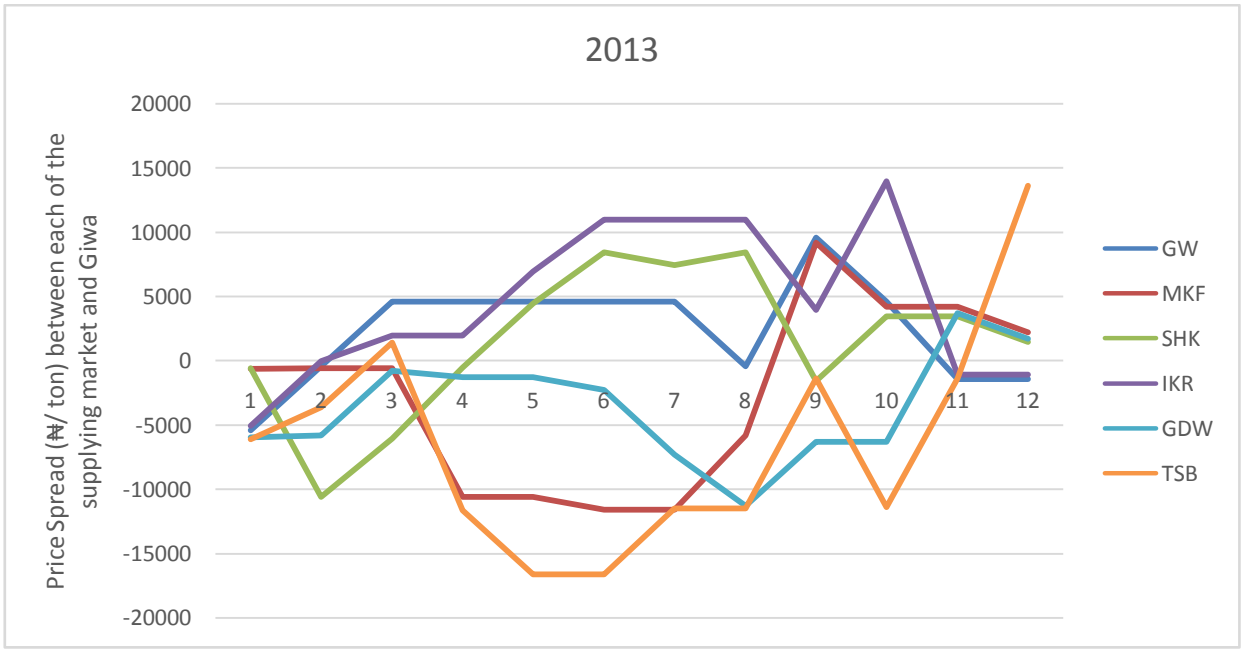

2008
Price Spread (₦/ ton) between each of the supplying market and Giwa
20000
15000
10000
5000
0
-5000
-10000
-15000
1
2
3
4
5
6
7
8
9
10
11
12
GW
MKF
SHK
IKR
GDW
TSB

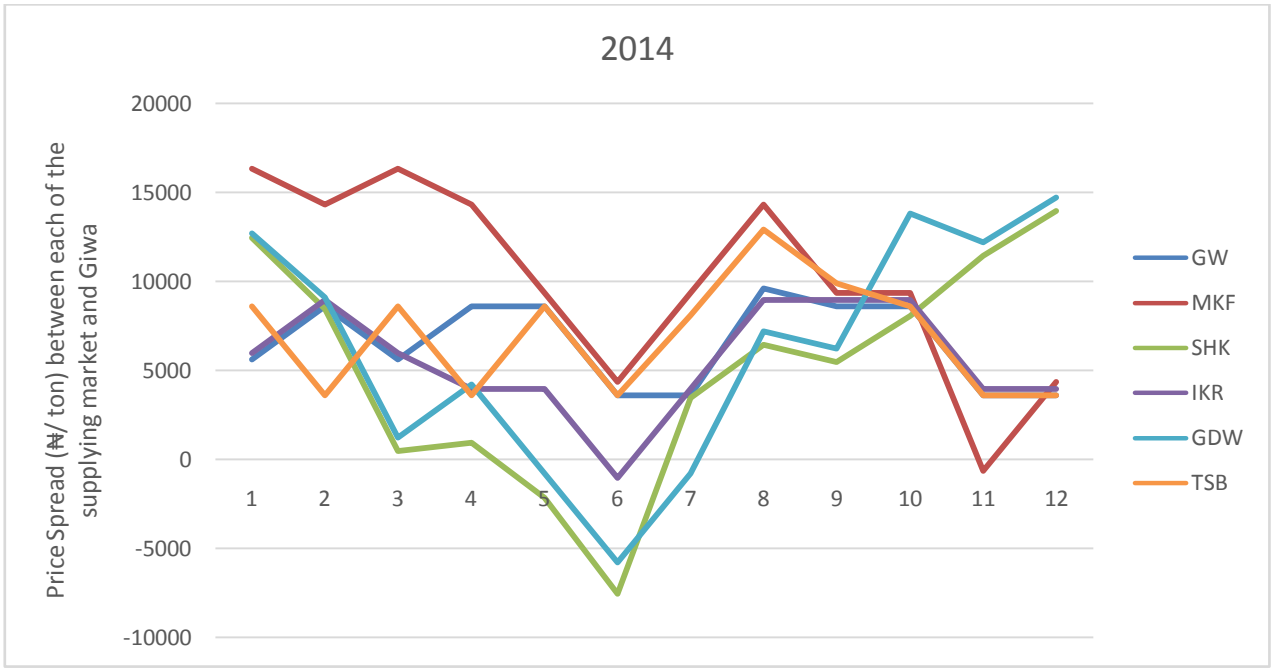

2009
Price Spread (₦/ ton) between each of the supplying market and Giwa
20000
15000
10000
5000
0
-5000
-10000
-15000
-20000
1
2
3
4
5
6
7
8
9
10
11
12
GW
MKF
SHK
IKR
GDW
TSB


2010
Price Spread (₦/ ton) between each of the supplying market and Giwa
20000
15000
10000
5000
0
-5000
-10000
-15000
-20000
1
2
3
4
5
6
7
8
9
10
11
12
GW
MKF
SHK
IKR
GDW
TSB


2011
Price Spread (₦/ ton) between each of the supplying market and Giwa
20000
15000
10000
5000
0
-5000
-10000
-15000
-20000
1
2
3
4
5
6
7
8
9
10
11
12
GW
MKF
SHK
IKR
GDW
TSB


2012
Price Spread (₦/ ton) between each of the supplying market and Giwa
15000
10000
5000
0
-5000
-10000
-15000
1
2
3
4
5
6
7
8
9
10
11
12
GW
MKF
SHK
IKR
GDW
TSB


2013
Price Spread (₦/ ton) between each of the supplying market and Giwa
20000
15000
10000
5000
0
-5000
-10000
-15000
-20000
1
2
3
4
5
6
7
8
9
10
11
12
GW
MKF
SHK
IKR
GDW
TSB


2014
Price Spread (₦/ ton) between each of the supplying market and Giwa
20000
15000
10000
5000
0
-5000
-10000
1
2
3
4
5
6
7
8
9
10
11
12
GW
MKF
SHK
IKR
GDW
TSB

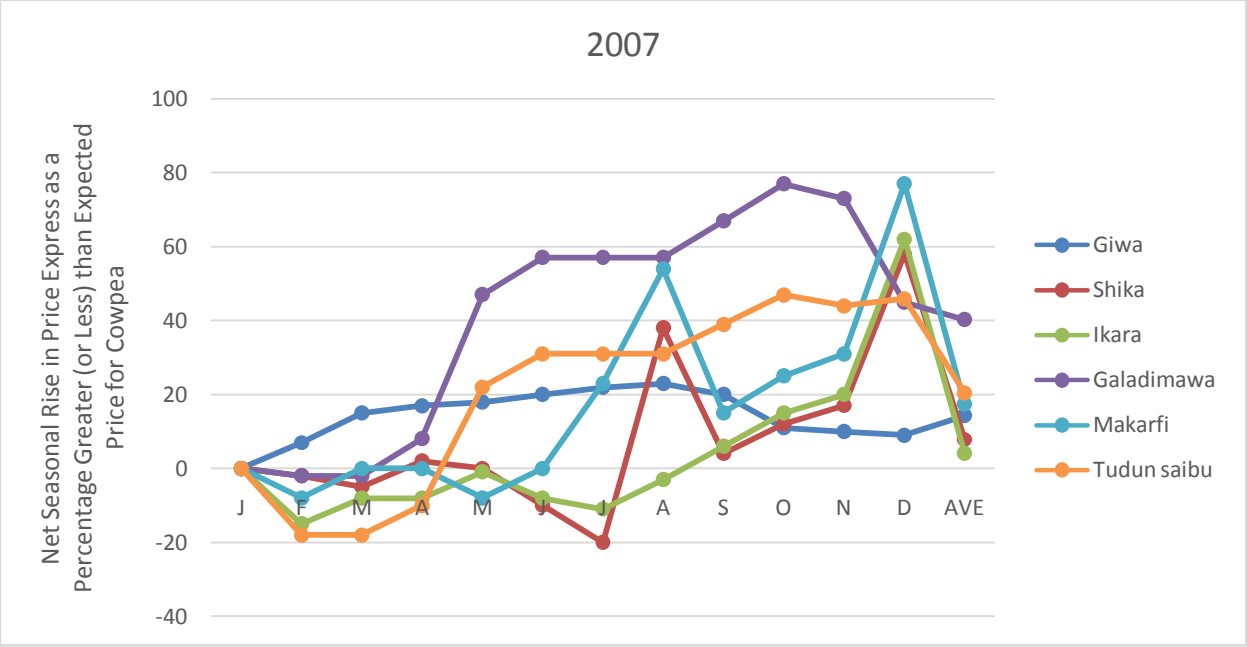
4.4.2 Temporal Price Analysis

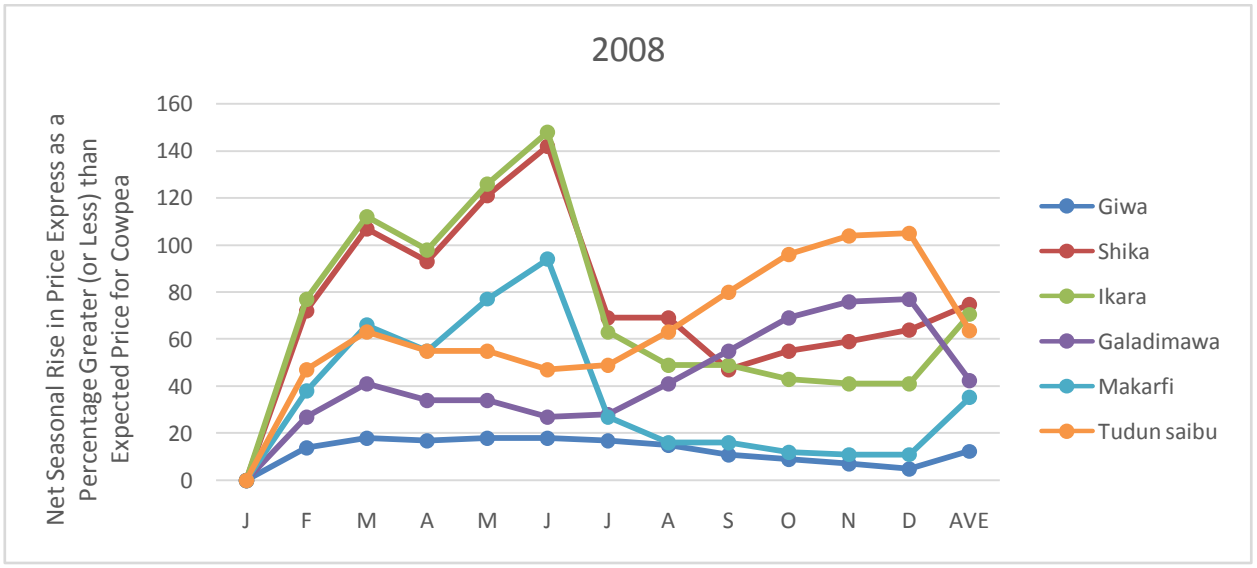
The result presented in Table 4.8 revealed that, there are significant seasonal variations in the prices of cowpea across the selected markets investigated over a period of eight years. The gross returns to storage are the highest of about 83% in 2009 followed by 74% in 2008 both at Shika. Comparing these figures to the current cost of borrowing capital - 9% per annum – it seems that the returns to storage are high. The profit from buying at harvest would have been obtained by selling in June (₦142) 2008 and July (₦121) 2008 both at Shika market. The price of cowpea across the markets under study varies as observed. This can be attributed to the fact that the crop has so many uses. The price is highest during the off-season and lowest during the harvest period in most cases. The price of the crop is always high especially during fasting period as a result of the excessive demand by consumer in the study area. This is the period when marketers make high profit.

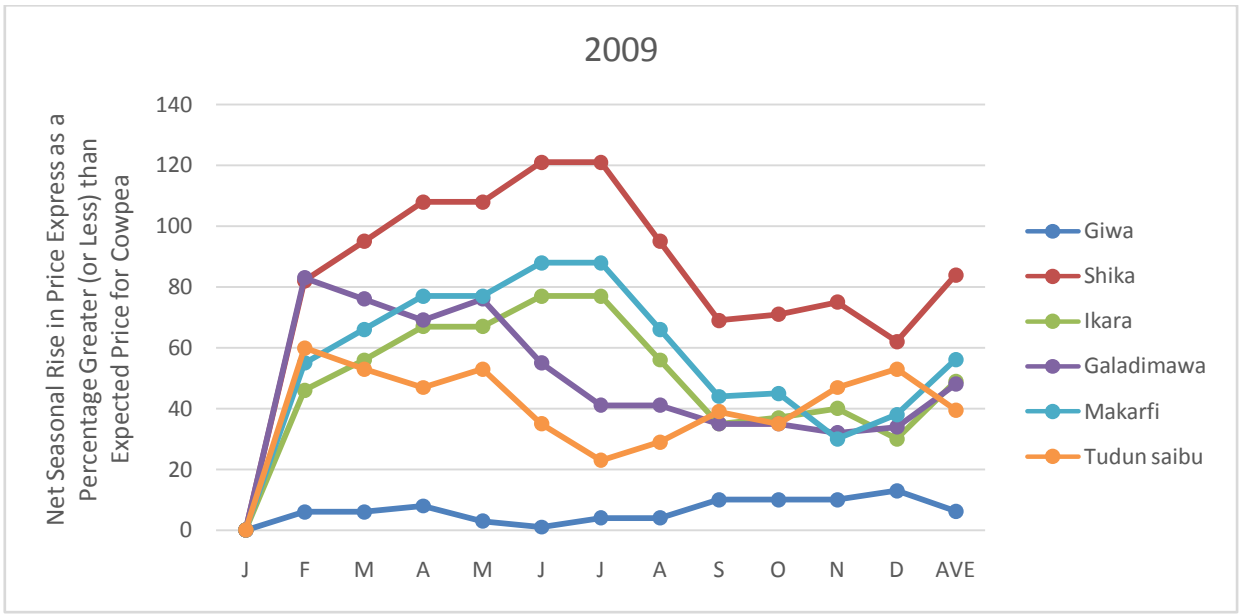
In temporal prices, there is price volatility which has plagued the economy over the years; lack of price information as well as poor storage infrastructure may be responsible causes. There are considerable losses during storage due to poor storage infrastructure and pest damage, storage facilities are not enough. If adequate storage facilities were available, large amount of cowpea would be bought at harvest, stored and then sold thereafter when prices are high. This calls for the provision of adequate and improved storage facilities and also the need for adequate capital provision through loans.

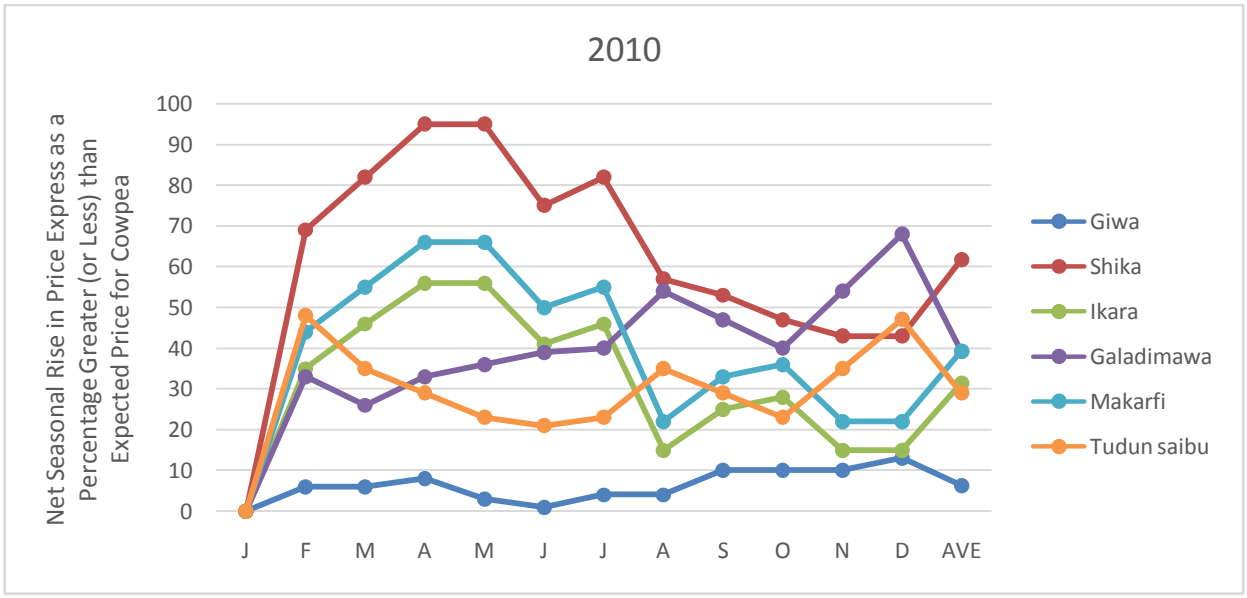
Comparison of the expected and actual price of storage across the six selected markets in the Table 4.8 shows that in 54 cases out of 56 the computed net seasonal storage

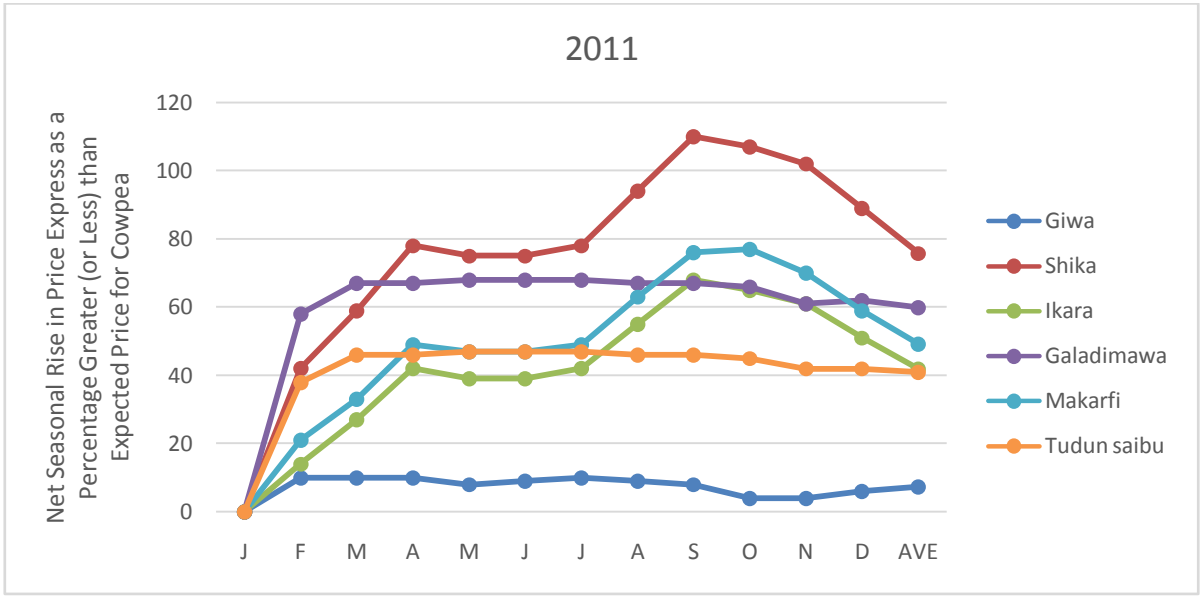
return exceed the costs of storage throughout the study. This implies that the marketers are making abnormal profit in the storage of cowpea over the years and hence brings an imperfection and inefficiency in the smooth activities of the marketing system. This is in line with the work of Nuhu *et al.,* (2009) in their work on food grain marketing in Northeast Nigeria: A Study of spatial and temporal price efficiency. So also, Taru (2012) documented that such prices variations among markets in Nigeria is necessary for the existence of a market, as it create incentives that attract market actors to engage in trade. In his opinion, excessive variability and in most cases, no variability of staple food prices should rather be a point of concern.

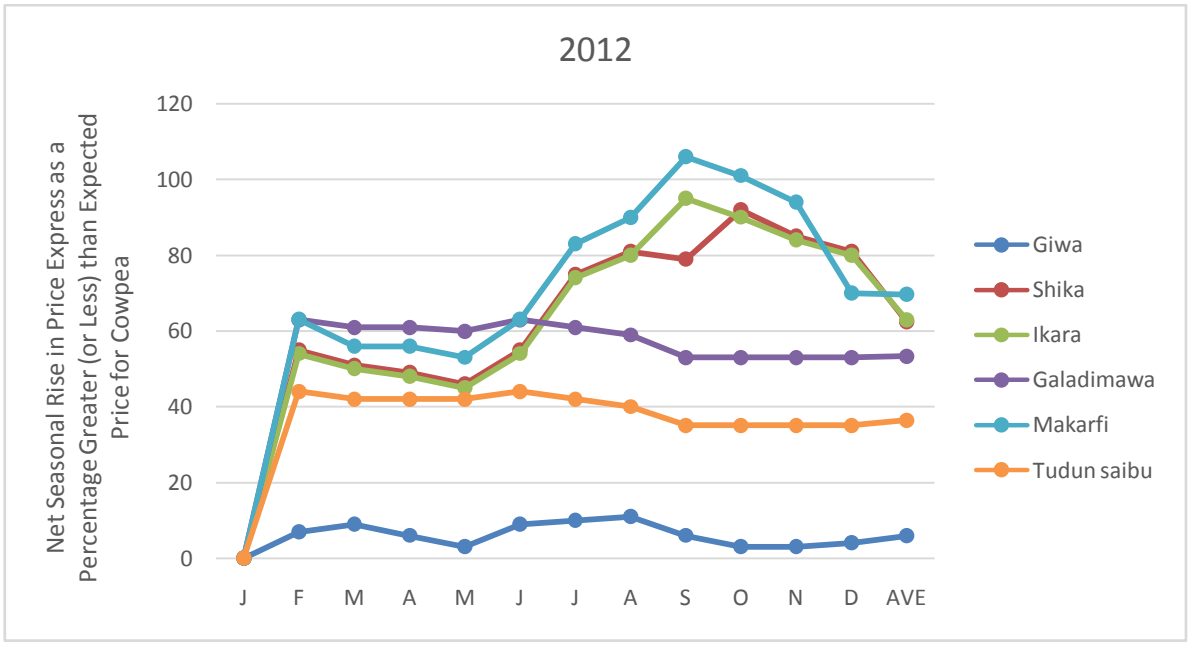


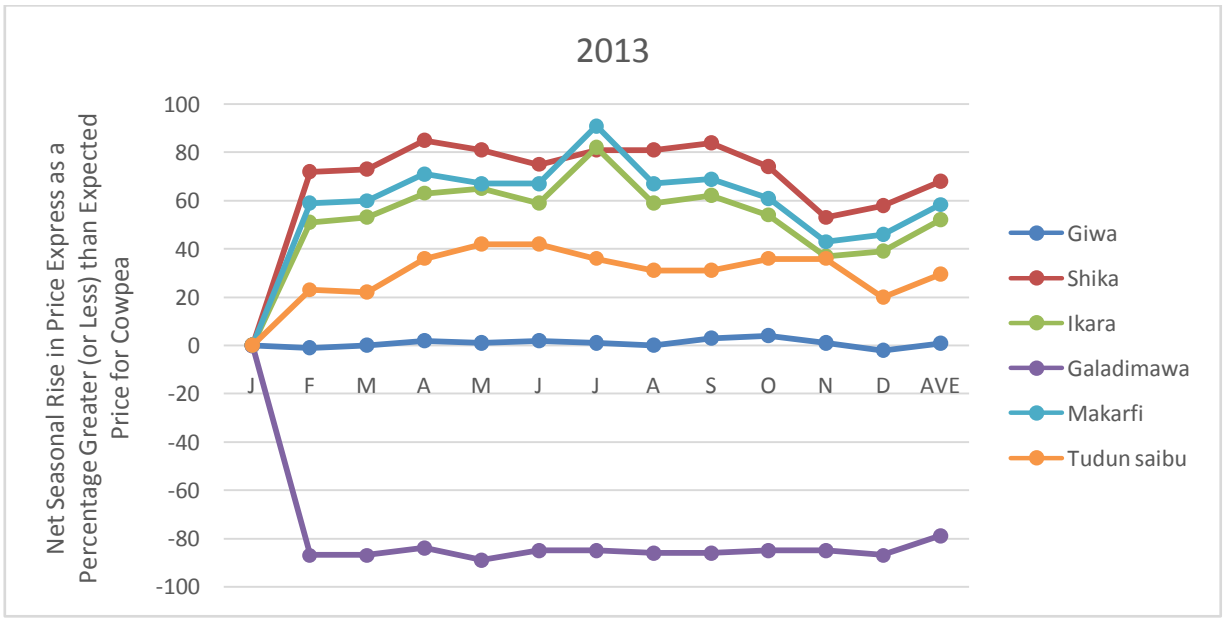

2008
Net Seasonal Rise in Price Express as a Percentage Greater (or Less) than Expected Price for Cowpea
160
140
120
100
80
60
40
20
0
J F M A M J J A S O N D AVE
Giwa
Shika
Ikara
Galadimawa
Makarfi
Tudun saibu

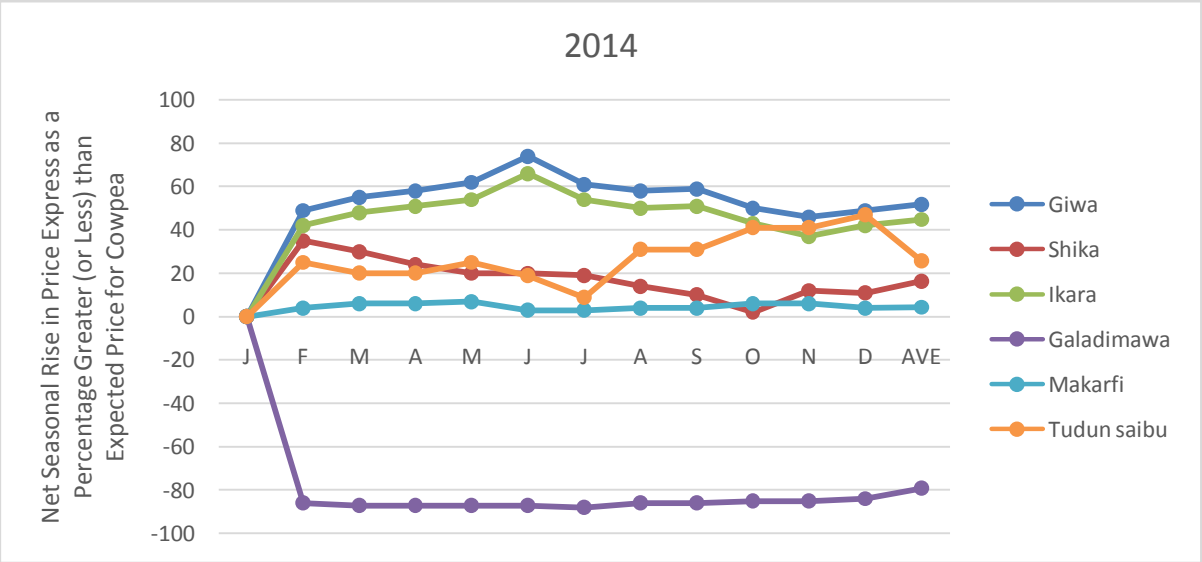

2009
Net Seasonal Rise in Price Express as a Percentage Greater (or Less) than Expected Price for Cowpea
140
120
100
80
60
40
20
0
J F M A M J J A S O N D AVE
Giwa
Shika
Ikara
Galadimawa
Makarfi
Tudun saibu


2010
Net Seasonal Rise in Price Express as a Percentage Greater (or Less) than Expected Price for Cowpea
100
90
80
70
60
50
40
30
20
10
0
J F M A M J J A S O N D AVE
Giwa
Shika
Ikara
Galadimawa
Makarfi
Tudun saibu


2011
Net Seasonal Rise in Price Express as a Percentage Greater (or Less) than Expected Price for Cowpea
120
100
80
60
40
20
0
J F M A M J J A S O N D AVE
Giwa
Shika
Ikara
Galadimawa
Makarfi
Tudun saibu


2012
Net Seasonal Rise in Price Express as a Percentage Greater (or Less) than Expected Price for Cowpea
120
100
80
60
40
20
0
J F M A M J J A S O N D AVE
Giwa
Shika
Ikara
Galadimawa
Makarfi
Tudun saibu


2013
Net Seasonal Rise in Price Express as a Percentage Greater (or Less) than Expected Price for Cowpea
100
80
60
40
20
0
-20
-40
-60
-80
-100
J F M A M J J A S O N D AVE
Giwa
Shika
Ikara
Galadimawa
Makarfi
Tudun saibu



4.4.3 Degree of market concentration

According to Kohls and Uhl (2002) Market concentration, the portion of the industry sales made by the largest firms, is another source of imperfect competition. Successful competitors frequently eliminate their rivals or discourage new firms entry, contributing to more concentrated markets. In general, the higher the level of market concentration, the less perfectly competitive the market is.

The concentration ratio is expressed in terms of CRx, which stands for the percentage of the market sector controlled by the biggest X firms. Four firms (CR4) concentration ratio is the most typical concentration ratio for judging the market structure (Kohls and Uhl, 1985). ACR4of over 50%is generally considered as strong oligopoly; CR4 between 33% and 50% is generally considered a weak oligopoly and a CR4 of less than 33% is un-concentrated market.

The cowpea market in the study area showed concentrated buyers. The analysis of the degree of market concentration was carried in Giwa market, where wholesales of cowpea commodity were significantly involved. Concentration ratio was estimated by taking annual volume of at purchased in 2014 by sample traders (Giwa). The survey result revealed that in Giwa market cowpea trading was dominated by few traders. The sample market is Giwa and the commodity is cowpea while the concentration index was 82.4%.

The result depicted that the four largest cowpea traders possess 82.4% of the total volume of purchase in Giwa market. Based on the rule of thumb of market structure criteria suggested by Kohls and Uhl (1985), the cowpea market in Giwa showed an oligopolistic market, indicating the existence of market imperfection.

4.4.4 Degree of market transparency

It is widely accepted that, accurate and timely market information enhances market performance by improving the knowledge of buyers and sellers concerning supply and demand. Exclusive access to market information or the control or concentration of information asymmetry and concentration of capital at the disposal of very few traders is important sources of monopoly which affects the nature of horizontal and vertical relations. More balanced knowledge of the markets provides a fair distribution of the gains from efficient market price formation (Timmer *et al.*, 1983; Muhammed, 2011).

However, even though information plays such a crucial role in improving the marketing System, there was no organized system to provide reliable market

information to all market participants in the study area. Hence, traders used different approaches to access market information. According to the survey result, about 49.8% sample traders obtained price information through telephone and from other traders in the market respectively. The remaining 51.2% of traders reported that they obtained price information through, brokers, discussion with other traders, and personal observation. Although, Medias such as television and radio play the greatest role in provision of market information in shortest possible time over larger area of coverage, its effect in addressing grain market information to users was very limited. Despite the fact that, no trader had accessed mass Medias as an information source. Since sources and means of obtaining information by different categories of traders varied significantly, the timeliness and quality of information obtained depends on the traders 'access to market information channels and their individual judgment on the level of supply, demands and prices collected from different sources and in different times.

4.5 Marketing Problem of Cowpea Traders

The major marketing problems that the sample cowpea traders faced in the study area were lack of access to credit facilities, lack of market information, inadequate marketing infrastructure, provision of quality product and poor storage facilities are presented in Table 4.9 and ranked according to severity.

Lack of access to credit was one of the marketing problems limiting operation and expansion of trading activities in the Tundun Saibu as reported by sample traders and ranked 1st by majority (93%) of the respondents . The problem in accessing credit was mainly related to religious factor as most of traders in Giwa are Muslims in their religious background, they did not like to take loan with interest. The other reasons

were absence of collateral, high interest rate of micro finance institutes. In addition, absence of municipality for traders having collateral in the market place of Ikara and Makarfi is one reason for traders not taking loans from banks as collaterals confirmed by municipality are conditions to access credit from banks. Because of these reasons, about 93% of sampled respondents did not obtain any credit from financial institution and credit is a very strong factor that is needed to acquire or develop any enterprise; its availability could determine the extent of marketing and production capacity. This agrees with findings of Nasiru, (2010) who noted that access to micro-credit could have prospect in improving the productivity of marketers and contributing to uplifting the livelihoods of disadvantaged rural marketers.

Market information is a market facilitation function that plays greater role in improving marketing decisions of traders through avoiding or reducing of information asymmetry. However, about 89% of traders face lack of market information providing institution although they were willing to pay for the required information. This was ranked 2nd.

About 82% of the cowpea marketers indicated inadequate marketing infrastructure which ranked 3rd. Market information is lacking. Sellers and buyers are not well informed about the sources of food supply and thereby reducing potential efficiency in the market. Other facilities such as clean environment, communication facilities, and health facilities, fire services, banking facilities, security facilities, water supply and good toilets are also lacking in most market.

Provision of quality products by farmers to the market were followed by better prices. However, about 58% of sample traders reported the presence of products quality

problem in the study area and was ranked 4th. This was particularly due to absence of extension support after harvest. Thus, the problem made farmers to accept lower prices unlike the neighboring farmers producing the same product. Attention to integrated extension system that can accommodate grain marketing is very important.

About 40% of the marketers indicate poor storage facilities as constraints across the markets investigated. This constraint has been ranked the 5th challenge across the markets studied. Poor storage is very common in the study area because of the poor attitude to modern storage facilities by the marketers which has direct effect to the marketing system. Good storage and warehousing facilities such as lock-up stores, silos, barns are lacking in most of these markets. This is consistent with the findings of Seid *et al*. (2013) and Basappa *et al*. (2007) who found inadequate storage facilities, inadequate transport facilities, pests and diseases to be significant factors contributing to post-harvest losses of cowpea and commercial horticultural crops respectively.

Table 4.9: Marketing constraints faced by Cowpea Marketers

Constraining Factors	***Frequency**	**Percentage**	**Rank**
Lack of access to credit	206	93.2	1st
Market information	197	89.1	2nd
Inadequate Marketing Infrastructure	181	81.9	3rd
Provision of quality product	129	58.4	4th
Poor Storage Facilities	89	40.3	5th

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

The focus of this study was to analyze cowpea marketing and price trends in some selected rural and urban markets in Kaduna State, Nigeria. A multi-stage sampling technique was used for sample selection. The first stage was purposive selection of Maigana agricultural zone markets in Kaduna State; namely Ikara, Makarfi, Giwa, Shika, Galadimawa and Tudun saibu. The second stage involved purposive selection of Giwa market as a reference market while Ikara, Makarfi, Shika, Galadimawa and Tudun saibu markets as the supplying markets from the selected agricultural zone. A simple random sampling technique was employed to select 15% of the sample Frame (1474) of the cowpea marketers obtained from the list of Marketers' Associations/Union. In all, a total of two hundred and twenty-one (221) marketers were used as sample size. Specifically, the study was made to describe the socio economic characteristics of cowpea marketers in the study area, determine the marketing channels of cowpea, examine the trend in price of cowpea in rural and urban markets, analyze market integration of cowpea between rural and urban markets in the state and describe the constraint encountered in the marketing of cowpea in the study area.

Primary and secondary data were used for the study. Primary data were collected from 221 respondents with the aid of structured questionnaire. Secondary data were obtained from the Agricultural Development Programme Office (ADPs) of the selected markets from Maigana agricultural zone of the State and National Agricultural Extension Research and Liaison Service (NAERLS), A.B.U Zaria which covered the wholesale monthly prices for 96 months (2007-2014). The statistical tools used to analyze the data were descriptive statistics, spatial price model and temporal price model.

The results of the study shows that 38% of the respondents were within the age range of 20-29 years and majority of the markets about 70% had formal education. Majority of the respondents 44%had household size ranging between 1-5 people in their family. About 64% of the respondents do not join any cooperative association and majority (71%) of the respondents are married while 78% of the cowpea marketers do not have access to credit to finance their business.

Analysis of spatial aspects of pricing efficiency show that the expected and actual price spreads between Giwa and five selected supplying is substantially high, even after considering plausible levels of unmeasured transaction costs.

Analysis of temporal price relationships indicated that seasonal price increases commonly exceeded cost of storage for cowpea which provided the opportunity to make more than normal profit. Considerable risk was involved in storage operations to achieve high profits.

The constraints identified in the study area, were lack of access to credit (93.2%), market information (89.1%), inadequate market infrastructure (81.9%), provision of quality product (58.4%) and poor storage facilities (40.3%).

5.2 Conclusion

Given the result of this study, the only way to reduce cowpea price over time and between market-pairs is through better and efficient cowpea storage system which will reduce storage cost, efficient market information to enable traders know when to store and the quantity to store. Inter-market price difference can also be reduced through better and efficient transportation system and the presence of other physical facilities. It could be concluded that the pricing system of cowpea marketing in the study area are inefficient. This is because the marketers (wholesalers) were making more than normal profit in most cases. This wide price spread across different markets could be attributed to inadequate information dissemination among marketers about the price of cowpea in different markets.

5.3 Contribution of the Study to Knowledge

i. The study revealed that about 49% of the sampled traders obtained price information through telephone and from other traders in the market respectively while the remaining 51% reported that they obtained price information through brokers, discussion with other traders, and personal observation.

ii. The study also revealed that the net seasonal rise in price of cowpea between the expected and observed range was from -₦88 to ₦142. This also indicated inefficiency in the seasonal price rise as a factor in explaining cost of storage.

iii. The study revealed that the major constraints to cowpea marketing `included lack of access to credit (93.2%), poor market information (89.1%), inadequate market infrastructure (81.9%), provision of quality product (58.4%) and poor storage facilities (40.3%).

iv. The spatial price spread revealed that the average positive spreads stood from the lowest value of (₦77) in Makarfi market to the highest value of (₦4342) in Galadimawa market. The results strongly suggests that the excess price differences between the Giwa market and other supplying markets did not result from planned manipulation under monopolistic conditions.

5.4 Recommendations

From the findings of this study, the following recommendations were made:

i. Inadequate fund for cowpea marketing was one of the major constraints the marketers faced. Marketers only have access to informal credit due to bureaucracy involved in formal credit institutions. Government should therefore assist in making the formal credit institutions accessible for traders with reduced interest rates.

ii. There is therefore a strong need for private organisations and the Government through the marketers of cowpea to provide more and better dissemination of market intelligence and information among the farmers and traders to improve knowledge which would help combat supply

uncertainty and reduce risk associated with inter-market trade and provide means of storing cowpea and in times of surplus.

iii. Government should increase the physical facilities associated with storage facilities in the markets, feeder roads, and bridges linking rural areas to urban centres while social amenities should be provided in rural areas to reduce rural -urban migration.

iv. The marketers should form cooperatives or association that can assist them in provision of physical facilities and better dissemination of market intelligence and information.

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APPENDIX

DEPARTMENT OF AGRICULTURAL ECONOMICS AND RURAL SOCIOLOGY, AHMADU BELLO UNIVERSITY, ZARIA.

Dear sir/madam,

I am a post graduate student (M.sc) of the aforementioned department carrying out a research on the topic:**Analysis of Cowpea Marketing and Price Trends in Some Selected Rural and Urban Markets in Kaduna State, Nigeria.** Please kindly answer the following questions to the best of your knowledge. Information provided will be treated confidentially.

Best regards,

Instruction: Kindly tick (√) or fill in the blank spaces as appropriate

SECTION A: SOCIO-ECONOMIC VARIABLES

Socio-economic characteristics of cowpea marketers

1. Age: i. < 20 [ ] ii. 21 – 25 [ ] iii. 26 – 30 iv. [ ] v. > 30 [ ]

2. Marital status: i. single [ ] ii. Married [ ] iii. Divorced [ ] iv. Widowed [ ] v. Separated [ ]

3. Household size: i. < 5 [ ] ii. 6 – 10 [ ] iii. Above 10 [ ]

4. Source of income: i. Banks [ ] iii. Cooperative society [ ] iv. Government [ ]

   v. Others (specify)…..

5. Level of education: i. Non formal education [ ] ii. Primary education [ ]

   iii. Secondary education [ ] iv. Tertiary education [ ]

6. Place of residence…….

7. Major occupation: ……

8. For how long have you been into cowpea marketing? i.< 20 [ ] ii. 21 – 25 [ ] iii. 26 – 30 [ ] > 30 [ ]

9. Size of income per annum: i. >₦20000 [ ] ii. ₦ 21,000 – ₦ 30,000 [ ]

   iii. ₦ 31,000 – ₦ 50,000 [ ]

Marketing activity

10. Level of entry? i. Retailer [ ] ii. Wholesaler [ ] iii. Assembler [ ] iv. Commission agent [ ] v. Rural assembler [ ] vi. Others (specify)……

11. What is your status presently? i. Retailer [ ] ii. Wholesaler [ ] iii. Assembler [ ] iv. Commission agent [ ] Rural assembler [ ] v. Others (specify)……

12. What is the source of supply of your goods?i. Farm gate [ ] ii. Village markets [ ] iii. Rural periodic markets [ ] iv. Urban markets [ ] v. Others (specify) …….

13. When do you buy your goods? i. At harvest [ ] ii. After harvest [ ] Before harvest [ ] Others, specify [ ]

14. From whom do you buy your goods? Farmers[ ] Agents [ ] Producers cooperative [ ] Wholesalers in rural market [ ] Wholesalers in urban markets [ ] Others (specify) [ ]

15. Do you have agents buying the goods for you? Yes [ ] No [ ]

16. If yes, how much commission do you give to the agents per unit of purchase?.....

17. At what period (month) do you buy your product? ……..

18. What type of measurement do you use? Mudu [ ] bags (50 kg)[ ] bushel [ ] others (specify) ……

19. What is the price of a measure in naira?
…….

20. What is the size of your purchase per period?……

21. At what price do you sell the same measure.....

22. What quantity do you sell per time period? …….

23. To whom do you sell your goods? i. retailers [ ] ii. Wholesalers [ ] Consumers [ ] Others (specify)…..

Storage of cowpea

24. Do you store your goods? ……

25. If yes, for how long?
……..

26. If yes, what facilities/materials do you use for the storage?
……
……
……

27. Why do you store your goods? i. Security of supply [ ] ii. Better prices for increasing income [ ] others (specify)
……
…

28. What method do you use in preventing your products from getting bad?
……

29. What is the cost of storage (₦) per unit estimate of the crop?
……

30. Do you own your storage facility? i. Yes [ ] ii. No [ ]

31. If yes, how effective is your facility? i. adequate and effective [ ] ii. Adequate but not effective iii. Inadequate but effective [ ] iv. Inadequate and ineffective [ ] v. others (specify)……

32. If no, how do you then arrange for storage?
……..

33. How are your goods bulked, packed and stacked inside the store?
……..

34. What determines the volume and length of time of your storage?
……

35. Describe the problems you have with storage of your goods
……..……
……
……

36. What effect does storage has on the selling price?i. It increases the selling price [ ] ii. It preserves the grain quality of cowpea [ ] iii. It adds the value to the cowpea [ ] iv. Others (specify)……

Transportation

37. Do you transport your goods? Yes [ ] No [ ]

38. If yes, what type of transport do you use? Motor cycle [ ] Lorries [ ] Canoe [ ] donkeys [ ] others (specify) [ ]

39. What type of road links your buying and selling points? All season road [ ] dry season road [ ] no motor able road [ ] others (specify)

40. What is the distance in km and transport cost from point of purchase to the market where you sell your goods?

s/no	Transportation		Distance in km	Transport cost (₦)	Quantity of fish
	From	To			
1					
2					
4					
5					
6					

41. To whom do you sell your cowpea (tick as many as applicable)
Wholesalers [] Retailers [ ] Commission agent [ ] Itinerant hawkers [ ] Consumers [ ] Processors [ ]Others (specify)……. [ ]

42. Do you have agents selling the cowpea for you? Yes [ ] No [ ]

43. If yes, how much commission do you pay in Naira per unit? (State the unit)
……

44. How do you contact the buyer of your goods? ……..

45. What problem do you encounter in the process of carrying out your marketing activity? ……

46. How do you obtain market information?

…….

47. How reliable is the market information you get? Very reliable [ ] reliable [ ] not reliable [ ]

48. How do you know the price you sell your goods? Just a fix price [ ] it is based on prevailing market price [ ] computing the cost of production [ ] use previous year's price [ ] others (specify) [ ]

49. How much do you sell the unit of the crop at urban and rural markets?

……..

Unit	Urban market price/unit (₦)	Rural market price/ unit (₦)

Finance

50. Do you obtain loan to finance your market? i. Yes [ ] ii. No [ ]

51. if yes, who gives the loan? i. Banks [ ] ii. Government [ ] iii. Friends [ ] iv. Relations [ ] v. Family [ ]

52. How did you acquire your initial capital? i. Loan from commercial banks [ ]

ii. Income from other occupations [ ] iii. Government occupation [ ] iv. Other (specify) ……..

53. Which of these facilitates your entry into the market? i. Tribe [ ] ii. Kinship [ ] iii. Friendship [ ] iv. Others (specify) …….

54. How can you assess the price trends of cowpea over the seasons? i. stable [ ] ii. Fairly unstable [ ] iii.Unstable [ ] iii. Very unstable [ ] iv. Others (specify) ……..……

55. Would you rather sell your crops at lower than equilibrium prices than leave them unsold? i. yes [ ] ii. No [ ]

56. What are your reasons for your answer above?…….

57. What would you advice the government to do for cowpea marketers?

……
……
……

58. What are the generalconstraints encountered in cowpea marketing in your area?

S/n	Constraints	Ranking according to severity 1=least severe, 2=moderately severe, 3= severe, 4= more severe, 5= most severe.	Coping Strategy
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Thank you for your attention.