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Adoption of Information Technology and its effect on Cooperative Performance in Egba Division, Ogun State, Nigeria

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Abstract. Cooperative is a common platform for addressing contemporary financial challenges in a fast growing economy. The manual accounting systems among cooperatives are very slow, leave high margin of errors and create opportunities for abuse with negative impact on cooperative performance. The study examined factors affecting information technology (IT) adoption and its effect on cooperative performance in Egba Division, Ogun State, Nigeria. Primary data were collected from 122 respondents by multi-stage sampling techniques through questionnaire. Data were analysed by descriptive statistics, Binary Logit and Cobb-Douglas function. The result shows that average respondent was 32.8 years old. Male (80.3%) dominated cooperative management, 64.8% were married, 31.2% had maximum of secondary education. Cooperative membership was 10 – 58 persons. The major IT facilities adopted were office phone (84.4%), computer system (63.9%) and television (45.9%). Some managers (23.3%) were computer illiterate. Regression estimates revealed that age ($p < 0.01$), education ($p < 0.01$), experience ($p < 0.01$) and computer literacy ($p < 0.01$) of cooperative managers affected IT adoption while cooperative performance was promoted by computer system ($p<0.01$), office phone ($p<0.01$), television ($p<0.01$) and managers' experience ($p<0.01$). The major constraints against IT adoption were high cost of IT (63.1%) and low membership/ finance (45.9). Therefore, government should ensure policy that will increase membership participation and finance in cooperatives. It is recommended that minimum cooperative membership for registration should be twenty (20) persons. Computer training should be compulsory for managers/ staff under the principle of cooperative education. IT adoption should become a policy in the bye-law.

Keywords: Cooperatives, adoption, information technology, performance, Logit model

1. Introduction

Cooperatives are veritable tools for economic development in many countries. Over the years, cooperative enterprises have successfully promoted small-scale businesses and serve as catalysts for social organization and cohesion. It has over one billion members worldwide and can be found in many sectors such as agriculture, finance, health and in the provision of utilities. The societies have been able to provide some infrastructure by establishing joint production facilities for members with full compliments of tools, electricity, and access road among others (Al-swidi and Al-hosam, 2012).

Cooperative business started as a defense mechanism against the adverse effects of agricultural and industrial revolutions of 18th and 19th centuries, during the period of low wages, rising cost of living, adulteration of foodstuffs and goods, unemployment and long working hours without relief. It evolved from peasantry level to a highly sophisticated business enterprise following the wide acceptance of cooperative lifestyle by all classes of people (Enebeli-Uzor, 2011). The society is regarded as one of the main institutional machineries for empowering the economically weak members. According to Omojola (2004), Strickland described cooperative as a group of individuals who aim at an agreed object of social or economic betterment, and live in such circumstances of proximity, common language and

harmony. Some authors defined cooperative as a social organization, some see it purely as an economic unit while others emphasize on the cultural and spiritual dimension and the educational value of cooperatives (Emeaso, 2011).

Pearse (2014) affirmed that the societies play meaningful roles in uplifting the socioeconomic conditions of their members and local communities, as well as running major businesses in their nations. They are part of informal sectors that provide credit which helps in the growth of small and medium scale enterprises (SMEs). They are found making remarkable progress in almost all the major sectors of the economies in all countries of the world. They help to create, improve and mobilize savings. They generate employment opportunities and contribute to poverty reduction (Agbasi 2010 and Fatoki, 2012). Madhoushi *et al.* (2011) pointed out that cooperatives is associated with promoting entrepreneurship not only on their jointly owned businesses but also in individual business units of their members.

In Nigeria, cooperative in spirit and practice has been existing before the advent of modern-day cooperatives. They are used in several ways to solve economic problems among the people. They are called different names by various tribes and cultures e.g. "Adashi", "Esusu" and "Isusu" by Hausa, Yoruba and Igbo respectively, among other tribes (Ogungbemile 2010). The societies serve as avenues for farm input distribution, production, processing, financing and marketing of agricultural products (Nwankwo *et al.*, 2012). According to Oladejo and Oluwaseun (2014) and Iheanacho et al (2012), the cooperatives empower members by facilitating financial services, creating employment and giving educational support, social protection, marketing services, mutual aids and labour exchange. They are significant social and economic actors in making personal development a reality and contributing to the well-being of entire population in the Nigerian economy (Oladejo, 2011).

In spite of these roles, cooperative sector is facing several challenges including lack of adequate funds, illiteracy among its members, and lack of training opportunities. More so, most large cooperatives still operate with manual or semi-manual accounting systems which are labour intensive to maintain, leave high margin of errors and create opportunities for abuse (Aladejesu, 2012). Akorede (2011) reported that the manual operations and processes are notoriously slow and labour intensive to maintain leading to poor information management processes. These manual operations and processes range from members' registration details, accounts of savings, shareholdings, loan, repayments and balances, Bank remittances, purchases and sales, dividend declaration and computations, among others.

Oladejo and Adereti (2010) pointed out the direct negative impact of the manual operations and processes in cooperatives including inaccurate returns, late rendition of returns, inadequate services to members, reduced confidence in the society, low level of patronage, dwindling performance, diminishing share structure and capital base, poor investment analysis, reduced profitability, diminishing surpluses, poor management, inefficiencies and fraud. It must be noted that both profit and non-profit oriented enterprises are taking advantage of the speed, accuracy, reliability and sometimes cost-effectiveness offered by information technology (IT) to further their interests in the competitive operating environment.

Against this background, the objective of the study is to investigate adoption of information technology (IT) and its effect on the financial performance of cooperatives in the study area. The empirical findings would guide the decisions of the societies and policy makers on the type of information technology to be adopted for a particular operation. The results would also serve as basis for further research work.

2. Literature Review

Information technology (IT) refers to computer for processing, storing and transferring information; telephone, radio, television for coast-to-coast broadcasting, internet facilities and various communication gadgets (Wallace and Haugen, 2011; Murch, 2012 and Mika et al., 2013).

Information Technology has become indispensable in business operations across the world. It makes huge investments possible to meet the dynamic and growing customer needs. It is applicable to the cooperatives where the society needs to communicate with members, process members' accounting information e.g. savings, loans, subscription, trading activities, annual accounts and returns and determine the society surplus as well as sharing dividends which must be accurate and timely processed.

According to Oladejo and Oluwaseun (2014), the manual operations are partly responsible for several challenges being faced by cooperatives. Thus, information technology would engender improved services to members. Satisfaction would be enhanced when enquiries from members are promptly attended

to. The numerous challenges attributes to cooperative societies would not only be minimized but eradicated (Oladejo and Adereti, 2010).

Information Technology has a potential to contribute to achieving significant economic, social and environmental benefits of cooperatives. Mika et al. (2013) noted that investments in IT are often argued with the benefits it can bring in form of prompt delivery time, improved quality, employee motivation and indirect cost savings. Wallace and Haugen (2011) postulated that the use of IT in business could help attract and retain employees and ensure increased workers' productivity. According to Diso (2005), adoption of IT can give companies competitive advantage, gain in market share and ensure improved efficiency. The benefits of early adoption must be substantial since the cost of IT tends to decrease over time. Chieochan et al. (2000) suggested that Information Technology (IT) should be used by agricultural cooperatives to acquire timely information. Information technology reduces the communication gap between rural communities and the cities. Soriano (2007) stated that the benefits of IT extends to economic aspects including better production and earnings.

The positive impacts of information technology on the operations and performance of cooperatives have been reported by many researchers. McKillop and Quinn (2013) examined website adoption and its resultant effects on the performance of cooperative credit union in Ireland. They found that population from which the union drew its membership significantly influenced adoption of websites while the adoption translated into cost benefits for the cooperatives.

Morris (2014) investigated the effect of ICT adoption on the financial performance of Savings and Credit Cooperative Societies (SACCOs) in Nairobi. The results indicated that adoption of ICT led to an increase in SACCOs financial performance. An increase in ICT adoption resulted to improvement in payments, processing and reduction in service time due to electronic delivery of financial services.

Murch (2012) also conducted a study on communication technology adoption behaviors to provide educational benchmarks for Texas cooperatives. The survey categorized 105 different cooperatives by technology use and management practices. The findings revealed that Texas cooperative managers were willing to expand on their current use of communication technology. Those cooperatives with defined policies for technology use were able to use many forms of the information technology. Years of cooperative existence and manager's working experience were found to significantly influence the willingness of Texas cooperatives to adopt new information technology and social media.

The study of Nwankwo et al. (2009) revealed that majority of the farmers in Kaduna and Borno States, Nigeria joined cooperative organizations mainly because of the need for information and social capital. They reported that the farmers became aware of recent innovations through the cooperatives. However, Wensheng (2001) warned that Information and Communication Technology can result in the marginalization of economically disadvantaged groups or rural poor within developing and even developed countries, if not well planned and implemented.

3. Methodology

3.1 The Study Area

The study area is Egba Division of Ogun State in Southwest Nigeria. Ogun State was created in February, 1976. It has a total population of 3,751,140 (NPC, 2007). The State is bounded in the West by Benin republic, in the South by Lagos State and Atlantic Ocean, in the East by Ondo State and in the North by Oyo State. Egba division is one of the four (4) divisions in Ogun State. Others are Ijebu, Remo and Yewa Division.

Yoruba is the predominant ethnic group in the area. The study area consists of six Local Government namely; Obafemi-Owode, Odeda, Abeokuta North, Abeokuta South, Ewekoro and Ifo LGAs. The major city in Egba Division is Abeokuta which is the Capital of Ogun State where the State Ministry of Cooperative and Community Development is located as a result of numerous cooperative societies and activities within the State.

The study area comprise of urban and rural areas where different types of cooperatives exist among farmers, artisans, civil servants, transporters and many other groups of people.

3.2 Method of Data Collection and Sampling Technique

Primary data were used for this study while secondary data were obtained as literature from research publications. The primary data were collected from the cooperative through their managers who were the respondents. The data were collected using structured questionnaires which were administered during personal interview. The

investigation was based on the use of information technology including computer system in record keeping, office phone for communication and messaging, television (TV) for office entertainment, Point of sale (POS) for electronic payment, e-banking, internet and social media among others.

A multistage sampling technique was employed in selecting the sample for the study. In the first stage, four (4) of the six (6) Local Government Areas in the Egba division i.e. 66.7% were randomly selected namely; Abeokuta South, Obafemi-Owode, Ewekoro and Odeda LGAs. In the second stage, Thirty Five (35) registered cooperative societies were selected from each of the four Local Government Areas for interview. In all, a total of One Hundred and forty (140) questionnaires were administered out of which reliable information from One Hundred and Twenty Two (122) respondents were used for the data analysis after screening.

3.3 Method of Data Analysis

Descriptive statistics such as frequency, percentage and mean was used to analyse the socio-economic characteristics of the respondents, cooperatives and enumerated IT facilities. Binary Logit model was used to determine the factors affecting adoption of IT facilities among the cooperatives while the Cobb-Douglas Linear function was fitted to capture the effects of IT adoption on cooperative performance.

The Binary Logit Model

The Logit regression analysis is an appropriate technique for estimating the probability that an event occur or not by predicting a binary dependent outcome from a set of independent variables (Hoetker, 2007). For example, a cooperative may decide to adopt or not to adopt a particular Information technology (IT). The probability to adopt, y_i^*, is linearly related to a vector of observable variables, X_i and other unobservable factors, the error term. The linear form of the Logit model is specified as;

$$y_i^* = \beta x_i + \varepsilon_i \quad (1)$$

When y_i^* is greater than zero, the cooperative decides to adopt the IT. Hence, y_i^* assumes a value of one (1) when the cooperative adopts the IT and zero (0) when it does not. The probability that $y_i = 1$ is given by;

$$P(y_i = 1 \mid x_i) = \frac{\exp(x_t \beta)}{1 + \exp(x_t \beta)} \quad (2)$$

where β is the vector of coefficients to be estimated.

The dependent variable in this analysis is adoption status of computer system (i.e. adopted or non-adopted) being the major information technology used to gather, process, compute, store, protect, and transfer information.it is also used for internet connections and social media. Positive coefficients mean that the probability of adopting the IT increases with that variable and vice versa.

The application of the Logit model is in line with Bassey (2015) among other authors. The regression equation is specified explicitly as;

$$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \ldots + \beta_8 X_8 + \varepsilon_i \quad (3)$$

Where:

Y_i = Adoption of IT (i.e. Use of computer system = 1, otherwise = 0)
X_1 = Age of cooperative manager/ respondents (years)
X_2 = Education of manager (years)
X_3 = Previous Annual subscription (₦)
X_4 = Size of cooperative membership (number)
X_5 = Gender of cooperative manager (Male = 1, 0 = otherwise)
X_6 = Experience of cooperative manager (years)
X_7 = Existence of cooperative (years)
X_8 = Managers' computer literacy (literate= 1, otherwise = 0)
β_0 = Constant term
β_i = Parameters to be estimated (regression coefficient).
ε_i = error term

The Cobb-Douglas Linear Function

The effect of information technology adoption on the performance of cooperative was measured by Linear form of the Cobb-Douglas function. The dependent variable was defined as cooperative business surplus in monetary term while the explanatory variables include computer system, office phone and television being the major IT facilities with high rate of adoption. Following Oladejo and Oluwaseun (2014), the Linear functional form of the model is given as;

$$Y = \beta_0 + \beta_i X_i + \mu i \quad i = 1, 2, 3, \ldots\ldots, n \quad (4)$$

The regression equation is specified explicitly as;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \cdots + \beta_8 X_8 + \mu_i; \quad (5)$$

Where:

Y = Cooperative business surplus (₦)
X_1 = Size of cooperative membership (Number)
X_2 = Computer system (adopted = 1, otherwise = 0)
X_3 = Mobile phone (adopted = 1, otherwise = 0)

X_4 = Office television (adopted = 1, otherwise = 0)
X_5 = Sex of cooperative manager (male =1, otherwise = 0)
X_6 = Years of cooperative existence
X_7 = Education of cooperative manager (years)
X_8 = Experience of manager in cooperative (years)
β_0 = Constant
β_i = Parameters to be estimated.
μ = Error term

4. Results and Discussion

The Socio-Economic Characteristics of the Respondents

The socio-economic characteristics of the cooperative managers was investigated on the basis that they could influence their management style and the performance of the cooperative. The results of the descriptive statistics in Table 1 shows that majority (85.3%) of the cooperative managers was, at most, 40 years old while 14.7% was between 41 - 60 years of age. An average respondent was 32.8 years old. This implies that the managers were young and agile and could provide active leadership with tendency for on-the-job training. The results revealed that cooperatives were usually led by men (80.3%) in the area while 18.0% of the managers was female. The proportion of the managers that were single and married were 28.7% and 64.8% respectively while 4.9% was either divorced, separated or widowed. Thus, majority being married should take responsibility and be more productive in their management profession.

The finding shows that 68.8% of the cooperative managers possessed, at least, Ordinary National Diploma (OND) which is a higher educational qualification while 31.2% had a maximum of Secondary School Certificate. This revealed a high literacy level among the managers implying that education is greatly important in decision making and cooperative management. The result further shows that 82.8% of the societies had up to thirty (30) members while 17.2% had between 30 – 58 members. Average cooperative membership was 20 persons. This confirms that low membership is a possible problem among the cooperative societies in the study area.

Table 1: Characteristics of the Cooperative Managers and the Societies (n = 122)

Characteristics	Variable	Frequency	Percentage
Age (Mean = 32.8 years)	<30	43	35.2
	30 - < 40	59	48.4
	40 - < 50	17	13.9
	50 - < 60	1	0.8
Gender	Male	98	80.3
	Female	22	18.0
Marital status	Single	35	28.7
	Married	79	64.8
	Divorced	2	1.6
	Separated	3	2.5
	Widowed	1	0.8
Educational status (years)	No formal education	None	None
	Primary	2	1.6
	Secondary	34	27.9
	OND /NCE	47	38.5
	HND and above	37	30.3
Cooperative membership	10 - 20	81	66.4
(Mean = 20.26)	21 - 30	18	14.8
	31 - 40	5	4.1
	41 - 50	10	8.2
	More than 50	6	4.9
Managers' Computer literacy (years)	No computer literacy	28	23.3
	< 1.0	69	57.5
	1.0 - < 2.0	14	11.7
	2 and above	9	7.5

Source: *Field Survey, 2016*

Adoption of Information Technology by the Cooperatives

The results of assessment of Information Technology (IT) adoption among the cooperatives are presented in Table 2. The statistics show that the major IT facility adopted by the societies was office phone line (84.4%) followed by computer system (63.9%) and office television (45.9%).

The office phones were mobile handsets used mainly to communicate with members and leaders. A unit was procured at an average of ₦ 18,507. About 10.7% of the cooperatives used the phone to send bulk SMS messages to members while 89.3% did not probably due to high cost of subscription for bulk messages. Only 27.9% of the cooperatives used Database Management (DBMS) software and Spreadsheet for electronic computation. The estimated average cost of a computer system, DBMS and spreadsheet were ₦ 25,925, ₦ 33,333 and ₦ 1,741 respectively. The computer was cheap probably because it was a fairly used system. Similarly, 18.9% subscribed for Broadband internet to provide online information or social media /account page. The low level of adoption could also be attributed to low level of finance for subscription or lack of adoption policy. Meanwhile, internet connectivity may attract more members through the social media or promote the name of the society through a social media account page.

Office television was adopted purposely to entertain visiting members and access current information. Adoption of office television indicates that the society has a functional secretariat and this would enhance effective cooperative services and performance. A television was procured at an average of ₦28,743. Television is different from Cable TV in that the latter requires a cable which may be purchased at an average of ₦ 8,172 in addition to monthly subscription while the former does not.. The adoption of cable TV was low (18.0%) perhaps to avoid or reduce cost.

The result shows that Point of Sale or POS (4.9%), E-banking (5.7%) and Skype (4.9%) were rarely adopted as IT facilities by cooperatives in the area. Meanwhile, POS is an important electronic device for receiving payment/ subscription vial ATM card without physical withdrawal from members' bank accounts. E-banking is useful for online transactions i.e. payment or transfer of money. The ease of payment and security could enhance cooperative performance. Skype enables voice and video calling. It provides opportunity and evidence for sharing real-life information between a caller and a receiver. But, effectiveness of these IT facilities also depends on the ability of the members and managers to use the technologies. However, 23.3% of the managers had no knowledge of computer operation, 57.5% had less than 1 year computer training while 19.2% acquired about 1-2 years of computer education.

Table 2: Distribution of Cooperatives by Adopted Information Technology (n = 122)

IT Facilities	Adoption		Average
	Freq.	%	Unit cost
Computer system	78	63.9	25,925
DBMS for managing members' records	4	3.3	33,333
Spreadsheet software for computation	7	5.7	1,741
Point of Sale (POS)	6	4.9	5,965
Office telephone line	103	84.4	18,507
Bulk SMS messaging	13	10.7	10,208
E-banking	7	5.7	12,000
Skype	6	4.9	2,666
Office Television	56	45.9	28,743
Cable TV	22	18	8,172
Broadband internet	5	4.1	12,881
Social media account/page	18	14.8	3,992

Source: Field Survey, 2016

Financial Performance of the Cooperatives

Cooperative performance was statistically described in financial term. The estimated values of various cooperative transaction are presented in Table 3. The result shows that range of cooperative membership was between 10–58 persons while the average strength was 20 members. This indicates low level of cooperative participation in the area. The mean annual subscription and savings were ₦165, 975.24 and ₦3, 058,935 respectively. An average cooperative disbursed a loan of ₦1, 890,558.63 to member within the financial year.

The range of interest paid on loan was 10 - 12%. The estimated average salary was ₦ 160,691.57 per annum which is about 5.2% of cooperative savings. This indicates high cost of labour which could be reduced by effective use of

computer and other information technology facilities. The average value of IT assets owned by a cooperatives was ₦ 48,930. 44 showing low level of adoption. However, miscellaneous was estimated at an average of ₦7, 770.02. This probably shows the allowance of the Board members for transportation expenses to Board meetings. The surplus generated by an average cooperative in the area was ₦ 401,171. 05 which implies that cooperative enterprise is profitable. The result revealed that about 53.6% of the surplus was shared or refunded as dividend, souvenir and gifts to members. This confirms that the principle of patronage refund is observed by the cooperatives. Although, percentage of refund depends on amount of surplus generated.

Table 3: Estimates of the Cooperatives' Financial Performance

Performance parameters	Minimum (₦)	Maximum (₦)	Mean (₦)
Number of members	10	58	20.26
Annual subscription	26,175. 00	4,991,250. 00	165,975. 24
Savings	290,078. 13	12,954,692. 71	3,058,935. 31
Loan Disbursed	220,311. 00	10,077,381. 00	1,890,558. 63
Interest on loan	26,437. 32	1,007,738. 10	203, 234. 99
Fine	313. 85	42,733. 92	5,583. 30
Salary	36,800. 00	410,950. 00	160,691.57
Administrative expenses	1,775. 11	27,257. 36	7,477. 21
Dividends	5,342. 09	1,077,502. 17	205,772. 83
Souvenir/ Gift	1,685. 43	35,820. 69	9,271. 28
Surplus	31,966. 16	3,018,843. 80	401,171. 05
Value of IT Asset	1,800. 23	123, 461. 15	48,930. 44
Miscellaneous	1,752, 20	26,181. 41	7,770. 02

Source: *Field Survey, 2016*

Determinants of Information Technology Adoption among the Cooperatives

The factors determining the use of Information technology (IT) among cooperatives in the study area were examined by the Binary Logit model. The dependent variable in this analysis is adoption status of computer system (i.e. adopted or non-adopted) being the major information technology i.e. hardware that is used to operate the software, internet and social media. The estimates of the analysis are presented in Table 4. The model parameters i.e. chi-square and log likelihood values were significant at ($P<0.01$) probability level showing that the model has significant explanatory power of the data. The value of pseudo-R^2 (0.7497) shows a good fit of the model. The value means that 74.9% of the variation in information technology (IT) adoption among the cooperatives was caused by the explanatory variables in the analysis while remaining 25.1% could be attributed to unknown factors.

The estimated coefficient of age (-0.0337) of the cooperative manager had a significant negative relationship with IT adoption at $p < 0.01$. This implies that age of the managers does not support the use of IT facilities. This may be due to their unwillingness to go back to class for computer training. Thus, youthful managers are likely to be willing for new training which will favour IT adoption in cooperative. Educational level of the managers had a positive and significant coefficient (0.2956) at $p < 0.01$ indicating that higher level of education will promote adoption of IT facilities among the cooperatives.

The coefficient of membership (0.0358) significantly influenced adoption of IT facilities at $p< 0.01$. The positive sign indicates that an increase in membership will enhance the use of IT facilities by the cooperatives through additional funds. The coefficient of gender (0.4324) is positive and significant at $p < 0.05$. The coefficient value is significantly not different from zero implying that female managers contributed more to the use of IT facilities by the cooperatives. This finding supports the fact that female dominates secretariat job than male workers.

Experience has a positive and significant coefficient (0.0607) at $p < 0.01$, implying that appreciable years in cooperative management will encourage effective use of IT facilities. However, the coefficient of manger's computer literacy (0.9399) shows a positive and significant relationship with IT adoption. Thus, adequate knowledge in computer operation is a prerequisite for adoption and effective use of computer system and other related facilities.

Table 4: Estimates of the Logit Model

Variables	Symbol	Co-efficient	t-value	Standard error	Marginal effect
Constant		-6.1640	-9.094	0.6778	-
Age of respondents	X_1	-0.0337***	-3.310	0.0101	0.3721
Education of manager	X_2	0.2956***	8.101	0.0364	0.1388
Annual Subscription	X_3	-0.869E-07	-0.569	0.152E-06	0.8189
Membership Size	X_4	0.0358***	4.336	0.0082	0.4299
Gender of manager	X_5	0.4324**	2.295	0.1883	0.6842
Experience of manager	X_6	0.0607***	2.763	0.0219	0.5971
Existence of cooperative	X_7	0.0219	0.896	0.0245	0.7659
Manager's computer literacy	X_8	0.9399***	3.954	0.2377	0.2192
Chi-square		72.816***			
Log likelihood		-255.430			
Pseudo R^2		0.7497			

Source: *Field Survey, 2016. ** Significant at p < 0.05, *** Significant at p < 0.01.*

Effect of Information Technology (IT) Adoption on Cooperative Performance

The Linear functional form of the Cobb-Douglas model was fitted to determine the effect of IT adoption on cooperative performance. The estimates of the model are presented in Table 5. The result shows that F-value (17.466) is significant at p<0.01 meaning that the model has the power to explanatory the study data. The Adjusted R^2 value (0.525) indicates that 52.5% of variation in cooperative surplus i.e. performance is accounted by the variables included in the model. The coefficient of computer system (20.036) shows that the machine significantly promoted the financial performance of the cooperatives. Perhaps, it contributed to reduction in labour cost, timely and accurate processing of information, members' satisfaction and increased participation in cooperative business leading to higher profit/ surplus.

The positive and significant coefficient of office phone (0.063) at p<0.01 implies that its use enhanced increased cooperative surplus. This could be attributed to messages and calls to members as well as Board members for timely planning and decision making towards the success of the cooperative enterprise.
Office television also had positive and significant coefficient (99.754) at p<0.01. Perhaps, this indicates existence of cooperative secretariat office where visiting members were entertained using the television. The secretariat and television are cooperative properties that could promote the confidence of members and their levels of participation which have positive effects on cooperative performance.

The coefficient of gender (38.435) of the manager had a significant effect on adoption of IT at p<0.10. More so, there is a positive and significant relationship between manager's experience in cooperative (90.126) and cooperative performance at p<0.01. This means that financial performance increases with the experience of cooperative manager.

Table: 5: Estimates of the Cobb-Douglas Linear Function

Variable	Symbol	Coefficients	T-value	Standard Error
(Constant)		-45.672	-0.810	56.3852
Cooperative membership	X_1	9.584	0.102	93.9608
Computer system	X_2	20.036.***	7.434	2.6952
Mobile phone	X_3	0.063***	3.607	0.0175
Office television	X_4	99.754***	3.379	29.5218
Sex of cooperative manager	X_5	38.435*	1.801	21.3409
Years of cooperative existence	X_6	-27.852	-0.979	28.4494
Education of cooperative manager	X_7	0.391	-1.150	-0.3402
Experience of manager in cooperative	X_8	90.126***	3.461	26.0405
F-value		17.466***		
R Square		0.557		
Adjusted R^2		0.525		

Field survey 2016. *Significant at p<0.10, **Significant at p<0.05 ***Significant at p<0.01

Reasons for Non-adoption of Information Technology by Cooperatives

The basis for evaluating the reasons against adoption of information technology (IT) is to understand the problems so as to find possible solutions to them. The reasons/ problems are presented in Table 6. The result shows that the

major reasons for non-adoption are high cost of IT and maintenance (63.1%), low membership/ finance (45.9) and low level of computer literacy among cooperative managers (39.3%). The adoption expenses include connection cost, repairs and regular subscriptions for communication or internet data among others. However, low membership implies low level of operations and financial contributions. The cooperative managers may not be proficient in computer operations or its applications even though majority were computer literate. This could lead to low level of IT adoption among the cooperatives.

Table 6: Distribution of Cooperatives by Reasons for Non-adoption of IT (n = 122)

Problem	Frequency	Percentage
High cost of IT/ maintenance	77	63.1
Low level of computer literacy	48	39.3
Members' risk aversion to using IT	10	8.2
Lack of regulation/ policy on IT adoption	13	10.7
Low membership/ level of operation	56	45.9
Lack of awareness	43	35.2

Source: *Field Survey, 2016*

5. Conclusion and Recommendations

The findings revealed that adoption of information technology (IT) by the cooperatives was low. Majority of the societies (63.9%) use computer system while only a few (27.9%) adopted electronic computation, processing and record keeping. There was little or no adoption of IT facilities like Skype, Point of sale (POS), E-banking and internet or social media among the cooperatives. Meanwhile, the adopted IT facilities had positive and significant effects on the performance of cooperatives in the area. Thus, it is imperative for cooperative management to adopt or increase their level of use of Information Technology (IT) so as to increase the financial performance of the cooperatives and their impacts on economic development. Meanwhile, high cost of procurement and maintenance, low level of computer literacy and low membership were the major constraints confronting adoption of information technology by the cooperatives. Therefore, increased cooperative membership should be ensured in order to increase cooperative finance and adoption of IT facilities.

Based on the above findings, it is recommended that cooperative membership should be increased to a minimum of twenty (20) persons as a condition for registration so that the societies will have increased membership participation and finance to solve their problems. Government and the cooperative unions should ensure implementation of cooperative education as a principle to include computer training of managers/ staff particularly in the use of DBMS, electronic spreadsheet and other software or connections. In addition, adoption of those IT facilities which should be listed by inspecting office should become a policy in the bye-law. The duration of adoption could be within 10 years which should also be clearly stated. The above recommendations, if implemented, will go a long way in reducing or eliminating many problems confronting cooperative development in the study area and in Nigeria as a whole.

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