

Standardization of Socio-Economic Status (SES) Scale for Farm Families in South West Nigeria

L. A. Akinbile

*Department of Agricultural Extension and Rural Development, University of Ibadan,
Ibadan, Nigeria*

E-mail: (la.akinbile@mail.ui.edu.ng) (lakinbile@yahoo.com)

KEYWORDS Status; material possession; cultural possession; group participation; farmers

ABSTRACT Dearth of appropriate scale for the measurement of socio-economic status of farm families in South West Nigeria necessitated this study. The study sampled 650 respondents from rainforest and derived savannah ecological zones of South West Nigeria using multistage sampling. Heads of farm families were sampled from villages in Oyo and Osun States to represent the two ecological zones. Correlation analysis was used to determine items that are valid for inclusion in the scale through item analysis. Weights were assigned to valid items using the sigma scoring method. Of the 265 items collated for measuring SES, only 33 are valid for determining the socio-economic status of farm families in the study area. Also, of all the valid items, the number of children that are graduates is the most valid one for measuring SES, followed by the number of children in higher institutions of learning and farm size. Ownership of vehicles attracted the highest weight of all the items (9), followed by ownership of houses (8). Concurrent validity of the scale showed a high correlation ($t=1.28$; $p=0.02$), and reliability coefficient of $r=0.89$ which confirms the new scale's validity and reliability. Respondents' SES scores is positively skewed (more respondents obtained low SES scores), with mean value of 63 and the minimum and maximum values being 30 and 129. Developmental interventions need be focused on the farm families in such a way that it will assist them improve their income generating activities so that their socio-economic status can be enhanced.

INTRODUCTION

The indicators of socio-economic status change with time in every community because of the dynamics of human existence. With the agrarian-based community made up of some disguisedly poor ruralite and a generally poverty ridden farming population (Olawoye, 2002), the inability to discern correct indices of ascribing socio-economic status automatically befuddles development concerns. Socio-economic status (SES) is the position that an individual or family occupies with reference to the prevailing average standards of cultural possessions, effective income, material possessions and participation in the group activities of the community. Wilson (1985) described SES as a classification of individual, household or family according to occupation, income, education or some other indicators of social status.

Patel and Anthonio (1974) in their work on SES posited that SES greatly influence the social behaviour of rural people that it is necessary to be able to identify and control those variables that indicates SES, especially in studies where other aspects of social behaviour are studied. Reddy and Smith (1973) posited that people with higher SES are much more likely to become

involved in voluntary actions than lower status people. This is of major importance in extension programmes as, for it to be successful, it must start where the people are. Thus, in the field of agricultural extension, status plays important role in the understanding of clientele and planning of development concerns. For this reason, Guarnachia et al. (1998) argued that a major factor affecting adoption of innovative economic strategies is SES, which is more important as a predictor than worldview and attitude towards change. They further posited that development projects need to assess socio-economic differentiation within a community as a major factor in understanding the response of different sectors of the economy to attempted interventions. This claim is corroborated by Okuneye (1992).

The indicators of SES, according to Sender and Smith (1990), change with time and among various groups of people. SES can be as varied as the people's perception of their status, and this change accordingly. The goods which people strive to acquire as soon as they could possibly afford them change with time, hence the indicators of SES change as those needs change. Among Tanzanian farmers, Sender and Smith (1990) discovered that crop type cultivated was an indicator of difference in SES among

farmers. They found that the farmers with high SES engaged their land more in the production of coffee and tea, while those on the lower level of the rung were more into maize and cassava production. Thus, the dynamics of change which is continuous in every society makes it imperative to consider the significant changes that have taken place on the indicators of socio-economic status of farm families through the development and standardization of a more current scale so that attempt to measure SES of farm families in contemporary time will be more valid and reliable. A valid understanding of the SES of farmers will accelerate prospects of disseminating and retrieving agricultural messages. This is because data on SES, which is latent in influencing changes along the lines of size of farm holding, patterns of investment and consumption trends have been neglected, unlike is the case with data on crop yield patterns, input use and land area cultivated. These have consequently resulted in policy conclusions that are at variance with the needs of the population or spatially adequate to meet people's needs. There is thus the need to bridge the gap, as well as establish dependable database on which further data can be generated.

Depleuch et al. (2002) stated that SES scales are developed by computing a weighted sum of socio-economic characteristics of persons with given occupation, education, and usually income. However, Patel (1987) reported the use of either single factor indices (which is rarely used as a valid SES measure) or the multiple factor indices which include the summation of scores obtained from cultural possession, material possession and participation in group activities.

It is discovered that previous efforts to measure SES of farmers in South Western Nigeria were standardized on the basis of indicators that were valid at the period (Patel and Anthonio, 1974; Ladele, 1990). Most of the indicators are no longer valid for assessing the socio economic status of farm families, hence the need to develop a standardized scale that will serve the need of the moment. It is important to note that electricity supply that is an issue in the contemporary situation was not a significant issue in many rural communities about 30 years ago in the country. Also, the possession of gas lamps that was a valid indicator of SES about 30 years ago is not an important possession in contemporary situation.

Previous studies have demonstrated the

relationship between the socio-economic characteristics of farmers and their innovativeness (Patel and Anthonio, 1974; Ladele, 1990; Akinbile 1997). Thus, the higher a farmer's social status, the better his adoption behaviour tends to be when compared with other farmers. It thus suggests that extension agents and other community development workers, as well as rural sociologists would be more successful in their efforts if the socio-economic status of farmers are determined and those with appropriate innovativeness are used in the diffusion of innovations. Ability to identify and utilize rural dwellers with relatively higher socio-economic status in the early stages of the diffusion process will help in achieving high level of adoption of recommended innovations. This will be possible if valid scale for the measurement of socio-economic status are available. The question that arises is thus how to construct and standardize a scale to measure the socio-economic status of farm families in South Western Nigeria that will satisfy the needs of the moment.

Patel and Anthonio (1974) and Middleton (2002) submitted that the differences in socio-economic status affect the social behaviour of rural people, which suggests the need to understand the social behaviours by measuring their socio-economic status. It is therefore necessary that necessary ingenuity is brought to bear to develop appropriate scale for the measurement of socio-economic status of farm families. This is important to aid the adoption of innovations in efforts at achieving improved agricultural production so that the nation can progress towards achieving the much desired food security. This becomes important as peasant farmers who permeate the farm families in rural communities in the study area produce the bulk of food consumed in the country (Okunmadewa, 1999). The purpose of this study is therefore to assist in achieving multiplier effect in food production and rural development through the identification of socio economic status of rural dwellers and making use of those that are appropriate in developmental interventions.

METHODOLOGY

There are different methods of measuring socio-economic status. Of these, this study adopts the definition of Chapin (1933) and Patel and Anthonio (1974) that referred to SES as the

position that an individual or family occupies with reference to the prevailing average standards of cultural possessions, material possessions and participation in-group activities of the community. The difficulty in measuring 'effective income' of rural dwellers who do not keep records made this study eliminate the factor of effective income. Other indirect measures like farm size were used instead.

This study adopts the following procedure:

- developing and pre-testing of the schedule
- administering the schedule
- conducting item analysis (to determine valid ones)
- assigning weights to valid items
- scale standardization through determining validity and reliability

2.1. Developing and Pre-testing the Experimental Schedule: The experimental schedule was developed through obtaining items on what constitutes indicators of social and economic status from literature, personal survey, observation, requesting the villagers to indicate the items they perceive as constituting the statuses, as well as through discussion with experts in the field.

Up to 265 items were collated and were subjected to initial pruning using the criteria of Patel and Anthonio (1974) of including only items that are objectively observable, suitable for the area, scorable and must be good indicators of socio-economic status. Items which were non-specific, redundant, vague and repetitive were rejected. This method led to reduction of the items to 125 items.

The schedule was pre-tested with 30 heads of farm families' selected using systematic sampling from Onidundu, a rural community in Oyo State. The use of heads of farm families was necessitated by the fact that much of the information required pertains to them. The pretest gave room for the rewording as well as other modifications in the structure and arrangement of the items. These processes gave rise to the final draft of the schedule used for the study.

2.2 Administering the Test Schedule: To administer the test schedule, multi stage sampling technique was adopted. The study area was stratified into 2 using agro ecological zones. Thus, sample was drawn from the rainforest and derived savannah agro ecological zones in the study area. Two local government areas (LGAs) each were randomly selected from the 2 agro

ecological zones. The two from the rainforest were from Osun State while those from the derived savannah were from Oyo State. The next stage involved random selection of 2% of the villages in each stratum, giving 8 villages in the rainforest and 5 villages in the derived savannah. Fifty heads of farm families were sampled from each village, giving a total of 650 respondents. The sample was drawn to ensure that respondents are from varying social statuses as perceived by members of the communities.

The test schedule was administered on the 650 respondents and it was revealed that of the 125 items on the scale, 12 items were possessed by less than 10 percent of the respondents, while 17 items were possessed by 75 percent of the respondents. The rate at which other items were possessed by the respondents varies from one item to the other. The results obtained were further subjected to descriptive and inferential statistics to determine which of the items are statistically valid to be included on the eventual scale.

RESULTS AND DISCUSSION

3.1 Result of Conducting Item Analysis: Item analysis is conducted to identify items that are valid for predicting socio-economic status, that is, those that best discriminate between the various levels of socio-economic status identified by members of the community. Basically, three methods can be used for item validation. The first method involves the correlation of scores of test items with those of an external criterion. The second method involves the use of factor analysis, while the third method involves the correlation of scores of test items with those of the whole item, which serves as an internal criterion. The first method of correlation of scores with those of an external criterion was used. The scale developed by Patel and Anthonio (1974) for the measurement of socio-economic status of rural farm families in Western Nigeria was used as the external criterion. The Patel and Anthonio scale, as well as the new scale were thus administered to the 650 respondents. The method used presumes that an item is valid for measuring socio-economic status if it discriminates the same way an initially developed and standardized scale for measuring socio-economic status discriminates (Depleuch et al., 2002). The item-external criterion method uses the Pearson Product Moment

Correlation Coefficient to determine items that are valid for measuring SES. A high correlation, that is, when it is statistically significant indicates that the item is valid for measuring SES.

3.1.1 The Standard for Item Selection: The standard set for this study was that each item selected for the scale should express significant relationship with the external criterion with the use of PPMC and have a r coefficient of 0.46 and above. On this basis, 45 items satisfied the condition. Some items that demanded information about functionality which the respondents view as being unnecessary, as well as those that were overlapping was dropped e.g. functionality of sound system. This gave a total of 33 items as shown in Table 1.

3.2 Assigning Weights to Valid Items: Both graduated scoring (that assigns scores to items in proportion to their supposed importance) and uniform scoring (that involves the arbitrary

assignment of a uniform score to item in the scale) was used where appropriate. The possession scores were then determined for each item and used to correlate scores obtained from the external criterion. This formed the basis for item selection.

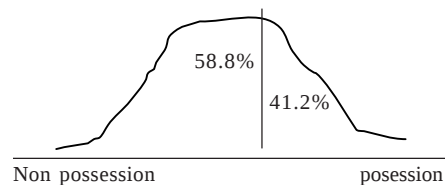
This study used the sigma scoring method for assigning weights to the valid items as used by Patel and Anthonio (1974). It assigns weights to items in reverse relation to their frequency of possession in the population. It states that those valid items that occur rarely in the population are most important and should be given highest scores. The greatest advantage of this method of scoring is that it expresses scores in standard units. The calculation of the sigma score is expressed through computing the score of an item on the scale. An example is the possession of refrigerator which was "possessed" by 41.2 percent of respondents and not possessed by the remaining 58.8 percent of them. The sigma score was computed thus:

Table 1: Correlation coefficient of items selected for the scale

Item	Correlation coefficient (r)	Significance (p)
1. Storey building in village	0.49	0.00
2. Other houses in village	0.73	0.04
3. House in city	0.69	0.01
4. Children in higher institution	0.91	0.00
5. Children that are graduates	0.97	0.00
6. Functioning vehicles	0.68	0.00
7. Floor rug	0.74	0.04
8. Dinning table	0.88	0.03
9. Cushioned executive chairs	0.52	0.01
10. Bicycle	0.90	0.02
11. Motorcycle	0.82	0.02
12. Relatives living under roof	0.49	0.01
13. Number of wives	0.59	0.02
14. Size of farm	0.95	0.02
15. Chieftaincy title	0.83	0.02
16. Leader of any society or org.	0.75	0.01
17. Member of executive of org.	0.77	0.00
18. Refrigerator	0.81	0.00
19. Ceiling/Table/Standing fan	0.78	0.00
20. Cooking stove	0.69	0.01
21. Pit latrine	0.74	0.04
22. Toilet with water cistern	0.87	0.02
23. Television	0.75	0.03
24. Personal generator	0.74	0.03
25. Radio cassette player	0.83	0.03
26. Well	0.87	0.02
27. Deep well & pumping machine	0.80	0.00
28. Wooden bed with mattress	0.70	0.00
29. Glass plates	0.74	0.01
30. Milling machines	0.64	0.00
31. Grinders	0.65	0.01
32. Electric stove	0.69	0.01
33. Membership of cooperative soc.	0.58	0.01

Table 2: Assignment of weights to non-graduated items (possession of refrigerator)

	F	cf	$cfmp$	$cpmp$	Z	Score
Non-possession	58.8	58.8	29.4	0.294	-0.54	3
Possession	41.2	100	79.4	0.794	0.82	6



Where f is frequency
 cf is cumulative frequency
 $cfmp$ is cumulative frequency to mid point
 i.e. $\frac{x + y}{2}$ where x and y are the 2 extreme

$$\text{points i.e. } NP = \frac{0 + 58.8}{2} = 29.4$$

$$\text{and } P = \frac{58.8 + 100}{2} = 79.4$$

$$cpmp \text{ is cumulative proportion to mid point} = \frac{cfmp}{N} = \frac{29.4}{100}$$

Z is the standard score corresponding to the $cpmp$ from the normal distribution (z) table, while the score is the rounded up z value, in this case, $(z + 2) \times 2$.

Thus, a respondent obtains a score of 3 for non possession of refrigerator and 6 for possession of refrigerator.

For graduated items, the following procedure was used, like in the case of number of houses owned in the city,

Scores are thus assigned on the basis of number of people that possessed particular number of the variables. A person thus scores 2 for not having a house in the city and 8 for having up to 3 houses in the city.

The weighted scores for possession of each of the 33 socio-economic status indicators are as presented in Table 4.

3.3 Scale Standardization: The process of

standardization of the scale involved taking it through validity and reliability tests. This is premised on the position that a standardized scale is one which is satisfactorily valid and reliable (Sewell, 1940; Patel and Anthonio, 1974). According to Cangelosi (1990), it involves the field testing of a scale or test for the purpose of collecting data for measuring validity and reliability to have normative standards to be used in interpreting scores. The process involves field-testing a scale on a representative sample of the population for which the test is designed, referred to as the test's norm group. The scores of people in the norm group become the standard to which the results of subsequent administrations of the

Table 3: Assignment of weights for graduated items (number of houses owned in city)

Number of houses owned in the city	Frequency of families possessing	Cummulative frequency	Cfmp	Cpmp	Z	Score $(z + 2) \times 2$
No house	240	240	120.0	0.18	-0.92	2
1	287	527	383.5	0.59	0.23	4
2	98	625	576.0	0.89	1.23	6
3 and above	25	650	637.5	0.98	2.05	8

Table 4: Weighted scores of the SES indicators.

Item	Weights of numbers possessed in parenthesis
1. Storey building in village	None [2]; 1 [4]; 2-4 [7]; above 4 [8]
2. Other houses in village	None [1]; 1 [3]; 2-4 [5]; above 4 [6]
3. House in city	None [2]; 1 [4]; 2 [6]; above 3 [8]
4. Children in higher institution	None [0]; 1 [1]; 2-4 [2]; above 4 [3]
5. Children that graduates	None [0]; 1[1]; 2-4 [2]; above 4 [3]
6. Functioning vehicles	None [2]; 1 [3]; 2-4 [6]; above 4 [9]
7. Floor rug	No [2]; Yes [4]
8. Dinning table	No [1]; Yes [3]
9. Cushioned executive chairs	No [1]; Yes [4]
10. Bicycle	No [1]; Yes [2]
11. Motorcycle	No [1]; Yes [4]
12. Relatives living under roof	None [0]; 1 [1]; 2-4 [2]; above 4 [3]
13. Number of wives	None [0]; 1 [1]; 2-4 [2]; above 4 [4]
14. Size of farm	Less than 6ha [1]; Btw 6&10ha [2]; above 10ha [5]
15. Chieftaincy title	No [1]; Yes [4]
16. Leader of any society or org.	No [0]; Yes [3]
17. Member of executive of org.	No [0]; Yes [2]
18. Refrigerator	No [3]; Yes [6]
19. Ceiling/Table/Standing fan	None [0]; 1[1]; 2-4 [2]; above 4 [3]
20. Cooking stove	No [0]; Yes [2]
21. Pit latrine	No [0]; Yes [2]
22. Toilet with water cistern	No [0]; Yes [3]
23. Television	No [0]; Yes [2]
24. Personal generator	No [2]; Yes [5]
25. Radio cassette player	No [0]; Yes [1]
26. Well	No [0]; Yes [2]
27. Deep well & pumping machine	No [1]; Yes [6]
28. Wooden bed with mattress	None [0]; 1 [2]; 2-4 [4]; above 4 [5]
29. Glass plates	No [0]; Yes [2]
30. Milling machines	No [2]; Yes [5]
31. Grinders	No [0]; Yes [3]
32. Electric stove	None [0]; 1 [1]; 2 [3]; above 3 [4]
33. Membership of cooperative soc.	No [1]; Yes [4]

test are compared once the test is certified satisfactorily valid and reliable. The average of the norm group's scores for each level of the test is the standard to which scores are compared. In a survey, the representative sample of the survey forms the norm group. The need for standardization is thus in order to have a standard reference with which further measurements are compared. The following procedures were used for determining the validity and reliability of the scale:

Validity

The validity of a scale is the extent to which the scale measures what it is intended to measure. To ascertain the validity of this scale, the following were conducted.

(a) *Content Validity*: This is the extent to which the items on the scale cover the universe of content on socio-economic status. The universe of content in this scale includes the respondents' cultural possessions, material possessions and participation in group activities of their communities. The content validity of the scale was ascertained through making experts in rural sociology as well as rural development workers face validate it.

(b) *Concurrent Validity*: The concurrent validity of this scale was ascertained through the known group method. This involved a sample of 30 people of high socio-economic status and 30 people of low socio-economic status. Some members of the communities were identified and asked to name people in the low and high socio-economic status category in their communities (known group technique). The socio economic status of the people sampled using this method for the low and high socio-economic status was measured. A student 't' test of difference in the socio-economic status of people in the low and high group gave a value of $t = 1.28$; $p = 0.02$. This shows that the scale is able to discriminate between people in the low and high socio-economic status groups, that is, the scale is valid.

Reliability of the Scale

A scale is reliable if it gives consistent results over several administrations. The methods used for assessing the reliability of this scale are the test-retest and the split-half methods.

(a) *Test-retest Reliability*: This gives the stability of a scale. It was conducted on 30 respondents. The score obtained by each respondent on the 33 items of the scale was calculated for the first administration (test). A retest was conducted after 3 months and the score obtained by the same respondents on the items computed. The two set of scores were correlated and a correlation coefficient of $r = 0.89$ indicated a high correlation of the scale. This confirms the stability of the scale and thus its reliability.

(b) *Split- Half Method*: The split-half method is a test of the internal consistency of a scale. This measure divides a scale into two halves and treats each half of the scale as a whole. The two halves obtained by interviewing 30 respondents were sorted on the basis of odd and even numbered items. Scores of the respondents for every item of the two halves was then computed and the 2 sets (the halves) were correlated. A correlation coefficient of $r = 0.75$ indicated the high reliability of the scale. Results thus show that the scale possess sufficient validity and reliability. It thus satisfies the conditions required for its standardization.

3.4 Respondents' Distribution According to Their SES Scores

The results of respondents distribution according to the socio-economic status scores is indicated in Table 5.

It can thus be seen that the distribution is not perfectly normal. It is positively skewed. Thus, further administrations of this scale can be compared with the distribution.

Table 5: Respondents distribution according to their SES scores

SES Scores	Frequency	Percentage
30-49	134	20.5
50-69	289	44.5
70-89	146	22.5
90-109	74	11.4
110-129	7	1.1
	650	100.0

Mean value = 63

CONCLUSION

This study discovered that only 33 socio-economic indicators are valid for assessing the socio- economic status of farm families in the

study area. The indicators thus form the constituents of the SES scale for South West Nigeria. Also, the weights for possession and non possession of the indicators vary between 0 and 9, with the possession of functioning vehicles attracting the highest weight, followed by having storey buildings as well as owning houses in the city. The item with the highest significance in determining SES in the study area is having children who are graduates, followed by size of farm as well as having children in higher institutions.

The scale possessed face validity, and had a concurrent validity coefficient of $t = 1.23$; $p = 0.02$ which shows a high degree of discrimination. Also, the test-retest method of reliability gave a coefficient of $r = 0.89$, while the split-half method gave a coefficient of 0.75. These confirm the validity and reliability of the scale, which are requisite ingredients for its standardization. The study further showed that the scale is positively skewed, indicating that majority of the respondents are of low SES. There is thus the need to assist the farm families in improving their socio-economic status to make their profession more attractive in order to guarantee the succession of the ageing farmers.

ACKNOWLEDGEMENT

This research was funded through the 2000 Senate Research Grants (SRG/FAF/2000/10A) of the University of Ibadan, Nigeria.

REFERENCES

- Akinbile, L.A 1997. *Measurement of Agricultural Indigenous Knowledge of Crop Farmers in Two Agro-Ecological Zones of Oyo State*. Unpublished Ph.D thesis, Ibadan: University of Ibadan.
- Cangelosi, J.S 1990. *Designing Tests for Evaluating Student Achievement*. New York: Longman. Pp. 100-221.
- Chapin, F.S 1933. *The Measurement of Social Status*. Minneapolis: University of Minnesota Press Pp. 16-63
- Depleuch, F., A. Cornu, P. Massamba, P. Trissac and B. Marie. 2002. "Is body mass index sensitivity related to socio-economic status and to economic adjustment? A case study from Congo." Report of ORSTON-DGRST, Congo. Pp. 11-12.
- Guarnachia, P.J., P. J. Pelto, G. L. Pelto, L. Allen, L. Menesses and A. Charez. 1998. "Measuring socio-economic status- intra community diversity." *Journal of Culture and Agriculture*, 15(2): 1-8.
- Ladele, A.A. 1990. *Socio-economic Analysis of the Impact of Agricultural Cooperative Organisations on Farmers in Kwara and Oyo States*. Unpublished Ph.D Thesis, Ibadan: University of Ibadan.
- Okuneye, P.A. 1992. *The Problem of Declining Food Production in Rural Development in Nigeria*. London: Avenbury Publishers. Pp. 56-82.
- Okunmadewa, F.O. 1999. "Livestock industry as tool for poverty alleviation." *Tropical Journal of Animal Science*, 2(2): 21-30.
- Olawoye, J.E 2002. "The needs and challenges in training and extension for rural development workers in the 21st century." *Paper presented at the National workshop on innovative B.Sc degree programme for serving mid-level agricultural extension workers*. ABU and Sasakawa Africa Association, ABU Zaria. Pp. 3-10.
- Patel A.U. 1987. "Measurement and scaling techniques in extension." *Lecture note in the Department of Agricultural Extension Services*, University of Ibadan. Pp. 24-61.
- Patel, A.U and Q.B.O Anthonio. 1974. "Construction and standardization of a scale to measure socio-economic status of rural farm families in Western Nigeria." *Nigeria Journal of Economic and Social Studies*, 16: 99-113.
- Reddy, R.D and O.H Smith. 1973. "Who participates in voluntary actions?" *Journal of Extension*, XI (3): 18-19.
- Sender, J and S. Smith. 1990. *Poverty Class and Gender in Rural Africa- A Tanzanian Case Study*. Bethel: Rutledge Publishers Pp. 194-196
- Sewell, W.H. 1940. "The construction and standardization of a scale for the measurement of the socio-economic status of Oklahoma farm families." *Agricultural Experiment Station Technical Bulletin* 9, Oklahoma Agricultural and Mechanical College, Stillwater, USA Pp. 42-54.
- Wilson, C. 1985. *The Dictionary of Demography*. Oxford: Blackwell Publishers Pp. 210-220.