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Abstract

Purpose: The study seeks to establish Information and Communication Technology adoption and performance of tea farmer's payment by Co-operative Societies in Kericho County that are privately owned with reference to Kericho County.

Methodology: The study used quantitative and qualitative methodology to collect data, analyze and report findings regards to effect of Information and Communication Technology adoption and performance of farmer's payment Cooperatives in Kericho County, Kenya. The study tested *Technology of Diffusion Theory that goes hand in hand with Technology Acceptance Model (TAM)* to justify adoption of ICT has a significant impact to performance of farmers payment Cooperatives in Kericho County, Kenya. The study classified the target population into strata that is groups of 6 based on the villages with farmers that supply tea to 5 private owned tea factories in Kericho County. The total population used in this study was 828 farmers from 5 tea factories in Kericho County. A structured questionnaire was administered to 263 tea farmers who were divided based on 6 villages to collect primary data.

Findings: The study findings indicated that mobile wallet, mobile banking security, quality content service provided by the mobile financial service providers and access to account information contribute positively to payment performance of privately owned tea cooperatives.

Unique Contribution to Theory, Practice and Policy: This study recommends utilization of mobile wallet, mobile banking security, quality content service provided by the mobile financial service providers and access to account information to enhance performance of tea farmer's payment by Co-operatives. This theory may be used by different Cooperatives regarding the utilization of the digital platform and how it can contribute to the maximization of profits in the organizations. It will facilitate individual researchers and scholars to identify gaps in the current research and carry out research in those areas, the work will also be used by academicians who will want to study similar area. Policy makers in the government and Cooperatives may use TAM theory to gain understanding on the effects of adoption of Information and Communication Technology has on performance of farmers payment Cooperatives. This remains instrumental in identifying areas that need reforms and in the making of policies that are favorable in the investment of ICT infrastructure in the country.

Keywords: *Information and Communication Technology, Adoption, Performance Tea Farmers Payment, Co-operative Societies*

INTRODUCTION

The World Council of Credit Unions (WOCCU) statistical report for 2019 states that there are approximately 86,055 Credit Unions in the world from 118 countries on the 6 continents serving approximately 291,432,972 members around the world (WOCCU, 2020). The first Savings and Credit Co-operative Society was started in Germany in 1849 by Herman Schulze and William Raiffersen. The Savings and Credit Co-operative Society (SACCO) was introduced to assist people overcome economic problems during the time of famine that prevailed there during that time. In 1850 in England, workers in a mill factory started savings and making loans, to help each other. According to the 2014 International Co-operative Alliance's World Cooperative Monitor, the turnover of the largest 300 cooperatives in the world grew by 11.6% to reach $2.2 trillion in 2012, equivalent to the Gross Domestic Product (GDP) of Brazil. The overall turnover of nearly 2,000 cooperatives in the 65 countries surveyed by the Monitor totals $2.6 billion. The top 300 cooperatives are active in three leading sectors: insurance (41%), agriculture and food (27%), and wholesale and retail (20%). Next come industry and utilities (5%), banking and financial services (4%), health and social care (1%), and others (2%) (International Cooperative Alliance, 2018).

In Africa, the history of SACCOs begins in Ghana. The idea was brought in 1955 by a Roman Catholic cleric, in Jirapa, a town in Ghana. Father John McNulty from Ireland had gone to school in Canada where he found out about saving for retirement funds and acknowledgment of co-operative social orders (WEBSACCO, 2021). English speaking nations were the first to adopt SACCOs. The first entrants into SACCO community include Ghana, Uganda, Nigeria, Tanzania, and Kenya. The formation of SACCO in Africa grew tremendously to the extent that the African countries formed a continental association of SACCOs, Africa Confederation of Cooperative Society Savings and Credit Association (ACCOSSCA), in 1965. ACCOSSCA was formed with the principal objective of promoting the SACCO principles, offer SACCO insurance, and educate members on SACCO issues.

In Kenya, the first Co-operative Society was Lumbwa Co-operative Society formed in 1908 by the European Farmers with the main objective of purchasing fertilizer, chemicals, seeds and other farm inputs and then marketing their produce to take advantage of economies of scale. In 1930, Kenya Farmers Association (KFA) was registered as a Co-operative Society to take over the role of supply of farm inputs played by Lumbwa Co-operative Society. Its objectives were to supply agricultural inputs such as fertilizers, chemicals and seeds to European settler farmers and to arrange for sale of their produce, taking advantage of economies of scale (Ototo, 2017). There are two categories of Co-operatives, government owned and private owned Co-operatives. According to Kenya Union of Savings and Credit Co-operatives Limited (KUSCCO), Information and Communication Technology (ICT) now drives businesses in a fast-paced world, where competitiveness and customer satisfaction is measured by efficiencies, convenience, delivery speeds and cost-effectiveness (KUSCCO, 2021). There are four basic elements of ICT, these include communication devices, networking devices, data transfer media and standards and procedures.

This study focused on privately owned Co-operatives in Kericho County, Kenya. There are approximately 5 privately owned tea factories in Kericho County, these include Evergreen tea factory, Mau tea factory, Kaisugu tea factory, Kabianga tea factory and Kap Chebet tea factory.

The elements of ICT used in this study were mobile wallet, mobile banking security, content service and digitalized account information that affect tea farmers payment by co-operatives in Kericho County, Kenya. This study demonstrates that due increase in adoption of ICT in the society, co-operatives should also keep up with high demand of ICT adoption and integrate new technologies with their existing business work flow especially financial operations that includes payment towards the tea farmers.

Statement of the Problem

Banks have come up with phone applications that consumers can download and use it to pay their bills, transfer money to other bank accounts and even borrow loans through their phones (Daneshvar, 2012) . The birth of mobile lending apps in the country has presented stiff competition for Savings and Credit Co-Operative Society (SACCO) which have been slow in adopting new technology (Wambu, 2019). Most farmers who contribute to privately owned co-operatives are always paid on a fixed date once a month this is so because they lack SACCOS that will enable farmers to get long term and short-term loans. Due to this, most farmers who need emergency or development funds to improve their livelihood are not able to access thus making the farmers seek alternative solutions such as government owned Co-operatives or middlemen to lend them cash. Mobile leading applications may issue the cash but it mostly it's never enough and the repaying interest is always high. Other alternatives like selling one's harvest to the middle men for advance cash at times may be risky in terms of repayment and terms and conditions set by them. Through adoption of ICT by these farmers paying co-operatives, the farmers will be able to get advance cash anytime they need that will be compared with the continuous contribution they have been taking. The interest rate may be neutralized since the transaction is between trusted parties that is the farmer and their co-operative. This will help the farmers to have motivation to contribute more to their co-operative and in return increase assets for those co-operatives.

General Objectives

To establish the effect of Information and Communication Technology adoption and performance of farmers payment Cooperatives in Kericho County, Kenya

Specific Objectives

The study seeks to pursue the following specific objectives

1. To examine the effect of mobile wallet adoption and performance of tea farmers payment by Cooperatives in Kericho County, Kenya.
2. To determine the effect of mobile banking security adoption and performance of tea farmers payment by Cooperatives in Kericho County, Kenya.
3. To assess the quality of content service provided by the mobile financial service providers adoption and performance of tea farmers payment by Cooperatives in Kericho County, Kenya.
4. To evaluate the effect of access to account information adoption and performance of tea farmers payment by Cooperatives in Kericho County, Kenya.

LITERATURE REVIEW

Theoretical Review

Theories are analytical tools for understanding, explaining, and making predictions about a given subject matter (Zima, 2007). In this theoretical framework, the researcher used the theories as follows Diffusion of Innovation Theory, Technology Acceptance Model, Theory of Reasoned Action and Theory of Planned Behavior. These theories were relevant to the study since they advocate on the benefits accrued from ICT adoption and performance of tea farmers payment by cooperative societies in Kericho County.

Technology Diffusion Theory

Technology Diffusion Theory was developed by Gabriel Tarde in the early 19s. Gabriel tabulated the first S-molded diffusion bend which later was followed by Ryan and Gross in 1943. In 1995 Everett Rogers promoted this theory by arguing that media and interpersonal contacts provide information that influences a person's opinion and judgement (Harker, 2003). The theory comprises of four elements, these are invention, diffusion through the social networks, time and consequences. Information filters through the networks and depending on the nature of the networks and the roles of its opinion leaders, new innovations are either adopted or rejected.

It explains how, over time, an idea or product gains momentum and diffuses (or spreads) through a specific population or social system. The end result of this diffusion is that people, as part of a social system, adopt a new idea, behavior, or product (LaMorte, 2019). Diffusion really includes three fairly distinct processes: Presentation of the new culture element or elements to the society, acceptance by the society, and the integration of the accepted element or elements into the preexisting culture. (Dearing, 2010).

ICT is fast growing and with time due to continuous usage by society, it is seen to have evolved and improved as time goes by. Technology of diffusion theory helps to explain the adoption process of an innovation by modeling its entire life cycle according to the aspects of communications and human information interactions (Chang, 2011). Diffusion of ICT on performance of tea farmers payment by cooperative societies in Kericho County will be implemented through adoption of mobile wallet technology to improves performance of tea farmers payments cooperatives in Kericho county, Kenya. Technology of diffusion theory will offer valuable insights into interface design that will support ICT adoption on performance of tea farmers payment by cooperative societies in Kericho County, Kenya.

Technology Acceptance Model

Technology acceptance model (TAM) was originally proposed by Davis in 1986, it has been one of the most influential models of technology acceptance, with two primary factors influencing an individual's intention to use new technology, that is, perceived ease of use and perceived usefulness (Elsevier, 2021). According to Davis, it is the degree to which a person believes that using a particular system will lead to improved performance also known as Perceived Ease-of-Use also abbreviated as PEoU. PEoU is explained as the degree to which a person believes that using a particular system would result to improved productivity. Acceptance is the first process in technology use and has a bipolar implication. Acceptance firstly, is a precursor to adoption.

Secondly, acceptance dictates the attitude and perception of the users which eventually affects efficiency of use and hence performance.

TAM also proposes that external factors affect intention and actual use through mediated effects on perceived usefulness and perceived ease of use. The term usefulness refers to the degree to which one considers that utilizing a system will improve their performance whereas the ease of use refers to the degree to which a user believes that the benefits of utilizing the system are more compared to the efforts required for using it. Use of computers, internet and other communication technologies in public organizations has enhanced their performance by providing better communication, access to information, knowledge and promoting innovation and efficiency (Dewett, 2001). Acceptance of ICT and performance of tea farmers payment by cooperative societies in Kericho County will be implemented through adoption of Mobile Banking Security through enforcement of pin and passwords, electronic alerts and voice authentication to improve performance of tea farmers payments cooperatives in Kericho county, Kenya. Technology acceptance model will offer valuable insights into interface design that will support ICT adoption and performance of tea farmer's payment by cooperative societies in Kericho County, Kenya.

Theory of Reasoned Action

The TAM theory does not account for the influence and personal control factors on behavior. Other factors such as economic factors, outside influences from suppliers, customers and competitors are also not considered by the TAM. To overcome the limitations of the TAM, the Theory of Reasoned Action (TRA) was introduced which is a more general theory than the TAM (Van Akkeren J. and Cavaye, 1999). This theory sheds light on the attitudinal behavior related to acceptance, use, and adoption of technology in Organizations'. The TRA was developed by both Fishbein and Ajzen way back in 1975 and 1980 from previous studies on attitude and behaviors in organizations towards performing certain actions. The theory argues that intention to perform certain behavioral action is a function of both attitude and subjective norm. Subsequently, when a positive intention is developed, a person tends to really involve in performing the actual action (Bakar, 2014).

The TRA model includes four general concepts namely behavioral attitudes, subjective norms, intention to use and actual use. Through adoption of this theory, this study will demonstrate the small-scale paying Cooperatives behavioral attitude on content service will determine adoption of ICT in their daily performance. Theory of reasoned action will offer valuable insights into interface design that will support ICT adoption and performance of tea farmers payment by cooperative societies in Kericho County, Kenya.

Technology-Organization-Environment Theory

According to Tornatzky and Fleischer (1990), there are generic set of factors which predict the likeliness of Information Technology to be adopted and used. As pointed out by the TOE theory, ICT usage and adoption is influenced by various factors which include the technology development, organizational conditions, business and organizational reconfiguration and industry environment (Kauffman, 2001). In regards to the technological perspective, adoption is based on various technologies within and outside the organization as well as perceived advantages, compatibility, complexity, experimentation and visibility. In terms of organizational context,

various aspects of the business are put into consideration. These include the business scope, management support, culture, managerial structure, human resource quality and the size of the firm related issues such as internal slack resources and specialization.

It may be noted that the TOE theory underscores Rogers' (1995) three groups of adoption predictors- leader characteristics relating to change. These include the internal characteristics that includes centralization, complexity, formalization, interconnectedness, organizational slack and size, and external characteristics which includes system's openness.

Conceptual Framework

Conceptual framework is a research tool intended to assist a researcher to develop awareness and understanding of the situation under scrutiny and to communicate it (Smyth, 2004). When clearly articulated, a conceptual framework has potential usefulness as a tool to assist a researcher to make meaning of subsequent findings. The dependent variable conceptualized in this study is performance of tea farmers payments whereas the independent variables include mobile wallet, mobile banking security, content service and digitalized account information (See Figure 1).

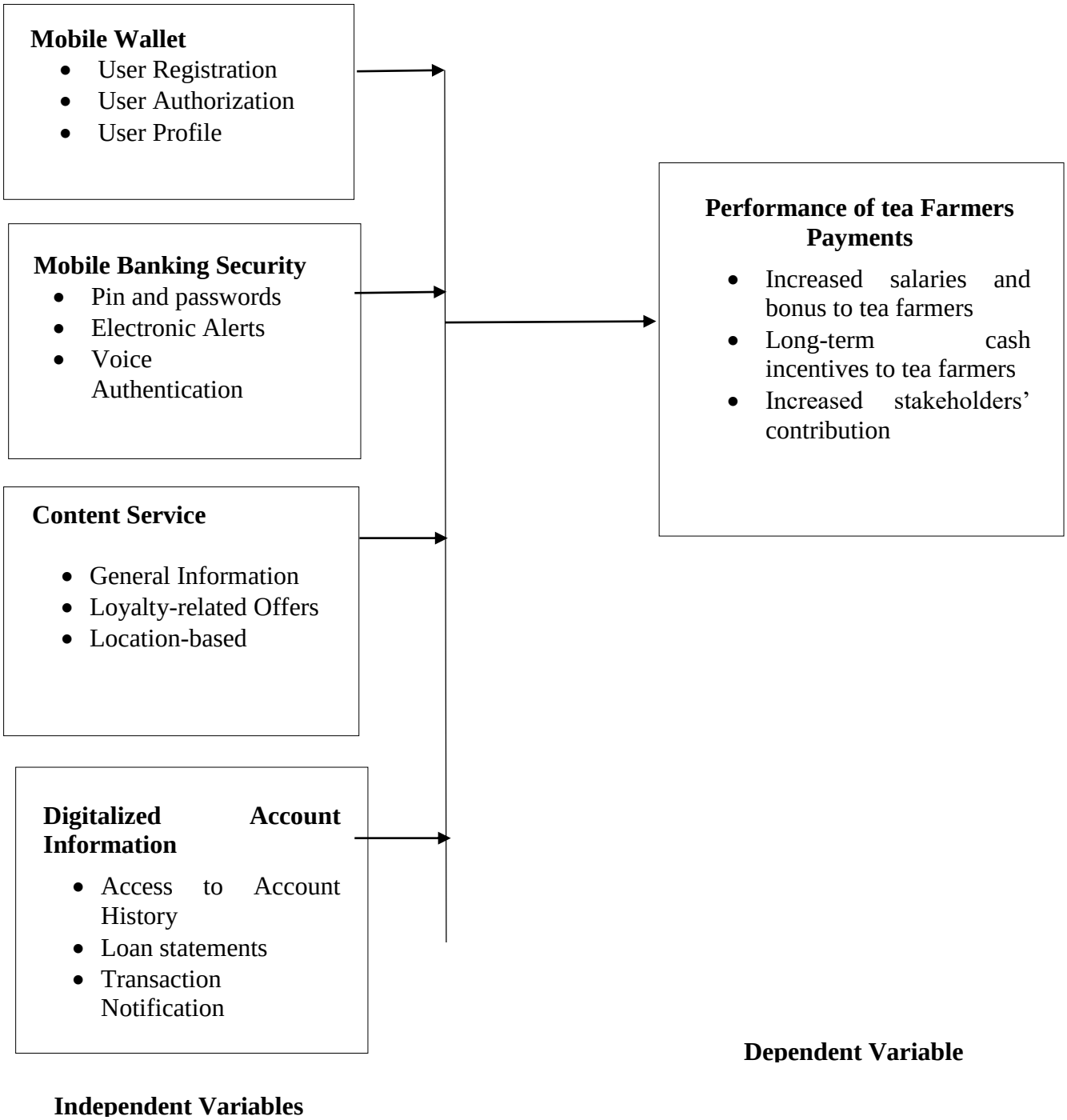

Figure 1:Conceptual Framework

Empirical Review

This section reviews literature from prior scholars regarding ICT adoption and performance on tea farmers payment cooperatives in Kericho County. Specifically, this section reviews the effect of mobile wallet, mobile banking security, content service and digitalized account information and performance on tea farmers payment cooperatives in Kericho County.

Mobile Wallet

A mobile wallet is a way of carrying digital card information in a digital form on a mobile device. To make purchases, people can pay with their tablet, smartwatch, or smartphone (Scott-Briggs, 2016). It can also be described as a payment service through which individuals and businesses can send and receive money through mobile device. It is a type of e-commerce mode that is intended to be used with mobile devices owing to their easy access and convenience. It is also known as a mobile money transfer or mobile money. Mobile wallet technology allows an individual to receive payments as well as pay for goods and services using a mobile device, its payment process model contains Mobile-based billing which entails an individual generally receive/sends payment through their mobile service provider, SMS-based transactions that involves initiating transactions by sending an SMS short code (Scott-Briggs, 2016).

The payment can be debited/credited from the configured bank account, mobile service or credit card, Mobile web payments which enable users to receive/send payments through a mobile app and Near-field communications (NFC) which means a special hardware in the mobile device and a mobile app relate with a payment-processing terminal. Example of a mobile wallet is PayPal, M-PESA, Airtel Money and Orange Money just to mention a few. Mobile Wallet variables entails user registration, user authorization and user profile which means ability to access one's data anywhere and anytime they need it.

Mobile Banking Security

Mobile wallet goes hand in hand with security feature since it contains an individual's personal private data. Mobile banking is an attractive target for criminal account takeover due to the rapidly growing number of users and limited fraud detection and prevention capabilities. Some of the mobile banking faces are mobile fraud which entails malicious or unauthorized use of mobile apps and services, fake users, fake events, misappropriated connections, all to receive goods, services, revenue, money, attribution or rankings without paying, account takeover involves using stolen or misappropriated credentials, fake apps, SMS interception and other methods, to lock valid users out of individual mobile accounts, and steal goods or money from individual mobile users.

Also associated with individual cyber-ransom attacks the other threat is Identity theft which entails trafficking or using stolen user, business or dev credentials and other Pin to open accounts, steal goods, services, and money from individuals or businesses. Target could be mobile apps or online services among others. In this study the researcher will look at Pin and passwords, Electronic Alerts and Voice Authentication as a measure of mobile banking security.

Content Service

This is a way to intelligently and efficiently capture information, send it to the right person, department, or process using digital channels, usually through the cloud. (Schneck, 2018). Cloud computing is the delivery of on-demand computing services, from applications to storage and processing power, typically over the internet and on a pay-as-you-go basis (Ranger, 2018). Some of the components of content service that will be used in this research will be users' ability to access their general information, loyalty related offers such as incentives, access to location-based service such as ability to get funds or any financial service within the users' area.

Digitalized Account Information

Digital technology takes information and breaks it down into its smallest components. By transforming an analogue signal into discrete pieces, digitalization makes it possible to manipulate information, text, graphics, software code, audio, and video in ways never before thought of, thus its informing, transforming capabilities (Yuval Cohen, 2020). Digitized account information will focus on user's mobile wallet information, users will be able to access their mini-statements and transaction history, access to loans statement for their analysis and alerts on account activities. This is beneficial to this study as it created transparency and clarity between the farmer and Co-operatives which boosts trust among the farmers to the paying Co-operative.

Performance of tea Farmers Payments

Performance of tea farmers payments entails increased salaries and bonus to tea farmers, long-term cash incentives to tea farmers and lastly increased stakeholders' contribution. To increase performance of tea Farmers payments by Co-operatives, they need to adopt mobile wallet, mobile banking security, content service platform and digitalized account information.

Critique of Literature Relevant to the Study

Despite positive attributes of theories used in this study, there are few researchers who have raised concerns regarding different theories such as Diffusion of Innovation theory (DoI) by Bass in 1969. The critique states that although DoI model is classic and widely established, it has several limitations regarding its predictive power related to the dissemination of an innovation (Bass, 1969). Bass, therefore, proposed the Bass model to explain his discovery that the number of adopters during a time period is almost identical to the number of sales throughout most of the diffusion process. This suggests that the number of adoptions in a time period serves as a good proxy for sales. Thus, the Bass model has been revised and implemented in forecasting innovation diffusion in multiple fields (Mahajan, 1990). While the Bass model has potential to predict the distribution of the adoption curve, Rogers' model serves as a comprehensive framework for understanding diffusion process of an innovation and its underlying factors driving the diffusion.

Research Gaps

Mobile banking has experienced fast adoption and has been credited for drastic reduction of financial transaction costs, serving the unbanked population and risk diversification. However, the effects of mobile banking to the financial sector and economy at macro levels have not been studied (Daniel, 2015).

METHODOLOGY

The study used quantitative and qualitative methodology to collect data, analyze and report findings regards to effect of Information and Communication Technology adoption and performance of farmer's payment Cooperatives in Kericho County, Kenya. The study tested *Technology of Diffusion Theory that goes hand in hand with Technology Acceptance Model (TAM)* to justify adoption of ICT has a significant impact to performance of farmers payment Cooperatives in Kericho County, Kenya. The study classified the target population into strata that is groups of 6 based on the villages with farmers that supply tea to 5 private owned tea factories in Kericho County. The total population used in this study was 828 farmers from 5 tea factories in Kericho County. A structured questionnaire was administered to 263 tea farmers who were divided based on 6 villages to collect primary data.The data was presented through Tables.

FINDINGS AND DISCUSSION

Requisite Analysis

This section covers the preliminary analysis of dependent and independent variables which were done before descriptive and inferential analysis. The requisite analysis included the use of factor analysis, reliability analysis, tests for normality and tests for multicollinearity. The independent variables discussed include mobile wallet adoption, mobile banking security adoption, content service adoption and digitalized account information adoption.

Factor and Reliability Analysis

The study used factor analysis for data reduction and summarization where the underlying dimensions (factors) that explain the correlations among the variables were determined and the original set of correlated variables replaced with uncorrelated ones. Factor analysis groups variables with similar characteristics put together (Hare, 1998). Factor analysis operates on the notion that measurable and observable variables can be reduced to fewer latent variables that share a common variance and are observable which is known as reducing dimensionality (Yong & Pearce, 2013). The Component Matrix contains estimates of the correlations between variables and estimated components. Questions with estimated correlations that were less than 0.4 were expunged while those with 0.4 and above were retained.

Kaiser-Meyer-Olkin (KMO) test and Bartlett's test of Sphericity were performed before factor analysis as recommended by Field (2005). Kaiser-Meyer-Olkin (KMO) test was used to indicate the proportion of variance in the indicators/variables that might have been caused by underlying factors. It was used to test how suited the data were for factor analysis. According to Kaiser (1974), a High KMO values close to 1.0 generally indicated that factor analysis could be useful with the data. If the KMO value was less than 0.50, the results of the factor analysis were considered not to be very useful.

Bartlett's test is used to test the strength of relationships among variables, that is, if the k samples have equal variances (Snedecor, 1983). Small significance values (less than 5%) indicated that factor analysis would be useful with the data and such factors were consequently retained for further analysis. Table 1 shows the KMO for all the variables is above 0.50 and the Bartletts test

of sphericity significance level is at p<0.05 which indicates that factor analysis is useful. Consequently, factor analysis was performed on the study.

Table 1: KMO and Barlett's Test Results

Variable	Kaiser-Meyer- Olkin (KMO) test of sampling adequacy	Bartlett's test of sphericity Approx. Chi-square	df	Sig.
Mobile wallet adoption	0.756	520.688	91	0.000
Mobile banking security adoption	0.728	233.503	66	0.000
Content service adoption	0.805	171.963	66	0.000
Digitalized account information adoption	0.794	267.912	78	0.000
Performance of tea farmers payments	0.730	465.016	105	0.000

Reliability analysis Results

The data was tested for reliability using Cronbach's alpha to determine whether the data gathered on each variable had a significant relationship with determinants of performance of tea farmers payments. The results of Cronbach's alpha were as follows, mobile wallet (α=.756), mobile banking security (α=.728), content service (α=.805), digitalized account information (α=.794) and performance of tea farmers payments (α=.730). Since the reliability measures were found to be between 0.6 and 0.9, as recommended by George and Mallery (2003), it was concluded that the data gathered for each variable had a significant relationship with the determinants of tea farmers payment cooperatives and therefore acceptable and reliable.

Table 2: Reliability Analysis

	Variable	Cronbach's Alpha Value	No. of Items
1.	Mobile wallet adoption	0.756	4
2.	Mobile banking security adoption	0.728	3
3.	Content service adoption	0.805	5
4.	Digitalized account information adoption	0.794	4
5.	Performance of tea farmers payments	0.730	3

Confirmatory Factor Analysis for Mobile Wallet Adoption

Factor analysis was conducted to reduce items of Mobile Wallet as the first variable. Mobile Wallet constructs were measured using 3 items thereby the construct was factor analyzed in order to come up with an appropriate measure. The study found that KMO had a value of 0.648 and Bartlett's test, x2= 155.44, p = .000. The KMO value is high (more than 0.5) and this indicates that a factor

analysis will be useful with the study data. The value of Bartlett's testis less than 0.05 and this indicates that a factor analysis will be useful in the study.

Table 3: KMO and Bartlett's Test for Mobile Wallet

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.648
Bartlett's Test of Sphericity	**Approx. Chi-Square**	155.44
	Df	3
	Sig.	0.000

The findings suggest that much of the variances in each of the original variables are explained by the extracted factors. Total variance explained for mobile wallet showed that one component explained 60.344% of the total variability in the four items.

Table 4: Total Variance Explained for Mobile Wallet

Component	**Total**	**Initial Eigenvalues**	**Extraction Sums of Squared Loadings**			
		% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1.	1.810	60.344	60.344	1.810	60.344	60.344
2.	0.669	22.294	82.638			
3.	0.521	17.362	100.000			
4.	0.401	15.002	150.002			

Confirmatory Factor Analysis *for* Mobile Banking Security Adoption

The study carried out Factor analysis to reduce items of mobile banking security factors as the second variable. Mobile banking security factors construct was measured using 3 items thereby the construct was factor analyzed in order to come up with an appropriate measure. The study found that KMO had a value of 0.638 and Bartlett's test, x2 = 344.463, p = .000. The KMO value is high (more than 0.5) and this indicates that a factor analysis will be useful with the study data. The value of Bartlett's test is less than 0.05 and this indicates that a factor analysis will be useful in the study.

Table 5: KMO and Bartlett's Test for Mobile Banking Security

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.638
Bartlett's Test of Sphericity	**Approx. Chi-Square**	344.463
	Df	3
	Sig.	0.000

Total variance explained for mobile banking security factors showed that one component explained 70.423% of the total variability in the three items. The results are presented in Table 4.11. The findings indicate that all three components of economic factors have factor loadings that

are greater than 0.5. The study therefore used the component with the highest factor loading of 0.904 to compute summated factor scores for economic factors.

Table 6: Total Variance Explained for Mobile Banking Security

Component	Total	Initial Eigenvalues		Extraction Sums of Squared Loadings		
		% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1.	2.113	70.423	70.423	2.113	70.423	70.423
2.	0.600	19.993	90.416			
3.	0.288	9.584	100.000			

Confirmatory Factor Analysis for Digitalized account information adoption

Factor analysis was conducted to reduce items of digitized account information as the third variable of the study. Digitized account information construct was measured using 3 items thereby the construct was factor analyzed in order to come up with an appropriate measure. The study found that KMO had a value of 0.686 and Bartlett's test, x2 = 281.135, p = .000. The KMO value is high (more than 0.5) and this indicates that a factor analysis will be useful with the study data. The value of Bartlett's test is less than 0.05 and this indicates that a factor analysis was useful in the study.

Table 7:KMO and Bartlett's Test for Digitized Account Information

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.686
Bartlett's Test of Sphericity	**Approx. Chi-Square**	281.135
	Df	3
	Sig.	0.000

Total variance explained for digitized account information showed that one component explained 69% of the total variability in the three items. The results are presented in Table 4.13. The study used the component with the greatest factor loading to compute summated factor scores for digitized account information.

Table 8: Total Variance Explained for Digitized Account Information

Component	Total	Initial Eigenvalues		Extraction Sums of Squared Loadings		
		% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1.	2.069	68.958	68.958	2.069	68.958	68.958
2.	0.545	18.171	87.129			
3.	0.386	12.871	100.000			

Confirmatory Factor Analysis for Content Service Adoption

Factor analysis was conducted to reduce items of content service which was the fourth and last independent variable in the study. Organizational structure construct was measured using 3 items thereby the construct was factor analyzed in order to come up with an appropriate measure. The study found that KMO had a value of 0.6 and Bartlett's test, x2 = 247.752, p = .000. The KMO value was more than 0.5 and this indicates that a factor analysis was useful with the study data. The value of Bartlett's test was less than 0.05 and this indicates that a factor analysis will be useful in the study.

Table 9: KMO and Bartlett's Test for Content Service Adoption

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.6
Bartlett's Test of Sphericity	**Approx. Chi-Square**	247.752
	Df	3
	Sig.	0.000

The total variance explained results for organizational structure indicated that one component explained 63.505% of the total variability in the three items.

Table 10: Total Variance Explained for Content Service Adoption

Component	**Total**	**Initial Eigenvalues**	**Extraction Sums of Squared Loadings**			
		% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1.	1.905	63.505	63.505	1.905	63.505	63.505
2.	0.759	25.294	88.798			
3.	0.336	11.202	100.000			

Diagnostic Tests

A regression model was adopted in the study to establish the statistical relationship between the independent and the dependent variables. The model however, has several assumptions such that if they are not met, the results may be biased. These assumptions include the assumption that the data is normality distributed (normality), the assumption that the data is not auto-correlated, no multicollinearity and that there is no heteroscedasticity in the sample data. This study therefore carried out the diagnostic tests to ensure that the assumptions of regression model are met.

Normality Test

Normality can be defined as the shape of the data distribution for an individual metric variable and its correspondence to the normal distribution, the benchmark for statistical methods (Anderson, 2010). Regression assumes that the data on variables under analysis are normally distributed (Hair et al., 2010). Q-Q Plot and Skewness and kurtosis were used to test for the normality distribution

in the study variables. The findings as shown in Figure 4.2 indicated that the points on the plot formed a linear pattern passing through the origin with a unit slope. It is visually clear that the residuals were normally distributed and therefore, the model could be applied in the analysis (Brooks, 2008).

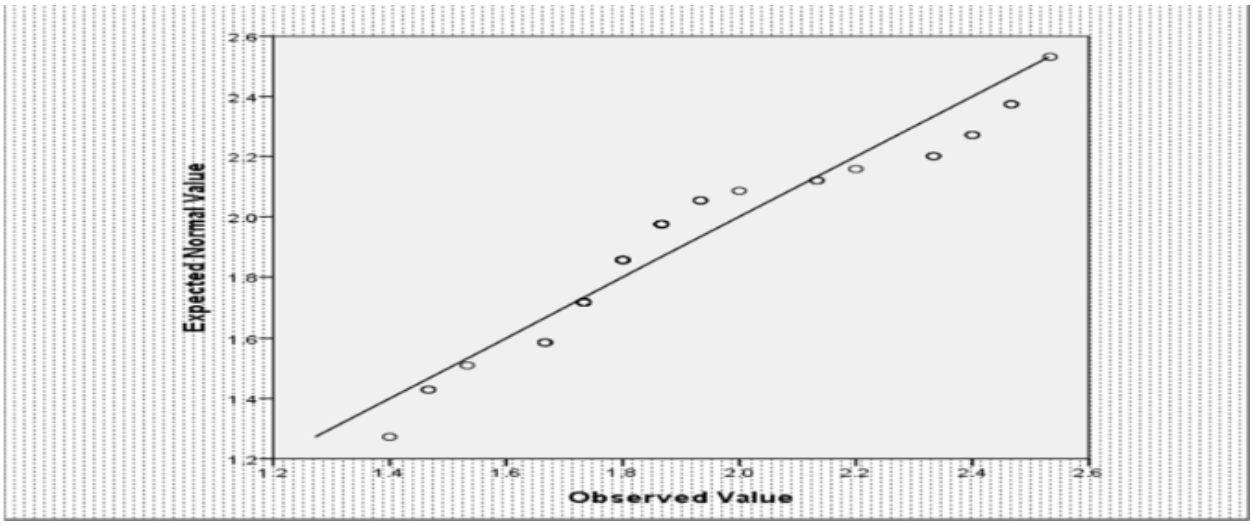

Figure 2: Q-Q Plot for Normality Test

Many of the statistical procedures in parametric tests are based on the assumption that the data follows a normal distribution (Ghasemi & Zahediasl, 2012). The normal distribution peaks in the middle and is symmetrical about the mean. Data does not need to be perfectly normally distributed for the tests to be reliable. According Ghasemi and Zahediasl (2012), Kolmogorov-Smirnov (K-S) test is the most popular and appropriate test for normality test. A Normally distributed data when using Kolmogorov-Smirnov should have a significant value of above the standard value of 0.05 to exemplify that the variable under consideration is not statistically significant to normal distribution. Table 11 shows all variables with the distribution of the variables of the study with reference to K-S test. The findings show that the variables have significance values higher than 0.05 thus implying that they are normally distributed.

Table 11: Kolmogorov-Smirnov Test for Normality

Variable	Kolmogorov-Smirnova		
	Statistic	Df	Sig.
Mobile wallet adoption	0.160	92	0.107
Mobile banking security adoption	0.096	92	0.085
Content service adoption	0.018	92	0.125
Digitalized account information adoption	-0.136	92	0.061
Performance of tea farmers payments	0.071	92	0.093

Multicollinearity

Multicollinearity exists when the standard errors of estimated coefficients of two or more independent variables are inflated (Simon, 2004). To test for multicollinearity the study adopted

Variance Inflation Factor (VIF) approach to test for multicollinearity. This study adopted the rule of thumb for VIF value of 10 as the threshold as suggested by Nachtsheim in 1996. The VIF values of greater than 10 would indicate presence of multicollinearity. These results s indicted in Table 12 revealed that the VIF values of the independent variables were within the threshold of 10 (ten). The tolerance value was greater than 0.1 ruling out the possibility of multicollinearity (Field, 2009).

Table 12: Results for Multicollinearity Test

Variable	Tolerance	VIF
Mobile wallet adoption	0.785	1.275
Mobile banking security adoption	0.785	1.275
Content service adoption	0.642	1.513
Digitalized account information adoption	0.661	1.513
Mean Tolerance/VIF	**0.718**	**1.394**

The result, therefore implied non- existence of a multicollinearity problem among the independent variables and hence the level of multicollinearity in the model could be tolerated. The multicollinearity diagnosis indicated that that there was no threat of multicollinearity problem and therefore, all the independent variables could be used for further analysis using the regression model. A VIF of less than five and tolerance value greater than 0.2 are recommended. The results therefore indicated that the values for tolerance and VIF were within an acceptable range.

Autocorrelation

The test for autocorrelation was performed to establish whether residuals were correlated across time. Regression analysis assumptions require that residuals should not be correlated across time and thus the Wooldridge test for autocorrelation which is also Lagrange multiplier LM test was adopted in this study. The results of autocorrelation test are as indicted in Table 13.

The null hypothesis is rejected if no first order serial/auto correlation exists. The results indicated that we failed to reject the null hypothesis that there is no serial autocorrelation of any order and that residuals were not auto correlated (Durbin-Watson (D) = 2.269).

Table 13: Autocorrelation Tests Results

Autocorrelation Tests
Wooldridge test for autocorrelation in panel data
H0: no first order autocorrelation
Prob > D = 2.269

Heteroscedasticity

A test for heteroscedasticity was carried out in the study. The null hypothesis was that there was no heteroscedasticity in the model for the study. A scatter plot was used to test for heteroscedasticity. The findings as shown in Figure 4 revealed that the plots had no standard flow an indication that there was no heteroscedasticity. The study therefore fails to reject the null hypothesis that there is no heteroscedasticity.

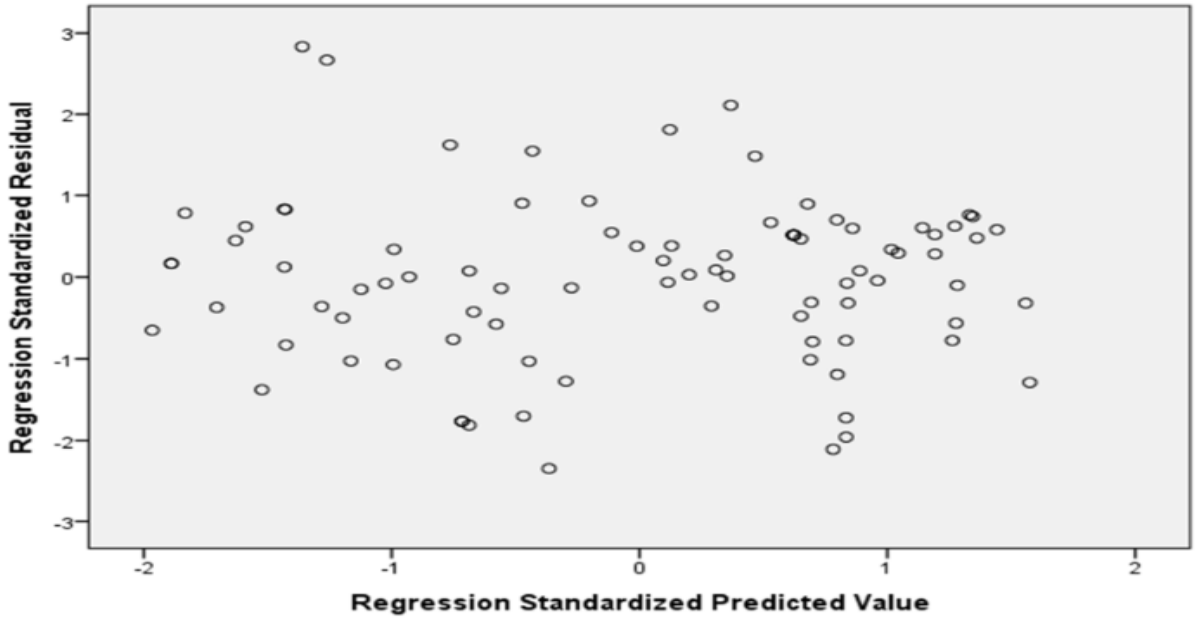

Figure 3: Scatter plot for Heteroscedasticity

Descriptive Analysis

Descriptive Analysis for Mobile Wallet Adoption

The first objective of the study was to assess the role of mobile wallet adoption as a determinant of performance of tea paying cooperatives in Kericho County. According to the findings as shown on Table 14, majority of the respondents agreed with the statement that Payment systems have been integrated with members' mobile phones to facilitate money transfer with a mean of 3.56 and standard deviation of 1.10.

Table 14: Factor Analysis for Variable Mobile Wallet

Component Matrix	Mean	Std. Dev.
Money can be wired from the co-operative's account to members' mobile money wallet.	3.02	1.18
Payment systems have been integrated with members' mobile phones to facilitate money transfer.	3.56	1.10
Mobile devices have facilitated reduction in the time it takes members to make a deposit and withdrawals.	3.10	1.27
Credit ratings of the members can be performed over a mobile device.	3.09	1.22

Factor Analysis for Mobile Banking Security Adoption

The research established the respondents' level of agreement on the specific statements regarding mobile banking security which influences the performance of tea paying cooperatives in Kericho County. According to the findings as shown on Table 15, majority of the respondents agreed with

the statement that Members can receive SMS alerts regarding their payment transaction status with a mean of 3.51 and standard deviation of 1.19.

Table 15: Factor Analysis for Mobile Banking Security

Component Matrix	Mean	Std. Dev.
Personal information is protected against fraud through administration of passwords and pins	3.34	1.19
Members can receive SMS alerts regarding their payment transaction status.	3.51	1.19
Availability of enhanced security features such as voice authentication may increase security of member's account.	3.29	1.20

Factor Analysis for Content Service Adoption

The research established the respondents' level of agreement on the specific statements regarding content service adoption which influences the performance of tea paying cooperatives in Kericho County. According to the findings as shown on Table 16, majority of the respondents agreed with the statement that Members are notified of their mobile wallet transactions with a mean of 3.70 and standard deviation of 0.95.

Table 16: Factor Analysis for Content Service Adoption

Component Matrix	Mean	Std. Dev
Application for Statements are available via mobile phone.	3.20	1.11
Information about account transactions is readily available through text message notifications.	3.55	0.83
Members are notified of their mobile wallet transactions.	3.70	0.95

Factor Analysis for Digitalized Account Information Adoption

The research established the respondents' level of agreement on the specific statements regarding content service adoption which influences the performance of tea paying cooperatives in Kericho County. According to the findings as shown on Table 17, majority of the respondents agreed with the statement that Members are notified of their loan approval standing with a mean of 3.96 and standard deviation of 0.91.

Table 17: Factor Analysis for Digitalized Account Information Adoption

Component Matrix	Mean	Std. Dev
Application for Statements are available via mobile phone.	3.57	1.02
Information about account transactions is readily available through text message notifications.	2.67	1.05
Members receive SMS alerts regarding their loan application status.	3.87	0.86
Members are notified of their loan approval standings.	3.93	0.91

Performance of Tea Farmers Payments

The research established the respondents' level of agreement on the specific statements regarding content service adoption which influences the performance of tea paying cooperatives in Kericho County. According to the findings as shown on Table 18, majority of the respondents agreed with the statement that Co-operative provide information via mobile application with a mean of 2.66 and standard deviation of 1.99.

Table 18: Factor Analysis for Performance of tea Farmers Payments

Component Matrix	Mean	Std. Dev
Co-operative provide information via mobile application.	2.66	1.99
Members deliver produce frequently to tea factory	2.14	1.82
Members receive incentives yearly based of their produce	2.41	1.97

Inferential Analysis and Correlation Analysis

The study used correlation and regression statistical tests. Before performing inferential statistics, the distribution of the data was determined.

Table 19: Pearson Correlation

	Mobile wallet adoption	Mobile banking security adoption	Content service adoption	Digitalized account information adoption	Performance of tea farmers payments
Mobile wallet adoption	1	0.895	0.854	0.904	0.920
Mobile banking security adoption	0.895	1	0.927	0.967	0.815
Content service adoption	0.854	0.927	1	0.953	0.774
Digitalized account information adoption	0.904	0.967	0.953	1	0.890
Performance of tea farmers payments	0.920	0.815	0.774	0.890	1

**Correlation is significant at the 0.01 level (2-tailed)

Regression Analysis

The study sought to establish the nature of the relationship (strength and the direction of the relationship) that exists between the study variables.

Model Summary

Table 20: Model Summary

Model	R	R Squared	Adjusted R Squared	Std. Error of the Estimate
1	0.981[a]	0.961	0.959	2.201

Where Predictors: (Constant), Mobile Wallet, Mobile Banking Security, Content Service, Digitized Account Information

R squared is the co-efficient of determination that gives the variation in the dependent variables caused by changes in the independent variables. From the findings presented in table 4.25, the value of adjusted R-squared was given as 0.959 which showed that there was a 95% growth in paying performance among small scale farmers as a result of changes mobile wallet, provision of mobile banking security, content service and digitized account information provided at 95% confidence interval.

R refers to correlation co-efficient that indicates the relationship between the variables used in this study. The findings establish a strong relationship of 0.981 between the study variables. This study focuses on dependence and independence association, which has been analyzed with the use of multiple regression analysis. The multiple regression analysis is mathematically expressed as:
$\mathbf{Y=\alpha+\beta1X1+\beta2X2+\beta3X3+\ \beta3X4+\varepsilon}$

Where y= Dependent variable (Performance of tea farmers payment)
a= is the constant
β'S = coefficients to be estimated
X1 = Mobile Wallet
X2= Mobile Banking Security
X3= Content Service

X4= Digitized Account Information

ε = error term

The use of multiple regression analysis was used to the importance of the four variables in the study, with a focus on Cooperative payment services on small scale farmers in Kericho County in Kenya.

Regression Model Coefficients

The following table shows the determination of coefficients regression equation.

Table 21: Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	STD. Error	Beta		
(Constant)	0.934	1.29		7.240	0.000
Mobile Wallet	0.650	0.739	0.148	0.880	0.383
Mobile Banking Security	0.138	0.055	0.483	2.501	0.015
Content Service	0.442	0.074	0.380	6.002	0.000
Digitized Account Information	0.362	0.064	0.509	5.655	0.000

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SUMMARY, CONCLUSION AND RECOMMENDATIONS

Summary

This section summarizes the major research findings that were made in the analysis. The summary of findings is presented according to the objectives. The main objective of the study was to determine the effect of Information and Communication Technology adoption and performance of farmers payment Cooperatives in Kericho County, Kenya. The specific objectives of the study were: to examine the effect of mobile wallet adoption and performance of tea farmers payment by Cooperatives in Kericho County, Kenya, to determine the effect of mobile banking security adoption and performance of tea farmers payment by Cooperatives in Kericho County, Kenya, to assess the quality of content service provided by the mobile financial service providers adoption and performance of tea farmers payment by Cooperatives in Kericho County, Kenya and to evaluate the effect of access to account information adoption and performance of tea farmers payment by Cooperatives in Kericho County, Kenya.

The study adopted a descriptive survey design and a correlational design. The unit of observation was 385 employees from 5 private owned tea cooperatives in Kericho County, Kenya. The study adopted stratified, simple random and consensus sampling techniques to select the sample size. According to Johnson and Christensen (2010), stratified sampling technique produces estimates of overall population parameters with greater accuracy. Kothari (2006) argues that simple random sampling gives each and every item in the population has an equal chance of inclusion in the sample, consequently reducing bias and increasing levels of representation. The sample size of 263 out of 828 farmers from 6 villages in Kericho County were selected using the Krejecies Morgan (1970) table of sample size. Qualitative and quantitive analysis was carried out on the data that were collected using a questionnaire.

Preliminary tests for normality and multicollinearity were carried out on the data before inferential analysis. Tests for normality, namely; Quantile-Quantile plot and Kolmogorov-Smirnov were carried out on the observed values for the dependent variable to establish whether they were normally distributed. The condition for normality must be satisfied since the data were using multiple regression model for analysis (Lapan et al., 2012). The Quantile-Quantile plot indicated that the observed values were randomly distributed along the diagonal line indicating normal distribution. Normality was further confirmed by the results of the Kolmogrov-Smirnov test and it was concluded that farmer data had a normal distribution. The data for the independent variables were tested for multicollinearity and found have no significant multicollinearity problems.

Multiple regression model was used to test whether mobile wallet, mobile banking security, content service and digitized account information have an effect on performance of tea farmers payment. Coefficients of correlation show that adoption of mobile wallet, mobile banking security, content service and digitized account information by tea paying cooperatives have the strongest effect on payment of the farmers. Since all the significance of all the Beta coefficients was found to be less than 5%, then all the variables were statistically significant consequently making them important indicators of payment performance among cooperatives in Kenya. This confirmed the variables conceptualized in the conceptual model had a positive relationship with payment performance.

Conclusions

The study concluded that mobile wallet was a critical driver to performance of tea payment cooperatives in Kericho County, Kenya. The findings outlined the prospects of Mobile Wallet such as user registration, user authorization and user profile as the main determinants of mobile wallet prosperity as far as enhancing collective bargaining agreement between the farmers and the cooperatives is concerned while steering payment performance. The study concluded that the cooperatives had effective mobile wallet infrastructure but did not put them into practice for the purpose of enhancing payment performance.

The study concluded that mobile banking security was a key factor in determining the tea farmers payment performance of cooperatives, the prospects of mobile banking security in this study were found to be administration of pins and password to the platform, access to electronic alerts, ability to set voice authentication on farmers e-wallet. Through enhanced security services towards farmers payment activities the farmers will feel secure to adopt ICT in their payment thus promoting cooperatives payment performance. This makes the farmers to continue supplying tea to the cooperatives since they are able to transact securely as a result this improves payment performance of cooperatives.

The study concluded that content service has a crucial role in determining the tea farmers payment performance of cooperatives, the prospects of content service in this study were found to be access to general information, access to loyalty offers, access to location-based services. Through availability of content service, the farmers will have transparency of their financial data thus promoting cooperatives payment performance. This would probably make the farmers to continue supplying tea to the cooperatives since they are able to financial information as a result this improves payment performance of cooperatives.

Digitized Account Information

The study concluded that digitized account information significantly influenced tea farmers payment performance of cooperatives, the prospects of digitized account information in this study were found to be access to mini-statements and account history, access to loan statements and access to alert on account activities. Through availability of digitized account information, the farmers will have transparency of their financial status thus promoting cooperatives payment performance. This would probably improve payment performance of cooperatives.

Recommendations

Based on the findings, it can be concluded that information and communications technology have a considerable effect on tea farmers payment cooperatives in Kericho County, Kenya. The findings of this research support the findings of previous researchers that adoption of ICT in small scale tea farmers paying cooperatives improves payment through increased transparency, and improved financial access and security.

The tea farmers paying cooperatives through the baraza leaders should ensure effective mobile wallet adoption among farmers that supply tea to the cooperatives. They can enforce this through farmer registration, authorization and profiling. The cooperatives could also adopt mobile banking security through use of pins and passwords while accessing the accounts, voice authentication and

electronic alerts. The other component the cooperatives could enforce is content service adoption through making farmer general information, loyalty related offers and location-based services accessible to all the farmers. The last factor cooperatives could consider to adopt is digitized account information through access to mini-statements and account history, availability of loan statements and access to alerts on account activities.

Recommendations for Further Studies

Since the study was limited to tea farmers paying cooperatives in Kericho County, further studies are recommended to be done in other counties in Kenya. Different counties have unique characteristics and diverse contextual realities that might affect the provision of paying cooperative services. The study should therefore be extended to cover other counties across Kenya. Further studies are recommended on the extent of expansion of farmer paying cooperatives services. It can also be suggested as a study to be conducted to find out whether the products and services offered by tea paying cooperatives meets the need of the small-scale farmers. In addition, studies that seek information about farm records, small scale farmers' income records and the data collection tools be designed to seek both facts and opinions. Such information would be critical in coming up with recommendations and developing favorable policies for smallholder farmers. Finally, a further study is suggested to explore challenges in provision and uptake of paying cooperatives services among small scale farmers. This is critical since the research has not dealt fully on the potential challenges.

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