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Factors Influencing Participation in Barter Trade by Rural Farming Households in Ondo State, Nigeria

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Abstract

The study examined the socio-economic factors influencing the participation of rural farming households in barter trade in Ondo State, Nigeria. The objectives were to compare the socio-economic characteristics of the participants and non-participants in barter trade, analyze the preference for barter trade and identify the constraints to it. Also, the factors affecting respondents' participation in barter trade were identified. Empirical results indicated that there were significant differences in the socio-economic characteristics of the participants and non-participants in barter trade. The SWOT analysis showed that possession of agrarian attributes by the locality where the trade is practiced was the strongest factor ensuring the survival of barter in the study area. Double coincidence of wants was found to be the most prevailing weakness associated with barter while the major reason for participation by some households was that the quantity of commodities received is usually higher compared with cash transactions. Transportation cost to barter markets was found to be the greatest threat to the continued existence of barter trade in the area. The results of the Probit model showed that age, household size, transportation cost to cash markets, farm size, distance to barter markets, and formal education significantly affected the probability participating in barter trade.

Keywords: Barter Trade, Market, Agricultural Commodities, Rural Areas, Farming Households, Nigeria.

1. Introduction

Marketing is crucial in the production and distribution of goods and services (Keefe, 2004). An essential feature of a developed economy is the ability to organize economic efforts and bring together resources, wants, and capacities, to convert a self-limiting static system into a creative, self-generating organic growth (Ifezue, 2005) and this makes marketing more relevant in any economy.

Agricultural marketing, which comprises of all activities involved in the supply of farm inputs to the farmers and movement of agricultural produce/products from the farms to the consumers, started with barter in primitive agrarian societies (Anitha, 2000). Barter trade involves a direct exchange of goods and services between two or more trading partners (Gisin, 2007; Frikken & Opyrchal, 2008).

With the progress of civilization, increase in population and multiplication of wants, money was introduced as a medium of exchange to overcome the various defects and inconveniences of the barter system and this gave rise to monetized economy (Jhingan, 2010). Subsequently, it was assumed that barter trade has waned or gone into extinction with the advent of monetized economies.

However, in spite of benefits associated with the use of money in monetized economy, it has been discovered that some people, in some parts of the world, still engage in barter trade (Adrian, 1978; Cresti, 2005; Franz, 2012). The Small Business Association based in the United States noted that in recent times, more and more entrepreneurs were taking up barter trade as an important part of their business strategy (SBA, 2008). It has been reported that barter trade is more widely practiced in rural areas (AlertNet, 2013).

In Ondo State, Nigeria, there are instances of some agriculture dependent rural dwellers engaging in barter trade for a considerable proportion of their everyday transactions. Nonetheless, just as a considerable proportion of these people actively participated in the trade, some people or entire households were also reported not to be involved in barter trade. This research therefore aimed at determining the socio-economic factors influencing the participation in barter trade among rural farming households, in Ondo State, Nigeria, with a view to comparing the socio-economic characteristics of the participants and non-participants, analyzing the preference for barter trade, identifying the constraints to the practice and determining the factors that affect participation in the study area.

2. Methodology

2.1. Study Area

The study was carried out in Ondo State, Nigeria. Ondo State was purposively selected because of her widespread, well organized practice of barter trade in the rural parts of the State. Ondo State is located in the South-West geo-political zone of Nigeria. It has a land mass of about 14,798.8 square kilometres (km2) and it geographically lies entirely in the tropical belt. The state lies between latitude 5o 45'and 8o 15'North and longitude 40 45' and 6000' East. The State is bounded in the North-West by Ekiti State, West-Central by Osun State, South-West by Ogun State, South-East by Edo State and in the South by the Atlantic Ocean. The population of the state was 3,640,877 as at 2006 (National Population Census, 2006). The people of the state are predominantly subsistence farmers, fishing folks and traders. For administrative purpose, the state is broken into eighteen (18) local government councils.

The climate of the state is tropical and it is divided into two broad seasons which are the rainy season (which lasts between April and October) and the dry season (spanning November and March). Annual temperature ranges between 21°C to 29°C and humidity is relatively high. The annual rainfall varies from 2,000mm in the southern areas to 1,150mm in the northern areas. The state enjoys luxuriant vegetation with high forest zone (rain forest) in the south and sub-savannah forest in the northern fringe. An important aspect of the vegetation of the state is the prevalence of tree crops. The major tree crops include cocoa, kola, coffee, rubber, oil palms citrus and cocoa. Cocoa is the most prevalent of all the tree crops. There are numerous rivers, creeks and lakes in and around Ondo State. The prominent ones are Owena, Ala, Oluwa, Oni, Awara, Ogbese and Ose. Generally, the land rises from the coastal part of Ilaje, Ese-Odo and Okitipupa areas to highlands and inselbergs in the northern parts of the state.

2.2. Sources of Data

This study was conducted using primary data which were collected through the aid of structured questionnaire. The questionnaire, which was administered on the largely illiterate rural farming folks by trained local enumerators who speak the native language, covered essential information such as the socio-economic characteristics of the respondents and the attractions and constraints to barter trade. Data were also collected on the factors affecting participation in barter trade in the study area.

2.3. Sampling Procedure

A multi-stage sampling technique was used to select the respondents for the study. Stage one involved a purposive selection of Ondo State because of its widespread and well organized practice of barter trade in the rural parts of the state. In stage two, there was a purposive sampling of the two Local Government Areas (LGAs) in which barter trade was more widespread. These LGAs were Irele and Ilaje. Stage three involved a purposive selection of two communities that are prominent in barter trade in each of the selected LGAs. Finally, snowball sampling technique was used to select 25 participants and 25 non-participants from each of the selected communities. This gave a total of 200 respondents.

2.4. Analytical Technique

The data collected for the study were analyzed using descriptive statistics, Strength, Weakness, Opportunity and Threat analysis (SWOT) which rested on the Likert rating scale and Probit Model. The independent sample t-test and Chi-square models were used to test for the various hypotheses postulated.

2.4.1. Likert Scale Weighting

The Likert scale used in the analysis is specified as follows:

$$Weighted\ Average = \left(\frac{Weight\ (Wf)}{Frequency\ (f)}\right) \quad (1)$$

Sum of the weights of the element considered = ∑(rating x frequency) = ∑wf
Sum of frequency for each of the elements = f

Weighted average = $\frac{\sum wf}{\sum f}$ (2)

2.4.2. The Probit Model

The Probit model was used to predict the probability of participating in barter trade. The model avoids negative dependent variables and assumes non-linear effects of the explanatory variables. Therefore, the model discriminates better near median potency (i.e. probability of response) and is more appropriate when the binary dependent variable is assumed to represent a normal distribution. In addition, it assumes OLS which further implies that the rate of change of the probability per unit change in the value of the explanatory variable is constant (Jari, 2009).

The model is a popular specification of a generalized linear model, using the Probit link function which is generally specified as:

$$Pr(Y = 1/X = x) = \Phi(x'\beta) \quad \text{---------- (3)}$$

where β is the parameter to be estimated, and Φ is the standard normal cumulative distribution function (CDF). The probabilities of the Probit model lie between 0 and 1 and they compel the disturbance terms to be homoscedastic (Silwana and Lucas, 2002). The underlying model is

$$Yi* = \alpha + \beta 1X1 + \varepsilon i \quad \text{---------- (4)}$$

Where

εi is the error term, with N(0, δ),
α and β are the parameters to be estimated.

With the realization that
Yi = 0 if Yi∗≤ 0, and Yi = 1 if Yi∗> 0.
It follows that Prob (Yi = 1) = P(Yi∗> 0) = P(α + β1Xi + ei> 0)
A number of relevant and appropriate independent variables likely to affect participation of rural farming households in barter trade were postulated to include size of farm, access to credit facilities, distance to barter market, household size, years of formal education, marital status, access to agricultural inputs, access to market information and ownership of livestock. In summary, the model was explicitly specified as follows:

$$Yi = \beta 0 + \beta 1X1 + \beta 2X2 + \beta 3X3 + \beta 4X4 + \beta 5X5 + \beta 6X6 + \beta 7X7 + \beta 8X8 + \beta 9X9 + \beta 10X10 + \beta 11X11 + ei$$

Yi = Probabilty of barter trade participation (Y = 1 if respondent participates, and Y = 0 if otherwise)
X1 = age of respondent (year)
X2 = farm size (hectare)
X3 = access to credit facilities (dummy, 1 if respondent has access, 0 if otherwise)
X4 = distance to the nearest barter market (kilometres)
X5 = household size (number of persons)
X6 = years of formal education of the respondent
X7 = marital status (dummy, 1 if married, 0 if otherwise)
X8 = access to agricultural inputs (access = 1, otherwise = 0)
X9 = cost of transportation to the nearest barter market (□)
X10 = cost of transportation to the nearest cash-and-carry market (□)
X11 = access to market information (access = 1, otherwise = 0)
ei = error term

3. Results and Discussion

3.1. Socio-Economic Characteristics of Respondents

From Table 1, 40.0% of the respondents that participated in barter trade was above 50 years of age compared to 17.0% in non-participating households. Furthermore, only 7.0% of the respondents that participated in barter trade was below 40 years compared to 17.0% within the same age group in non-participating households. Table 1 also revealed that a larger percentage of the respondents was still in their productive years with the participants having a mean age of 50.2 years compared to the mean age of the non-participants which was 46.6 years.

As can be seen in Table 1, it was revealed that majority of the participants and non-participants of barter trade households were male-headed. This is in agreement with a research carried out by Food and Agriculture Organization in Malawi which indicated that only a few of rural households were female-headed (FAO, 2011). This result implied that male usually dominates the headship of rural households.

It was further revealed from the table that only a small proportion of people among the participants and non-participants were widowed. However, the number of respondents that were widowed among barter participants was higher (7.0%) compared with non-participants (4.0%). Moreover, no one among the respondents was found to be single.

The information on Table 1 indicated that the number of barter participating households that had more than eight people under their roofs was (30.0%), compared to (12.0%) in non-participating households. Table 1 further revealed that majority (85.0%) of non-participating households had household size of between five and seven persons compared to participants in which 67.0% of the households had household size of between five and seven.

From Table 1, it was also shown that none of the respondents that participated in barter had their education exceeding secondary school, compared with non-participants which had about 25.0% of them having higher education acquired from a College, Polytechnic or University.

The information presented on Table 1 further showed that the percentage of barter participants that earned above □30,000 per month was very small (1%) compared to (31%) of non-participants. The proportion of barter participants that earned below □20,000 was (18.0%) compared with (2.0%) for non-participants.

3.2. Result of Hypothesis Testing

Table 2 revealed that age, household size, years of education and monthly income of the respondents considered were significant at 1% ($p < 0.01$). The negative sign of the age variable showed that the average age of the participants of barter trade was greater than that of non-participants. This same thing was found for household size. The implication is that there were significant differences in the socio-economic characteristics of the participants and non-participants in barter trade in the study area. The null hypotheses were therefore all rejected.

3.3. Preference for and Constraints to Barter Trade

It is evident from Table 3 that the agrarian nature of the community where barter trade is being held was the strongest factor that encouraged its continued existence in the area. It had a weighted average of 2.05. The perception of barter trade as a heritage which must not be allowed to go into extinction, was regarded as the least influential factor by the people. As shown on Table 3, this factor had a weighted average of 1.93.

The issue of double coincidence of want was ranked as the most serious weakness associated with barter trade. It had a weighted average of 2.65. Exploitative tendencies which are due to the absence of a common measure of value for the items traded, was regarded as a not-too-serious weakness by the participants as reflected in its weight of 2.53 on the Likert scale. The quantity of commodities realized at the end of barter transaction was the motivating factor that encouraged the participation of respondents in barter trade in the study area.

Information on Table 3 also indicated that the least influential factor inducing the participation of households in barter trade was the opportunity to have a variety of food items. It means that a household that produced cassava and vegetables for instance, could take part of its commodities to barter market to collect fish, plantain, processed cassava, yam and other items in the market leading to more varieties and variety has been regarded as the spice of life.

The cost of transportation was regarded as the most serious threat to continued existence of barter trade in the study area. This had a weighted scale of 3.27. The findings on transportation implied that even though people may be willing to come from different locations to the communities where barter markets are located, cost of transportation could serve as a hindrance. Transportation has been reported as one of the greatest constraints to market access by

smallholders in developing countries (International Fund for Agricultural Development [IFAD], (2003), IFAD/UNEP, (2013).)

The location of barter market was ranked last on the table of threats to barter trade with a weighted average of 2.19. The implication is that the locations of these markets were not regarded as a serious threat to the continued existence of barter in the study locale. Even though, some of the markets were located in the remote and rustic areas, many participants did not see it as a serious threat because of their strong interest in barter trade.

Table 1. Summary of Socio-economic Characteristics and Description of Barter Participants and Non-Participants

Variables	Category of respondent	Dominant indicator	Mean
Age	Participant	40% above 50 years	50.2
	Non-participant	17% above 50 years	46.66
Gender	Participant	91% are males	-
	Non-participant	98% males	-
Marital Status	Participant	89% married	-
	Non-participant	96% married	-
Household Size	Participant	67% had between 5 and 7 members	6.89
	Non-participant	85% had between 5 and 7 members	6.15
Year of formal education	Participant	None had tertiary education	-
	Non-participant	25% had tertiary education	-
Monthly income	Participant	1% earned above □30,000	1.8
	Non-participant	25% earned above □30,000	2.3

Source: Survey data, 2014

Table 2. Result of Hypothesis Test of Differences between Barter Participants and Non-participants

Variables	T	Sig.(2-tailed)	Standard error
Age	-4.049	0.000	0.887
Household size	-4.100	0.000	0.180
Years of education	9.402	0.000	0.490
Income	8.130	0.000	719.5

Source: Data analysis

Table 3. SWOT Analysis of Preference for and Constraints to Barter Trade

STRENGHTS	WEAKNESSES
• Nearness of market to river(s) • People's heritage • Agrarian community	• Absence of common measure of value • Double coincidence of want • Time constraint during transaction • Exploitative tendencies
OPPORTUNITIES	**THREATS**
• The quantity realized • Opportunity to save money for other purposes • Alternative way of getting food in the absence of money • Opportunity of having different kinds of food items	• Presence of other market(s) where money is used as medium of exchanged • Cost of transportation • Seasonality of commodity traded • Location of the market

Source: Survey data (2014).

3.4. Factors Affecting Participation in Barter Trade

The results of the Probit model for analyzing the factors determining the participation of respondents in barter trade are presented on Table 4. The table revealed a log likelihood of -63.44, Pseudo R2 of 0.52 and LR statistic of 137.47. All the postulated explanatory variables accounted for about 52.0% of the variations in the probability that rural farming households will participate in barter trade.

The result presented in Table 4 showed that the coefficient of age of respondents was statistically significant and positive at 5% level ($p<0.05$). This indicated that older people were more willing to participate in the trade. A unit increase in the age of the respondents increased the probability of their participation in barter trade by 2.1%. Thus, the older the household heads, the more the probability of their participation in barter.

The coefficient of household farm size was positive and had statistically significant influence ($p<0.01$) on the participation of the respondents in barter trade. The results showed that a unit increase in farm size increased the probability of participation in the trade by 19.0%. The coefficient of distance to barter market was statistically significant and positive at 1% ($p<0.01$). The result showed that a unit increase in the distance to the nearest barter market would increase the probability of participation by 0.69%. Although its positive coefficient was contrary to a priori expectation as findings from Dereje (2006) reported it to be negative.

Table 4 further revealed that coefficient of household size was statistically significant at 5% ($p<0.05$) and positively related to the probability of participation in the trade. The result showed that a unit increase in household size would increase the probability of rural household's participation by 9.0%.

Number of years of formal education of household heads played a negative role in their participation in barter trade. From Table 4, the coefficient of the variable was statistically significant at 1% ($p<0.01$) and it was negatively signed. It implied that a unit increase in the number of years of formal education was likely to decrease the probability of participation in the barter trade by 11.0%. The coefficient of cost of transportation to barter market was statistically significant at 1% ($p<0.01$) but it bore a negative sign. The result showed that a unit increase in the cost of transportation to barter market would decrease the likelihood of participation by about 1.0%. It can therefore be inferred that the higher cost of transportation to the barter market, the lower the probability of participation. These findings agree with that by IFAD and UNEP (2013) that reported that increase in transaction cost, of which cost of transportation is the most important component, decreases small farmers access to urban and regional markets that are further away from the farm gate (IFAD, 2003; IFPRI/ NSSP; 2010). The coefficient of cost of transportation to the nearest cash-and-carry market was found to be positive and statistically significant at 5% ($p<0.05$). The result in Table 4 indicated that a unit increase in the cost of transportation of respondents to cash-and-carry markets would likely increase the probability of their participation in barter markets by 0.3%. It implied that the more the cost of transportation to cash-and-carry markets, the higher the probability of participation of rural households in barter trade.

Table 4. Results of the Probit Model

Variables	Coefficient	Standard Error	P-value	Marginal effect
Constant	-2.271143	1.373911	0.098	-1.6530
Age (X1)	0.0580907	0.0227226	0.011**	0.0210581
Size of farm (X2)	0.534739	0.1236411	0.000***	0.193844
Access to credit (X3)	-0.5447894	0.3629378	0.133	-0.205535
Distance to barter market (X4)	1.892277	0.6899291	0.006***	0.685956
Household size (X5)	0.2371124	0.1064234	0.026**	0.0859539
Formal education (X6)	-0.2931657	0.0498943	0.000***	-0.106273
Marital status (X7)	0.0550085	0.5842151	0.925	0.0201382
Input access (X8)	0.2216896	0.4858271	0.648	0.0767074
Transport cost to nearest barter market (X9)	-0.0255462	0.0069458	0.000***	-0.00926057
Transport cost to nearest cash markets (X10)	0.0077617	0.0034249	0.023**	0.00281363
Market information (X11)	0.157705	0.400471	0.6937	0.0621932

Source: Field Survey (2014).

Notes: Log likelihood = -63.441954, LR statistics = 137.47, Pseudo R2 = 0.5200, Prob> chi2 = 0.000.

*** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level

4. Conclusion

This study concluded that there are significant differences in the socio-economic attributes of participants and non-participants of barter trade in the study area. The variables that showed significant differences included age, household size, years of formal education and income of the respondents. Also, opportunities associated with barter trade in the study area included greater quantity of commodity realized during exchange, opportunity to save money for other purposes, and opportunity to get food when households are short of money. Presence of cash-and-carry markets, cost of transportation to them and the distance of such markets are the main constraints facing the continued existence of barter trade in the study area.

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