The Moderating Role of Satisfaction and Trust in the Continuance Intention to Use Mobile Banking in Saudi

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Abstract: The objective of this study is to examine the moderating role of satisfaction and trust in the Continuance intention to use M-banking in Saudi: an application of the Unified Theory of Acceptance and Use of Technology (UTAUT). Performance expectancy, effort expectancy, facilitating conditions, social influence, perceived value, habit, and hedonic motivation are independent variables. At the same time, satisfaction and trust are moderating variables. Similarly, the intention to continue using M-banking was used as the dependent variable. The study used a questionnaire survey to collect data from 138 users of m-banking applications at Al-Jouf University in Saudi as respondents. The primary data collected was analyzed using Smart PLS 3. The study's findings indicate that Performance expectancy, facilitating condition, and Habit are the main factors influencing customers' intention to continue using M-banking applications in Saudi. In addition, trust strengthens the positive relationship between (performance expectancy, facilitating condition, and habit) and Continuance intention to use M-banking. Moreover, satisfaction maintains the positive relationship between habit and Continuance intention to use mobile banking. While has been found that satisfaction dampens the positive relationship between performance expectancy, facilitating condition, and Continuance intention to use M-banking. The outcome will help financial institutions develop strategies to sustain consumers' interest in using M-banking applications. In addition, the study is among the first known attempts to examine the moderating role of satisfaction and trust in the Continuance intention to use M-banking in Saudi: an application of the Unified Theory of Acceptance and Use of Technology (UTAUT).

Keywords: Moderating Role, Arabia, Trust, Satisfaction, M-banking, continuance intention.

1. INTRODUCTION

The advancement of technology has affected various sectors including the financial sector. The financial sector particularly the banking industry has noticed the significant importance of technology and incorporates technology in many dimensions involving banking activities (M-Banking). The profusion of innovation based on mobile technologies connected to the internet is happening at an unprecedented rate (Chen & Chan, 2014). People's lives have been invaded by devices such as smartphones and tablets, affecting the way they communicate and relate to other individuals, either by instant messaging or social networks.

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M-banking is an interface where customers can access the banking system by using mobile phone devices such as smartphones, personal digital assistants (PDAs), and tablets at any time or place (Teo et al., 2012; Oliveira et al., 2014; Alalwan et al., 2016). The availability of mobile platforms has created mobile banking services that allow customers to use banking services via their mobile gadgets (Owusu Kwateng et al., 2019). A mobile banking service enables a bank customer to access banking services such as searching for information, managing an account, paying bills, and transferring money (Raza et al., 2019). Many banking customers, in recent times, are unwilling to perform their banking needs at the banks but rather request service providers that offer convenient services (Zhang & Shim, 2010). The ability of a bank to provide competitive and innovative services and products that address customer satisfaction will inure to its success. Furthermore, research on M-banking is fragmented and based on different theoretical frameworks (Shaikh &

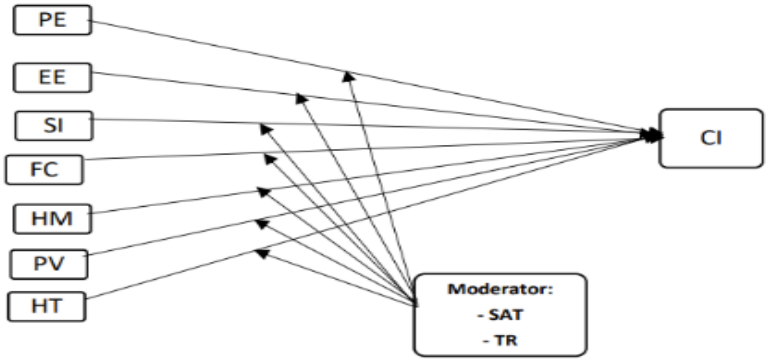

Fig. (1). The conceptual framework.

Karjaluoto, 2015). Many theories and models have been devised to understand individual behavioral intention regarding technology usage, including the technology acceptance model (TAM) (Davis et al., 1989), TAM2 (Venkatesh, 2000), TAM3 (Venkatesh & Bala, 2008), the Unified Theory of Acceptance and Use of Technology (UTAUT) and the Unified Theory of Acceptance and Use of Technology2 (UTAUT2) (Venkatesh et al., 2003, 2012). However, few studies have analyzed M-banking adoption based on these theories (Yu, 2012; Tam & Oliveira, 2016; Tan & Lau, 2016). The majority of studies related to M-banking adoption have utilized the TAM theory. That justifies the importance of utilizing other theories to cover any possible knowledge gaps (Tam & Oliveira, 2017) likewise, researchers have suggested that future research must employ the updated UTAUT2 to further comprehend consumer intentions about M-banking (Oliveira et al., 2014; Thakur, 2014). Moreover, most studies using the UTAUT and UTAUT2 employ these models about moderating factors such as age, gender, and experience (Yu, 2012; Baptista & Oliveira, 2015). Therefore, this study will adopt the UTAUT2 theory and examine the moderating role of satisfaction and trust in the Continuance intention to use mobile banking in the Kingdom of Saudi Arabia. This study will help banking managers and researchers to identify the factors that affect the customers' intentions to continue intention to use mobile banking, in addition, to recognizing the moderating role of satisfaction and trust. Mobile banking enables banks to access a fantastic customer base and increase revenues.

2. THEORETICAL BACKGROUND

Technology acceptance has attracted the focus of researchers for decades, a fact reflected in the various studies and technology acceptance models available in the field. Mobile banking was not an exception and its acceptance was predominantly studied using five models; the innovation diffusion theory (IDT), theory of reasoned action (TRA), theory of planned behavior (TPB), technology acceptance model (TAM), and theory of perceived risk (TPR). However, these models had limitations (Merhi, Hone, & Tarhini, 2019). Therefore, this study attempt to address these limitations by adopting the UTAUT2.

The UTAUT 2 model proposed in 2012 by Venkatesh et al. (2012) includes three new variables, hedonic motivation, price value, and habit. The model seeks to explain the relationship between these variables with behavioral intention and technology use. However, Merhi, Hone, & Tarhini, (2019) stated that the UTAUT2 has since been applied, validated, and extended in multiple fields such as e-services, mobile banking, online shopping, internet banking, smartphone, and e-learning, further establishing it as a comprehensive model for the study of technology acceptance both in organizational and customer contexts.

The proposed model of this study was adopted from the UTAUT2 model by adding satisfaction and Trust as mediating variables as in the following Fig. (**1**).

Performance Expectancy (PE)

Performance Expectancy is defined as the extent an individual believes that his or her task performance will be improved through the usage of a particular system (Venkatesh et al., 2003). Stated that In the M-banking context, the individual's belief that using Mbanking will improve their banking activities. Individuals will use the technology when they have the assurance that it will bring positive results. Therefore, the following hypothesis is proposed:

H1: PE has a significant and positive effect on the customers' intention (CI) to continue using mobile banking in Saudi Arabia.

Effort Expectancy (EE)

This variable explains how easy for the individual to operate the technology (Venkatesh et al., 2003). In the banking context, it tells how easy for clients to operate internet banking. The study by KoenigLewis et al. (2010) shows that if the technologies are easy to use, they will surely increase the adaption rate with the service. Therefore, the following hypothesis is proposed:

H2: EE has a significant and positive effect on the customers' intention to continue using mobile banking in Saudi Arabia.

Social Influence (SI)

Social influence refers to an individual's perception of other people's opinions if he or she should perform a particular behavior. Prior studies of mobile banking adoption have

shown a relationship between social influence and intention to use mobile banking (Laukkanen et al., 2007; Amin et al., 2008; Riquelme & Rios, 2010; Puschel et al., 2010; Sripalawat et al., 2011; Dasgupta et al., 2011; Tan & Lau, 2016). This study investigates whether social influence has any effect on customers' decision to continue using mobile banking, so it proposes the following hypothesis:

H3: EE affects the customers' intention to continue using mobile banking in Saudi Arabia.

Facilitating Condition (FC)

Facilitating conditions are "the degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system" (Venkatesh et al., 2003, p. 453). This construct is based on several variables, including perceived behavioral control, work style compatibility, and external facilitating conditions (Yu, 2012). Baabdullah et al., 2019 stated that the capacity to log in to personal accounts, the ability to transfer money from one account to another, and a high level of compatibility support the use of mobile banking. Therefore, based on this assumption the hypothesis can be highlighted as follows:

H4: FC has a positive effect on the customers' intention to continue using mobile banking in Saudi Arabia.

Hedonic Motivation (HM)

Hedonic Motivation is the pleasure and joy gained from using technology (Brown and Venkate& 2005). Hedonic impulses are non-functional and emotional and based on an individual's affective needs (Malik et al., 2013). The pleasure and enjoyment derived from using a new technology play a significant role in enhancing a consumer's adoption intentions (Alalwan et al., 2015). Moreover, studies have shown that the usage of interactive services, such as m-banking applications, is not only based on functional motivations, but is also largely driven by hedonic needs and values (Malaquias & Hwang, 2016). Thus, it can be hypothesized that:

H5: HM has a positive effect on the customers' intention to continue using mobile banking in Saudi Arabia.

Price Value (PV)

Perceived value is an individual's evaluation of a product's overall worth by comparing its expected benefits vs. its expected costs (Zhu et al., 2010). Merhi, Hone, & Tarhini, 2019 Define price value as "consumers' cognitive trade-off between the perceived benefits of the applications and the monetary cost of using it". Empirical evidence affirmed that consumers were more likely to adopt a service with a reasonable price value (Merhi, Hone, & Tarhini, 2019).

The cost associated with mobile banking is the need for a smart mobile phone, an internet connection, and any additional cost necessary for mobile banking applications. However, Saudi customers already have smartphones and mobile broadband. Thus, the cost of access to mobile banking services in Saudi Arabia will be effectively reduced to the cost of the application itself in addition to the connection cost. So that the following hypothesis is proposed:

H6: PV has a positive effect on the customers' intention to continue using mobile banking in Saudi Arabia.

Habit (HT)

Habit is the degree of observed automatic behavior following accumulated learning after using technology. Thus, once customers use technology more frequently, a habit will be create (Merhi, Hone, & Tarhini, 2019). Regarding mobile banking, Huili and Zhong (2011) asserted that repeated use of Mbanking gradually increases the additivity in using this service compared to E-banking. Many studies have found that habit also significantly affects customers' intention to continue using M-banking in Saudi Arabia. Therefore, the following hypothesis is proposed:

H7: HT will have a positive effect on the customers' intention to continue using mobile banking in Saudi Arabia.

Satisfaction (SAT)

The term satisfaction can be well-understand by the definition of Oliver (1997, p. 28) "the consumer's fulfillment response, the degree to which the level of fulfillment is pleasant or unpleasant". There are two types of satisfaction mentioned in the existing literature, i.e. the overall satisfaction that originates from the overall experience and attributes satisfaction that measures the performance of individual attributes (Oliver, 1993). Geyskens et al. (1999) categorized satisfaction into two distinct characters, i.e. affective predisposition measured by economic conditions, such as the amount margin of sales or profits, and psychological factors, such as contentment with a deal with a partner and its relationships. The present paper adopts the psychological aspects of satisfaction, which are most appropriate for customers' satisfaction with mobile banking.

Literature has broadly discussed the importance of customer satisfaction in banking services. Concerning mobile banking adoption, user satisfaction with the service has a key role in influencing customers' intention to continue using the service (Singh & Srivastava, 2018). According to the positive influence of users' satisfaction on their continuance intention has been demonstrated by several studies in mobile-related research areas such as m-banking (Yuan et al., 2016), mobile social networking services (Hsu & Lin, 2018), and mobile shopping (Shang & Wu, 2017). In contrast, no research has been conducted to investigate the moderating role of users' satisfaction in using M-banking. Therefore, we experiment with putting these hypotheses:

H8a: Satisfaction moderates the relationship between PE and CI.

H8b: Satisfaction moderates the relationship between EE and CI.

H8c: Satisfaction moderates the relationship between SI and CI.

H8d: Satisfaction moderates the relationship between FC and CI.

H8e: Satisfaction moderates the relationship between HM and CI.

H8f: Satisfaction moderates the relationship between PV and CI.

H8g: Satisfaction moderates the relationship between HT and CI.

Trust (TR)

Trust refers to a positive belief about reliability and dependency on anyone or any object' (Soares et al., 2012). Trust is significant for any business relationship and plays a crucial role in m-banking, as it decreases the risk of uncertainty (Alalwan et al., 2018; Baabdullah et al., 2019; Gu et al., 2009; Lu et al., 2011; Palvia, 2009; Wang et al., 2015; Zhou, 2013). Trust is one of the essential factors that can affect user behavior concerning the adoption of banking technology. Masrek et al. (2012) defined trust in mobile banking as "the belief that allows individuals to willingly become vulnerable to the bank, the telecommunication provider, and the mobile technology after having the bank, and the telecommunication provider's characteristic embedded in the technology artifact". As Kim, Shin, and Lee (2007) noted, the primary trust of people in services is expressed as the essential factor in using mobile banking. Jamshidi, et al. (2018) find that trust has a positive significance on the intention to continue using M-banking (Gummerus et al., 2004; Kim et al., 2009). However, there are no studies conducted to study the modulating role of trust, so this study suggests the following hypotheses:

H9a: Trust moderates the relationship between PE and CI.

H9b: Trust moderates the relationship between EE and CI.

H9c: Trust moderates the relationship between SI and CI.

H9d: Trust moderates the relationship between FC and CI.

H9e: Trust moderates the relationship between HM and CI.

H9f: Trust moderates the relationship between PV and CI.

H9g: Trust moderates the relationship between HT and CI.

3. RESEARCH METHODOLOGY

M-banking applications users' at Al- Jouf University constituted the study population. A random sampling method was used to select the sample. A total of 390 respondents were selected, and 165 questionnaires were collected. (Joseph F. Hair, Hult, Ringle, & Sarstedt, 2014) stated that when the amount of missing data on a questionnaire exceeds 15%, the observation is typically removed from the data file, SmartPLS offers an option to remove all cases from the analysis that include missing values in any of the indicators used in the model (casewise deletion), so we used that method to handling missing data. lastly, remain 138 responses were useable after the initial screening and data cleaning in a ratio (35.4%), this ratio is weak because the study was processed on Staff and within the semester. A Likert scale that ranged from 1 strongly agree to 5 strongly disagree was used. The questions were adapted from the researchers who either used the questions in similar studies. The questionnaire was in two sections. The first part represents the demographic characteristics of the respondents, the second part represents the constructs items, i.e., the independent variables (PE, EE, SI, FC, HM, PV, and HT) and dependent variable (CI) in addition to moderator variables (SAT and TR). The data collected were analyzed with the SPSS version 22 and Partial least squares (PLS) analysis is an alternative to OLS regression, canonical correlation, or covariance-based structural equation modeling (SEM) of systems of independent and response variables. PLS is sometimes called "composite-based SEM", "component-based SEM", or "variance-based SEM", in contrast to "covariance-based SEM," which is the usual type (e.g., implemented by Amos, SAS, Stata, MPlus, LISREL, EQS, and other major software packages).

On the response side, PLS can relate the independent variables to multiple dependent (response) variables. On the predictor side, PLS can handle many independent variables, even when predictors display multi-collinearity. PLS may be implemented as a regression model, predicting one or more dependents from a set of one or more independents; or it can be implemented as a path model, handling causal paths relating predictors and paths relating the predictors to the response variable(s). PLS is implemented as a regression model by SPSS and by SAS's PROC PLS. Smart PLS is the most prevalent implementation as a path model (Garson, 2016). So, this study used the PLS. The application of SEM methods requires that quantitative data be available. Many research applications in scholarly research involve primary data, but it is possible to use secondary data. Social science researchers in general have relied on primary data obtained from structured questionnaires for their SEM analyses. This is true for both CB-SEM and PLS-SEM and particularly for academic research.

The data was coded and screened for outliers or any other variation in the data set. Descriptive analysis was used for demographic variables and hypotheses were tested using structural equation modeling. Validations were performed through content and construct validations. Confirmatory factor analysis was also used to purify the measures, assess the unidimensionality of the scale items, and assess discriminant validity among the constructs.

4. RESULTS AND DISCUSSION

4.1. Demographic Characteristic

Demographic characteristics of respondents Some demographic variables were collected in this study: gender, age, Experience (years of dealing with application), and income per month. The table below shows the summarized results.

Table 1. Demographic Characteristics of Respondents.

Items	Category	Frequency	Percentage %
Gender	Male	105	76.1
	Female	33	23.9
Age	25 – 34 yrs	23	16.7
	35 – 44 yrs	69	50
	45 – 54 yrs	41	29.7
	55 yrs and above	5	3.6

Experience (years of dealing with applications)	Less than one yr	20	14.5
	1 – 3yrs	53	38.4
	4 – 6 yrs	25	18.1
	7 – 9 yrs	19	13.8
	10 yrs and above	21	15.2
Income (per month)	5,000 – 10,000 SAR	57	41.3
	10,001 – 15,000 SAR	61	44.2
	15,001 – 20,000 SAR	16	11.6
	More than 20,000 SAR	4	2.9

Notes: n = 138, 1 SAR = 0.267 $ (currency exchanger, August 26, 2021).

4.2. Building and Testing Measurement Model

One of the biggest advantages of CFA/SEM is its ability to assess the construct validity of a proposed measurement theory. Construct validity is the extent to which a set of measured items reflect the latent theoretical construct they are designed to measure. Based on Hair et al. (2014) construct validity is made up of two important components:

4.2.1. Convergent Validity

Convergent validity is the extent to which a measure correlates positively with other measures (indicators) of the same construct. To establish convergent validity, researchers consider the outer loadings of the indicators, as well as the average variance extracted (AVE). The criteria to assess convergent validity are:

- Factor loading should be higher than 0.70 (> 0.70)
- Composite reliability should be higher than 0.70.
- Average Variance Extracted should be higher than 0.50.

Table 2. The Results Summary of Measurement Model – Convergent Validity.

Constructs	Items	Factor loading	CR	AVE	Convergent Validity
Performance Expectancy	PE1	0.873	0.881	0.651	Yes
	PE2	0.820			
	PE3	0.712			
	PE4	0.813			
Effort Expectancy	EE1	0.891	0.924	0.754	Yes
	EE2	0.887			
	EE3	0.915			
	EE4	0.773			
Social Influence	SI1	0.901	0.938	0.790	Yes
	SI2	0.938			
	SI3	0.925			
	SI4	0.784			
Facilitating Condition	FC1	0.906	0.928	0.812	Yes
	FC2	0.895			
	FC3	0.901			
Hedonic Motivation	HM1	0.922	0.934	0.826	Yes
	HM2	0.944			
	HM3	0.859			
Price Value	PV1	0.898	0.939	0.838	Yes
	PV2	0.928			
	PV3	0.920			
Habit	HT1	0.848	0.877	0.704	Yes
	HT2	0.822			
	HT3	0.846			
User Satisfaction	SAT1	0.878	0.962	0.864	Yes
	SAT2	0.960			
	SAT3	0.952			
	SAT4	0.927			
Trust	TR1	0.887	0.917	0.734	Yes
	TR2	0.909			
	TR3	0.877			
	TR4	0.754			
Continuance Intention	CI1	0.937	0.964	0.870	Yes
	CI2	0.938			
	CI3	0.945			
	CI4	0.910			

Notes: CR: Composite Reliability, AVE: Average Variance Extracted.

4.2.2. Discriminant Validity

Discriminant Validity is the extent to which a construct is truly distinct from other constructs by empirical standards. Two measures of discriminant validity have been proposed.

One method for assessing discriminant validity is by examining the cross-loadings of the indicators. Specifically, an indicator's outer loading on the associated construct should be greater than all of its loadings on other constructs (Joseph F. Hair, Hult, Ringle, & Sarstedt, 2014). See the table **3**.

Table 3. Discriminant Validity – Cross-Loading.

	CI	EE	FC	HM	HT	PE	PV	SAT	SI	TR
CI1	0.937	0.548	0.607	0.498	0.697	0.669	0.470	0.873	0.530	0.652
CI2	0.938	0.476	0.612	0.558	0.685	0.655	0.477	0.767	0.569	0.588
CI3	0.945	0.516	0.629	0.529	0.692	0.674	0.449	0.802	0.602	0.589
CI4	0.910	0.536	0.676	0.468	0.669	0.687	0.443	0.788	0.530	0.617
EE1	0.529	0.891	0.589	0.379	0.422	0.560	0.531	0.597	0.472	0.415
EE2	0.477	0.887	0.488	0.392	0.414	0.507	0.517	0.558	0.466	0.333
EE3	0.533	0.915	0.552	0.529	0.556	0.538	0.509	0.627	0.455	0.433
EE4	0.374	0.773	0.527	0.572	0.511	0.438	0.379	0.421	0.527	0.376
FC1	0.627	0.542	0.906	0.401	0.572	0.589	0.481	0.623	0.619	0.485
FC2	0.532	0.550	0.895	0.383	0.432	0.568	0.466	0.564	0.472	0.425
FC3	0.656	0.581	0.901	0.438	0.577	0.627	0.459	0.655	0.501	0.471
HM1	0.442	0.456	0.369	0.922	0.548	0.475	0.332	0.434	0.490	0.433
HM2	0.591	0.535	0.479	0.944	0.643	0.598	0.482	0.529	0.585	0.505
HM3	0.442	0.436	0.373	0.859	0.584	0.494	0.497	0.419	0.472	0.444
HT1	0.605	0.572	0.542	0.615	0.848	0.539	0.497	0.603	0.614	0.513
HT2	0.501	0.412	0.433	0.579	0.822	0.474	0.393	0.496	0.529	0.505
HT3	0.711	0.390	0.504	0.474	0.846	0.535	0.368	0.623	0.560	0.456
PE1	0.640	0.479	0.569	0.542	0.559	0.873	0.432	0.561	0.476	0.456
PE2	0.569	0.435	0.468	0.472	0.466	0.820	0.411	0.474	0.406	0.348
PE3	0.511	0.389	0.441	0.446	0.514	0.712	0.361	0.484	0.567	0.404
PE4	0.593	0.596	0.646	0.412	0.457	0.813	0.443	0.580	0.399	0.461
PV1	0.424	0.490	0.461	0.371	0.393	0.433	0.898	0.497	0.399	0.421
PV2	0.450	0.478	0.444	0.438	0.457	0.486	0.928	0.514	0.408	0.325
PV3	0.477	0.572	0.519	0.513	0.508	0.483	0.920	0.509	0.442	0.374
SAT1	0.816	0.563	0.661	0.535	0.692	0.617	0.456	0.878	0.572	0.674
SAT2	0.824	0.616	0.656	0.500	0.650	0.629	0.560	0.960	0.534	0.636
SAT3	0.799	0.599	0.621	0.443	0.591	0.590	0.539	0.952	0.493	0.632
SAT4	0.781	0.609	0.606	0.425	0.636	0.585	0.502	0.927	0.513	0.630
SI1	0.479	0.477	0.494	0.522	0.590	0.499	0.412	0.460	0.901	0.378
SI2	0.542	0.524	0.551	0.506	0.605	0.515	0.424	0.503	0.938	0.390
SI3	0.520	0.472	0.498	0.558	0.638	0.474	0.357	0.490	0.925	0.398
SI4	0.566	0.457	0.546	0.449	0.569	0.520	0.417	0.552	0.784	0.350
TR1	0.619	0.419	0.469	0.410	0.559	0.500	0.344	0.621	0.449	0.887
TR2	0.595	0.399	0.397	0.444	0.463	0.462	0.325	0.602	0.310	0.909
TR3	0.470	0.288	0.338	0.415	0.452	0.370	0.268	0.487	0.353	0.877
TR4	0.551	0.410	0.537	0.477	0.502	0.422	0.445	0.639	0.342	0.745

Note: Bold value indicates the indicator loadings of each construct variable.
Source: authors' findings.

Table 4. The Results of the Latent Variable Correlation Matrix and the Square Root of the AVE.

	CI	EE	FC	HM	HT	PE	PV	SAT	SI	TR
CI	0.933									
EE	0.557	0.868								
FC	0.676	0.620	0.901							
HM	0.550	0.528	0.454	0.909						
HT	0.735	0.543	0.591	0.655	0.839					
PE	0.720	0.591	0.662	0.581	0.618	0.807				
PV	0.493	0.563	0.520	0.484	0.497	0.512	0.915			
SAT	0.867	0.642	0.685	0.513	0.692	0.652	0.553	0.930		
SI	0.597	0.545	0.592	0.573	0.678	0.568	0.455	0.569	0.889	
TR	0.657	0.449	0.513	0.510	0.581	0.518	0.407	0.692	0.428	0.857

Note: Note: Bold value indicates the square root of the average variance extracted from each construct variable.
Source: authors' findings.

Table 5. The Results of the Path Coefficient of the Research Hypotheses.

Hypo	Relationship	Std. beta	Std. error	T- value	P-value	Decision
H1	EE --→ CI	0.011	0.081	0.132	0.895	Not significant
H2	FC --→ CI	0.214	0.079	2.717	0.007	significant
H3	HM --→ CI	-0.014	0.077	0.180	0.857	Not significant
H4	HT --→ CI	0.397	0.083	4.769	0.000	significant
H5	PE --→ CI	0.317	0.078	4.057	0.000	significant
H6	PV --→ CI	0.015	0.073	0.199	0.842	Not significant
H7	SI --→ CI	0.018	0.097	0.180	0.857	Not significant

Source: authors' findings.

The Fornell-Larcker criterion is a second and more conservative approach to assessing discriminant validity. It compares the square root of the AVE values with the latent variable correlations. Specifically, the square root of each construct's AVE should be greater than its highest correlation with any other construct (Joseph F. Hair, Hult, Ringle, & Sarstedt, 2014).

4.3. Assessment PLS-SEM Structural Model Results

Once we have confirmed that the construct measures are reliable and valid, the next step addresses assessing the structural model results. This involves examining the model's predictive capabilities and the relationships between the constructs. The key criteria for assessing the structural model in PLS-SEM are the significance of the path coefficients, the level of the R^2 values, the f^2 effect size, the predictive relevance (Q^2), and the q2 effect size (Joseph F. Hair, Hult, Ringle, & Sarstedt, 2014).

4.3.1. Structural Model Path Coefficients

After running the PLS-SEM algorithm, estimates are obtained for the structural model relationships (i.e., the path coefficients), representing the hypothesized relationships among the constructs.

4.3.2. Coefficient of Determination (R^2 Value)

The most commonly used measure to evaluate the structural model is the coefficient of determination (R^2 value). This coefficient measures the model's predictive accuracy and is calculated as the squared correlation between a specific endogenous construct's actual and predicted values (Joseph F. Hair, Hult, Ringle, & Sarstedt, 2014). Chin (1998) suggested that the values of R^2 that are above 0.67 are considered high, while values ranging from 0.33 – 0.67 are moderate, whereas values between 0.19 to 0.33 are weak. Any R^2 values less than 0.19 are unacceptable.

Table 6. R-Square of the Endogenous Latent Variables.

Constructs Relation	R^2	Result
CI	0.681	high

Source: authors' findings.

4.3.3 Effect Size F²

Effect size indicates the relative effect of a particular exogenous latent variable on endogenous latent variable (s) using the R-squared (Chin, 1998). It is calculated as the increase in R-squared of the latent variable to which the path connected, relative to the latent variable's proportion of unexplained variance (Chin, 1998).

Table 7. F-square of the Endogenous Latent Variables.

Constructs Relation	F^2	Result
EE	0.000	NO effect size
FC	0.061	Small effect size
HM	0.000	NO effect size
HT	0.192	Medium effect size
PE	0.135	Small effect size
PV	0.000	NO effect size
SI	0.000	NO effect size

Source: authors' findings.

4.3.4 Blindfolding and Predictive Relevance Q²

In addition to evaluating the magnitude of the R² values as a criterion of predictive accuracy, researchers should also examine Stone-Geisser's Q² value (Geisser, 1974; Stone, 1974). This measure is an indicator of the model's predictive relevance. In the structural model, Q2 values larger than zero for a specific reflective endogenous latent variable indicate the path model's predictive relevance for this particular construct (Joseph F. Hair, Hult, Ringle, & Sarstedt, 2014). See the table and figure below

Table 8. Shows Testing Predictive Relevance Q² in SmartPLS.

Variable	SSO	SSE	Q²(= 1 – SSE/SSO)
CI	552.000	238.219	0.568
EE	552.000	552.000	
FC	414.000	414.000	
HM	414.000	414.000	
HT	414.000	414.000	
PE	552.000	552.000	
PV	414.000	414.000	
SI	552.000	552.000	

Source: authors' findings.

4.3.5. Goodness of fit of the model (GoF)

Tenenhaus, Chatelin, and Lauro (2005) defined GoF as the global fit measure, the geometric mean of both average variances extracted (AVE) and the average of R² of the endogenous variable. The purpose of GoF is to account for the study model at both levels, namely the measurement and structural model with a focus on the overall performance of the model (Chin, 2010; Henseler & Sarstedt, 2013).

The calculation formula of GoF is as follows:

$$GoF = \sqrt{\left(\overline{R^2} \; X \; \overline{AVE}\right)} = \sqrt{(0.681 * 0.784)} = 0.647$$

The criteria of GoF to determine whether GoF values are no fit (GoF less than 0.1), small (GoF between "0.1 to 0.25"), medium (GoF between "0.25 to 0.36"), or large (GoF greater than 0.36) to be considered as global valid PLS model have given by Wetzels, Odekerken-Schroder, and Van Oppen (2009). According to the above and the value of the GoF (0.647), it can be concluded that the GoF model of this study is large enough to consider sufficient PLS model validity.

4.4. Moderator Concept

Baron and Kenny (1986) define the moderator as a variable that affects the direction and/or strength of the relationship between an independent variable and a dependent variable. To achieve this there are two conditions:

- Moderating effects should be significant.
- Moderator should assist with the intention (increase or decrease).

4.4.1. Satisfaction as a Moderator Variable.

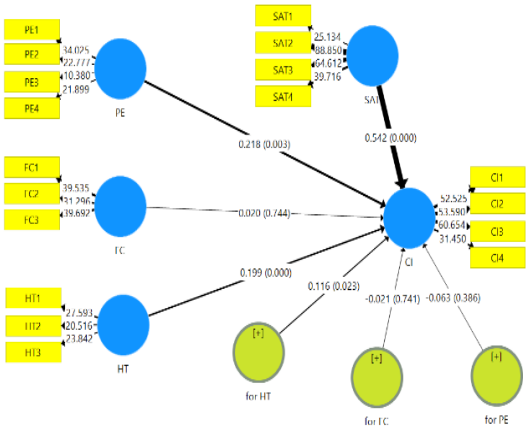

Fig. (2). Bootstrapping results of SAT as a moderating role.

Source: SmartPLS output.

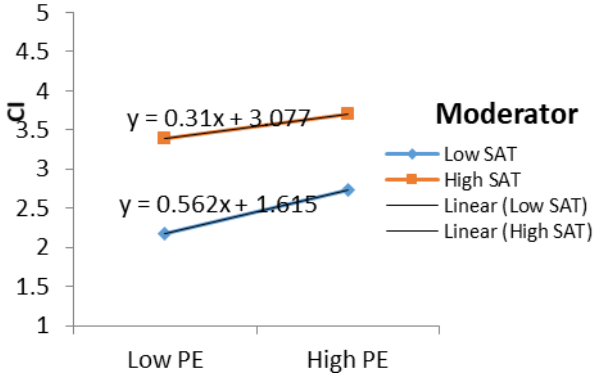

Fig. (3). Interaction effect of PE on CI.

Source. Data Analysis.

The two lines in. Fig. (**3**) represents the relationship between PE and CI for low and high levels of the moderator construct SAT. Usually, a low level of SAT is one standard deviation unit below its average, while a high level of SAT is one standard deviation unit above its average. The relationship between PE and CI becomes more robust with high(er) levels of SAT. For low(er) levels of SAT, the slope is much fatter, as shown in. Fig. (**3**) Hence, with low(er) levels of the moderator construct SAT, the relationship between PE and CI becomes weaker (Joseph F. Hair, Hult, Ringle, & Sarstedt, 2014). So, the result of Fig. (**3**) shows that SAT dampens the positive relationship between PE and CI.

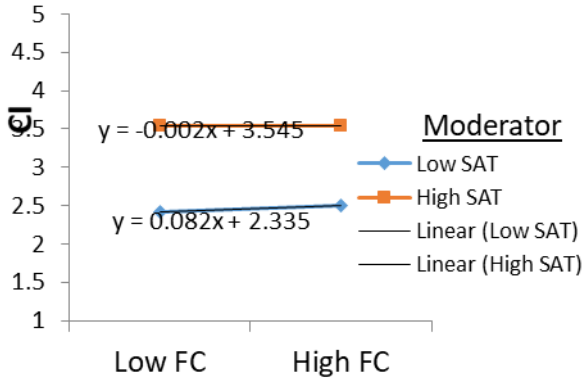

Fig. (4). Interaction effect of FC on CI.

Source. Data Analysis.

The two lines in Fig. (**4**) represents the relationship between FC and CI for low and high levels of the moderator construct SAT. Usually, a low level of SAT is one standard deviation unit below its average, while a high level of SAT is one standard deviation unit above its average. The relationship between FC and CI becomes more robust with high(er) levels of SAT. For low(er) levels of SAT, the slope is much fatter, as shown in Fig. (**4**). Hence, with low(er) levels of the moderator construct SAT, the relationship between FC and CI becomes weaker (Joseph F. Hair, Hult, Ringle, & Sarstedt, 2014). So, the result of the figure shows that SAT dampens the positive relationship between FC and CI.

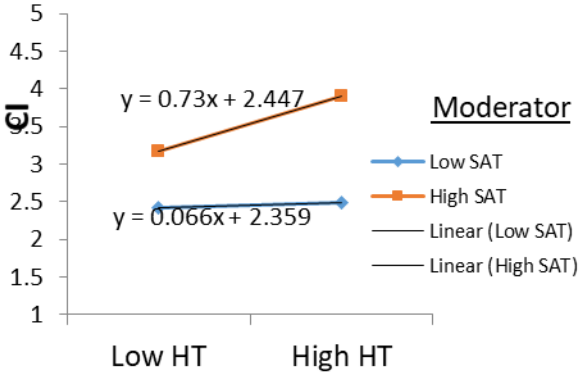

Fig. (5). Interaction effect of HT on CI.

Source. Data Analysis.

The two lines in Fig. (**5**) represents the relationship between HT and CI for low and high levels of the moderator construct SAT. Usually, a low level of SAT is one standard deviation unit below its average, while a high level of SAT is one standard deviation unit above its average. The relationship between HT and CI becomes more robust with high(er) levels of SAT. For low(er) levels of SAT, the slope is much fatter, as shown in Fig. (**5**). Hence, with low(er) levels of the moderator construct SAT, the relationship between HT and CI becomes weaker (Joseph F. Hair, Hult, Ringle, & Sarstedt, 2014). So, The result of the figure shows that SAT strengthens the positive relationship between HT and CI.

4.4.2. Trust as a Moderating Variable

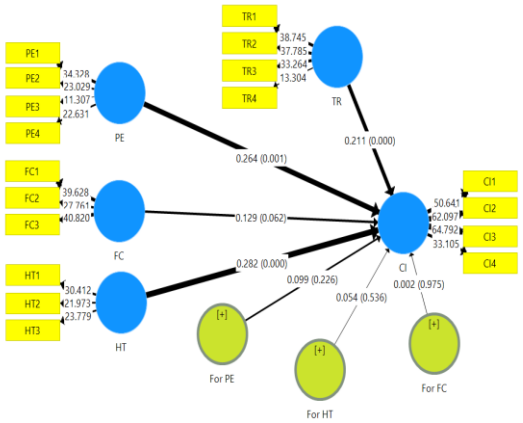

Fig. (6). Bootstrapping results of TR as a moderating role.

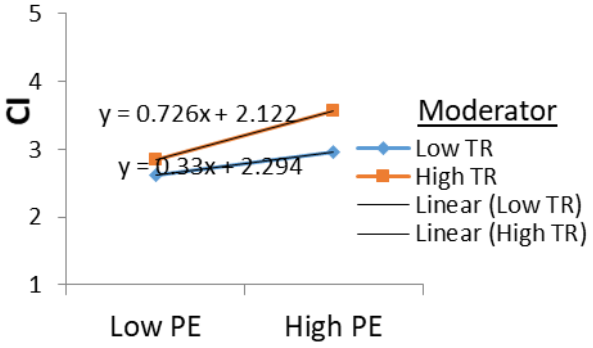

Fig. (7). Interaction effect of PE on CI.

Source. Data Analysis.

The two lines in. Fig. (**7**) represents the relationship between PE and CI for low and high levels of the moderator construct TR. Usually, a low level of TR is one standard deviation unit below its average, while a high level of TR is one standard deviation unit above it more robust. The relationship between PE and CI becomes stronger with high(er) levels of TR. For low(er) levels of TR, the slope is much fatter, as shown in. Fig. (**7**). Hence, with low(er) levels of the moderator construct TR, the relationship between PE and CI becomes weaker (Joseph F. Hair, Hult, Ringle, & Sarstedt, 2014). So, the result of the figure shows that TR strengthens the positive relationship between PE and CI.

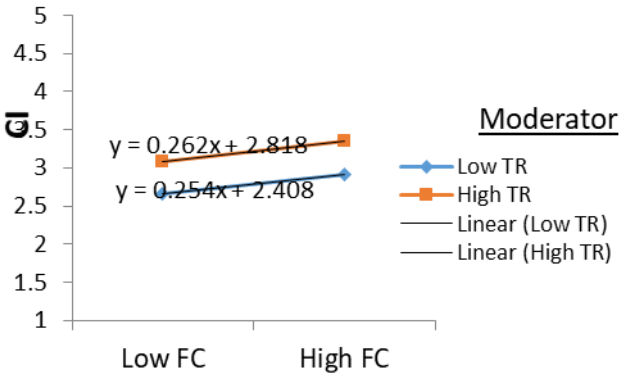

Fig. (8). Interaction effect of FC on CI.

Source. Data Analysis.

The two lines in. Fig. (**8**) represents the relationship between FC and CI for low and high levels of the moderator construct TR. Usually, a low level of TR is one standard deviation unit below its average, while a high level of TR is one standard deviation unit above its average. The relationship between FC and CI becomes more robust with high(er) levels of TR. For low(er) levels of TR, the slope is much fatter, as shown in. Fig. (**8**) Hence, with low(er) levels of the moderator construct TR, the relationship between FC and CI becomes weaker (Joseph F. Hair, Hult, Ringle, & Sarstedt, 2014). So, the result of the figure shows that TR strengthens the positive relationship between FC and CI.

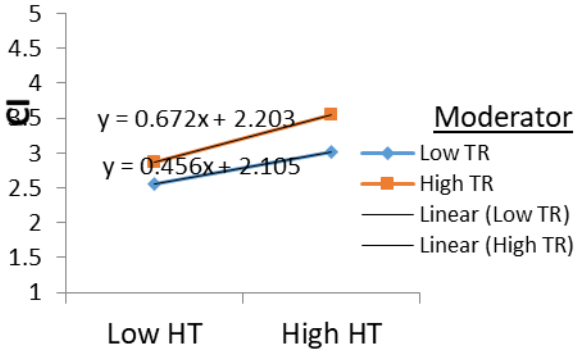

Fig. (9). Interaction effect of HT on CI.

Source. Data Analysis.

The two lines in. Fig. (**9**) represents the relationship between HT and CI for low and high levels of the moderator construct TR. Usually, a low level of TR is one standard deviation unit below its average, while a high level of TR is one standard deviation unit above its average. The relationship between HT and CI becomes more robust with high(er) levels of TR. For low(er) levels of TR, the slope is much fatter, as shown in. Fig. (**9**) Hence, with low(er) levels of the moderator construct TR, the relationship between HT and CI becomes weaker (Joseph F. Hair, Hult, Ringle, & Sarstedt, 2014). So, the result of the figure shows that TR strengthens the positive relationship between HT and CI.

CONCLUSIONS

To sum up, mobile devices along with their numerous apps provided have prevailed in the digital environment and comprise the main portal to the internet for the main online users globally. Therefore, almost all industry sectors have already tried to benefit from these technological innovations. Banks, as information-intensive firms, have been major adopters of ICT. As they did realize very early the mobile shift of their customers to smartphones and apps, they have tried to provide more and more value-added self-service functions and enhanced customer experience. Hence, m-banking has been developed as a fundamental channel in current years and its services are regarded as the most value-adding and vital m-commerce apps.

This study examined the moderating role of satisfaction and trust in the Conti nuance intention to use mobile banking in Saudi Arabia: an application of UTAUT 2. Using SmartPLS 3. to analyze data collected from a survey of 138 M-banking users from Al jouf University staff in Saudi Arabia, the results show that trust strengthens the positive relationship between (habit, facilitating condition, performance expectancy) and customer intention to continue using M-banking. In addition, the results show that satisfaction strengthens the positive relationship between habit and customer intention to continue using M-banking. However, it dampens the positive relationship between (facilitating conditions, performance expectancy) and customer intention to continue using M-banking.

Our study contributes to the theory and research in several relevant ways. A first theoretical contribution comes from the review of the recent mobile banking UTAUT2-based literature. Another major contribution stems from the empirical validation of the proposed extended UTAUT2 model. Since previous research on the drivers of the UTAUT2 factors is still limited and there is a lack of studies that examine the moderating role of satisfaction and trust in the Continuance intention to use M-banking in Saudi.

Stated that “for many firms, often the challenge is not managing the technology, but rather getting consumers to try the technology”. Results of the current study help understand the different factors that influence on continuance intentions toward adopting mobile banking technology. The results show the importance of facilitating condition, habit, and performance expectancy and its significant indirect influence on continuance intentions. Consequently, banks should try influencing perceptions of performance expectancy, effort expectancy, social influence, and facilitating conditions, particularly performance expectancy, given its greater relative weight in behavioral intention. To achieve this, banks should spend more time on teaching and educating their clients about the utilitarian advantages and benefits of using mobile banking when performing various financial tasks. Additionally, banks need to encourage developers to focus on adding value. Furthermore, they should develop simple and friendly mobile applications, with unassuming and attractive interfaces, to help their customers’ effort expectations and to increase the convenience of using mobile banking.

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