Effectiveness of Mobile Banking Service Delivery in Tanzania: A Case Study of CRDB Bank

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ABSTRACT

Digitization of banking technology is an essential means in transforming the financial services industry delivery, resulting to the increase of number of people who use mobile banking services either through mobile money companies or through the cooperation between banks and mobile companies, and mobile banking services still needs an effective oversight framework to safeguard public confidence and financial stability. To examine the effectiveness of mobile banking service delivery in Tanzania, a case study of CRDB Bank. In attaining this objective, the study further examined three specific objectives. The study examined customers' attitude towards the use of mobile banking services in Tanzania and examined the extent of customers' adoption of mobile banking services in Tanzania and examined challenges experienced by customers towards mobile banking services usage in Tanzania. The study adopted mixed used research design by combining the use of quantitative and qualitative approach. The findings revealed that customers had positively altitude towards mobile banking services and to the great extent; the customers are using some of the services offered by mobile banking services. Main challenges identified were transactional costs, security and privacy and reconciliation challenges. It was recommended for the conduction of more campaigns on mobile banking services, provision of trainings and awareness sessions to customers on the issues of security and privacy in using mobile banking services.

Key Words: Digitization, Mobile Banking Services, transactional costs, security and privacy and reconciliation

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1. INTRODUCTION

The internationalization of financial markets is having profound effects on all countries [1]. Foreign investors and international bodies give funds to corporations in certain countries [2], help financial businesses, open new ones or help the government by investing in treasury [3]. This has led to the computerization of societies to be indispensable everywhere around the world [4]. According to the Economic Corporate Network [5], the most valuable derivative of digitization is preferred as the rich pool of gathered data, which is growing very fast. It is very clear that advanced computing capability has paved the way for big data analytics [6]. For example, social media, mobile, analytics and cloud (SMAC) and application program interface (API) technologies have allowed different data streams to talk to each other in a highly efficient manner [5].

This innovation helps financial institutions to remain competitive and achieve longevity in the market, to improve efficiency and the performance within the organization [7], [6]. Innovation in financial technology, often referred to as "Fintech" is rapidly transforming the global financial sector [8]. Since 2010, more than US$50 billion was been invested in almost 2,500 companies worldwide as Fintech redefines the way in which we store, save, borrow, invest, move, spend, and yet protect money [9].

Financial technology helps to drive significant change in the financial industry, the new ways of delivering products to customers and solutions improve effectiveness [10]. Despite this, the customers are facing challenges from the usage of these financial technologies especially mobile banking technology in Tanzania. Therefore, this study intends to assess the effectiveness and challenges of mobile banking which is one of the financial technology applications applied in Tanzania banking sector.

2.0 LITERATURE REVIEW

Mori & Mlambiti added on the knowledge of determinants of customers' adoption of mobile banking and the extent of adoption of those banking services in Tanzania [11]. The study employed a survey approach whereby 416 customers contacted. Purohit & Arora studied on the benefits and challenges of mobile banking at the bottom of the pyramid [12]. The study documented challenges of mobile banking to include system security, regulatory environment and economic viability. In the same context, studied on the factors hindering the usage of mobile banking in Tanzania by using the case of CRDB bank – Arusha branch [13].

2.1 Technology Acceptance Model (TAM)

According to this theory, two factors determines acceptance of the technology; perceived usefulness of the particular technology and the perceived ease of use. This model emphasized on the perceptions of the users of the technology, which influence the acceptance of that particular technology. For the technology to be accepted, the users of the technology should share those benefits of adopting the particular technology.

2.2 Diffusion of innovation theory (DIT)

According to this theory, from the first contact with innovation to the adoption stage, an individual goes through five stages. The first stage is knowledge when an individual learns about the purpose and function, the second stage is persuasion when an individual form positive or negative opinion about the particular technology. The positive or negative opinions generated in this stage influence the decision for an individual to adopt or not to adopt the technology. The third stage is decision stage whereby an individual is getting the chance to test the usefulness. The fourth stage is the implementation of the particular innovation and final stage is the confirmation stage, which attained when the innovation integrated into the ongoing routine.

2.3 Behavior change theory

Behavior change theory narrates that an individual can change the particular behavior only if the benefits of behavior change are clear and the barriers of behavior change are at minimum. Contrary to this, especially when the benefits of behavior change are not clear and there are various barriers towards changing the particular behavior, it becomes very hard for an individual to change the particular behavior. In this theory, the behavior change passes through various stages that include pre-contemplation, contemplation, and preparation for action, action and maintenance of the new behavior. Despite these processes narrated, it is argued that the degree for a person to change behavior differ from one person to another. In congruent to this study, the adoption and extent of using mobile banking services differ from one individual customer to another and the same as for the challenges that they might experience. This theory helped to provide the grounding information on the individual challenges concerning mobile banking service delivery in Tanzania.

3.0 METHODOLOGY

This study adopted the qualitative and quantitative research approaches. The research methodology comprises with research design adopted, types of data to be collected, sampling procedures that were used in including cases in the sample, methods of collecting data, data analysis techniques and the general procedures adopted in undertaking of this study.

3.1 Sampling and data collection

The use of the sample size of 100 customers in this study supported by various study argued that at a significant level of 90%, the minimum sample size of unknown population is 100 [13], [14]. The main population of this study is the customers who are using mobile banking services offered by the chosen commercial bank in Dar es Salaam. In attempting of selecting commercial banks operating in Dar es Salaam, the study used a case of CRDB bank plc.

The main reason of choosing CRDB bank plc is because it has been in the operation for more than 10 years in the country and it offers mobile banking services to their customers. In addition to that, according to CRDB Annual Report 2020, the bank has more than 243 branches, 17,031 agents, 3,635 qualified personnel and over 3.3 million customers and hence it provides the solid base as a case study for undertaking this study.

3.2 Data analysis

The analysis of quantitative data collected in addressing the stated research questions conducted differently according to the measurement adopted. The use of descriptive analysis applied to the quantitative data collected regarding the adoption of mobile banking services usage and the challenges experienced by customers in using mobile banking services. Generally, the descriptively analysis was supported by the presentation of data in tables, frequencies, percentages, histogram and charts.

The presence of independent variables and dependent variable derived from the challenges experienced by customers in using mobile banking services attracted for the use of correlation analysis and multiple regression analysis between those variables. On the other hand, the content analysis applied for the qualitative data that collected from the research questions that aimed at measuring the extent of customers' adoption towards the usage of mobile banking services, the challenges experienced by customers and the possible solutions towards effectiveness of mobile banking services.

4.0 RESULTS

This section presents results of the study. The sample of the study consisted of 100 respondents. It comprises with various sections, which covers the socio demographic characteristics of respondents and key informants, general usage of banking services and mobile banking, customers' altitude towards the use of mobile banking services in Tanzania, extent of customers' adoption of mobile banking services in Tanzania, challenges experienced by customers towards mobile services usage in Tanzania.

4.1 Socio–demographic characteristics of respondents and key informants

The socio – demographic characteristics of respondents has been illustrated in Table 4.1 whereby more than half of the respondents contacted were male (59%, n = 59). The remained respondents (41%, n = 49) were female. Concerning the age distribution of the respondents, more than half of the respondents (58%, n = 58) had 26 years to 45 years old. On the other hand, 26% of the respondents had less than 25 years old and 16% of the respondents had more than 45 years old.

The education profile of the respondents revealed that more than half of the respondents (61%, n = 61) had attained the level of education of bachelor degree and above.

Table 4.1: Socio – demographic profile of the respondents

Variable	Variable measure	Frequency (N)	Percentage (%)
Gender	Male	59	59%
	Female	41	41%
		100	
Age	Less than 25 years	26	26%
	26 years - 35 years	35	35%
	36 years -45 years	23	23%
	Over 45 years	16	16%
		100	
Education	Secondary	13	13%
	Certificate or Diploma	26	26%
	Bachelor and Above	61	61%
		100	

The study contacted 15 key informants reached using interview; these key informants were mainly the staff from CRDB bank Plc. Table 4.2 presented the socio – demographic characteristics of key informants.

Table 4.2: Socio – demographic profile of key informants

Variable	Variable measure	Frequency (N)	Percentage (%)
Gender	Male	8	53%
	Female	7	47%
		15	
Age	26 years - 35 years	2	13%
	36 years -45 years	7	47%
	Over 45 years	6	40%
		15	
Education	Bachelor and Above	15	100%
		15	
Title	Managers	9	60%
	Supervisors	4	27%
	Officers	2	13%
		15	

4.2 Customers altitude towards the use of mobile banking services in Tanzania

The respondents were required to provide the general perception towards mobile banking services in Tanzania. The results revealed that more than half of the respondents (52%, n = 52) had positive attitude towards mobile banking services in Tanzania. On the other hand, 35% of the respondents had negative attitude towards the general operations of the mobile banking services in the country (See Table 4.3).

Table 4.3: General altitude of customers towards the use of mobile banking services

	Frequency (N)	%	Cumulative %
Positive attitude	52	52%	52%
Neutral	13	13%	65%
Negative attitude	35	35%	100%
Total	100	100%	

In addition to that, various questions asked to the respondents to provide the experiences and their attitudes towards the usage of the mobile banking services.

Table 4.4: Various altitude of customers towards the use of mobile banking services

	Agree	%	Neutral	%	Disagree	%
It is more convenience to use mobile banking services	65	65%	9	9%	26	26%
I find it easy to use mobile to access mobile banking services	53	53%	12	12%	35	35%
I do not encounter technical problem while using mobile banking services	29	29%	12	12%	59	59%
Mobile banking services has helped to pay various bills timely	71	71%	9	9%	20	20%
It is cost efficiency to use mobile banking services	22	22%	9	9%	69	69%

The study contacted the key informants regarding the customers' altitude towards the use of mobile banking services.

Participant A commented that ''Most of the customers are more affected with banking hall fever where they consider it as the first option when it comes to making banking transactions. There is a need for more awareness to attract customers on the usage of mobile banking services''.
However, to the large extent, they are not comfortable with the bank charges associated with those services. They believe that, they incur much cost in using mobile banking services rather that going physically to banking hall or banking agencies.

Participant B commented that ''Majority of the customers perceived that they incurred high cost when they are using mobile banking services. The bank charges on mobile banking services are more reasonable and convenient to the clients as far as the conveniences brought by the mobile banking services is considered''.
Other customers perceived that it is not safe to command some of the transactions using mobile banking services. They believe that the use of mobile phone exposed them to various risks that enhance the occurrence of errors that can lead into financial loss or unnecessary delays.

Participant C commented that ''the use of mobile banking service requires more attention which it becomes challenging tasks to some of the clients. They are worrying to make mistakes and even to learn on how to use the mobile banking rightly''.
The findings revealed that customers had positively altitude towards mobile banking services as it has brought banking services nearly to their hands. Mobile banking services offer more convenience way towards provision of banking services in the society and hence more customers are expecting more from these services. The findings revealed that despite some challenges experienced by the customers still mobile banking services have been useful among the majority of customers.

4.3 Extent of customers' adoption of mobile banking services

In addressing the customers' adoption towards mobile banking services, the findings revealed that to the great extent the customers are using some of the services offered by mobile banking services. Generally, the adoption of mobile banking services is of great extent. The findings revealed that customers are using mobile banking services to payment of various bills such as

water utilities bills and electricity bills. The customers are also using mobile banking services to check balances of their banking accounts and to transfer funds from their banking accounts to mobile money wallet. However, the customers are eagerly to use mobile banking. They customers are using mobile banking services to check their balance download a mini statement, pay different bills, and transfer funds from their account to mobile money account.

Table 4.4: Extent of using mobile banking services

	Frequency (N)	%	cumulative e %
To a great extent	26	26%	26%
Somewhat	36	36%	62%
Very little	27	27%	89%
Not at all	11	11%	100%
Total	100	100%	

Further analysis conducted to find out for how long the respondents have been using the mobile banking services. The findings revealed that more than half of the respondents (58%, n = 58) had used mobile banking services for 1 year to 6 years. On the other hand, 42% of the respondents had used mobile banking services for more than 6 years (See Table 4.5).

Table 4.5: Number of years on using mobile banking services

	Frequency (N)	%	cumulative %
1year - 3 years	11	12%	12%
4 years - 6 years	41	46%	58%
7 years - 10 years	32	36%	94%
More than 10 years	5	6%	100%
Total	89	100%	

From the list of identified number of mobile banking services, the respondents were required to provide the feedback on their usage towards the specific item. The findings revealed that majority of the respondents (61%, n= 61) were using mobile banking services to pay various bills. On the other hand, 39% of the respondents were not using mobile banking services to pay bills. (See Table 4.6), for airtime recharging (Table 4.7), for transfer funds from my account to telecom networks (Table 4.8), for checking my balance (Table 4.9) and for download mini-statement (Table 4.10)

Table 4.6: Paying bills

	Frequency (N)	%	cumulative %
Never	39	39%	39%
Rarely	16	16%	55%
Very Frequently	45	45%	100%
Total	100	100%	

Table 4.7: Airtime recharging

	Frequency (N)	%	cumulative %
Never	65	65%	65%
Rarely	17	17%	82%
Very Frequently	18	18%	100%
Total	100	100%	

Table 4.8: Transfer funds from my account to telecom networks

	Frequency (N)	%	cumulative %
Never	42	43%	43%
Rarely	20	20%	63%
Very Frequently	36	37%	100%
Total	100	100%	

Table 4.9: Checking my balance

	Frequency (N)	%	cumulative %
Never	45	45%	45%
Rarely	35	35%	80%
Very Frequently	20	20%	100%
Total	100	100%	

Table 4.10: Download mini-statement

	Frequency (N)	%	cumulative %
Never	78	78%	78%
Rarely	13	13%	91%
Very Frequently	9	9%	100%
Total	100	100%	

4.4 Challenges experienced by customers towards mobile banking services

Various questions asked to the respondents to provide the experiences on various challenges associated with the usage of mobile banking services. The questions presented in Likert scale statements ranging from one as strongly disagree to five as strongly agree. The respondents were required to rate various statements narrating specific challenge. For the purpose of this analysis, those who strongly disagreed and disagreed combined into disagreed group and those who agreed and strongly agreed combined into agreed group.

In addressing challenges experienced by customers towards mobile banking services. The results revealed that majority of the customers are facing various challenges towards the usage of mobile banking services. Some of the challenges, which found to be more significant, include the transactional challenges, security and privacy challenges and reconciliation challenges. Other challenges found insignificant, include network challenges. Generally, majority of customers are facing transactional costs challenged compared to other challenges. The findings from the said study explored that theft of fund transferred, delay of fund delivery and reconciliation are among the challenges associated with mobile banking services.

Table 4.11: Network failure challenges

Network failure challenges	Agree	%	Neutral	%	Disagree	%
Frequency network failure in some of areas has been one of the challenges for mobile banking services	27	27%	8	8%	65	65%
Network problem attributed for a serious delay in getting mobile banking services	39	39%	12	12%	49	49%
Network problems attributed for additional costs due to repetition of the same actions many times	28	28%	11	11%	61	61%

Table 4.12: Reconciliation challenges

Reconciliation challenges	Agree	%	Neutral	%	Disagree	%
Difficult in reconciling mobile banking transactions	71	71%	8	8%	21	21%
It is very easy to make errors in making mobile banking transactions	66	66%	10	10%	24	24%
It is very difficult to reverse the wrongful transactions	58	58%	7	7%	35	35%

Table 4.13: Security and privacy challenges

Security and privacy challenges	Agree	%	Neutral	%	Disagree	%
Mobile banking is financially secure	28	28%	7	7%	65	65%
Details of any transaction is guarantee	31	31%	11	11%	58	58%

	Agree	%	Neutral	%	Disagree	%
safe						
Do not worry about the security of mobile banking	8	8%	5	5%	87	87%
It is very difficult to be used by unauthorized persons	12	12%	7	7%	81	81%

Table 4.14: Transactional costs challenges

Transactional costs challenges	Agree	%	Neutral	%	Disagree	%
The cost of accessing the mobile banking services is very reasonable	14	14%	5	5%	81	81%
Mobile banking services charges a reasonable cost of deposit	21	21%	4	4%	75	75%
The cost of withdrawing money through mobile banking is minimum	5	5%	3	3%	92	92%
The bank charges reasonable cost for mobile banking information	33	33%	7	7%	60	60%
Making payments through mobile banking is cheaper	11	11%	5	5%	84	84%

4.5 Correlation and multiple regression analysis

The study conducted the regression analysis for mobile banking service challenges using independent variables and dependent variables. The correlation results revealed that there is high correlation between independent variables and dependent variable. The R – Square is 0.867, which means the correlation between variables is 86%. This implied that, the variations in dependent variable explained by the independent variables in this study by 86% whereas the 23.7% of the variations covered by other factors not included in this study (See Table 4.18).

Table 4.15: Correlation analysis

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.867a	0.752	0.742	0.65124

a. Predictors: (Constant), Security and privacy challenges, Transactional costs challenges, Reconciliation challenges, Network failure challenges

4.6 Analysis of variance (ANOVA)

Table 4.16 revealed that all the independent variables were significant predictor of the dependent variable. The p value is this study is sig 0.000, which is less that the standard p value, which is 0.05. In this case, all the independent variables were significant for the analysis (See Table 4.16).

Table 4.16: Correlation analysis

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	122.459	4	30.615	72.184	.000b
	Residual	40.291	95	0.424		
	Total	162.750	99			

a. Dependent Variable: Mobile banking service challenges

b. Predictors: (Constant), Security and privacy challenges, Transactional costs challenges, Reconciliation challenges, and Network failure challenges.

4.7 Multiple regression

Table 4.17 presents the multiple regression results. The results from the regression analysis provide the clear picture on the coefficient value of each variable and hence help in providing the analysis towards the influence of the particular variable. In

examining their significant level, it has been found that transactional costs challenges, security and privacy challenges and reconciliation challenges were significant compared to the network failure challenges which were found to be insignificant.

The coefficient level for those three variables is less than the standard p value of 0.05, which means they are significant. The coefficient level for transactional costs challenges were 0.000 which is less than the p value of 0.05, the coefficient level of security and privacy challenges were 0.011 which is less than p value of 0.05 and also the coefficient value for reconciliation challenges were 0.035 which is less than the p value of 0.05. Only coefficient for network failure challenges were greater than p value of 0.05.

Table 4.17: Multiple regression results

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-0.435	0.225		-1.938	0.056
	Reconciliation challenges	0.594	0.278	0.183	2.137	0.035
	Network failure challenges	-0.531	0.302	-0.189	-1.757	0.082
	Transactional costs challenges	1.494	0.232	0.551	6.446	0.000
	Security and privacy challenges	1.109	0.426	0.371	2.602	0.011

a. Dependent Variable: Mobile banking service challenges

The key informants were engaged to provide their insights concerning the challenges associated with mobile banking services. The findings revealed that most one of the main challenges is the associated bank charges and tariffs on mobile banking services. The clients are not comfortable with the bank charges for mobile banking services. Majority of the clients are incurring more costs when they transfer the funds from their bank accounts to mobile money accounts. This discourage them to use mobile banking services frequently and they only use the services for emergencies.

In addition to that, the new changes which require for the payments of tariff of Tshs 100 to access the mobile banking services has increased more challenges towards the use of mobile banking services.

5.0 CONCLUSION AND RECOMMENDATION

The findings from this study revealed that there are various mobile banking services challenges that the customers are experiencing. In addition to those challenges, the findings revealed that the moderate number of customers are using mobile banking services. The study concluded that more awareness sessions, trainings and campaigns are required to activate and to increase uptake of mobile banking services in Tanzania, the necessitates of more innovation in mobile banking products in order to entice users to rely on the service is needed to increase the convenience of using mobile banking services. Furthermore, the challenges can be addressed into two ways which are provision of enough trainings to the users of the mobile banking services and tailor made the mobile baking services as per needs of the customers.

The study recommended for conduction of more campaigns on mobile banking services, provision of trainings and awareness sessions to customers on the issues of security and privacy in using mobile banking services, the Government should reduce and remove some tariffs charged on the usage of mobile banking services, the banks should reduce the banking charges associated with the mobile banking services. Also, the study proposed for the conduction of comparative studies on challenges experienced in the use of mobile banking services and mobile money

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