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Discriminant Analysis of Rural Households Unemployment status in Imo State, Nigeria

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Research Article

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ABSTRACT

This study analyzed the household unemployment rate in Imo State. Data were collected with validated questionnaire from 540 proportionately and randomly sampled rural households in Imo state. Data were analyzed using descriptive statistics and Discriminant function model. The household unemployment rate in Imo state was found to be 61.4% , therefore the households in Imo state are categorized as unemployed households. About 71% of the household members were frictionally unemployed. Determinants of household unemployment rate were found to be wage rate in non-paid employment, dependents, socioeconomic status, level of education, type of Occupation, health status, and frequency of use of information sources on jobs. The most significant discriminator of unemployed households is education.

Key words: Discriminant Analysis, Households, Unemployment Rate, Imo state

INTRODUCTION

In Nigeria, unemployment constitutes an important macroeconomic issue since the labour markets are impacted in the long run by demographic Changes in production and the rate of growth in potential output (Udoh and Omonona, 2006).

In a market economy, it is common for workers to seek out the best employment fit with their skill, initiative, employment preference and salary expectation. Often those in the pool of the employed will seek change in the condition of their employment to find the greener pasture.

According to Lipsey and Steiner (1981), unemployment is the State of affairs in the labour market in which the supply of labour power is greater than the available openings.

Nigeria is potentially one of the richest countries in Africa because of her large population and the large petroleum resources. Ironically, the most dominant feature of the Nigerian economy is unemployment and poverty (World Bank, 2003). Available information from Central Bank of Nigeria (2010) showed increasing trend of unemployed persons in Nigeria. For instance, in 2008 the number of the unemployed that registered with the Employment Exchange Office stood at about 8,123,906 as against 143690 in 2003 (NBS, 2009). At the same periods, a total of 2,675,092 vacancies were declared for the professional and executive cadre in 2008 as against marginally 125 in 2003. The widespread unemployment results to high poverty level of the households, some of whom, in trying to eke out a living engage in some economic activities which make them less productive, disguised unemployed and underemployed.

The unemployment situation in Nigeria is very unsatisfactory and unacceptable, especially as a large (53%) of the unemployed are graduates of higher institutions (CBN, 2009).

At micro-level, which is the focus of this paper, the incidence of unemployment has overwhelming impact on livelihood status and general wellbeing of persons in households at both the rural and urban areas. Thus, empirical evaluation of unemployment status is imperative and relevant in understanding the structure and pattern of unemployment in rural households. Therefore the paper seeks to determine the household unemployment rate, unemployment type and factors influencing rural household unemployment rate in the study area.

Household unemployment is regarded as a disequilibrium phenomenon that arises because of excess household labour supply above its optimal level or because demand for labour is lower than it ought to be. Solomon (1980) said that unemployment is any unused resources, which has cost to the economy. A person is said to be

unemployed not merely because such a person does not want a job (voluntary unemployment), but as someone who is actively seeking for work but is unable to find it (Valentino, 2001).

Unemployment is categorized into frictional, structural, cyclical (demand-driven) and seasonal (Henderson and Poole, 1991). Usually frictional unemployment is short-run in nature and originated on supply side of labour market, which depends on the number of vacancies. According to Layard et.al, (1991), the larger the frictional unemployment, the less frequent are job finds and the more frequent are job separations. In terms of severity, cyclical unemployment constitutes a major problem especially when an economy is in a serious recession, and it is the culprit when unemployment is associated with ease with which workers are dismissed and is a problem in countries where redundancies are acceptable (Valentino, 2001). According to Fabiyi et al., (1988), structural unemployment occurs as a result of the changes in the structure of consumer demand and change in technology, which alter the structure of the total demand for labour.

The flow of people in and out of the pool of unemployment is influenced by the decision of individuals, households, and firms to supply labour at specified wages (Rosalind et. al., 2005; Layard et al., 1991).

In most countries of developed economy, percentage unemployment rate are calculated by dividing the number of unemployed by the number of employee in the employment plus the unemployed (Grahame, 2009). However, in Nigeria household unemployment rate (HUR) equals the number of people in a household who are unemployed divided by the total number of people in household that are qualified to be in the labour market. It estimates the persons in a household without jobs of all the household members who desire jobs at a wage that they believe is obtainable in the market (Ansel et al., 2008; Udo and Omonona, 2006).

MATERIALS AND METHODS

This study was conducted in Imo State. It lies within latitudes $5^{\circ} 40' 1''$ and $7^{\circ} 51' 1''$ North and longitudes $6^{\circ} 35' 1''$ and $80^{\circ} 30' 1''$ East. According to the National Population Commission (NPC, 2006), the population of the state was put at 3.94 million. The state is divided into three main agricultural zones, namely; Owerri, Orlu and Okigwe and further divided into 27 Local Government Areas (LGAs). Multistage sampling technique was adopted in selecting the sample. The state was stratified into the three agricultural zones. Three rural LGAs were purposively selected from each agricultural zone, making nine LGAs. The list of communities in each selected LGA was collected from the community Development officer at the LGA headquarters, and from this list three communities were randomly selected from each LGA, making 27 communities. The list of villages in each selected community was collected from the community leaders and town union executives, and from this list two villages were randomly selected from each community, making 54 villages. The sampling frame was the list of households in the selected villages, compiled with the assistance of the village heads and youth leaders. From this frame, 540 households were proportionately and randomly sampled.

Primary data were collected using structured and validated questionnaire and administered to household heads or any informed person in each household. Specifically, data were generated on the basic demographic, socioeconomic characteristic of households, unemployment status and factors influencing household unemployment rate. The data were analyzed using descriptive statistics, unemployment rate model and discriminant function analysis.

Household unemployment type was determined using descriptive statistics such as frequency distribution and percentages.

Household unemployment rate was calculated using the unemployment rate model stated as follows:

$$HUR = HUL^{-1}$$

Where,

HUR = Household unemployment rate

HU = total number of persons unemployed in a household at a particular Period.

L = total number of persons in the household qualified to be in labour market at a particular period.

Discriminant function analysis was used to categorize the factors influencing household unemployment into two namely; unemployed households and not unemployed households.

In this, the households were divided into two, unemployed and not unemployed households based on "HUR" which is the household unemployment rate.

HUR $\geq$ 50% group 1: Unemployed household

HUR $\leq$ 50% group 2: Not unemployed household.

The discriminant linear model is specified thus;

$$Z = d_1 X_1 + d_2 X_2 + \dots + d_n X_n$$

Where,

Z is the total score on the discriminant function

$d_1, d_2, \dots, d_n$ are discriminant coefficients

$X_1, X_2, \dots, X_n$ are values of the discriminating variables used in the model.

The independent variables used in the analysis are defined as follows;

- X_1 = Age (years)
- X_2 = Level of education (Number of years spent in school)
- X_3 = Type of occupation of household head (Dummy variable, 1 for paid employment, zero if otherwise)
- X_4 = Gender (Dummy variable, 1 for male, zero for female)
- X_5 = Wage rate in non-paid employment (N)
- X_6 = Marital status (measured on a five point scale of separated (1) divorced (2), single (3), widow/widower (4) and married (5).
- X_7 = Ethnicity (Dummy variable, 1 for Ibo, zero for others)
- X_8 = Course specialization (Dummy Variable, 1 if course read is in area of need, zero if otherwise)
- X_9 = Dependents (Number of persons below 18 years and above 70 years old)
- X_{10} = Health status (Dummy Variable, 1 for good health, zero for bad health)
- X_{11} = Religion (Dummy Variable, 1 for Catholics, zero for Pentecostal)
- X_{12} = Socioeconomic status (value of assets owned in naira)
- X_{13} = Family inheritance (Value of inheritance in naira)
- X_{14} = Availability of information sources on jobs (Dummy Variable, 1 for available, zero for unavailable)
- X_{15} = Frequency of use of information sources on jobs (Number of times used per month)
- X_{16} = Collusion (Dummy Variable, 1 if there is peace, zero if otherwise)
- X_{17} = Tenancy status (Dummy Variable, 1 if landlord, zero if tenant)
- X_{18} = Political affiliation (Dummy Variable, 1 if belonged to ruling party, zero if otherwise)
- X_{19} = Access to credit (Dummy variable, 1 for access, zero if otherwise).

The discriminant function is a statistical technique that classifies an observation into one of several grouping based on observed individual characteristics. The technique attempted to derive a linear combination of these factors which "best" discriminated between the two groups. The importance of the derived discriminant function for the study was assessed using the squared canonical correlation, wilk's Lamda and an associated chi-square statistics and the percentage of unemployed households classified into group (Madukwe and Ayichi, 1997; Klecka, 1975; Mbanasor and Nto, 2008).

RESULTS AND DISCUSSION

Unemployment status of households' members

The unemployment status of household members is presented in Table1, which shows that from the 540 households surveyed, the household size was 3865. Thus the average household size in the study area was about 7 persons per household. About 70% of the persons in each household are unemployed while only about 30% of the household

members are involved in income generating activities. This is an indication of high dependency ratio in the households and it is a potential source of poverty if income levels of the working class are low.

Table1: Unemployment status of households' members

Unemployment status	Frequency	Percentage
Unemployed members	2709	70.1
Not unemployed members	1156	29.9
Total	3865	100

Source: Survey Data 2012

This finding is similar to those of Udoh et. al., (2008) who found in their study on Analysis of unemployment status among households in Ilcot Ekpene LGA of Akwa Ibom state, Nigeria, that about 60% of the persons in each household were unemployed while only 40% of the household members were employed.

Household unemployment Rate

The household unemployment rate is presented in table 2, which indicates that out of the 2998 households that are qualified for employment, only 1156 were not unemployed, resulting to household unemployment rate of 61.4% . This finding implies that most household members in Imo state are unemployed, and therefore constrained in obtaining productive resources.

The household unemployment rate (HUR) was found to be 61.4%, which is greater than the benchmark of 50%; the households in Imo state are therefore categorized as unemployed households.

Table 2: Distribution of household members according to unemployment rate

Unemployment status	Frequency	Unemployment rate(%)
Qualified for employment	2998*	
Not unemployed	1156	
Unemployed	1842	61.4

*The actual number of household members who are qualified for employment but are not involved in any income generating activity.

Source: Surrey Data 2012

Household Unemployment Type

The distribution of Unemployed households of Imo State according to unemployment type is presented in Table 3, which indicates that frictional unemployment is the predominant type of unemployment in Imo state. About 71% of the household members were frictionally unemployed, 14.6% were structurally unemployed and 9.3% were seasonally unemployed while 5.0% were cyclically unemployed.

Table 3: Distribution of Unemployed Households according to unemployment type

Type of unemployment	Frequency	Percentage
Frictional	109	71.1
Structural	268	14.6
Cyclical	93	5.0
Seasonal	172	9.3
Total	1842	100

Source: Survey Data 2012

The high percentage of frictionally unemployed in the sampled households is an indication that the rate of finding work and the efficiency of job match is quite low. This perhaps is due to the fact that the number of declared vacancies that could match the suitability of the unemployed are quite limited. The observed percentage for the structurally unemployed, which is normally linked to the ease with which organization disengages workers because of inappropriate skill may not be unconnected to the nature of the economy, which is largely transitory and permit high level of redundancies. This finding agrees with those of Udo et. al., (2006).

Factors Influencing Household Unemployment Rate

The result presented in Table 4 classifies the households into unemployed and not unemployed using the discriminating powers of the independent variables included in the model. The cut-off point for the purpose of classification was taken as the mid-point of total discriminant score for each of the groups because discriminant function model assumes equal cost of misclassification (Green and Tull, 1975; Arene, 1993).

The estimated function for the rural households using the stepwise discriminant analytical procedure identified only 11 variables as being significant in discriminating between the two groups of households. They are level of education, type of occupation, wage rate in non-paid employment, ethnicity, course specialization, dependents, health status, socioeconomic status, frequency of use of information sources on jobs, tenancy status and political affiliation.

The estimated centroid for unemployed households was found to be 3.412 while that of not unemployed households was 1.317. This implies that the higher the composite score of any household, the higher the probability that the household will be classified as being unemployed, while the lower the composite score of any household, the higher the probability that the household will be classified as being not unemployed (Eze, 2003; Nwankwo, 2004).

Table 4: Standardized Canonical Discriminant Function Coefficients Among Rural Households.

Variables	Discriminant Coefficients	
Age (x_1)	0.034	(1.803)
Level of Education (x_2)	-0.175	(-3.016)**
Type of Occupation (x_3)	-0.027	(-2.413)*
Gender (x_4)	0.019	(1.441)
Wage rate in non-paid employment (x_5)	0.225	(2.513)*
Marital status (x_6)	0.016	(1.502)
Ethnicity (x_7)	0.051	(2.391)*
Course specialization (x_8)	0.063	3.014)**
Dependents (x_9)	0.017	(3.004)**
Health status (x_{10})	-0.022	(-2.313)*
Religion (x_{11})	0.031	(1.552)
Socioeconomic status (x_{12})	0.315	(2.914)**
Family inheritance (x_{13})	0.041	(1.603)
Availability of information Sources on jobs (x_{14})	-0.017	(-1.683)
Frequency of use of Information sources on jobs (x_{15})	-0.091	(-2.339)*
Cohesion (x_{16})	-0.033	(-1.422)
Tenancy status (x_{17})	0.081	(2.504)*
Political affiliation (x_{18})	-0.037	(-2.644)**
Asses to credit (x_{19})	0.068	(1.726)
<hr/>		
Group centroids: Unemployed Households	-3.412;	
Not unemployed Households	1.316	

Figures in parentheses are t-ratios

* Significant at 5%

** Significant at 1%

Source: Survey Data 2012

Relative Contribution of the Significant Variables to the Total

Discriminant score

The percentage contribution of the significant variables to the total discriminant score is presented in Table 5. The result shows that level of education, wage rate in non-paid employment, socioeconomic status, dependents, health status, type of occupation and frequency of use of information sources on jobs accounted more to the total discriminant score with about 35%, 29%, 8%, 7%, 6% and 6% respectively. The implication is that they are the most valuable variables in determining household unemployment rate in Imo state, Nigeria.

Table 5: Contribution of individual Variables to the Total Discriminate Scores

Variables	Discriminant	Percentage contribution	Coefficients
Level of Education	-0.175	35.03	
Type of Occupation	-0.027	6.11	
Wage rate in non-paid Employment	0.225	29.06	
Ethnicity	0.051	0.21	
Course specialization	0.063	0.15	
Dependents	0.017	8.03	
Health status	-0.022	7.03	
Socioeconomic status	0.315	8.14	
Frequency of use of Information sources on jobs	-0.091	6.06	
Tenancy status	0.081	0.12	
Political affiliation	-0.037	0.07	
Canonical correlation	-0.913		
Wilk's Lambda	0.175		
Chi-square	87.07**		

** Significant at 1%

Source: Surrey Data 2012

The statistical test of significance of the estimated function shows a high canonical correlation coefficient of 0.913 and low wilk's Lambda value of 0.175. These values are indication that the discriminant function used in this study provided the high significant amount of information required for determining household unemployment rate. The result provided a similar result with that of Mbanasor and Nto (2008), and is a better test when compared with previous studies (Arene, 1993; Onyemuchey, 2005; Eze, 2003). Also the chi-square test was found to be significant at 1%, implying that all the discriminant coefficients were not equal to zero, thereby confirming that the estimated function can be used to discriminate between unemployed and not unemployed households as originally defined.

CONCLUSION AND RECOMMENDATIONS

Household unemployment and poverty in Nigeria has remained a dominant feature. The household unemployment rate in Imo state was found to be 61.4% , therefore the households in Imo State are categorized as unemployed households. About 71% of the households' members were frictionally unemployed.

The study has identified household unemployment rate as being directly related to wage rate in non-paid employment, dependents, and Socioeconomic status, and inversely related to level of education, type of occupation, health status, and frequency of use of information sources on jobs.

The most significant discriminator of unemployed households is level of education. Considering the immense benefits that could be derived from attainment of high educational standard, households in Imo state are strongly urged to pay strict attention to the education of their household members to brighten their chances of securing employment.

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