Discriminant Analysis of Rice Producers' Socio-Economic Conditions in Buruku Local Government Area of Benue State

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A b s t r a c t

The study examined the socio-economic conditions and nature of discriminations in rice producers' access to facilities in Buruku Local Government Area of Benue State. Five stages of rice production: farming, processing, wholesale, retail and dispensary were used in the study. Survey design was adopted involving the use of questionnaire, structured interviews and focused group discussions (FGDs). A total of 400 respondents were selected from 2,240 rice producers through systematic sampling technique. The multiple discriminate model was used for data analysis. The study found that rice farming discriminates significantly between the poor and non-poor farmers, which mean non-significant contribution of rice farming activities to the improvement in the socio-economic conditions of farmers. The rice processing stage does not discriminate significantly between the poor and non-poor, which mean significant contribution of rice processing activities to income generation. The rice wholesale and retail stage do not discriminate significantly between poor and non-poor marketers, which implies significant contribution of rice wholesale and retail activities to the profitability of rice marketers and rice processing discriminates significantly between the poor and non-poor processors, which mean non-significant contribution of rice processing activities to the improvement in their welfare in Buruku local government area. The study recommended that Non-Governmental Organizations as well as farmers' organizations in Benue state should propagate the expected gains of rice processing, wholesale and retail ventures or businesses especially to young graduates who are in the labour market in search of jobs. The NGOs and other organizations can do this by organizing conferences, symposiums and church activities targeted at youths where the potentials of these ventures could be propagated. If this is done, youths and vulnerable women who were hitherto unemployed and poverty laden, would gainfully employ themselves. The Government should also intervene by making available rice processing machineries to processors and other target groups in its poverty reduction efforts.

Keywords: *Rice Production, Rice marketing, Discriminate analysis*

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Background to the Study

Poverty generally forms one of the major problems confronting developing countries today and is at the centre of development policy. It is therefore, not a surprise that since over a decade, the World Bank chose the theme of "Attacking poverty" for its 2004 Development Report in which it estimated that of the world's 6 billion people, 2.8 billion live on less than US 2 a day and 1.2 billion on less than US 1 day. It further stressed that of the 1.2 billion who live on less than a dollar a day, 23.3 percent were in sub-Saharan Africa. Poverty therefore, has become an important topic of discussion among world leaders. This was reflected in the theme of World Vision 2020 conference held in Uganda (IFPRI, 2003). The United Nations General Assembly in 2000 summarized the development goals agreed upon at various international conferences and world summits during the 1990s and tagged it the "Millennium Development Goals" (MDGs) with reducing extreme poverty and hunger by half by the year 2015 as the first among the eight-point targets (Vincent, 2006)

In Benue State in particular, the socio-economic indices are also very disturbing, as poverty has been on the increase. With only 1% extremely poor and 21% moderately poor in 1980, these figures rose to 25% extremely poor and 39% moderately poor in 1996. In 2003, 65% of Benue people were living below the poverty line (US $1 per day). (Benue Advanced Plan Document, 2003). The life of a Benue child, the hope of tomorrow is quite distressed. As at 2005, 31% of the children under five were distunted, 11% wasted and 17% underweight with an extremely high mortality rate of 84.4 per thousand for the under five. Within the same, the HIV/AIDS prevalent rate for the state at 21% was the highest in Nigeria (the National average was 5.4%) (Kyarem, 2005). Today, Benue state is ranked the 8th poorest of the 36 states of the federation (Akighir, 2011). The Nigerian government has attempted to reverse the trend of rising poverty rate through intervention programmes such as Operation Feed the Nation (OFN), National Poverty Eradication Programme (NAPEP), and Transformation Agenda, among others, but the evidence on ground points to the fact that "the poverty 'virus' is getting more entrenched (as depicted above) and spreading wider among the citizenry" (Ajegi, 2002).

The above poverty reduction policies put up by the government have been institutionally driven; requiring several bureaucratic processes and stages for implementation. This eventually hinders the achievement of full potential, and the final end result – poverty reduction. Hence, rather than adopt the conventional top-bottom approach to poverty reduction, it has become pertinent to grapple with a bottom-top approach so as to remove the bureaucracy that hinders direct impact on the targeted beneficiaries.

As Nigeria is an agrarian society, it is desirable to anchor poverty reduction strategies in the agricultural sector. This makes Benue State strategic in poverty reduction efforts given its status as the "Food basket of the Nation", with high potentials for alleviating poverty through agricultural value chains. However despite the ecological blessings bestowed on the state by nature, more than 54% of the total population across the three senatorial districts has difficulty in satisfying their food needs (Benue State Statistical Agency, 2001). Benue state is therefore, deficient in its objective and opportunities to feed Nigeria.

It is expected that a value-yield venture like rice production should be able to impact positively on the socio-economic conditions of participants by raising their standards of living. Studies carried out by Olamola (2007), Akighir (2012) and Onov (2014) show that rice producers gained significantly from rice production. Since Buruku Local Government Area is a rice producing hub in Benue State, one expects that participants should have access to desirable facilities like hospitals, good schools, habitable houses, portable water and three square meals per day.

However, since different ventures exist in rice production, the benefits derived from rice production activities may not be same among participants: some participants may therefore tend to access better facilities while others may not. This is what results into a situation generally referred to as economic discrimination. It is therefore pertinent to clearly situate the particular venture that provides more opportunities to rice producers in Buruku Local Government Area. The questions that readily come to mind are: do rice producers (farmers, processors, wholesalers, retailers and dispensers) gain access to the same facilities in Buruku Local Government Area? If there is discrimination in the level at which rice producers gain access to facilities, which stage of production gain higher access to the facilities and which specific facilities are accessed more by these producers? How is the socio-economic condition of rice producers a determinant of the accessibility of available facilities in Buruku Local Government Area?

Conceptual Issues
Rice Production
Rice production involves all the activities of growing and consuming rice, from planting to marketing. Specifically, rice production activities involve cultivation, planting, harvesting, and storage, processing and marketing of rice. According to Ogunjobi (2000), production is only complete when goods and services reach the final consumers, hence, rice production can only be complete at the point where it reaches the final consumers. For Singh in Olomola (2007), rice production systems include rain-fed upland, rain-fed lowland, irrigated lowland, and deep water and mangrove rice.

Under the rain-fed Upland rice production system, rice is directly seeded in non-flooded, well drained soil on level to steeply sloping fields. Rainfall is the only source of water here-generally limiting this system to areas with more than 1,300mm of annual rainfall. The land is cleared between December and March. With the onset of rains in early April, the land is prepared and the seeds broadcast and harrowed in with a hoe.

Rain-fed Lowland rice on the other hand is planted and seeded directly in the soil on level to directly sloping fields with variable depth and duration of flooding depending on rainfall. The average yield is about 2.2ton/ha. Deeper water rice system can generally be defined as those where flooding achieves a depth of 60-100cm, and floating rice system as those where flooding exceeds 100cm. Deeper water and floating rice represent an increasingly marginalized production system for which area and production values are generally limited (Olomola, 2005).

Rice processing activities essentially entail parboiling and milling of paddy (Olomola, 2005) which make it ready for cooking (Titiola, 2003). It is a distinct activity which involves the removal of panicle from rice seed to obtain the grain suitable for cooking (Aderibigbe, 1997). The activities consist in soaking paddy in hot or cold water in a drum, followed by a rapid exposure of the soaked paddy to steam and gradual drying for at between one and two days (Akighir, 2011; Stuykers , 1982 in Olomola, 2005).

Rice Marketing

Rice marketing has been defined by Ihere (1996) as the performance of all business activities in the flow of paddy and milled rice, from the point of initial production until they are in the hands of the ultimate consumers. Seen from this perspective, Aderibigbe (1997) divided the marketing of rice into four stages with a change of product ownership occurring between each pair of stages. The first stage is farming through harvesting. Stage two includes movement from the farms to processing centres, while stage three consists of moving the milled rice from processing areas to urban consumption centres. The fourth stage encompasses wholesaling and retailing in the urban centres. The present study adds the fifth stage; rice dispensary. Rice dispensary according to Onov (2014) refers to the sale of cooked rice in small quantities in restaurants, hotels, market squares and other public places for onward consumption by members of the public.

Theoretical Issues

This study is structured on the vicious cycle of poverty hypothesis, propounded by Nurkse (1953). The major thrust of the theory is that, there is a circular constellation of forces tending to act and react upon one another in such a way as to keep a poor person, society or country in a state of poverty. The theory posits that a poor man may not have enough to eat; being underfed, his health may be weak; being physically weak, his working capacity may be low, which in turn means that he will not have enough to eat; which means that he is poor and likely to remain poor (Jhingan, 2007).

The basic vicious cycle stems from the fact that Less Developed Countries' total productivity is low due to deficiency of capital, market imperfections, economic backwardness and underdevelopment. Thus, the vicious cycle of poverty tends to perpetuate the low level of development in LDCs.

The vicious cycle operates both on the demand side and on the supply side (Jhingan, 2007). The demand side of the vicious cycle is that the low level of real income leads to a low level of demand which, in turn, leads to a low rate of investment and hence back to deficiency of capital, low productivity and low income. The low level of real income means low savings, leading to a low investment and to deficiency of capital. The deficiency of capitals, in turn, leads to a low level of productivity and back to a low income. Thus, the vicious cycle is complete from the supply side (Akighir, 2011).

The third vicious circle envelops underdeveloped human and natural resources. Development of natural resources is independent of the productive capacity of the people in the country. If

the people are backward and illiterate, lack of technical skill, knowledge and entrepreneurial activity, the natural resources will tend to remain un-utilized or under-utilized. On the other hand, people are economically backward in a country due to underdeveloped natural resources. Under developed natural resources are therefore, both a consequence and cause of the backward people. Jhingan (2007) therefore submits that poverty is a curse, but a greater curse is that it is self-perpetuating.

This theory underscores the fact that a society like Buruku in want of an effective poverty reduction strategy is bound to be entangled in a vicious circle of poverty such that until and unless a comprehensive approach involving a value-adding, self engaging economic activity is adopted, the individuals or society may not break from the grip of the poverty. The individual entangled in the poverty circle may therefore, be limited by his inability to access desirable facilities even if they exist around him.

Methodology

The study used survey method to obtain relevant data from the respondents. The study's target population comprises all producers of rice, including those who participate at the level of rice farming, rice processing, and those involved in rice marketing at wholesale, retail and dispensary levels in Buruku Local Government Area of Benue State. A sample of 400 respondents were selected from 2,240 rice producers through systematic sampling technique. Primary data required for this work were sourced via the administration of questionnaires, oral interviews, personal observations and Focus Group Discussions (FGDs). The questionnaire method of data collection however formed the major source of data. Descriptive statistical tools such as tables, charts, simple percentages were used to analyze the data.

The analytical method employed was the discriminate analysis as employed by Madukwe, (2004). The statistical technique classifies an observation into one or several a-priori groupings based on its characteristics. The procedure generates a discriminate function based on a linear combination of the predictor variables which provide the best discrimination between the groups (Ibrahim and Umar, 2008). It forms one or more linear combinations of the discriminating variables of the form:

$$Di = di_1 Z_1 + di_2 Z_2 + di_3 Z_3 + \dots di_n Z_n \qquad \dots\dots\dots\dots\dots\dots\dots\dots (1)$$

Where Di is total score of the discriminate function, di is the weighting coefficient and Z = standardized values of the discriminating variables used in the analysis. Applied to the present study, the explicit form of the model becomes:

$$POV = {}_o + {}_1 Z_1 + + {}_2 Z_2 + {}_3 Z_3 + {}_4 Z_4 + {}_5 Z_5 + {}_6 Z_6 + {}_7 Z_7 + {}_8 Z_8 \dots\dots\dots\dots\dots (2)$$

Where Z_1 is income earned (₦), Z_2 is household size of the rice producers, Z_3 is Number of meals taken per day (1 if three times, 0 if otherwise), Z_4 is House type (1 if tenement and/or flat, 0 if otherwise), Z_5 is Access to clothing (1 if at least 1 new cloth is purchased in a year, 0 if otherwise), Z_6 is Source of drinking water (1 if Tap and/or borehole 0 if otherwise), Z_7 is Access to 'improved' medical services (1 if respondent visits dispensary, clinics, specialized and General Hospitals,) of otherwise) and Z_8 is Level of access to education of Rice producers (1 if the respondents attains secondary education and above, 0 if otherwise).

The discriminate model specified above was used to apply separately to each stage of rice production since socio-economic variables and indicators of participants may differ from one stage to another. The variables of the model were measured using Wilk's Lambda, Pooled within Group correlation and Canonical correlation.

Wilk's Lambda: This is an inverse measure of the discriminating power in each independent variable still left in the discriminating function. When the Wilk's Lambda value of variable is high, it means that less information concerning the variable is still left.

Pooled within Group Correlation: This explains the relevance of each variable to the discrimination. The results are usually ranked based on their sizes. Again, the results are interpreted in terms of the absolute values. For instance, a negative value explains that the value of the function is negatively associated with the variable.

Canonical Correlation: This explains how closely the function and group variables are related.

Standardised Coefficients: This explains each predictor's unique contribution to each function; it is a partial correlation which indicates a relative importance of each predictor in a predicting group assignment from each function.

Unstandardised Coefficients: This refers to the functions at group centroids. It is the mean scores for each grouping variable which are given for each function.

Based on the Discriminate analytical model in equation 2, 1, 3, 4, 5, 6, 7, and $_8$ are expected to be negatively signed. This implies that the variables are expected to be inversely related to poverty, showing that an increase in any of income earned, number of meals taken per day, access to clothing or improvement in house type, source of drinking water, medical services, and level of access to education, is expected to result in a decrease in the level of poverty of rice producers.

The apriori expectations are $_1 < 0; _2 < 0; _4 < 0; _5 < 0; _6 < 0; _3 > 0; _7 > 0; _8 > 0.$

Data Presentation and Results
Table 1: Discriminate Function Coefficients at Farming Stage

Variables	Standardized coefficient	Unstandardised Coefficient	Remark
Income (Z_1)	-.22.6	-1.608	D
H.Hold size (Z_2)	.63.8	.212	ND
No. of meals taken (Z_3)	-.200	-.024	D
House type (Z_4)	-.18.6	-.906	D
Access to clothing (Z_5)	-.259	-.626	D
Source of drinking water (Z_6)	-.174	-.731	D
Access to med. Services (Z_7)	-.315	-1.600	D
Access to education of farmers (Z_8)	-.149	-1.225	D

Source: Field Survey, 2017.
*NB: *D=Discriminating; ND=Not Discriminating. **Wilk's Lamda = .869; Canonical Correlations = .84, .71.*

The result of the step-wise discriminate analysis on rice farming as presented in Table 2 shows that the standardized coefficients of the pooled-within-group correlations depicted explained 63.8% of farmers' poverty manifests through their household sizes (Z_2) ; 31.5% of farmers' poverty is reflected by their access to medical services(Z_7); 25.9% of farmers' poverty manifests via the level of their access to clothing (Z_5), 22.6% of farmers' poverty can be viewed from their income levels (Z_1); 20.0% of farmers' poverty is reflected in the number of meals taken per day (Z_3); 18.6% of farmers' poverty is indicated by their house types (Z_4), 17.4% of farmers' poverty is observed through their sources of drinking water (Z_6), while 14.9% of farmers' poverty is reflected in their access to education explained. Farmers' poverty is reflected more in their access to medical services improve and lowest least their access to education.

The unstandardized canonical functions at group centroids shows that seven out of the eight variables subjected to discriminate analysis were selected as discriminating significantly between the poor and non-poor farming households. Among the seven variables, one made positive contributions while six made negative contributions in the discrimination. The positive sign obtained for household size means that rice farmers are likely to be poorer with an increase in this variable. This implies that, an increase in this variable will increase the vulnerability of the farmers to poverty, while the negative signs for the other six variables mean that these variables are likely to decrease the vulnerability of rice farmers to poverty.

The Canonical correlation value of 0.84 shows strong correlation, implying that the group variables are closely related to the function. The Wilk's Lamda shows a discriminating power of 0.757, meaning that about 75% of information concerning the variables has been accounted for by the discriminating function, but not significant at 0.05 levels (p(0.62)>0.05). Therefore, it suggests that rice farming discriminates significantly between the poor and non-poor farmers, which mean non-significant contribution of rice farming activities to the improvement in the socio-economic conditions of farmers in Buruku local government area.

Table 2: Discriminate function Coefficients at rice Processing Stage

Variables	Standardised coefficient	Unstandardised coefficient	Remark
Income (Z_1)	-.685	-3.150	D
H.Hold size (Z_2)	.437	.888	D
No. of meals taken (Z_3)	-.239	.000	ND
House type (Z_4)	-.453	-.514	D
Access to clothing (Z_5)	-.364	.000	ND
Source of drinking water (Z_6)	-.313	.000	ND
Access to med. Services (Z_7)	-.478	-.311	D
Access to education (Z_8)	-.422	-.185	D

Source: Field Survey, 2017.

NB: *D = Discriminating; ND = Not Discriminating. **Wilk's Lamda = .687; Canonical Correlations = .55, .46*

The result of discriminate analysis presented in Table 3 shows the pooled-within-group correlations of the standardized coefficients depicted 68.5% of processors' poverty is observed through their income levels (Z_1) ; 47.8% is reflected the level of their access to medical services(Z_5) , 45.3%, reflected in their house types, 23.9% is depicted in the number of meals taken per day , 43.7% of their poverty levels is seen through processors' household sizes, 42.2% reflected in their access to education, 36.4% also manifests in their access to clothing while 31.3% of processors' poverty manifests in their sources of drinking water. This means that rice poverty reduction manifests more from the rise in income and their access to medical services and lowest from the number of meals they take per day.

The result of the unstandardized canonical functions at group centroids shows that five (out of the eight variables subjected to the analysis) were selected as discriminating significantly between the poor and non-poor participants. The pooled within group correlation shows that among the five variables selected, one made positive contribution in the discrimination, that is, any increase in this variable (participants household size) will increase the vulnerability of rice processing participants to poverty. Meanwhile the remaining four variables (level of income, house type, access to medical services and level of education of the participants) made negative contribution, implying that an increase in any of these variables will reduce poverty of the participants. The Canonical correlation value of 0.559 shows moderate correlation, implying that the group variables are moderately related to the function. The Wilk's Lamda shows a discriminating power of 0.807, meaning that about 80% of information concerning the variables has been accounted for by the discriminating function, and significant at 0.05 levels (p(0.02)<0.05). Therefore, it suggests that rice processing does not discriminate significantly between the poor and non-poor, which mean significant contribution of rice processing activities income generation in Buruku local government area.

Table 3: Discriminant Function Coefficients at Rice Wholesale and Retail Stages

Variables	Standardised Coefficient		Unstandardised wholesale	Coefficient Retail	Remark Wholesale	Retail
	Wholesale	Retail				
Income (Z_1)	-.88	-.66	-1.291	-1.608	D	D
H. Hold size (Z_2)	.35	.48	.558	.212	D	D
No. of meals taken (Z_3)	-.72	-.64	.000	.000	ND	ND
House type (Z_4)	-.59	-.31	-.906	-.351	D	D
Access to clothing (Z_5)	-.71	-.85	.914	.000	D	ND
Source of drinking water (Z_6)	-.48	-.53	.000	-.287	ND	D
Access to med. Services (Z_7)	-.70	-.47	.000	-1.600	ND	D
Level of education of farmers (Z_8)	-.63	-.56	.000	-1.225	ND	D

Source: Field Survey, 2017.

NB: *D = Discriminating; ND = Not Discriminating. **Wilk's Lamda = .921 & . 906; Canonical Correlations = .84, .71 & .60, .54*

Table 4 shows the pooled-within-group correlations (standardized coefficients) depicted that rice wholesalers' poverty level manifests from 88% of their levels of income and 72% the number of meals they take per day. Other important variables that strongly explain the dynamics of wholesalers' poverty are access to clothing which accounted for 71%, access to medical services (70%), access to education (63%), house type (58%), and household size (35%). For rice retailers, access to clothing led with 85%, followed by income (66%), number of meals taken per day (64%), source of drinking water (53%), household size (48%), access to medical services (47%) and house type (31%). This means that the most important variable that depicts rice wholesalers' level of poverty is income while the least is number of meals taken per day. For retailers, the most important variable is access to clothing and the least is the type of house they live in.

The table shows that out of the eight variables subjected to discriminate analysis, only four were selected as discriminating between poor and non-poor rice wholesalers, while six were selected as showing discrimination between poor and non-poor rice retailers. The variables selected under wholesale showing negative discrimination are income of the wholesalers and house type while those showing positive discrimination are household size and access to clothing. Meanwhile, the variables under retail which show negative discrimination are level of income of retailers, house type, source of drinking water, access to medical services and retailers' level of education. However, household size showed positive discrimination of the participants. The Canonical correlation value of 0.68 shows strong correlation, implying that the group variables are closely related to the function. The Wilk's Lamda shows a discriminating power of 0.906, meaning that about 90% of information concerning the variables has been accounted for by the discriminating function and significant at 0.05 levels ($p(0.01\&0.003<0.05)$. Therefore, these suggest that rice wholesale and retail do not discriminate significantly between poor and non-poor marketers, and hence implies significant contribution of rice wholesale and retail activities to the profitability of rice marketers in Buruku local government area.

Table 4: Discriminate Function Coefficients at Rice Dispensary Stage

Variables	Standardised coefficient	Unstandardised coefficient	Remark
Income (Z_1)	-.271	-.929	D
H.Hold size (Z_2)	.795	.487	D
No. of meals taken (Z_3)	-.926	.000	ND
House type (Z_4)	-.473	-.906	D
Access to clothing (Z_5)	-.254	.914	D
Source of drinking water (Z_6)	-.338	-.731	D
Access to med. Services (Z_7)	-.332	-1.188	D
Access to education of farmers (Z_8)	-.540	-1.445	D

Source: Field Survey, 2017.
NB: *D = Discriminating; ND = Not Discriminating. **Wilk's Lamda = .757; Canonical Correlations = .62, .66*

Table 4 shows the pooled-within-group correlations of the standardized coefficients depicted that 92.6% reduction in the poverty levels of rice dispensers manifests through the meal taken per day. Also 79.5% of poverty levels of dispensers can be observed from the size of households, 54% of the poverty levels in dispensers' manifests in their access to education. More so, 47.3% of poverty is depicted by the type of house dispensers live in; 33.8% of the poverty levels manifests from dispensers' sources of drinking water.

The results also show that 33.2% of poverty status is reflected in dispensers' access to medical services while 27.1% of the poverty status manifests from the level of income of dispensers. The means that the leading indicator of rice dispensers' poverty level is the number of meals taken per day, that of depth of poverty is household size while the least is indicator is access to clothing. The result of the unstandardized canonical functions at group centroids shows that out of the eight variables subjected to discriminate analysis, seven were selected as discriminating between poor and non-poor dispensary business participants. The variables which showed negative discrimination are level of income, house type, source of drinking water, and level of education of participants, while household size, access to clothing, and access to medical services showed positive discrimination in the analysis.

The Canonical correlation value of 0.62 shows strong correlation, implying that the group variables are closely related to the function. The Wilk's Lamda shows a discriminating power of 0.501, meaning that about 50% of information concerning the variables has been accounted for by the discriminating function, but not significant at 0.05 levels (p(0.53)>0.05) and suggests that rice processing discriminates significantly between the poor and non-poor processors, which mean non-significant contribution of rice processing activities to the improvement in their welfare in Buruku local government area. Thus, due to its very short cycle-time, rice-dispensary seems to contribute much value to the income of participants in Buruku local government area. However, given that almost all variables at this stage showed discrimination, this value may not truly translate to poverty education of the participants.

Conclusion

The level of discrimination among rice producers in Buruku Local Government Area is generally low. However, the participants involved in rice farming and dispensary tend to discriminate more, implying that while some privileged rice farmers and dispensers can afford better opportunities in terms of access to food, better sources of water, quality education, good houses and quality medical care among others, there are yet others who are not opportune to afford such facilities. However, rice processing participants, wholesalers and retails earn enough money to access the afore-mentioned facilities. The implication is that, rice processing participants, wholesalers and retailers have better opportunities and can access better facilities than rice farmers and dispensers in Buruku Local Government Area.

The study recommends that Non-Governmental Organizations as well as farmers' organizations in Benue state should propagate the expected gains of rice processing, wholesale and retail ventures or businesses especially to young graduates who are in the labour market in search of jobs. The NGOs and other organizations can do this by organizing conferences, symposiums and church activities targeted at youths where the potentials of these ventures could be propagated. If this is done, youths and vulnerable women who were hitherto unemployed and poverty laden, would gainfully employ themselves. The Government should also intervene by making available rice processing machineries to processors and other target groups in its poverty reduction effort.

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APPENDIX: Questionnaire

Instruction: Please tick (√) or fill the space provided for each question based on the answers that best suit your opinion regarding. What you know about rice farming in your area.

1. Number of meal taken per day:
    (a) 1 time [ ]   (b) 2 times [ ]   (c) 3 times [ ]   (d) above 3 times [ ]

2. What type of house do you live in?
    (a) Thatched house [ ]   (b) Tenement/Flat [ ]   (c) Storey building [ ]

3. How many times do you buy new clothes in a year?
    (a) None [ ]   (b) Once [ ]   (c) Twice [ ]   (d) Three times [ ]
    (e) Four times [ ]   (f) Above 4 times [ ]

4. What is your source of drinking water?
    (a) Stream/pond [ ]   (b) Well [ ]   (c) Tap/Borehole [ ]

5. Where do you go when sick?
    (a) Traditional medical practitioner [ ]   (b) Self medication [ ]
    (c) Clinic/dispensary [ ]   (d) Hospital [ ]

6. What is your level of education?
    (a) None formal education [ ]   (b) Primary education [ ]
    (c) Secondary education [ ]   (d) tertiary education []