

# Moderating Effect of Gender on the Assessment of customer Satisfaction with Mobile Banking Technology: A study of Selected Deposit Money Banks (DMBs) in Zaria Metropolis

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**Abstract:** This paper examined the impact of mobile banking services on customers' satisfaction considering gender as moderating variable in Zaria, Nigeria. A descriptive research design was adopted this study. The population of customers that used mobile banking applications in Kaduna metropolis is considered unlimited (essentially infinite). In most statistical research studies, population parameters are usually unknown that must be determined from the sample. Therefore, the study employed a purposive sampling technique. Primary data were adopted for this study using a questionnaire of which 384 copies were administered but 347 were validly returned by respondents. Customers who visited the three sampled banks for transactions, namely: Eco bank and GT bank in Zaria metropolis were randomly administered with questionnaires. In this study, descriptive statistics inform of percentages and frequencies, while regression analysis was used as an inferential statistics. The data gathered from the questionnaires was analysed using Microsoft excel, SPSS packages and SMART PLS. Using Partial Least Square Structural Equation Modelling (PLS-SEM) approach, gender was to moderate the relationship between mobile banking service components and customer satisfaction. Cash withdrawals, Funds transfer and Balance enquiry are all components of mobile banking services that were used as independent variables to evaluate the customer satisfaction considering gender as moderating variable. The results indicated that there is relationship between mobile banking components and customer satisfaction but gender of the customers only moderates the relationship between cash withdrawals and customer satisfaction.

**Keywords:** mobile banking services, Deposit Money Banks (DMBs), Cash withdrawals, Funds transfer, customer satisfaction.

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## 1. INTRODUCTION

Information technology promotes faster service delivery where various channels are providing quality services to their customers and increasing their satisfaction level. Prior to the introduction of mobile banking, it was a common phenomenon in Nigeria banking institutions to see queue inside the banking hall, with people struggling and quarrelling for their turn to perform transactions. Mobile banking services become an indispensable tool of banking business and a powerful catalyst for economic development as a result of emergence of global economy (Pushpa & Venkatesh, 2014).

Nigerian banking system was characterized by frustrations and poor services occasioned by ineffectiveness and inefficiency in the services delivered prior to the introduction of ATM and mobile banking services (Burodo, Suleiman and Shaba, 2019; Suleiman and Yasir 2022A). Nigerian banks are now investing money in ICT infrastructure to provide e banking services to their customers (Suleiman & Usman, 2016). Mobile banking, often known as M-banking that allow customers to access financial services as well as account information via mobile phone. It is the ability to use a mobile device to make banking transactions (Jannat & Ahmed 2015). Similarly, Pandiya and Gupta (2015) considered mobile banking as a facility that enable customers to perform banking services, such as fund transfer, bills payment, buying airtime and raising loans over the telephone at their convenience rather than by personal visit. Moreover, mobile banking is one of the most recent mobile technological innovations that has introduced a level of mobility to the delivery of bank services to bank customers (Mohammadi, 2015). Other banking services, such as ATMs, Internet banking and traditional banking channel provide effective delivery channels, but they do not cater for bank users who are on the move. As a result, mobile banking allows customers to conduct banking transactions anywhere and anytime while on the go (Shaikh & Karjaluto, 2015). Similarly, Masrek et al., 2012; Akturan and Tezcan, (2012) described mobile banking as a unique communicative channel that allows customers to communicate with a bank via a mobile device. Mobile banking is a platform that allow customers to use mobile phones to access financial services (Shaikh & Karjaluto, 2015). It is a service that allows customers to do banking transactions on their mobile phone and has access to their bank account 24/7 (Afshan & Sharif, 2016). Moreover, Masamila, (2014) defined mobile banking as banking channel that enables customers to withdraw and deposit money without necessarily attending the banking halls. M-banking provides convenience for bank customers as it enables traveling to perform banking transactions without necessarily visiting the banking branch (Afshan & Sharif, 2016). Customers benefit time savings, immediate information, instant connectivity, great interactivity and convenience (Malaquias & Hwang, 2016). Customer are likely to be satisfied if these are provided. M-banking, allows customers to perform their banking transactions anyplace and anytime and they connect to banking services quickly and easily via mobile devices (Shaikh & Karjaluto, 2015). However, customers encountered problems when using mobile banking services for transactions such as wireless network failure, fake SMS messages and scams, virus and malware attack, insecurity and customer awareness. These issues have an impact on customer satisfaction when it comes to mobile banking. Customer satisfaction has been observed as a key strategy of every business and a benchmark against which many organizations have set their standards (Burodo, Suleiman and Yusuf, 2021; Adeniran, Burodo & Suleiman, 2022; Burodo, Adeniran and Ibrahim). A customer satisfaction is an ambiguous and abstract concept. Actual manifestation of the state of satisfaction will vary from person to person, product to product and service to service. The state of satisfaction depends on a number of factors which consolidate as psychological, economic and physical factors (Suleiman and Usman 2016). Actual index of the state of satisfaction varies from individual to individual, product to product and service to service (Suleiman and Yasir, 2022B; Ahmed, Burodo and Suleiman, 2022).

The purpose of this study is to see if mobile banking significantly influence customer satisfaction in Kaduna metropolis.

### **1.1 Research Objectives**

The broad aim of this study is to determine the impact of mobile banking services on customer satisfaction with respect to cash withdrawals and funds transfer considering gender as moderator in some selected Deposit Money Banks in Kaduna Metropolis. The specific objectives are:

- i. To determine whether or not cash withdrawal via mobile banking significantly influence customer satisfaction.
- ii. To assess whether or not funds transfer using mobile banking have influence on customer satisfaction.
- iii. To determine whether or not balance enquiry via mobile banking significantly influence customer satisfaction.
- iv. To determine whether or not gender moderate the relationship between cash withdrawal via mobile banking and customer satisfaction.
- v. To determine whether or not gender moderate the relationship between funds transfer via mobile banking and customer satisfaction
- vi. To determine whether or not gender moderate the relationship between balance enquiry using mobile banking and customer satisfaction.

## 1.2 Hypotheses

Based on the objectives of this research, the following hypotheses were formulated

H1: Cash withdrawals has a no significant effect on customer satisfaction

H2: Funds transfer has a no significant effect on customer satisfaction

H3: Balance enquiry has a no significant effect on customer satisfaction

H4: Cash withdrawals has a no significant effect on customer satisfaction, moderated by gender.

H5: Funds transfer has a no significant effect on customer satisfaction, moderated by gender.

H6: Balance enquiry has a no significant effect on customer satisfaction, moderated by gender.

## 2. LITERATURE REVIEW

An empirical review of authorities who conducted studies in the area of discussion is required to support the assertions of any study. However, similar studies were reviewed as follows:

Mtui (2020) assessed the effectiveness of Mobile Banking on Customer Satisfaction using a case study of CRDB Bank Dar Es Salaam. The study is aimed at assessing the challenges facing customers in using mobile banking services. Both quantitative and qualitative research techniques employed by this study. Data were collected through questionnaire. The study employed both descriptive and inferential statistics in analysing data. Descriptive statistics was used to assess effectiveness of mobile banking on customer's satisfaction. However, Pearson's correlation analysis and regression analysis techniques were used to analyse the data collected with a help of computer software programme called Statistical Package for Social Sciences (SPSS). The study used a sample of 120 respondents. The findings indicated there is a significant positive impact between the mobile banking services and customer's satisfaction. The Balance inquiry and Purchase of Airtime statistically significant influence the customer satisfaction positively by 0.130 and 0.098 respectively. Moreover, network cut-off (system inaccessibility), high service charges (fees), lack of services information and wrongful money transfer revealed as the major challenges to customers hence decrease usage frequency and customer satisfaction level. The study recommends that the limited amount for withdraw or fund transfer should be increased so as to meet customers need. Alternatively, the bank can establish a procedure of accepting formal requests from the customers who need their withdraw amount or transfer amount to be increased.

Yong, Yen, Chi and Theng (2020) conducted a research on the impact of Mobile Banking on Customer Satisfaction in Perak, Malaysia. The objective of this study is to examine whether the independent variables which are transaction speed, service quality, brand trustworthiness, and security have impact towards customer satisfaction on mobile banking in Perak, Malaysia. The study adopts primary data through questionnaire surveys to collect the data from respondents in Perak who are using mobile banking. The study employed both descriptive and inferential statistics in analysing data. The data was analysed using Statistical Package for the Social Sciences (SPSS) software. However, hypotheses tested using Reliability Test, Pearson's Correlation Test, Multiple Linear Regression, and Analysis of Variance (ANOVA) Test. The results found out that there is a positive relationship between four independent variables (transaction speed, brand trustworthiness, service quality, and security). The study recommends the need for targeting different types of age groups but not just to focus attention on younger generations (students) which forms the age of 20-29. This is because different types of age groups might have different opinions on customer satisfaction on mobile banking

Jamil (2020). Investigated the Service Quality of Mobile Banking Applications and Customer Satisfaction in North Lebanon. Purpose - This study is aimed at investigating the impact of mobile banking applications service quality on customer satisfaction within the Lebanese context, specifically North Lebanon. Using an online distributed questionnaire, there was a collection of 157 usable responses. The study analyzed data using SPSS. Moreover, correlations and regression analysis techniques were used to test the hypotheses. The results indicated that assurance, convenience and ease of use, privacy/security, responsiveness, sociality and reliability have a positive impact on the satisfaction of customers.

Abdullah, Ali, Nripendra, Hatice and Pushp (2019) conducted a study on consumer use of mobile banking (M-Banking) in Saudi Arabia. The conceptual model of this study combines two models (i.e. UTAUT2 and the D&M IS Success Model). A questionnaire survey was conducted to collect the required data from Saudi bank customers using convenience sampling techniques. The main factors – performance expectancy, price value, facilitating conditions, hedonic motivation, habit, system quality and service quality – were found to have a significant impact on actual use behaviour. The study used cross-sectional. Structural Equation Modelling (SEM) was then used to test the collected data, and the main results largely supported the proposed model which was able to predict of 62% and 54% of variance in usage and loyalty respectively. Further, except EE, SI, and IQ, the rest factors PE, FC, PV, HM, HT, SQ, and SRQ are supported to have a significant impact on the usage behaviour. A strong relationship was also supported between actual usage behaviour and customer satisfaction. Finally, customer loyalty was noticed to be strongly predicted by the role of both usage behaviour and satisfaction.

Chuan, Tan, Cheah and Yew (2012) incorporate the demographic factors and subjective norms with the Technology Acceptance Model (TAM) in investigating the intention to adopt mobile banking in Malaysia. Out of the 400 questionnaires, 193 questionnaires were validly returned, thus yielding a response rate of 48.25%. The data was tested using multiple regression and factor analysis. Among the four demographic constructs, education and income were found to be positively related with PU. However, only gender and education were positively related with PEOU. The findings also validated the mediating effect of PEOU on PU. Likewise, PEOU, PU and SN positively affect the Malaysian's intention to adopt mobile banking. The study is beneficial for both scholar as well as practitioners such as banking institutions, policy makers, system developers and marketers especially when crafting key decisions.

From the review empirical studies, there exists methodological weaknesses because majority of the studies employed the same statistical tools in their study. For example multiple regression and factor analysis was employed by Chuan, Tan, Cheah and Yew (2012). However, Mtui (2020) used Pearson's correlation analysis and regression analysis techniques. In the same vein Jamil (2020) employed a correlation and regression model. Structural Equation Modelling (SEM) was utilized by Abdullah, Ali, Nripendra, Hatice and Pushp (2019); Raleting and Nel (2011) used. Nevertheless, Reliability Test, Pearson's Correlation Test, Multiple Linear Regression, and Analysis of Variance (ANOVA) Test were employed by Yong, Yen, Chi and Theng (2020). Therefore, this study aims to fill this existing gap by employing Chi-square technique.

Furthermore, to the best of the Author's knowledge no academic journal has written to assess the effect of mobile banking technology on customer satisfaction considering gender as moderating variable using the dimensions of mobile banking services which this study is using namely: cash withdrawals, funds transfer and bills payment.

In light of these identified gaps, the current study aims to contribute by assessing customer satisfaction with mobile banking technology considering gender as moderating variable in selected Deposit Money Banks (DMBs) in Kaduna Metropolis.

## **2.1. Theoretical perspectives on customer satisfaction**

This section discusses theories on mobile banking and customer satisfaction in the banking section. These theories are applied in order to justify the choice of the research topic.

### **2.1.1. Technology Acceptance Model (TAM)**

The Theory of Reasoned Action by Ajzen and Fishbein's (TRA) (1980) was the origins of the Technology Acceptance Model (TAM). It asserts that people's intentions to perform are linked to their beliefs and attitudes. According to TRA, an individual's attitude towards an action is defined by behavioral beliefs about the consequences (based on the information available or offered to the individual) and the individual's affective judgment of those consequences. Beliefs are defined as an individual's estimate of the likelihood that engaging in a particular behavior will result in a particular outcome. The TAM is a paradigm that was introduced and refined by Davis (1989) to address the question of how users come to accept and use a technology. There are two key variables in TAM thought to be essential predictors of user acceptance: perceived usefulness and perceived ease of use. User's behavioral intentions, according to the TAM, determine actual technology acceptance. The user's attitude towards technology has an impact on behavioral intentions. Perceived usefulness and perceived ease of use, according to Davis (1989) are beliefs that lead to favorable attitudes and intentions to accept and use technology.

However, the TAM is much less broad than the Theory of Reasoned Action (TRA) as the former was specifically designed particularly to apply to computer usage behaviour (Davis, Bagozzi, & Warshaw, 1989).

### **2.1.2. Innovation Diffusion Theory**

Roger (1983) proposed Diffusion Theory which explains individuals' intention to adopt a technology as a mode of doing a traditional activity. It is concerned with figuring out how why and at what rate innovative ideas and technologies spread in a social system (Rogers, 1962). This is accomplished by creating websites and mobile applications that suit the customer needs (Arnaboldi & Claeys, 2008). As a result, customers can access their accounts from anywhere as long as they have access to the internet. This theory is concerned with the manner in which a new technological idea, technique, or a new use of an old one, migrates from creation to use (Rogers, 2003). It is the diffusion themselves that change in the diffusion of innovations, not people (Les Robinson, 2009).

Diffusion on the other hand, is the process through which an innovation is conveyed to the members of a social system over time through certain channels (Rogers, 2003). Similarly, Fichman (2000) defines diffusion as the process by which a technology spreads across a population of organizations. The spread of ideas from one society to another or from a center or institution within a society to other parts of that society is commonly referred to as diffusion of innovations (Rogers, 1962). According to IDT, technological innovation is conveyed among members of a social system through certain channels over time.

Knowledge (exposure to its existence, and understanding of its functions); persuasion (the forming of a favourable attitude to it); decision (commitment to its adoption); implementation (putting it to use); and confirmation are the stages through which a technological innovation passes (Arnaboldi & Claeys, 2008) (reinforcement based on positive outcomes from it).

### **2.2. Theoretical Framework**

After extensive review of relevant theoretical models, this study carefully considered the two theories to be the appropriate in explaining the study's assumptions and it is upon the theory's assumptions that this research is hinged on. Technology Acceptance Model (TAM), which contains two major indicators for potential adopters: perceived usefulness and perceived ease of use. TAM capable of explaining and assessing the link between POS services and customer satisfaction. TAM provides a direct or categorical linkage between their assumptions and the need for the research in such a way that an appropriate and detailed explanation can be drawn, TAM is one of the appropriate models for explaining the study's assumptions and it is upon the theory's assumptions that this study is hinged on.

On the other hand, the Innovation Diffusion Model (IDM) is concerned with determining how, why and at what rate innovative ideas and technologies spread in a social system. It explains why people want to use technology as a modality to perform a traditional activity. Therefore, Innovation Diffusion Model also explained the study's assumptions and it is upon the theory's assumptions that this study is hinged on.

## **3. METHODOLOGY**

This study used a descriptive research design. The population of customers that used mobile banking services in Kaduna metropolis is considered unlimited (essentially infinite). In most statistical research studies, population parameters are usually unknown and have to be estimated from the sample (Heizer, Render, 2004). Therefore, the study used purposive sampling technique. For the purpose of this study, primary data were adopted through questionnaire where 384 copies were administered but 347 were validly returned by the respondents. The variables used in this study was measured on a five point likert scale anchored by 1(strongly disagree), 2(disagree), 3(undecided), 4(Agree), 5(strong agree). The questionnaire was divided into two sections which measured three dimensions of mobile banking services and its effect on customer satisfaction; Section A contains demographic characteristics of the respondents. Section B contains the three dimensions; cash withdrawals has 4 (items); funds transfer has 5 (items) and bills payment has 4 (items). Customers who visited the three sampled banks for transactions, namely: Eco bank and GT bank in Zaria metropolis were randomly administered with questionnaires. In this study, descriptive statistics inform of percentages and frequencies as well as regression analysis as an inferential statistics were employed. The data generated from the questionnaires were analysed using Microsoft excel and SPSS packages. Gender moderate the relationship between mobile banking service components

and customer satisfaction using regression analysis. Cash withdrawals, Funds transfer and Bills payment are all components of mobile banking services that were used as independent variables to evaluate the customer satisfaction considering gender as moderating variable as illustrated in Figure 1

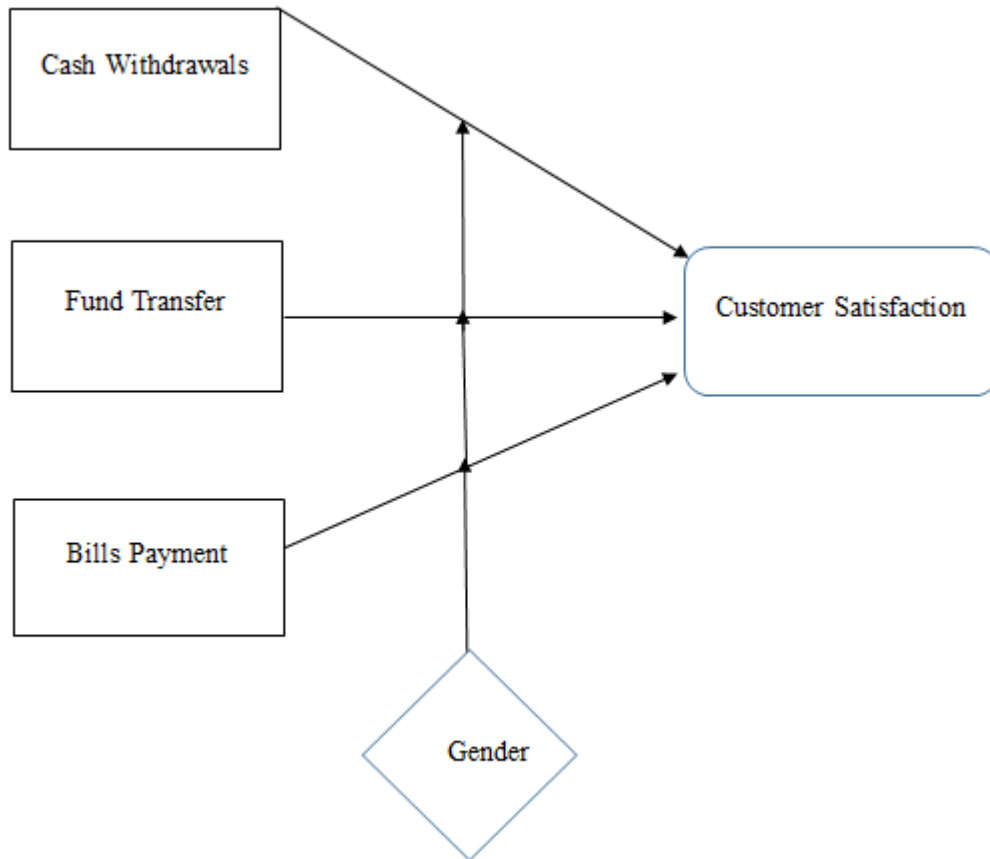


Figure 1: Research Model

#### 4. RESULTS AND DISCUSSION

##### 4.1 Descriptive statistics

Table 1: Descriptive statistics of the constructs

| Constructs            | Mean | Standard deviation | Cronbach's alpha |
|-----------------------|------|--------------------|------------------|
| Cash withdrawals      | 3.73 | 1.13               | 0.86             |
| Fund transfer         | 4.32 | 1.07               | 0.87             |
| Balance enquiry       | 3.68 | 1.43               | 0.78             |
| Customer satisfaction | 4.59 | 1.31               | 0.91             |

Table 1 indicates that the mean for each construct used in the proposed model was greater than 3.5 for the sample (N = 347), which indicates that the majority of participants expressed generally positive responses to the constructs that were measured in this study. The standard deviation (SD) value in each case is relatively low and ranges between 1.07 and 1.43.

##### 4.2 Measurement model

In this stage, analyses of individual item reliability, construct reliability, convergent validity, and discriminant validity were performed. The results of these analyses are summarized in Tables 2 and 3. Table 2 presents the analysis of individual item reliability. This research concentrated on the loadings ( $\lambda$ ) of each item which indicate how much of the variance of an item is explained by its variable. The table indicated that the factor loadings for all the items exceeded the

recommended value of 0.5 (Hair et al. 1998). Hence, in our results, all analyzed items met this requirement. Also, in table 2, the reliability of the constructs was also tested using composite reliability criterion. Composite reliability values in this study ranged from 0.819 to 0.874 which exceeded the minimum recommended value of 0.7 (Hair et al., 1998). Table finally contained convergent validity which allowed us to measure the amount of variance generated by the indicators of a variable, i.e., to see whether the indicators belonged to a single variable, and to confirm their one-dimensionality. As proposed by (Fornell & Larcker, 1981), a cut-off index for this criterion is 0.5. Our results showed that all variables explained at least 50% of the variance of their indicators. As a final step in the validation analysis of the measurement scale, we measured discriminant validity to establish whether each of the variables shared more variance with its indicators than with the rest of the indicators included in our study. In this analysis, we used Fornell and Larcker' (1981) analysis and the heterotrait-monotrait (HTMT) ratio of correlations. As can be seen in Table 3, since inter-construct correlations show that each construct shares larger variance values with its own measures than with other measures, then discriminant validity is established in this study.

**Table 2: Reliability and validity of the constructs**

| Constructs            | Variables | Factor loadings | Composite reliability | AVE   |
|-----------------------|-----------|-----------------|-----------------------|-------|
| Cash withdrawals      | CW1       | 0.837           | 0.874                 | 0.632 |
|                       | CW2       | 0.707           |                       |       |
|                       | CW3       | 0.862           |                       |       |
| Fund transfer         | FT1       | 0.778           | 0.823                 | 0.709 |
|                       | FT2       | 0.865           |                       |       |
|                       | FT3       | 0.751           |                       |       |
|                       | FT4       | 0.892           |                       |       |
| Balance enquiry       | BE1       | 0.921           | 0.819                 | 0.810 |
|                       | BE2       | 0.868           |                       |       |
|                       | BE3       | 0.762           |                       |       |
|                       | BE4       | 0.881           |                       |       |
| Customer satisfaction | CS1       | 0.787           | 0.872                 | 0.746 |
|                       | CS2       | 0.763           |                       |       |
|                       | CS3       | 0.860           |                       |       |
|                       | CS4       | 0.763           |                       |       |
|                       | CS5       | 0.912           |                       |       |
|                       | CS6       | 0.887           |                       |       |

**Table 3: Discriminant validity**

| Latent Variables      | 1     | 2     | 3     | 4     |
|-----------------------|-------|-------|-------|-------|
| Cash withdrawals      | 0.797 |       |       |       |
| Fund transfer         | 0.121 | 0.813 |       |       |
| Balance enquiry       | 0.349 | 0.340 | 0.793 |       |
| Customer satisfaction | 0.163 | 0.436 | 0.342 | 0.862 |

### 4.3 Structural Model Analysis

The second step in analyzing using the PLS method is by assessing the structural model. This is done by running the bootstrap resampling technique (Henseler et al., 2009) with 5000 iterations to ensure stability. This provides analyses on hypotheses and constructs' relationship based on examination of standardized paths. The result of our assessment is displayed in Table 4 and figure 1

**Table 4: Hypothesis testing Results**

| Hypotheses | Relationship | Coefficients | Standard deviations | T-statistics | P-values | Decision  |
|------------|--------------|--------------|---------------------|--------------|----------|-----------|
| H1         | BE-> CS      | 0.281        | 0.109               | 2.352        | 0.019    | Supported |
| H2         | CW->CS       | 0.239        | 0.101               | 2.228        | 0.026    | Supported |
| H3         | FT-> CS      | 0.196        | 0.086               | 2.103        | 0.036    | Supported |

Table 4 and figure 2 showed that all hypotheses are supported with t-value ranging from 2.352 to 2.103. Balance enquiry ( $\beta = 0.281; p < 0.05$ ) was significant in explaining customer satisfaction, cash withdrawals and fund transfer ( $\beta = 0.239; p < 0.05$ ) and ( $\beta = 0.196; p < 0.05$ ) were both significant in determining customer satisfaction.

Further analysis was performed to assess the effect of gender on all constructs. This moderator effect will explain if a variable has affected the relation's direction or strength between independent and dependent variables. The result of the analysis is shown in Table 5. It can be concluded that not all hypotheses are supported. Only the relationship between balance enquiry ( $\beta = 0.032; p < 0.05$ ) to customer satisfaction that being affected by gender with t-value of 1.947. Having rejected two hypotheses in Table 5 is an indication that gender doesn't affect most of the constructs relationship. However, the relationship of balance enquiry has a positive effect on customer satisfaction that is moderated by gender.

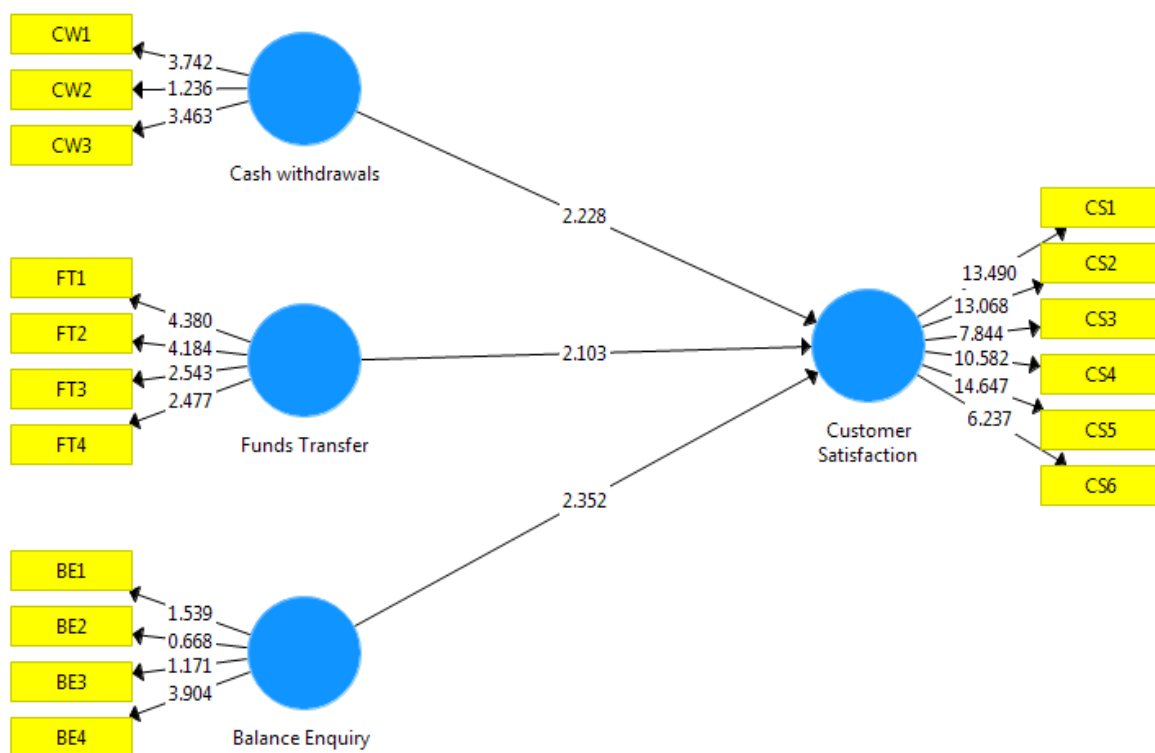


Figure 2: Structural model results

Table 5: Moderator Analysis Results

| Hypotheses | Relationship | Coefficients | Standard deviations | T-statistics | P-values | Decision      |
|------------|--------------|--------------|---------------------|--------------|----------|---------------|
| H4         | BE*Age-> CS  | 0.032        | 0.034               | 2.816        | 0.02     | Supported     |
| H5         | CW*Age->CS   | 0.001        | 0.011               | 0.996        | 0.320    | Not supported |
| H6         | FT*Age-> CS  | 0.006        | 0.063               | 0.103        | 0.635    | Not supported |

### 5. CONCLUSION

The purpose of this study is to measure the moderating effect of Gender on the assessment of customer satisfaction with mobile banking technology. The SEM approach was used to test the constructs framework that customer satisfaction was influenced by the mobile banking technologies. The results of this study established that there is a positive significant relationship between mobile banking components and customer satisfaction, but gender of the customers only moderates the relationship between cash withdrawals and customer satisfaction. Hence, the study concludes that the higher the quality of the mobile banking, the better the satisfaction customer derives, regardless of their gender, except in the case of cash withdrawals that is being moderated by gender.



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