Analysis of Structure and Conduct of Date-Palm Marketing in Katsina State, Nigeria

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ABSTRACT: The study examined the structure and conduct of date-palm marketing using structured questionnaire administered to 112 randomly selected date-palmmarketers in Katsina State. Data was analyzed using two measures of concentration; Gini coefficient and Concentration ratio were used to determine the structure of the market. The gini coefficient analysis showed that there is a high level of inequality in buyer/seller concentration among the importers (0.52), and retailers (0.56), and low concentration among the wholesalers (0.47). A concentration ratio of 38.8% indicated a weak oligopolistic structured market. Majority of the marketers rely on family or personal sources for finance, they attend apprenticeship under family members, they do not collude to fix prices. The study recommended the provision of appropriate storage facilities, loans and physical market facilities in the area especially by the associations and formal credit institutions such as Bank of Agriculture (BOA), as well as increasing local production to produce marketable surpluses that will reduce the high rate of importation and all year round availability of fresh date-palm fruits. Also individuals, trade unions should establish market information units and also take advantage of cooperative trade.

Keywords: structure, conduct, date-palm, marketing, Katsina

INTRODUCTION

Date-palm (Phoenix dactylifera) has been described as the “tree of life” and production has been on the increase from about 1.8 million tonnes in 1961 to about 7.5 million tones in 2011 worldwide. However, Nigeria is not listed among international date producers, though the Sahelian and Guinea savannah zones of northern Nigeria are known for many economic tree crops such as gum arabic, date-palm, guava, mango and orange among other crops (Sani et al., 2010). It is believed that date-palm fruit was introduced in Nigeria in the early 8th century by Arab marketers from North Africa. The crop has become a homestead crop in most of the Sudan-Sahel region of Nigeria, and sold in the open market along other staple foods. It is widely consumed fruit among the people of northern Nigeria. Its importance in cultivation and marketing in the country is increasing, and the country has the potential of exporting date fruits and its’ bi-products to the international market, but Nigeria is more of a consumer and importer of date fruits. Awoyemi et al. (2011) stated that the industry has potential for food provision, employment and income generation, animal feed, shelter belt, and poverty reduction. Employment opportunities especially exist in the areas of nursery production, plantation establishment, harvesting and marketing.

Generally, the specific ways in which efficient marketing systems play a leading role in economic development have been widely developed (Harris-White, 1999). Agricultural or food marketing can be regarded as the main driving force for economic development, the proficiency or successful delivery of benefits to
consumers whilst the main focus is on competition captured by the degree of market power.

In food marketing, very large number of producers and consumers at each end of the marketing chain is suggestive of competitive conditions and, therefore, the focus in analyzing market structure is in the numbers and sizes of enterprises within the system, and the potential access of additional participants to it. Conversely, there is an absence of a theoretical framework for market conduct analysis, there is therefore a tendency to treat conduct variable in a descriptive manner (Pomeroy and Trinidad, 1995). However, a large number of marketing functions affecting the structure and conduct of the market in Nigeria have been neglected, thus, limiting the responsiveness of marketing processes (Okwoche et al., 2010).

Date fruits are economically important commodities, yet there are no sufficient research studies to identify the functioning and conduct of its marketing system. There is inadequate information on the structure and behavior of the various actors in date-palm marketing system. In an attempt to determine the structure and conduct of date-palm marketing in the study area, the research will seek to answer the following objectives: (i) determine the market structure of date-palm marketers in Katsina State, and (ii) to examine the market conduct of the date-palm marketers in the study area.

METHODOLOGY

The Study Area

Katsina State is located between latitude 12° 15' N and longitude 7° 30' E. The state is located in the Sahel Savannah region of northern Nigeria, covering a total land area of 24,308.40sqkm with a total projected population of about 6,998,046 in 2012 (2006 census) with growth rate of about 3%, (Kurfi, 2011). The state borders Zamfara and Sokoto states to the west, Jigawa and Kano states to the east, Niger Republic to the north while Kaduna state is to the south. Kurfi (2011) indicated that farming and agricultural marketing are the main occupation of its people and (Abdul Qadir et al., 2011) stated that although there is no recorded data on date-palm production, it is recognized by as one of the 15 states that produces date-palm in Nigeria. Katsina State of northern Nigeria and the southern city (Maradi) of Niger have been one of the oldest trade paths open for centuries to the gulf of guinea, North Africa and the Middle East (CIP, 2007). The United Nations in 2006 reported that the intensive trade that thrives between the two countries is that of agricultural products (corn, sugar cane, date-palm and livestock).

Sampling Procedure and Sample Size

Multistage sampling procedure was used in this study. The first stage involved the purposive selection of three local government areas (LGAs) namely Daura, Jibia and Katsina from the state based on the intensity of date-palm marketing activities. In the second stage, a total of 47 date-palm marketers were randomly selected in Jibia (LGA) out of the 470 identified. In Daura (LGA) a total of 20 respondents were randomly selected out of the 200 identified as date-palm marketers, while in Katsina (LGA) a total of 45 respondents out of a population of 450 were randomly selected. These samples represent 10% of the identified date-palm marketers in the respective sampled markets of the three local government areas in the state. A total of 112 questionnaires were administered. 

Data Collection Technique

Primary data was obtained through structured questionnaire administered to the selected marketers (importers, wholesalers and retailers). The information obtained from the marketers of date-palm included: cost of
purchase, sales, credit facilities and interest (if any), storage facilities, market information, product channel, commission agent, and market charges among others.

**Data Analysis Technique**

In order to achieve the stated objectives, the data was analysed using (i) Gini coefficient, Lorenz curve and Concentration ratio to achieve part of objective (i) and objective (ii).

**Gini coefficient**

The gini coefficient is a numerical representation of the degree of inequality in a population. The gini coefficient ranges between 0 and 1 used in determining the level of concentration in the market structure. A gini coefficient of 0 is indicative of a perfect equality in seller/buyer concentration while a coefficient of 1 means perfect inequality, the higher the concentration, the higher the inefficiency in the market structure. Mathematically expressed as

\[
GC = 1 - \sum_{k=0}^{n} [(X_k - X_{K-1})(Y_K + Y_{K-1})]
\]

Where GC=Gini coefficient

- \(X_K\) = the cumulated proportion of the population variable, for \(k = 0, \ldots, n\), with \(X_0=0\) and \(X_n=1\)
- \(Y_K\) = the cumulated proportion of the income variable, for \(k = 0, \ldots, n\), with \(Y_0=0\) and \(Y_n=1\)

\(\sum\) = summation sign.

**Concentration Ratio**

The concentration ratio (CR) measures the market share of each supplier in the market. It measures the cumulative market share of the largest \(n\) firms (Stead et al., 1996). The greater the degree of concentration, the greater the possibility of non-competitive behavior in the market. It was used in part to determine the market structure. This can be calculated as

\[
CR = \frac{\text{sales volume of largest four firms}}{\text{total volume of sales}} \times 100
\]

**RESULTS AND DISCUSSION**

**Structure of date-palm market in Katsina State**

The market was found to have numerous buyers and sellers. The importer, wholesaler and retailer gini coefficients were calculated as 0.52, 0.47 and 0.56 respectively. Figures 1, 2 and 3 showed the Lorenz curves which graphically depict the nature of seller concentration that was quantitatively analyzed using gini coefficient. On the graph, the cumulative market share was plotted on the x axis while the cumulative proportion of the total number of marketers (importers, wholesalers and retailers) were plotted on the y axis. A perfectly equalized degree of concentration is depicted by the straight diagonal line \(y=x\) called the line of perfect equality or the 45° line. The degree of inequalities in market share (starting with the lowest value) amongst the marketers are shown by the curves which form an arc with the 45° line (line of equality). The extent of deviation of these curves from the line reveals the level of seller concentration among the marketers and the nature of market competition in the study area.

Thus, at the importer level, the value of the gini coefficient (0.52) is tending towards unity indicating that there is an inequality or high level of seller concentration at this level. Further, from the Lorenz curve (Figure 1) the extent of deviation of the curve from the line of equality shows an imperfect market competition (52% gini), such that no particular date-palm market participant is large enough to have the market power to set the price of date-palm, but only a few of the marketers handle the major share of the quantity traded at the market.
In the case of the wholesalers, the market was found to be purely competitive (gini coefficient of 47%) as indicated in the Lorenz curve (figure 2). Additionally, the calculated gini coefficient (0.47) pointed towards a low level of seller concentration in the wholesaler category.
While at the retail level, a gini coefficient of 0.56 is indicative of a high level of seller concentration with an imperfect market competition as shown in the Lorenz curve (figure 3) that is a gini of 56%. The nature of market competition is imperfect. Though there are many sellers in the market selling a standardized product of date-palm, there is also the existence of full market knowledge at this level. Thus, the characteristics of date-palm marketers include:

i. There are many buyers in the market purchasing a standardized product (date-palm). Therefore it can be said that the structure is purely competitive.

ii. There are many participants, especially retailers and commission agents that enter into date-palm marketing during the Muslim holy month of Ramadan only and/or when the fresh date-palm is in season, usually between the months of June - July to make short-term seasonal trading. These retailers and commission agents are either farmers or are involved in trading of other products such as sugar cane.

**Concentration Ratio**

The concept of concentration ratio was also used to further determine the structure of the market. The concentration was computed according to (Kohls and Uhl, 1985) rule of thumb. The result showed a concentration ratio of 38.8%, indicating the weak oligopolistic nature of the market. The result further agrees with the findings of Abdulsalam(2004) on cross-border grain marketing. In spite of its oligopolistic nature, the market does not show any of the characteristics of a pure oligopolistic market. An oligopolistic market is a market where firms are engaged in selling differentiated products, they are price makers and a simple move by one firm or trader can have an influence on the others (Olukosi and Isitor, 1990).

\[
CR = \frac{260200000}{669884220} \times 100 = 38.8\%
\]
Organization of date-palm market participants
About 98% of date-palm in Nigeria is imported into the country from Niger Republic while the remaining 2% is what is grown locally in Jigawa, Kano, Adamawa, Bauchi, Borno, Gombe and Yobe states (Abdul Qadir *et al.*, 2011). The study found out that Jibia market is the major bulking market of the imported fruit in Nigeria from Tawa (Niger Republic). The market operates on Sunday, importers of date-palm transport and trade in the market on Saturday. Wholesalers from different parts of the country (sometimes with the help of commission agents) purchase the fruit to retail or wholesale again at other markets. Inheritance, familiarity and kinship were found to play a leading role in date-palm marketing, therefore, there is a network of buyers and sellers who transact business with each other rather than anyone else.

Identification of the different types, varieties and forms of dates
Two types of date fruits (local type and foreign type) were traded in two LGA of the study area; viz: Katsina and Daura, while the imported type is what is traded in Jibia LGA mainly. The most widely traded type of date-palm fruit in the surveyed markets are the imported type (Deglet Noor, Danmali or Empress and Tagyal) which are available in all the three LGAs. The local type of date-palm marketed is in its fresh form while the foreign type is in its dry form. It was noticed that the processed form of date-palm which is more expensive than the unprocessed dates is not marketed in any of the surveyed markets because its demand is very low. The predominance of the foreign type of date in the study area shows the high rate of importation of the fruit into the country.

The marketing participants used the following methods to identify the different varieties, namely: colour, size, shape and taste. Marketers reported that when held up to the sun, the center of Deglet Noor appears light or golden, it is semi dry and not very sweet. Deglet Noor is further sub divided into a high quality grade I (Giredi in Hausa) and a lower quality grade II by the marketers. Danmali (empress) is bigger in size than Deglet Noor, somewhat softer and sweeter and has a light tan top half and brown bottom half. Tagyal is the sweetest amongst the three and is very dark skinned. The most preferred and widely traded type of date fruit in the surveyed markets is the Deglet Noor probably because it is the chief export cultivar in the world and its higher level of consumer preference. It is cheaper and readily available at the bulking market and stores relatively better than the other types.

Market information
Informal market information is not communicated between the participants of date-palm marketing (importers and wholesalers). The marketers and buyers usually take advantage of market situations through negotiations and haggling. Accordingly, date fruit has a fairly regular price and majority of the marketers are aware of when prices are likely to go up; during the Muslim holy months of Ramadan and Dhul-hajj due to high demand of the fruit in these periods when Muslims fast and perform pilgrimage. And the prices are said to fall during the harvest of new fruit (Muharram, the first month of the Muslim calendar).

Marketing channel of date-palm
The date-palm marketing channel identified in the study area revealed the participation of 5 major actors. These participants were involved in the channeling of date-palm from the importers (of foreign date from Niger Republic) to the consumers. At every stage of the channel the participants perform marketing functions such as
loading/offloading, transportation and storage. The participants include importers, wholesalers, commission agents, retailers and consumers. Figure 4 shows the marketing channel of date-palm in the study area;
Entry and exit conditions
This refers to the ability of a firm to enter or leave a market. There was no apparent restriction to entry into and exit from date-palm marketing as is the case with most agricultural marketing. However, there was a monetary or high start-up capital needed in becoming an importer or a wholesaler. This agrees with the findings of Sambo(2005). He stated that entering into or moving to another status in Gum Arabic marketing is influenced by size of capital. The research found out that inheritance, experience, kinship and honesty to some extent influenced the conduct of the marketing system, since a greater percentage of the transactions carried out on credit. There are no exit conditions from the market.

Conclusion and Recommendations
The study concludes that the structure of date-palm marketing in the study area is weakly oligopolistic. There is inequality in the market power concentration. There is also no collusive behavior among sellers in the date-palm market. Thus, based on the findings of the study the following recommendations were made:

Policy makers should take an action to reduce the market power concentration in the hands of few sellers, through policies (such as provision of credit) that will encourage competition and improve welfare.

REFERENCES


