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Determinants of Mobile Banking Usage in Tanzania: A Case of CRDB Bank Customers in Iringa Municipality

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Abstract

Low-income earners now have better access to a broad range of services owing to the widespread use of mobile phones, and mobile banking is one of these services. In several countries across Sub-Saharan Africa, particularly Tanzania, mobile banking is now a crucial means of financial inclusion. The determinants of mobile service consumption in Tanzania were investigated in this study, which focused on CRDB Bank customers in the Iringa Municipality. In particular, demographic, motivational, and personal variables were investigated for their influence on mobile banking usage. The study used a mix of research methods, with the quantitative approach dominating and the qualitative data being used to augment the quantitative data. Because the data collection, analysis, and interpretation were all done at the same time, the study used cross-sectional research. A questionnaire was also used to collect data from 100 CRDB bank customers in the Iringa Municipality. The information from key informants was gathered using the interview guide. Both descriptive (percentage, frequency, and mean) and inferential statistics were used to analyze the data (Regression and Correlation analysis). The findings imply that motivating factors (reliability, security, speed, responsiveness, and ease of use) and personal attributes (desire, social influence, experience, personal ambition, trust, and attitude) had a positive significant influence on mobile banking usage, while demographic factors including; age, gender, education, and marital status had a weak relationship with mobile banking usage. It is therefore recommended as per the study findings that banks should make additional efforts to guarantee that dependability, simplicity of use, responsiveness, and speed are improved.

Keywords: Mobile banking, Customer, Usage

1. Introduction

The vast and quick development of information and communication systems has resulted in a more diverse and extended use of technological methods by both organizations and individuals, which is reflected in the increased use of the Internet as a prime communication means. Other forms of communication include mobile phones, often used in a variety of activities; including marketing, which includes a variety of strategies that have been adopted by various organizations to include; electronic, internet, mobile marketing, etc (2019, Mori).

Mobile banking is an innovative technology that has gained popularity in Africa and other parts of the world. Mobile banking services include; balance inquiry, fund transfer, and other services. The adoption of mobile banking has brought about changes in banking operations following the advancement of mobile communication techniques and collaboration with mobile service providers. As a result, mobile banking technology is a convenient financial transaction option for both individuals and the banking sector (Munisi, 2015).

Many countries were still in the trial-and-error phase of mobile banking technology implementation in the early 2000s. Moble banking, like any other system, presented numerous obstacles to both customers and service providers. With the constant inventions of mobile phones, the services improved and got more effective while also becoming more user friendly with time. According to Makanyeza (2017), mobile banking services have successfully provided consumers with time, freedom, cost-saving , and market expansion opportunities. Mobile phone menus and other more recent applications can now connect bank systems to the phone network, resulting in more user-friendly interfaces. Consumers can now access financial services at their convenience (Cheah et al., 2011). In 2008, The Bank of America alone had more than 1.9 million clients who used mobile banking (Ajide, 2016).

In Tanzania, mobile banking is a type of mobile computing that allows users to bank from anywhere and at their own convenience by utilizing a mobile portable device and service such as SMS (SMS). Mobile banking eliminates the space and time constraints that come with banking activities like checking account balances or moving money from one account to another.

The recent introduction of the 4G wireless broadband service has significantly boosted internet use. Although indicators show that there is rapid growth in the Tanzanian ICT infrastructure, communication facilities are mainly available in the urban areas leaving the rural areas, where the majority of Tanzanians reside underserved (Mori, 2019 and Abdinoor and Mbamba, 2017). Despite the rapid increase of wireless commercial services, the use of mobile banking services is still lower in Tanzania than was expected by the bank (Cruz et al., 2019) thus, the mobile banking market is still underutilized. That means the widespread adoption and broad use of cell phones do not rightly reflect the adoption and use of mobile banking, although mobile banking, perhaps, was the first commercial mobile service in Tanzania (Scornavacca and Hoehle, 2007). Hence the critical question to be answered is "*What determines the usage of mobile banking services in Tanzania?* This study intended to answer the question by examining the determinants of mobile banking services in Iringa.

1.0 Theoretical Framework

2.1 Technology Acceptance Model

Innovation and adoption of new technology have attracted substantial attention across literature. This has resulted in a plethora of models and ideas that are thought to influence the acceptance of new technology. The Technology Adoption Model is a model that depicts the acceptance and adoption of new technology (TAM). Many studies in industrialized countries have utilized the model to investigate the factors that influence mobile banking adoption.

TAM was created by Davis (1989) to investigate how various individuals adopt technology. It takes into account both the perceived simplicity of use and the utility of technology. The use of mobile banking is determined by the perceived simplicity of implementation. Individuals' attitudes regarding adoption will influence their decision to adopt new technology in the future. When people come across new technology, they make decisions about how and when they will utilize it based on a variety of criteria. Age, gender, experience, and individual willingness to use are some of these determinants (Davis, 1989). The model aids in the prediction of the primary factors of customers' behavioral intentions toward new technology adoption. External variables might be included as determinants of mobile banking usage in the model.

TAM was developed to demonstrate how external factors may influence individual decisions to employ new technology. The purpose of this study is to determine the factors that influence mobile banking users' utilization of mobile financial services. Mobile banking is a relatively new technology, particularly in the context of developing countries; TAM shows that users form opinions about the utility and ease of use of various technologies, which leads to real use of the technology. As a result, the model is beneficial in providing insight into new technology uptake.

TAM has been successfully applied to a wide range of technologies and users across cultural and economic settings in research studies, particularly those involving the acceptance and adoption of new technologies, regardless of whether participants reside in urban or rural areas. In his study on mobile banking in Iran, Mohammadi (2015) employed the model (TAM). Other researchers that employed the model include Wessels and Drennan (2010) from Australia, who used it to analyze consumer acceptance of mobile banking. Riquelme and Rios (2010) conducted a study in Kuwait and used the model (TAM) in the Moderating effect of gender in the adoption of mobile banking. Tobbin (2013) used the model to analyze mobile banking adoption among the unbanked in Ghana. TAM was upgraded to TAM2, and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh, Morris, Davis, & Davis, 2003) was established as a unified theory of technology acceptance and use.

2.2 Service Quality Model

The current study was also guided by the Service quality model which views service quality in light of the gap between the expected level of service and perceptions of customers regarding the service, The SERQUL/ ERVPERF MODEL is distinct from others because it determines more than one aspect of service encounters (Ravichandran *et al*, 2010). This view supports this study because the usage of mobile banking services is based on various dimensions (factors) of service encounters which influence customer usage of the services

such as, Reliability, Security Transaction cost, Speed, Responsiveness, Ease of use and this is what the current study seeks to establish.

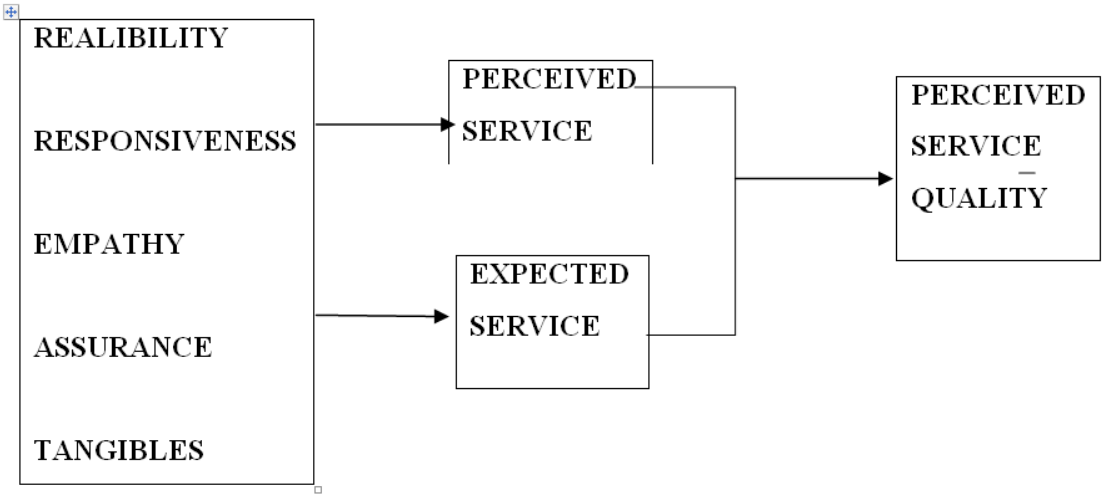

Figure 1: Model of Service Quality Perception

Source :(Ravichandran *et al*, 2010) and Santos (2003)

2.0 Methodology

3.1 Research Approach

The research used a mixed methods approach, which included both quantitative and qualitative research methods. The fieldwork was divided into two phases: quantitative data collecting and qualitative data collection. The first phase began with the collecting of quantitative data and the examination of numerical data related to the study questions. Because the study's objective is to explain the causal relationship between demographic characteristics, personal factors, and motivating factors on mobile banking usage, the quantitative approach was more predominantly used. The second phase commenced with an in-depth interview conducted with Branch managers of the selected branches to obtain their opinions of efforts made by branches to enhance mobile banking use.

3.2 Research Design

The study adopted an explanatory cross-sectional sequential design of mixed methods. The study is explanatory because it closely examines the influence of demographic, personal, and motivating factors on mobile banking The study further adopted a cross-sectional data collection method because data collection, analysis, and interpretation were conducted at the same time.

3.3 Population and Sampling

The population for this study is 22,572, according to data received from Iringa CRDB Branch Business Manager in May 2021, and the study's targeted populations are CRDB bank customers who use mobile banking services. In addition, four managers were interviewed in order to collect qualitative data. Both probability and non-probability sampling were used in this investigation. The area in which the investigation was conducted was chosen via non-probability sampling. This study area was chosen since it was the first in the Southern Highlands Zone to offer mobile banking services. Respondents who utilize mobile banking services were selected using probability sampling. In this study, all CRDB customers who utilize mobile banking services from the Iringa branch were sampled, with 22,572 customers serving as a representative sample of all CRDB customers.

The sample size was determined through a formula developed by Kothari (2004) as detailed below;

$$n = \frac{N}{1+N.\square^2} \quad (1)$$

$$n = \frac{22,572}{1+22,572.(0.1)^2} = 99.75$$

n= 100

Where n = size of samples, N = total population=22,572; e = standard error of sampling (10%) is tolerated. Upon entering each value of the variable into the formula (1) above, a sample size of 100 respondents was obtained. Hair *et al* (2006) suggests that a research study designed to reveal factor structures should have more observations than variables, and that the minimum absolute sample size should be 50 observations. The systematic sampling method used to draw samples, where customers counted one to four and each fourth customer was interviewed until the sample of 100 customers was obtained. The systematic sampling procedure was employed to avoid bias.

3.4 Data Collection Methods

A well-structured questionnaire was prepared and tested before administration to respondents. The purpose of the administered questionnaire was to assist the researcher in clarifying the intended meaning of the questions, as one question could be understood differently by respondents. As a result, administering the questionnaire aids in clarifying the intended meaning of the questions to all respondents and ensuring that the language used is understandable to them.

Before being given to CRDB Bank in Iringa Municipality, a well-structured questionnaire was designed and tested. The purpose of the administered questionnaire was to assist the researcher in clarifying the intended meaning of the questions, as one question could be understood differently by respondents. As a result, administering the questionnaire aids in clarifying the intended meaning of the questions to all respondents and ensuring that the language used is understandable to them.

3.5 Data Analysis

For quantitative data, descriptive statistics are used in the sense that the researchers examined central tendency, measures of variance and used the weighted mean. The purpose of using a weighted mean is to obtain an accurate response and a clear picture of the responses to the questions given. Inferential statistics, on the other hand, were used to test theories and hypotheses produced during the study. Statistical Package for Social Science (SPSS) was used to analyze data collected in the field (SPSS). SPSS was used in this study because it is a computer software tool for statistical analyses, modifying data, and creating statistical proof. Thematic content analysis was used to analyze qualitative data.

3.0 Results

4.1 Demographic Factors and its influence on Mobile Banking Usage

Age, education level, and experience have weighted means above the neutral point (3), while gender and married status have weighted means below the neutral point (3), as shown in Table 1. These data imply that user education, experience, and age have a positive relationship with mobile banking adoption, since educated users are more likely to learn new things and adopt mobile banking. Age was also found to have an impact on mobile banking usage, since younger generations have the advantage of growing up with technology, allowing them to use mobile banking because they use many online platforms in their daily lives. Not only that, but a person with prior technology experience can quickly adopt any new technology in a variety of settings, including the banking industry. Furthermore, the study found that users' marital status and respondents' gender have little bearing on mobile banking usage. The interview results from CRDB bank's Customer Service Manager confirmed these findings, he said.

> "The number of people using mobile banking is growing every day, and we already have around 3600 people using this service." Some people are still hesitant to use mobile services because they are unfamiliar with how to use them or the benefits of doing so. Some people claim they can't use mobile banking since they don't have smartphones or computer tablets.

Another head of operations said that;

> *"Most of younger people prefer mobile banking compared to older people, due to difference level of understanding on internet issues. Young people are quick learners compared to older who needs time to understand steps and functions of their mobile phones. So, I think education is quite vital for our customers' especially the older ones".*

Table 1: Influence of demographic factors on mobile banking usage

One-Sample Test

	Test Value = 0					
	t	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference Lower	Upper
Gender	28.864	99	.000	1.440	1.34	1.54
Age	24.094	99	.000	4.190	3.84	4.54
Marital Status	25.081	99	.000	2.150	1.98	2.32
Education level	26.237	99	.000	4.130	3.82	4.44
Experience in the bank	21.026	99	.000	3.970	1.78	2.16

Source: Field data (2021)

In addition, the researcher used spearman correlation to examine the aggregate impact of demographic characteristics on mobile banking usage, and the results in Table 2 revealed a weak positive link between demographic parameters and mobile banking usage.

Table 2: Spearman correlation output on the influence of demographic factors on mobile banking usage

Correlations

			USG	DEF
Spearman's rho	USG	Correlation Coefficient	1.000	.010
		Sig. (2-tailed)		.923
		N	100	100
	DEF	Correlation Coefficient	.010	1.000
		Sig. (2-tailed)	.923	
		N	100	100

Source: Field data (2021)

The results of the spearman correlation were also confirmed by regression analysis, which revealed a moderate positive link between demographic components with a coefficient of 0.007 and a p-value of 0.939, which is greater than 0.05, as advised by Saunder et al., (2014). This conclusion contradicts Jordanian researchers Alafeef, Singh, and Ahmad (2011), Ethiopian researchers Teka and Sharma (2017), and Nigerian researchers Abayomi, Teye, Haq, and Mensah (2019).

Table 3: Regression output

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	10.857	1.278		8.494	.000
	Demographic Factors	.007	.090	.008	.077	.939

a. Dependent Variable: Usage of Mobile banking

4.2 Influence of Motivating Factors on Mobile Banking Usage

Weighted mean was used in assessing factors may lead to mobile banking usage among CRDB customer In examining the parameters that may contribute to CRDB consumers in Iringa Municipality using mobile banking, a weighted mean was employed. Reliability, security, transaction cost, transaction speed, responsiveness, and ease of use were all identified as possible factors. The findings show that all motivating variables that scored above the neutral point influence mobile usage to a substantial extent. These findings are in line with those of Emmanuel (2018), who discovered that 68.2 % of all respondents believed that similar attributes examined in his study were linked to mobile banking usage.

Table 4: Mean values of motivating factors

One-Sample Test

	Test Value = 0					
					95% Confidence Interval of the Difference	
	t	Df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Reliability	28.270	99	.000	4.680	3.42	3.94
Security	28.901	99	.000	3.640	3.39	3.89
Transaction cost	30.727	99	.000	3.760	3.52	4.00
Transaction speed	30.259	99	.000	3.740	3.49	3.99
Responsiveness	30.937	99	.000	3.760	3.52	4.00
Ease of Use	29.453	99	.000	4.390	3.44	3.94

Source: Field data (2021)

Furthermore, the researcher used spearman correlation to examine the aggregate influence of motivating variables on mobile banking usage, and the results in Table 5 revealed a substantial association between motivating elements and mobile banking usage.

Table 5: Spearman correlation output on motivating factors

Correlations

			USG	MOF
Spearman's rho	USG	Correlation Coefficient	1.000	.056
		Sig. (2-tailed)		.028
		N	100	100
	MOF	Correlation Coefficient	.056	1.000
		Sig. (2-tailed)	.028	
		N	100	100

Source: Field data (2021)

The correlation findings were also confirmed by regression analysis output in Table 6, which shows that there is a substantial positive link between motivating factors with a coefficient of 0.007 and a p value of 0.939, which is greater than 0.05, as recommended by Saunder et al (2014). These findings suggest that mobile banking usage is highly associated with reliability,

security, transaction speed, transaction costs, and ease of use among CRDB bank customers in Iringa Municipality. These findings are consistent with Yu's (2009) findings in New Zealand, who found that service quality dimensions influence mobile banking usage.

Table 6: Regression output on Motivating Factors

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	12.132	1.907		6.361	.000
	MOF	.062	.085	.073	.725	.010

a. Dependent Variable: USG

5.3 Personal Factors and their Influence on Mobile banking usage

Personal attributes that may lead to mobile banking usage among CRDB customers in Iringa Municipality were investigated using the weighted mean method. Desire, experience, personal ambition, trust, and attitude were all considered as personal variables. The findings show that all parameters that scored over the neutral point play a significant role in mobile banking usage. These findings suggested that personal desire, a positive attitude, trust, ambition, and social influence are all linked to mobile banking usage.

One respondent similarly said said *" I'm afraid of the overwhelming amount of information on some mobile banking interfaces, and some of them are confusing, so I prefer to queue since it's simple to receive advice from bank workers." I also make mistakes owing to the smaller keyboard on smart phones, thus I don't use them for internet banking or online shopping. So I use my phone to make phone calls and listen to music*."

Table 7: Mean Values for Personal Factors

One-Sample Test

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference Lower	Upper
Desire	29.619	99	.000	3.720	3.47	3.97
Social influence	23.689	99	.000	3.080	2.82	3.34
Experience	32.591	99	.067	3.340	3.61	4.07
Personal ambition	31.591	99	.000	3.820	3.58	4.06
Trust	31.967	99	.000	3.830	3.59	4.07
Attitude	32.742	99	.000	3.820	3.59	4.05

Source: Field data (2021)

The overall influence of personal attributes on mobile banking usage was tested using Spearman correlation, and the results in table 8 revealed a strong association between personal factors and mobile banking usage. These findings are consistent with the findings of

Raza and Rehman (2012), who discovered that a customer's inclination to use the same product or service again is influenced by their desire, habit, and social influence. The survey also reveals that knowledge, experience, and personal innovation all have an impact on e-banking adoption.

Table 8: Spearman output on the influence of Personal Factors on Mobile Banking Usage

Correlations

			USG	PEF
Spearman's rho	USG	Correlation Coefficient	1.000	.023
		Sig. (2-tailed)		.001
		N	100	100
	PEF	Correlation Coefficient	.023	1.000
		Sig. (2-tailed)	.001	
		N	100	100

Source: Field data (2021)

Additionally, the regression analysis output revealed similar results, with a coefficient of 0.11 and a p value of p=0.001, which is less than the cut-off point of 0.05, confirming the findings that personal attributes have a positive significant influence on mobile banking usage. The findings contrast those of Kahiga (2015), who found that there is no link between personal variables and mobile banking usage in Kenya.

Table 9: Regression output on Personal Factors and Mobile Banking Usage

Coefficients[a]

		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	10.526	1.612		6.531	.000
	PEF	.011	.072	.015	.147	.001

a. Dependent Variable: USG

Source: Field data (2021)

4.0 Conclusion and Implications

The study shows that demographic characteristics have a weak relationship with mobile banking usage. The survey also found that several demographic parameters, such as education level, experience, and age of users, had a positive influence on mobile banking usage, whereas gender and marital status have no consequence. The study concludes that motivational factors have a positive significant impact on mobile banking usage. The study concludes that motivational factors have a positive significant influence on mobile banking usage. The intention to use mobile banking was found to be associated with reliability, security, transaction cost, transaction speed, responsiveness, and convenience of use. Finally,

personal aspects are found to have a positive significant impact on mobile banking usage, according to the study. Desire, experience, personal ambition, trust, and attitude were all discussed as personal aspects. The findings show that mobile banking usage is influenced by a variety of factors. Because security has been found to have a substantial influence on mobile baking usage in Tanzania, the study suggests that service providers modify some existing policies on online services to ensure safety or security. In addition, CRDB Bank must guarantee that the quality of its mobile banking services is maintained, as these are the services that the majority of clients prefer.

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