



A STATISTICAL STUDY OF THE RELATIONSHIP BETWEEN GENDER, STAFF CATEGORIES AND GRADE LEVEL ON THE SAVING HABIT OF COOPERATORS



O. S. Obafemi* and I. O. Ajao

*Mathematics and Statistics Department, Federal Polytechnic Ado-Ekiti, Ekiti State, Nigeria
Corresponding author: obafemisamuel22@gmail.com

Received: January 14, 2016 Accepted: May 02, 2017

Abstract: A cooperative society which is a business organization that can be compared to other types of business owned either by individual, partnership or jointly, is a universal form of organization found in most countries of the world. Its importance in providing the necessary and desirable services to its members cannot be over emphasized, hence the need for this study. In carrying out the study, regression analysis, chi-square test of independence and bar charts were used. It is observed that amount saved by members depend on gender, grade level and categories of staff, which is corroborated by the result obtained from the regression analysis. It can therefore be concluded that Grade level, Categories of staff and Gender contributed significantly at 5% level to the amount saved by cooperatives member.

Keywords: Cooperatives, dependences, relationship, savings

Introduction

Presently cooperative is almost a universal form of organization found in most countries of the world and used by people in many ways. The cooperative provide the necessary and desirable services to the people concerned, it engage in business with the motive of service instead of profit maximization, it also operate on the basis of self-help where the people involved look towards themselves as a group for the solution to their problems.

It should be noted however that cooperative society is a business enterprise which can be compared with the one man business, partnership, joint stock company, etc. while an individual or group of individuals may be so strong financially to start and run a business, the members of cooperatives sometimes are financially weak and it is through their association that the people could start and run a business, they become owners and would be at the same time customers for those that will directly benefit from the business of the society.

Tongyi (1999) a lecturer in the Department of Social Development and Cooperative Studies Kaduna Polytechnic defined cooperative as an association of persons and usually of limited means who voluntarily have joined together to achieve a common economic end through formation of a democratically controlled business organization such persons as associate make equitable contribution to the capital required and accept fair share of benefits and risks of their undertaking.

Cooperative is an association of person who have voluntarily joined together to achieve a common end through the formation of a democratically controlled organization making equitable contribution and capital required and accepting a fair share of the risks and benefits. Anywhere people voluntarily come together with the sole aim of achieving a collective economic goal they actually form a simple cooperative society. During the industrial revolution era where machine were been replaced with manual labour (human labour), the first cooperative society were organized by working men who were seeking to change the hard situation which emerged through the factory production which began in England about two hundred years ago, which was later adopted by other countries of the world today. The success of the early cooperative societies attracted the full attention of Nigeria government.

In an attempt to form a definite cooperative policy, which includes the essential futures of cooperative society guided by his Indian experience, Mr. C.F. Strick's drafted the

cooperative ordinance which is comprehensive and flexible, was passed into law on 3rd December, 1935.

The Internationally Cooperative Alliance (ICA) 1995 defined cooperative as an autonomous association of people united voluntarily to meet their common economic, social and cultural needs and aspiration through a jointly owned and democratically controlled enterprise.

Ihimodu (1988) said that many governments have encouraged the formation of cooperative societies in their respective countries. They had in addition continued to assist them with all kinds of facilities to the extent of not allowing them to indicate the self-help motive.

Ibrahim (1990) opined that cooperative was not only meant to serve the economic interest of their members, but are more importantly meant to serve as a training ground where members learn to work with others to practice democratically and acquire individual proficiency and skills which they can direct to the common good. Cooperatives societies should serve as a training ground for members and not for their economic interest alone. Members are supposed to learn how to work together to improve their skills. A great number of cooperative societies have collapsed in different parts of the country because they lack cooperative education.

In the early 19th century when the pre-Rochdale cooperative societies were formed, they all collapsed for various reasons which include lack of cooperative education. In view of this fact, the Rochdale equitable pioneers decided to pay greater attention to rules of life, which in course of time matured into an acceptable principle of cooperative all over the world. The Rochdale set out a sum of money for giving cooperative education to their member committees, officers and even their employees.

Frauz (1985) analysed the motives of voluntary membership, which include either economic rational or sociological emotional. Kareem *et al.* (2012) in their study confirmed that cooperative societies have effect on member's welfare and also concluded that the role of cooperative in poverty reduction and capital formation cannot be over emphasized. They recommended that government should assist cooperative societies to improve their capital base through substantial allocation of money to the cooperative societies like other sectors of the economy. Godwin (2011) described cooperative as values-led business ever since people have come together to do business as a cooperative which is driven by political and ethical values. According to Nueze (2003), small holders have lost their access to overseas markets a major source of income. One of the effective ways to overcome this problem

is cooperative of cocoa farmer production in which famers pull their resources together to increase agricultural productivity and enhance the economy and social status of member.

Aregawi and Tadele (2013) in their research pointed out that women participation in cooperative societies is very limited. Their assertion was supported by Majurin (2012) who also concluded that women membership account for about 30% and their participation decline for upper position.

Ajahet *al.* (2014) believed that the major constraint militating against cooperative societies effectiveness were low repayments and embezzlement of funds. They however suggested that policies that will improve management of funds and higher loan repayment will improve the managerial ability of the cooperative management and increase the approval rate to hundred percent (100%).

Onuoha (1986) believed that cooperative education is absolutely essential for the success of the cooperative movement anywhere. A cooperative cannot rise above level of understanding of its member, if cooperative education is not taking in all its breath to include member's education, staff training and public relation. Its objectives are in three fold, to produce enlightened and responsible members, efficient staff and a favorable public opinion. Looy (1926) in his opinion believed that cooperatives stand today as the zealous guardians to genuine economic freedom and individual enterprises, so essential in truly democratic society.

In 1951 the country was divided into three regions and each region enacted their own laws from the Nigeria cooperative ordinance to suit cultural and social setting of each region with the appointment of registrar for each region to see to the affairs of cooperative development in their region.

Materials and Method

The data used in this work is collected from the Senior Staff Multipurpose Cooperative Society of the Federal Polytechnic Ado-Ekiti. The data therefore is a secondary data obtained by transcription from records method.

Multiple Regressions

A multiple regression is a statistical technique that allows us to predict someone's score on one variable on the basis of their scores on several other variables.

Multiple regression allows us to identify a set of predictor variables which together provide a useful estimate of a participant's likely score on a criterion variable. The concepts and principles developed in dealing with simple linear regression (i.e. one explanatory variable) may be extended to deal with several explanatory variables.

The regression equation in such a case becomes:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 \dots \dots \dots (i)$$

It is customary to replace α with β_0 , and regression equations would be written as

$$\hat{Y} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 \dots \dots + \beta_n X_n \dots \dots \dots (ii)$$

Where: \hat{Y} is the predicted Y (dependent variable), X_1, X_2, \dots, X_n are independent variables,

β_0 is the intercept and $\beta_1, \beta_2 \dots \beta_n$ are the regression coefficients.

Chi-square test for independence

The **chi-square independence test** is used to find out whether there is an association between a row variable and column variable in a contingency table constructed from sample data. The null hypothesis is that the variables are not associated: in other words, they are independent. The alternative hypothesis is that the variables are associated, or dependent.

Expected frequencies in a chi-square independence test

To find the expected frequencies in a cell when performing a chi-square independence test, multiply the row total of the row containing the cell by the column total of the column

containing the cell and divide this result by the table total.

That is,
$$\frac{\text{Row total} \times \text{column total}}{\text{Table total}}$$

Test statistic for the test of independence

Let O_{ij} represent the observed counts in the i th cell and E_{ij} represent the expected counts in the i th cell. Then $\sum \frac{(O_{ij} - E_{ij})^2}{E_{ij}}$ approximately follows the chi-square distribution with $(r-1)(c-1)$ degrees of freedom, where r the number of rows and c is the number of columns in the contingency table,

Result and Discussion

From the appendix, the cross tabulations between amount saved and gender, amount saved and grade level, amount saved and categories of staff, with their respective chi-square analysis from SPSS output with P value less than the alpha value in all cases is an indication that there is not enough evidence in support of the null hypothesis of independence. It can therefore be concluded that there is dependences among amounts saved and gender, grade level, categories of staff members.

Also the regression equation, $y = 1.037 + 0.421 \text{ sex} + 0.658 \text{ grade} - 0.268 \text{ staff categories}$, with P value less than alpha, the coefficients β_i 's are significant when tested individually and collectively as shown in the ANOVA Table. This is a clear indication that Gender, Grade level and Staff Categories determine significantly the amount saved by cooperators.

The bar charts show that there is more male member than their female counterpart in the society. It is also observed that staffs of grade level 7 and 8

have the highest number of member while staffs of grade level 12 and 13 have the least number of memberships. More members contribute between 20,000 and 40,000 naira monthly. The higher the amount contributed the lesser the people in the category. The bar chart also reveals that the academic staffs have more member than the non-academic staff.

Generally it is expected that the higher the amount earned the higher the saving which is what is shown in the analysis. However more female are encouraged to join, and people earning higher who had not been saving much should be encouraged to save more because of their retirement.

Future researchers can look for other factors regulating savings.

References

Ajah E & Ago M 2014. Analysis of cooperative societies effectiveness in credit delivery to agricultural enterprise in Calabarmunicipary of Cross River State, Nigeria. *Greener J. Agric. Sci.*, 4(8): 354-361.

Aregawi T & Tadele H 2013. The role of cooperative in promoting social- economic empowerment of women. *Int. J. Community Devt.*, 1(1) 1-11.

Arigbabu YD 2012. The impact of cooperative society on capital formation. *Global journal of science frontiers* 12(11): 17-29.

Onuoha E 1986. *Principle of Cooperative Enterprise* 5th edition Macmillan Press Limited London.

Fraud H 1985. *Cooperative Society Motive voluntarily* 2nd edition McGraw Hill, New York.

Godwin R 2011. *Poverty Reduction Through The Use of Cooperative Societies*: Kaduna Nuhu Bamadi polytechnic international cooperative alliance (ICA). *Review Int. Cooperative*, 4: 85-86.

International Cooperative Alliance 1995. *The Cooperative Identity* 3rd Edition Engle wood Cliffs Prentice Hall.

International Labour Organization (ILO) 1977. *Cooperative Management of Administration*. Academic Press, New York.

Ihimodu IL 1988. *Cooperative Economic* Prentice Hall Englewood cliffs.
 Majuurin F 2012. *How Women Fare in East African Cooperatives*. The cooperative facility for Africa. International Labour Office Daereselam (ILO).
 Nweze NJ 2003. Cooperative promotion in rural communities: The project approach. *Nig. J. Cooperative* 2: 76-89.
 LooyP 1926. *Economic Freedom and Individual Enterprises*, Dellen Sam Francisco.
 TongyiDS 1999. *Cooperative education 2nd Edition* Cambridge Educational.

Appendix

Table 1a: Amount * sex crosstabulation

Amount	Count	sex		Total
		female	male	
20000-40000		54	65	119
41000-60000		28	74	102
61000-80000		8	49	57
81000-100000		6	37	43
101000 above		3	51	54
Total		99	276	375

Table 1b: Chi-square tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-square	42.105 ^a	4	.0001

Table 2a: Amount * grade crosstabulation

Amount	Count	Grade				Total
		7 & 8	9 & 11	12 & 13	14 & 15	
20000-40000		78	28	5	8	119
41000-60000		39	36	11	16	102
61000-80000		7	21	8	21	57
81000-100000		0	17	9	17	43
101000 above		0	5	10	39	54
Total		124	107	43	101	375

Table 2b: Chi-square tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	171.344 ^a	12	.0001

Table 3a: Amount * categories crosstabulation

Amount	Count	Categories		Total
		academic	non-teaching	
20000-40000		46	73	119
41000-60000		57	45	102
61000-80000		38	19	57
81000-100000		32	11	43
101000 above		45	9	54
Total		218	157	375

Table 3b: Chi-square tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-square	39.243 ^a	4	.0001

Table 4a: Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
	1 (Constant)	1.037	.282		
sex	.421	.141	.132	2.978	.003
grade	.658	.050	.558	13.255	.0001
categories	-.268	.128	-.094	-2.097	.037

a. Dependent Variable: Amount

Table 4b: ANOVA^b

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	310.160	3	103.387	88.874	.0001 ^a
Residual	431.584	371	1.163		
Total	741.744	374			

a. Predictors: (Constant), categories, grade, sex

b. Dependent Variable: Amount

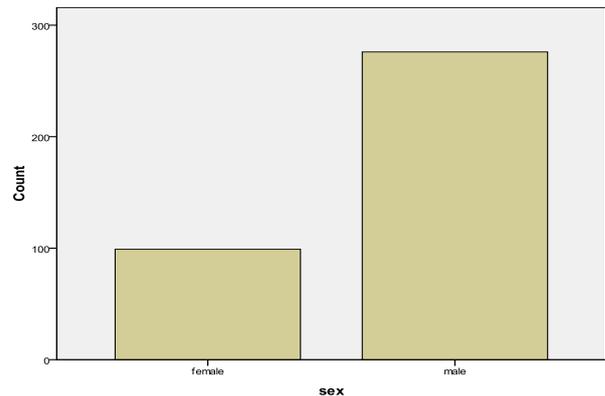


Fig. 1: Bar chart showing number of male and female cooperators

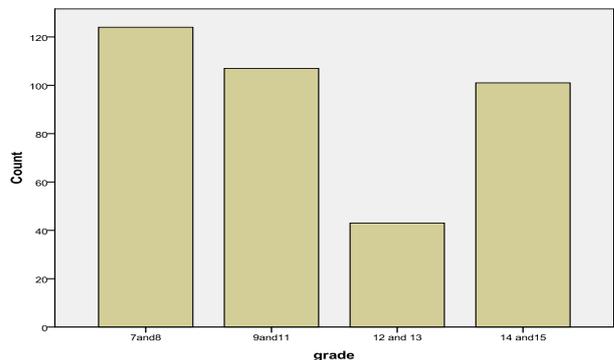


Fig. 2: Bar chart showing cooperators by grade levels

The Relationship of Gender, Staff Categories and Grade Level on Saving

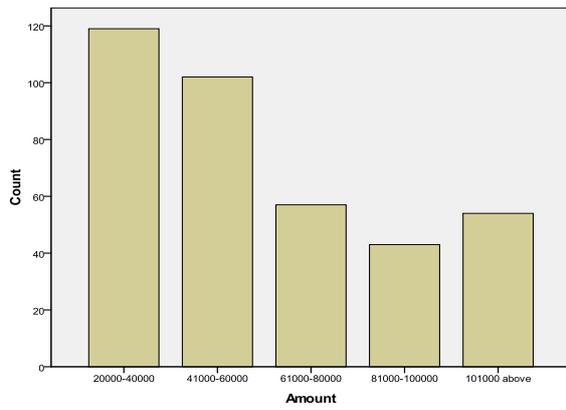


Fig. 3: Bar charts showing savings

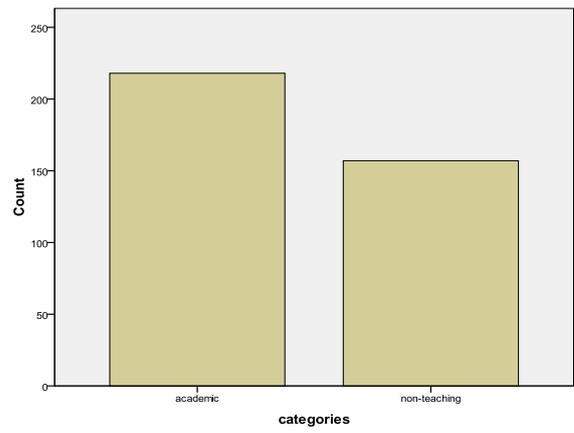


Fig. 4: Bar chart showing cooperators by categories