

Profitability Index of Dates (*Phoenix dactylifera* Linn.) Trade Among Wholesalers in Kano State, Nigeria

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Abstract

This study examined the profitability index of Dates trade among wholesales in Kano State Nigeria. A total of 30 questionnaires were distributed randomly in proportion to the total number of wholesalers in each of the purposively selected markets located in the State. Data collected were subjected to descriptive and inferential statistical analysis. The study indicated that over 97% of the respondents were in their productive years of age. Half (50%) of the respondents belong to the Hausa ethnic group. The highest form of educational qualification obtained by 66.67% of the respondents was primary school leaving certificate. The rest (33.33%) had either Quaranic education or no form of education at all. Most (70%) of the respondents were married and more than half (53.33%) of the respondents maintained a large family size of not less than five in number. The study further revealed that an average of 6580kg of Dates was traded/month, the average cost price was 118.33/kg while the average selling price was 129.33/kg. Profitability indices such as; average revenue and average Net Income (NI) were estimated to be ₦799,680.00 and ₦673,591.71 respectively. The rate (534.22%) of return on investment was high. The regression result shows that Revenue, transportation cost, storage cost and loading and off-loading significantly affect Net Income (NI) while the calculated Gini-coefficient (GC) of 0.44 indicated that the market was dominated by a few marketers.

Keywords

Date Palm (*Phoenix dactylifera*), Dates, Profitability Index, Net Income, Wholesalers, Gini-coefficient

1. Introduction

A date palm fruit which is known as Dates has been a staple food of the Middle East for thousands of years. It was believed to have originated around the Persian Gulf, and have been cultivated since ancient times from Mesopotamia to prehistoric Egypt, possibly as early as 6000BC. In later times, Arabs spread Dates around northern Africa and into Spain (Praveen, 2012). Date palm (*Phoenix dactylifera*) is well known in northern Nigeria. The leaves are stiffer, with rather stiff, sharply pointed leaflets, and the fruits hang down in large and very conspicuous clusters of spikes. It is oval-cylindrical in shape, 3-7cm long and 2-3cm wide, and when unripe, it ranges from bright red to bright yellow in colour, depending on the variety. Dates contain a single seed of

about 2-2.5cm long and 6-8mm thick (The Date, 2015; Praveen, 2012). The types of fruits depend on the glucose; fructose and sucrose content. Date palms take about seven years after planting before they bear fruit, and produce viable yields for commercial harvest after about ten years. Mature date palms can produce 80-120kg of Dates per harvest season, although they do not all ripe at the same time so several harvest are required. In order to get fruits of marketable quality, bunches of Dates must be thinned before ripening so that remaining fruits can grow larger (FAO, 2000; Vasant, 2007).

The European Union (EU) is an important market in terms of import with over half a million metric tonnes imported every year in the world. France is the world's largest importer of Dates and is also one of the main suppliers of the other EU countries through its re-exports. Its main supplier is Tunisian

and Algeria (FAO, 2002). Dates is a Non-Timber Forest Product (NTFP) marketed in the study area. It provides employment and serves as a source of income to the users. However, its socio - economic contributions is yet to be accorded the right recognition in the study area and the country at large. The data base on Dates marketing in the study area is very scanty. According to Arnold *et.al* (2006), the overall economic and social significance of non timber forest products are based on unreliable statistics. This study therefore will provide information on the structure, conduct and marketing performance of Dates trade among the wholesalers in the State. Also, the study is significant for examining the relationship between profit and factors affecting level of profit that is derived from Dates trade in the State. Data obtained from the study will guide the policy makers in taking the best decision on Dates marketing. It will induce plantation establishment of the crop and give room for profitable and efficient marketing in the study area.

2. Materials and Methods

2.1. The Study Area

Kano State lies between Longitude 7° 54' and 9° 06' East and Latitude 11° 37' and 12° 21' North. The State has a population of 9,383,682 which accounts for 6.70% of total population of Nigeria (NPC, 2006). The population is predominantly Hausa-Fulani. The Nupe and Kanuri 'natives' occupy distinct tracts of the old city. Yoruba and the Igbo follow the Hausa Fulani in number but almost all other tribes of Nigeria are found in the State. Hausa is the most widely spoken language. Both Hausa and English are used in official communication (Mamman, 2000).

2.2. Data Collection and Sampling Technique

Data for this study were collected using a well-structured questionnaires administered by the researcher with the assistance of extension agents in the State Department of Forestry. The questionnaires consist of both open and closed ended questions. The secondary data used were sourced from books, journals, bulletins, periodicals and research documents.

Multistage sampling technique was employed in this study. The first stage involved the purposive selection of six markets where wholesale traders were found in the State. The second stage involved the distribution of thirty (30) questionnaires in proportion to the population size of the wholesale traders in each market location.

2.3. Data Analysis/Model Specifications

The specific objectives were realized using descriptive statistics such as frequency and percentages and Inferential statistical tools such as: Gini coefficient measure; budgetary analysis which involves the use of tools such as; Net Income (NI) and Rate of Return on Investment (RORI). Multiple linear regression models was used in explaining the relationship between profits and factors affecting the level of

profit derived from the business.

Net Income (NI) is defined as Gross Income (GI) less Gross Cost (GC) (Olukosi and Erhabor, 2005). The Total Cost (TC), comprises of Fixed Cost (FC) and Variable Cost (VC). Fixed Costs were costs incurred on Fixed Assets such as; rents, tables, and depreciation of structures. The straight line method of depreciation was adopted. This is expressed as;

C-S

Y, where;

C = cost of fixed assets in naira

S = salvage value

Y = economically productive years of fixed asset.

Variable Costs (VC) includes: transportation cost, storage expenses, loading and off-loading, handling/packing and purchase costs.

The Net Income (NI) for Dates was determined for the wholesalers follows:

$$NI = GI - TC \tag{1}$$

Where:

GI (Revenue) = Total quantity of product sold X unit selling price

TC = Variable Cost (VC) + Fixed Cost (FC)

2.4. Gini-coefficient

The Gini-coefficient (GC) is the technique that gives a more measure of market structure. It is a measure of statistical dispersion most prominently used as a measure of inequality of wealth or product distribution (Lorenzo, and Paolo 2006). It is defined as a ratio with values between 0 and 1. A low Gini-coefficient indicated more equal income, wealth or product distribution while a high Gini-coefficient indicates more unequal distribution. Zero (0) corresponds to perfect equality and (1) corresponds to perfect inequality. The Gini-coefficient is specified thus:

$$GC = 1 - XY \tag{2}$$

GC = Gini-coefficient

X = Percentage of marketers per period of study

Y = Cumulative percentage of the marketers sales/purchase per period of study.

2.5. Rate of Return on Investment (RORI)

The RORI depicts the level of profitability of an investment and is an important criterion in determining the choice of investment (Farris, *et. al.* 2010).

$$RORI = TR - TC / TC \times 100 / 1 \tag{3}$$

Where: TR = Total Revenue

2.6. Multiple Linear Regression Model

This model was used in explaining the relationship between profit from Dates and factors affecting level of profit that is derived from it (Armstrong, 2012 and David, 2005).

$$Y = a + b_1x_1 + b_2x_2 + \dots + b_nx_n + e_i \quad (4)$$

Where Y = Dependent variable (Profit)

x_1, \dots, x_n = Independent variables. These include; revenue, transportation cost, commission, storage, handling, loading and off-loading charges.

a = intercept

b_1, \dots, b_n = Regression coefficient or estimation

e_i = error term

Among the three functional forms of regression models specified double-log was chosen as the lead equation due to

its satisfaction of the statistical and econometric criteria for selection of a lead model.

The model is as follows:

$$\text{Log}Y = -3.24X10^{-9} + 1.208***\text{log}X_1 - 0.186***\text{log}X_2 - 0.074**\text{log}X_3 - 0.036\text{log}X_4 - 0.093***\text{log}X_5 + 0.1180$$

$$F - \text{Statistics} = 2741, R^2 = 0.99, \text{Adjusted } R^2 = 0.94$$

3. Results and Discussion

Table 1. Socio-economic characteristics of Dates (*Phoenix dactylifera*) wholesalers in Kano State.

Variables	Category	Frequency	Percentage (%) of Total
Age	Less than 30 yrs	10	33.33
	31-40 years	14	46.67
	41-50 years	5	16.67
	51-60years	1	3.33
State of origin	Kano	20	66.67
	Katsina	2	6.67
	Sokoto	4	13.33
	Niger	3	10
Ethnic group of origin	Borno	1	3.33
	Hausa Fulani	5	16.67
	Hausa	25	83.33
	Hausa-fulani	5	16.67
Sub-ethnic composition	Kanawa	6	20
	Kanuri	2	6.67
	Nupe	2	6.67
	Hausa	15	50
Educational achievement	No formal education	7	23.33
	P/School Cert.	20	66.67
	Quranic Schl. Cert.	3	10.00
	Less than 6 years	2	6.67
Working experience	6-10 years	10	33.33
	11-15 years	5	16.67
	16-20 years	7	23.33
	21-25 years	4	13.33
	26-30 years	2	6.67
Marital status	Married	21	70
	Single	9	30
No of wives	None	9	30
	1	5	16.67
	2	13	43.33
	3	3	10
Household size	1-5	14	46.67
	6-10	13	43.33
	11-15	3	10

Source: Field Survey 2011

Table 2. Market Distribution of Respondents.

Location	Frequency	Percentage
Central market	8	26.67
Yankaba	6	20
Wambai	6	20
Sabon gari	5	16.67
Tarauni	3	10
Rimi	4	6.66
Total	30	100

Source: Field Survey 2011

Table 3. Estimated Market Margin Analysis of Kano Wholesalers.

Variable	Mean Value (₦)/Annum
(i) Gross Income (GI)	799,680.00
(ii) Variable Cost (VC)	
Commission to government	600.00
Transportation cost	78,792.00
Loading and off-loading cost	14,980.00
Labour	879.96
Cost of Packaging material	7,820.04
(iii) Total Variable Cost (TVC)	103,051.96
(iv) Fixed Cost (FC)	
Rent	22,800.00
Depreciation for Table	236.33
(v) Total Fixed Cost (TFC)	23,036.33
(vi) Total Cost = TVC+ TFC	
(vii) Net Income (NI)	126,088.29
Revenue	799,680.00
Net Income = Revenue – TC	673,591.71
Rate of Return on Investment (RORI)%	534.22

Source: Field Survey 2011

Table 4. Multiple Regression Results of Profit Model for Dates Wholesalers in Kano State.

Functional forms	Multiple Regression Results		
	Linear	Semi-log	Double-log
Wholesalers (Kano)			
Constant terms	0.00245	9.50 X 10 ⁻⁸	-3.24 X 10 ⁻⁹
Regression coefficient			
X ₁ = Revenue	1.002** (196.63)	1.36 X 10 ⁻⁶ (0.810)	1.208*** (77.01)
X ₂ = Transportation cost	-1.044*** (-18.03)	1.21X10 ⁻⁵ (1.242)	-0.186*** (-9.406)
X ₃ = Storage cost	-1.235*** (-4.745)	0.0001** (-0.882)	-0.074** (-2.681)
X ₄ = Packaging cost	-1.757** (-2.418)	0.0004*** (3.511)	-0.036 (-1.294)
X ₅ = Loading and off-loading	-0.627 (-1.859)	0.0004*** (6.846)	-0.093*** (-3.619)
R ²	0.99	0.80	0.99
Adjusted R ²	0.93	0.77	0.94
F – Stat	21962		2741

Note: The figures in parenthesis are t – values *** Significant at 0.01 level; ** Significant at 0.05 level

Table 5. Distribution of Date Wholesalers by size of annual sales in Kano State.

Sales Range (₦)	Number of Sellers (Frequency)	Percentage of Sellers (X)	Cumulative Frequency	Cumulative Percentage of Sellers	Total Sales (₦)	Percentage of total sales	Cumulative % of Total Sales (Y)	XY
400000-600000	5	16.67	5	16.67	2184000	9.13	9.13	0.0152
600001-800000	8	26.67	13	43.34	5115600	21.39	30.52	0.0814
800001-1000000	5	16.67	18	60.01	4267200	17.84	48.36	0.0806
1000001-1200000	11	36.67	29	96.68	11088000	46.36	94.72	0.3473
1200001-1400000	3	3.33	30	100	1260000	5.28	100	0.0333
					23914800			0.5578

Gini-coefficient = 1 – 0.5578 = 0.4422

Table 1 shows the socio-economic characteristics of the respondents. The age of the respondents shows that 46.67% respondents were between the ages 31 – 40 years. About 33% respondents were less than 30 years of age, 16.67% respondents were within age group 41 – 50 years and only 3.33% respondents were above 50 years. This shows that majority of the respondents were in their productive age. Majority (70%) of the respondents were married. Almost

43% had 2 wives each while, 16.67% respondents married 1 wife each, 10% of the respondents married 3 wives each. The household size indicated that 46.67% of the respondents had a household size of between 1 – 5 members each, 43.33% of the total respondents had a household size of 6 – 10 members each while 10% of the total respondents had between 11 – 15 family members living together. Hence, most of the respondents maintain a large family size.

Hausa constituted the largest (83.33%) group in the ethnic composition of the respondents. The sub-ethnic groups captured in this study were Kanawa (20%), Hausa-fulani (16.67%), Kanuri and Nupe, 6.67% each. Most (66.67%) of the respondents hailed from Kano State, 13.33% of the respondents were from Sokoto State, 10% of the total respondents were from Niger State, 6.67% of the respondents were from Katsina State and 3.33% of the total respondents were from Borno State.

Their educational status revealed that majority (66.67%) of the respondents attended Primary school while 23.33% had no formal education, 10% of the traders obtained Quranic education. It cannot be concluded that their educational status influence their marketing performance since none of the traders acquired tertiary education. Furthermore, table 1 revealed that sixty percent of the total respondents had been trading for more than 10years. The remaining (40%) respondents had less than 10 years' experience in the sales of Dates. The years of experience of the respondents in the trade could be responsible for their ability to master the business and bargain with their customers very well.

The market distribution of the respondents is shown in Table 2. Kano central market had the highest number (25%) of respondents. Other respondents were located in Yankaba (20%), Wambai (20%), Sabon gari (16.67%), Tarauni (10%) while Rimi market had the least (6.66%) number of respondents.

This study revealed that the average quantity of Dates traded by the wholesalers was 6580kg per month. The average cost price and selling price were ₦118.33/kg and ₦129.33/kg respectively. The estimated mean market margin analysis in Table 3 shows that a Gross Income (GI) or Revenue of ₦799,680.00 with a Net Profit of ₦673,591.71 were generated by the traders per annum. A total variable cost of ₦103,051.96 was also incurred with transportation cost having the highest value of ₦78,792.00. Other variables that added to the costs were loading and offloading, labour and packaging materials while the total fixed cost was ₦23,036.33. The RORI was found to be very high with the value of 534.22%.

In Table 4, the result shows that X_2 (Transport cost), X_3 (Storage cost) and X_5 Loading and off-loading were negatively related to NI in accordance with a-priori expectations, while X_2 and X_5 were significant at 1% probability level, X_3 was significant at 5% probability level thus, 0.186, 0.074 and 0.093 unit increase in each of X_2 , X_3 and X_5 respectively will result in corresponding unit decrease in respondents NI. This agrees with the work of Orefi and Demonongo (2011); Oguniyi (2011) and Hyuha (2006). They found out that labour cost such as loading and off-loading and other costs affects profits. The revenue (X_1) is positively related to NI hence, 1.208 unit increases in X_1 will bring about a corresponding unit increase in the revenue.

Distribution of Dates wholesalers by size of annual sales in Kano State is revealed in Table 5. Most (36.67%) of the respondents earned between N1,000,001.00 and N1,200,000.00 per annum while 26.67% of the respondents

earned between N600,001.00 and N800,000.00. Almost 17% of the respondents earned between N800,001.00 and N1,000,000.00 while 16.67% of the respondents earned between N400,001.00 and N600,000.00. Only 3% of the respondents earned between N1,200,001.00 and N1,400,000.00. The average annual and monthly sales were estimated to be N797,160.00 and N66,430.00 respectively. The calculated Gini-coefficient was 0.4422. This implies that there is a moderately high degree of inequality among the traders. In essence, it indicates that more sales are controlled by a few groups among the wholesalers.

4. Conclusion

This study revealed that Dates marketing is a profitable venture. The business has the potential to accommodate more people who are willing to engage themselves in this kind of business. There is a need for the government, non-governmental organization and other relevant stakeholders such as research institutes to look into the possibility of having a plantation of this plant by breeding and providing varieties that are adaptable to the environmental conditions of the area. This will create job for our teaming population. In addition, production for exportation should be encouraged to boost our foreign earnings.

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