

internet banking is not viable. This implies that commercial banks could initiate mobile banking services in remote villages and slums where only very few computers are connected to the internet in order to take advantage of large potential market [3].

It is contended [1] that, it could be true that mobile banking has brought about positive shift in customers' perceptions in Nigeria. Due to the prevailing gap emanating from lack of empirical research on the adoption of mobile banking in Nigeria, the same subject has been studied. This was further necessitated by the many advantages associated with use of mobile banking services which customers can get if and when they adopt the facility. It is pointed out some of these benefits to include among others, portability, labour free, reduced cost, convenience, wider customer reach, high security level, and accessibility [6]. It is further asserted that there are disparities in ratio of commercial banks and population in different African countries. Ethiopia, Uganda and Tanzania are exemplified to each have less than 1:100,000 bank branch against people ratio. Zimbabwe has more than three whereas Namibia and Botswana have almost four banks per 100,000 people.

It is posited that in year 2007, Kenya had only about 30 per cent of households with bank accounts which translates to low penetration of banking services in the country. According to another study [14], in order to enhance productivity, many firms in Kenya have implemented mobile payment services. This kind of payment requires the use of mobile telecommunication devices such as mobile phones and PDAs. The system is averred to minimize transaction costs. It is argued that in spite of several commercial banks in Kenya having implemented mobile banking system, there is little research which has been conducted on the factors that affect adoption of this technology by customers [13]. More specifically, the precise challenges that limit the adoption and use of mobile banking in the country have hardly been studied.

The study will be limited to Equity bank which is the leading bank in Kenya in terms of the number of account holders. The bank is further known to be a market leader in the banking industry in terms of innovativeness and technological advancement. The bank has partnered with telecommunication firms (Airtel, Safaricom, Yu, and Orange) to offer mobile banking services on their platform. "M-Kesho" is a bank account the bank has which is highly affordable since there no charges, no ledger fees, and no minimum balance. The account enables customers to send or transfer money between the M-Kesho bank account and "M-Pesa" system via deposits and withdrawals. Very recently, Equity bank has introduced yet another mobile banking service called "Eazzy 247". This service allows customers to access the bank services using their mobile phones. Easy 247, according to Equity Bank's website is available through Safaricom, Orange, Yu, Airtel and MTN USSD, SMS and internet services, which makes it easy for customers to transact anywhere, anytime. Due to the aforementioned facts that Equity bank is not only the market leader in Kenya in terms of customer base but also in terms of initiating and implementing mobile banking, then it is very appropriate to

be studied in context of challenges affecting adoption and use of mobile banking in the country.

2. Statement of the Problem

Mobile banking has been in use since early 2000s in many parts of the world. Indeed, European banks started using the service in 1999 upon the launch of smart phones [21]. In Kenya, almost all commercial banks have embraced the service. It is documented that mobile banking is associated with many benefits which include reduced time of transaction and the need for physical bank branches. Against this backdrop, however, it is observed that, there have been conspicuous challenges that have limited the adoption and use of the mobile banking [7]. This is evidenced by the fact that the use of mobile banking services is much lower than initially anticipated and still underused, and the mobile banking market still remains very small when compared to the entire banking transactions.

It is further observed that the widespread adoption and large usage of cellular phones did not translate to adoption and usage of mobile banking [19]. Failure of sufficient adoption and use of mobile banking services by commercial banks' customers is bound deny customers the objected benefits (in terms of portability, labour free, reduced cost, convenience, wider customer reach, high security level, and accessibility) as noted earlier noted [6]. On the other hand, given that banks introduce this service with one of the key objectives being to cut down on costs by reducing the number of physical branches and human resources, when the service fails to be adopted and used, they are bound to lose on the aforesaid benefits; instead they are likely to incur huge losses associated with the costs of initiating mobile banking.

3. Objectives

3.1 General Objective

To assess the challenges affecting adoption and use of mobile banking by customers of commercial banks in Kenya

3.2 Specific Objective

To establish how relative advantage affects adoption and use of mobile banking

4. Research Question

How does relative advantage affect adoption and use of mobile banking?

5. Conceptual Framework

The conceptual framework (Figure 1) outlines the relationship between independent and dependent variables. The independent variable is relative advantage. On the other hand, the dependent variable is adoption and use of mobile banking.

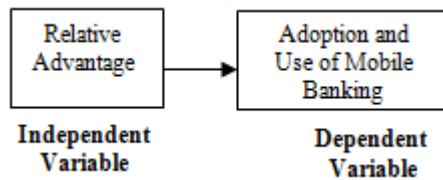


Figure 1: Conceptual Framework

6. Literature Review

The section delves into theories and empirical studies pertaining challenges affecting adoption and use of mobile banking.

6.1 Theoretical Review

6.1.1 Technological Acceptance Model (TAM)

TAM is said to be an adaptation of the theory of reasoned action (TRA) to the field of information systems (IS). According to TAM, perceived usefulness and perceived ease of use influences a person's intention to use a system. Perceived usefulness is furthermore viewed as being directed impacted by perceived ease of use. As previously argued [21], TAM has been simplified by getting rid of attitude construct found in TRA from the current specification.

It is asserted that attempts to extend TAM have taken one the following three approaches: by introducing factors from related models; by introducing additional or optional belief factors; and by examining antecedents and moderators of perceived usefulness and perceived ease of use. TAM, just like TRA, has strong behavioral elements. This is exemplified by the assumption that when a person forms an intention to act, he or she will be free to act without limitation. However, in practice, constraints such as limited ability, time, environmental or organizational limits, and unconscious habits are bound to limit the freedom to act.

The TAM model was highly applicable in the current study. It enabled the researcher to relate perceived ease of use (which is one of the variables under study) and the adoption of mobile banking. In the context of this study, mobile banking is the innovation. It was interesting to find out the external variables that trigger perceived ease of use of mobile phones and mobile banking and how that perception affects the attitude towards usage of mobile banking services, the intention to use and ultimately the actual use of the services. In the same light, the constraining factors (challenges) to the adoption and use of mobile banking services as exemplified by the model were delved into.

6.1.2 Diffusion Innovations Theory (DIT)

The DIT explains the subject of user adoption [18]. According to the theory, innovation diffusion is achieved through users' acceptance and use of new ideas or things. The theory is said to explain the process of innovation decision process, the determinants of rate of diffusion, and various categories of adopters among other things. DIT aids in predicting the likelihood and the rate of an innovation being adopted. According to Rodgers, an innovation's relative advantage, compatibility, complexity, trialability,

and observability were established to explain 49 to 87 per cent of the variance in the rate of that innovation's adoption.

As earlier posited [18], DIT is employed in the study to illustrate the process of adopting mobile banking. It, moreover, sought to explain how the rate of diffusion of mobile banking and categories of adopters amongst the commercial bank customers influence the use and adoption of mobile banking services.

6.2 Empirical Review

This section reviewed empirical studies pertinent to challenges affecting adoption and use of mobile banking. It was guided by both independent variable (relative advantage) and the dependent variable (adoption and use of mobile banking). The studies were reviewed from global to regional perspective and ultimately narrowed down to the local perspective.

6.2.1 Relative Advantage

In a study conducted in Jordan on factors affecting adoption of mobile banking services by consumers, relative advantage was correlated against mobile banking adoption [8] and it was discovered that, there exists a positive and significant relationship between the two variables ($r = 0.674$; $p = 0.00$). An impressive 73 per cent of the variance in mobile banking adoption, according their study findings, could be explained by relative advantage. These findings were in agreement with yet another study whose findings indicated that relative advantage was one of the perceived characteristics that play an important role in determining consumer decision to adopt mobile marketing [5]. Indeed, it is posited that relative advantage had the strongest effect on adoption of mobile banking. Relative advantage as exemplified by the mobility factor was found to be a very crucial trigger for adoption of mobile banking. In the same breadth, it was argued that customers like the notion of being up-to-date in terms of technological advancement and being early adopters implies that they have to withstand potential initial hiccups and invest time and effort in learning.

Relative advantage was inferred to be a positive factor that affects adoption of mobile banking [11]. In a study of mobile banking in Brazil, [15] relative advantages were identified as some of the root causes of intention to use mobile banking. Empirical evidence reveals that mobile banking adoption is highly encouraged by economic factors such as advantageous transaction service fees [22]. On the other hand, adoption of mobile banking is asserted that it could be dissuaded by economic considerations like concerns on basic fees for connecting mobile banking, cost burden for using mobile banking, and high payment for using mobile banking [3].

A study on South African consumers showed that relative advantage was one of four factors that fundamentally affected adoption of mobile banking. In a survey of 162 respondents on predictors of cell phone banking adoption in South Africa, it was discovered that perceived advantages significantly influenced people to adopt mobile banking. They argued that the greater the perceived relative advantage the more likely mobile banking would be adopted [2].

In Nigeria, mobile banking is said to have occasioned a positive shift in customers' perceptions. In his study of mobile phone banking in Nigeria, it was posited [1] that, many researchers have given evidence that there are a number of advantages which can be derived from employing mobile bank services which the customers can get if and when they adopt mobile banking. According to another study [6], some of the relative advantages of mobile banking over conservative banking include portability, labour free, reduced cost, convenience, wider customer reach, high security level, availability and accessibility.

In a study of mobile banking adoption in Kenya [13], it was observed that relative advantage is one of the key attributes of mobile banking innovation that drives its usage. Relative advantage is posited to influence attitude that results in behavioral intention to adopt mobile banking. The respondents in Kenya's study indicated that, mobile banking enables them to accomplish tasks more quickly, and as such, it is more advantageous.

6.2.2 Adoption and Use of Mobile Banking

Adoption and use of mobile banking has been initiated and escalated by innovations in telecommunications. In yet another study it is asserted that, technological features play a key role in the adoption of mobile banking value added services. A study of Jordanian consumers of commercial banks [8], it was averred that in establishing the challenges facing mobile banking adoption, one should commence by looking into the mobile technology development in the recent past. In this light, it is observed that in Western Europe the presence of GSM standard and the high penetration rates of mobile phones have enhanced the expectations in development of mobile communication. A different study [21] indicated that, in Western Europe there exists a significant customer adoption of mobile financial services (MFS). They add that many commercial bank customers are willing to pay extra for the use of MFS. These findings are in line with a previous study's [21] assertion that there is an increasingly positive perception of MFS in the society.

More precisely, other findings indicated that mobile devices have become the fastest adopted consumer product hitherto. Mobile banking services, it is noted [8], are yet to fully develop. In tandem, they argued that there is need to comprehend the adoption of mobile banking and the factors that influence their intention to use mobile banking. Increased positive perception of MFS is attributed to the high penetration of the society by the mobile phones; and the integration of world economies which has led to more mobility such that availability of mobile services is a necessity rather than a luxury among other factors. A survey of 178 respondents from one of the largest universities in Taiwan discovered that, mobile banking adoption was encouraged by speed of transactions and special reductions in transaction fees [22].

It is alleged [1], that, in spite of the obvious benefits of mobile banking, there is inadequate empirical research touching on adoption of mobile banking in Nigeria. The scholars opined that if just one per cent of current phone owners in Nigeria with bank accounts were to employ the

banks' phone banking services, it would expand their customer database. Conclusively, it is averred that when mobile banking is adopted, there are reduced costs of transactions.

It is admitted that several commercial banks in Kenya have implemented mobile banking. However, little research has been dedicated to investigating the factors that affect adoption of mobile banking. In Kenya, it was established [13] that, perceived usefulness and perceived ease of use positively affect adoption of mobile banking technology. On the other hand, perceived risk was found to influence adoption of mobile banking negatively.

7. Research Methodology

It is asserted that, research methodology is a science of studying how research is to be carried out [17]. A research design indicates the various approaches to be employed to solve the research problem. In the context of the current study, descriptive research design was adopted. This research design enabled provision of accurate and representation of the study variables which are in line with the research questions. In particular, the study employed cross-sectional survey method where the researcher sought to establish the present situation of mobile banking and specifically the challenges affecting its adoption and use [12]. The target population defines those units for which the findings of the study are meant to generalize. It is further said that both the geographic and temporal characteristics of the target population should be delineated [10]. In the same breadth, the target population constituted all the 171 employees of Equity Bank working at Nakuru Branches. The Nassiuma's formula was employed to calculate the sample size of 64 respondents. The sampled respondents were selected using simple random method.

The study employed a structured questionnaire to collect primary data from the sampled respondents. The researcher pre-tested the research instrument before it was administered to the sampled respondents in the main study. The essence of the pilot study was to determine probable weaknesses (errors) in the research instrument so that measures of minimizing the identified errors could be effected. This was achieved by testing the reliability and also determining the validity of the instrument. The Cronbach alpha (α) was used to test for reliability. The instrument was to be affirmed to be reliable if and when it reached $\alpha \geq 0.7$ threshold. The researcher sought to assess the content validity of the research instrument by approaching her research supervisors for their expert opinion. This was ascertained by the argument that this type of validity could not statistically be determined [9].

7.1 Data Processing and Analysis

The Statistical Package for Social Sciences (SPSS) software was employed to electronically process and analyze the collected data. The data pertinent to study variables (independent and dependent) underwent both descriptive and inferential analysis. In this case, descriptive analysis entailed means and standard deviations as measures of central tendencies and variability respectively. Lastly, inferential

analysis which was very crucial in drawing conclusions, involved the Pearson’s correlation.

7.2 Research Findings

64 questionnaires were issued to the sampled respondents. Out of this number, 53 questionnaires were filled and collected by the researcher. This represented 82.8 per cent response rate.

7.2.1 Descriptive Findings and Discussions for Relative Advantage

The researcher sought the opinions of the sampled respondents on issues touching on relative advantage. Table 1 shows the results of the findings.

Table 1: Descriptive Statistics for Relative Advantage

	Min	Max	Mean	Std. Dev
Relative advantage positively affects adoption of mobile banking	4	5	4.57	.507
Relative advantage plays an important role in determining consumers decision in mobile banking adoption	4	5	4.29	.463
Relative advantage in terms of mobility is an important trigger in mobile banking adoption	3	5	3.90	.641
Relative advantage causes intention to use mobile banking	2	5	4.24	.944
Economic considerations are a challenge to mobile banking adoption	2	5	3.65	1.268
High payment can dissuade customers from adopting mobile banking	1	5	4.05	1.564
Advantageous service fees encourage adoption of mobile banking	4	5	4.90	.301
Relative advantage influences attitude that results in behavioral intention to adopt mobile banking	4	5	4.69	.479

Respondents agreed that, relative advantage plays an important role in determining consumers’ decision in mobile banking adoption; relative advantage in terms of mobility is an important trigger in mobile banking adoption; relative advantage causes intention to use mobile banking; economic considerations are a challenge to mobile banking adoption; high payment can dissuade customers from adopting mobile banking; and also that, relative advantage influences attitude that results in behavioral intention to adopt mobile banking. The aforementioned propositions returned means that tended towards or were greater than 4.00 (agree). Almost all respondents absolutely believed (mean = 4.90; std dev = 0.301) that, advantageous service fees encourage adoption of mobile banking

7.2.2 Descriptive Findings and Discussions for Adoption and Use of Mobile Banking

Moreover, the researcher sought the views of the respondents regarding adoption and ease of use of mobile banking services. The findings are as shown in Table 2

Table 2: Descriptive Statistics for Adoption and Use of Mobile Banking

	Min	Max	Mean	Std. Dev
Adoption of mobile banking has been initiated and escalated by innovation in telecommunication	4	5	4.62	.498
Technological features play a role in adoption of mobile banking services	4	5	4.67	.483
Several banks in Kenya have implemented mobile banking	4	5	4.62	.498
Relative advantage affects adoption and use of mobile banking	4	5	4.76	.436

It was found that, respondents strongly agreed (mean ≈ 5.00) that, adoption of mobile banking has been initiated and escalated by innovation in telecommunication; technological features play a role in adoption of mobile banking services; several banks in Kenya have implemented mobile banking; and that relative advantage affects adoption and use of mobile banking.

7.2.3 Effect of Relative advantage on Adoption and Use of Mobile Banking

Furthermore, the study sought to find out how relative advantage concept impacts on adoption and use of mobile banking. Table 3 shows the results of the study findings.

Table 3: Correlation between Relative Advantage and Adoption and Use of Mobile Banking

		Sustainable Competitive Advantage
Relative Advantage	Pearson Correlation	.643**
	Sig. (2-tailed)	.002
	n	53

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

It was established that, there exists a strong, positive, and significant relationship between relative advantage and adoption of mobile banking ($r = 0.638$; $p < 0.01$). In other words, the more customers perceive mobile banking to have a relative advantage over conservative modes of banking, the more they are likely to adopt and use mobile banking services. As such, commercial banks that have embraced mobile banking technology should embark on massive promotional strategies to enlighten current and prospective customers on potential benefits (advantages) of adopting and using the mobile banking services.

8. Summary, Conclusions and Recommendations

This section outlines the summary of major research findings. It then draws conclusions relative to the study objectives. Lastly, pertinent recommendations are suggested.

8.1 Summary

It was observed that relative advantage plays an important role in determining consumers’ decision in mobile banking adoption; relative advantage in terms of mobility is an important trigger in mobile banking adoption; relative

advantage causes intention to use mobile banking; economic considerations are a challenge to mobile banking adoption; high payment can dissuade customers from adopting mobile banking; and also that, relative advantage influences attitude that results in behavioral intention to adopt mobile banking. Advantageous service fees were established to encourage adoption of mobile banking. The study findings further indicated that, there exists a strong, positive, and significant relationship between relative advantage and adoption of mobile banking. In other words, the more customers perceive mobile banking to have a relative advantage over conservative modes of banking, the more they are likely to adopt and use mobile banking services.

8.2 Conclusions

It is inferred that relative advantage plays an important role in determining consumers' decision in mobile banking adoption. It is concluded that relative advantage influences attitude that results in behavioral intention to adopt mobile banking. It is further deduced that, the more customers perceive mobile banking to have a relative advantage over conservative modes of banking, the more they are likely to adopt and use mobile banking services.

8.3 Recommendations

It is recommended that, commercial banks that have embraced mobile banking technology should embark on massive promotional strategies to enlighten current and prospective customers on potential benefits (advantages) of adopting and using the mobile banking services.

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