



## FACTORS AFFECTING CUSTOMER SATISFACTION AND RECOMMENDATION OF MOBILE BANKING SERVICES IN MOROCCO

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### Abstract:

This paper is an application of a variation of American Customer Satisfaction index model in the context of Moroccan banking sector. We specifically chose mobile banking and added a variable that is the service recommendation factor, the results of our work have proved that the hypotheses proposed by our model are validated except the relationship between the perceived quality and customer satisfaction and which can be explained by the indirect relationship through the perceived value.

JEL: M31, Z33

**Keywords:** satisfaction, mobile banking, loyalty, recommendation, service quality

### 1. Introduction

Consumer satisfaction has been extensively studied in marketing. However, marketers have not yet agreed on a generally accepted definition of satisfaction. Consumer satisfaction has been viewed as perhaps the main ideas (Morgan et al., 1996; McQuitty et al., 2000) and one of the primary destinations of marketing (Erevelles and Leavitt, 1992). Satisfaction assumes a focal part in marketing as it is a decent indicator of purchase attitudes (purchase intentions re-purchase, brand choice and switching behaviour) (McQuitty et al., 2000).

Customer satisfaction is a proportion of how well the products and services provided by a company meet or surpass client assumptions (Fornell, 1992). All things considered, estimating customer satisfaction demonstrates the achievement of a business.

The goal of the organisation is to give products and/or services to the market (Fornell, 1992). Customer satisfaction is officially estimated by a few public customer

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satisfaction databases, including the Customer Satisfaction Barometer in Sweden, and the American Customer Satisfaction Index (ACSI) in the United States (Anderson, Fornell and Lehmann, 1994; Fornell, 1992; Fornell et al., 1996). Information from these sources are often utilized in experimental empirical research studies (e.g. Anderson and Sullivan, 1993; Fornell et al., 2010).

More developing degrees of customer satisfaction is important for businesses because of the influence of customer satisfaction on economic performance (Fornell et al., 2006). At the miniature level, customer satisfaction is related with expanded portion of market share and profitability (Anderson, Fornell and Lehmann, 1994; Reichheld and Sasser, 1990).

Research shows that companies with more elevated levels of consumer satisfaction create more significant yields on investment (Anderson, Fornell and Lehmann, 1994), higher productivity and efficiency (Anderson et al., 1997), higher market value (Fornell, 2001), owner value (Anderson et al., 2004) and improved stock market performance (Fornell et al., 2006).

In addition, increasing and maintaining high levels of customer satisfaction strengthens customer loyalty and serves as a protection against increasing price competition (Anderson, Fornell and Lehmann, 1994; Anderson and Sullivan, 1993).

At the macro level, research shows that aggregate customer satisfaction indices such as the ACSI are strong predictors of growth in gross domestic product and services and even stronger predictors of personal consumption expenditure (Fornell et al., 2010).

When a company improves the quality of its service, it most frequently aims to satisfy its customers. In this sense, a customer's satisfaction with a service provider will be explained for the first time by the non-confirmation paradigm.

This paradigm defines satisfaction as the gap between initial expectations and actual service performance. However, there are significant differences in the definition of this concept, which poses problems in its operationalisation.

Indeed, its definition differs according to the authors who consider it to be an effective response assimilating it, for example, to emotion, or a cognitive response such as that which considers it to be a comparison.

The most recent definitions of satisfaction take into account all of its dimensions by understanding it as an affective state resulting from an affective and cognitive evaluation process that occurs during a specific transaction (Lakhrif, Zoubir, & Haddou-Yousfi, 2013, p. 4). Phillip Kotler and Kevin Keller, on the other hand, define satisfaction as the positive or negative impression a customer has of a purchase and/or consumption experience, resulting from a comparison between their expectations of the product and its performance (Kotler & Kevin, 2012, p. 152).

There are two measures of satisfaction: objective and subjective. Objective measures most often take the form of questions that companies use to assess the level of customer satisfaction, such as the number of complaints (Vanhamme, 2002, p. 59). However, measures of an affective and cognitive nature, which are considered to be

subjective, are used in the vast majority of empirical studies . These can be in the form of a single item (Lakhrif, Zoubir, & Haddou-Yousfi, 2013, p. 5).

In this paper our objective is to build a conceptual framework for the mobile banking customer satisfaction index. This proposed index for the Moroccan banking sector will measure the satisfaction of mobile banking customers. This study is relevant because of the exponential growth of mobile banking. To this end our paper is structured as follows. After an introduction of the concepts and background of our study, section 2 will present the literature review of the different models of customer satisfaction. section 3 will present the methodology and sample of our study. section 4 of our study will contain the results, and finally, we conclude with a discussion of the results of our study.

## **2. Literature review**

Johnson et al. (2001) reported on the evolution and limitations of the CSI models used by previous researchers. This study mentions the evolution of customer satisfaction models from the Swedish Customer Satisfaction Barometer (SCSB) in 1991 to the European Customer Satisfaction Index (ECSI) in 2000. Johnson et al (2001) notice that the SCSB gave a hypothetical premise to the advancement of the American customer satisfaction index (ACSI). The ACSI has been used because the basis for the proposed models for measuring satisfaction in Norway and therefore the EU countries.

Various researchers (Keskar and Pandey 2018; Johnson et al., 2001; Fornell et al., 1996) have suggested that already established customer satisfaction models should be evaluated for further development. Therefore, a systematic review of past literature was conducted. Based on the theoretical justifications, analysis and results of the literature review, an appropriate model that considered the context of online banking customer satisfaction was proposed.

### **2.1 Evolution of the ITUC**

The connection between the antecedents of customer satisfaction and the outcomes of customer satisfaction is mainly inspected and tried in developed countries such as Sweden, the United States, New Zealand, Norway, Austria, Korea and the European Union.

These indices have never been proposed or tried on a worldwide scale or for one industry or sector (Johnson et al., 2001). The examination realized by Johnson et al (2001) featured that albeit the circumstances and logical results framework was a suitable framework utilized for CSI, there were still a few constraints that should have been accommodated. This investigation affirmed that client loyalty was a key ward variable in CSI models.

The measurement of customer satisfaction takes into account two measures: transaction-specific satisfaction and cumulative satisfaction (Johnson et al., 1995). Of these measures, marketing researchers have focused on transaction-specific measures and the relationship between perceived quality and satisfaction.

As per to Johnson et al. (2001), proportions of the total satisfaction develop foresee re-purchase behaviour and economic performance better than transaction-specific satisfaction measures. Also, Johnson et al. (2001) detailed that the fundamental models of consumer satisfaction have thought about satisfaction as an outcome of quality. Previous researchers have developed national CSI models taking into account the relevance of various products and services, but the development of industry-specific CSI models, such as the banking sector, has never been considered.

Therefore, see how consumer satisfaction was inspected by previous researchers in order to propose a framework for the banking sector in general and for the internet banking context in particular. To more readily comprehend the exploration of the research context, this study analysed the main CSI models such as SCSB, ACSI, Swiss Customer Satisfaction Index (SWICS), Norwegian Customer Satisfaction Index (NCSI), ECSI, Russian CSI, Hong Kong Customer Satisfaction Index (HKCSI), Kanji CSI, E-Commerce Customer Satisfaction Index (ECCSI), and more others, ECSI, Russian CSI, Hong Kong Customer Satisfaction Index (HKCSI), Kanji CSI, E-Commerce Customer Satisfaction Index (ECCSI) and Electronic Customer Satisfaction Index (e-CSI). This section explores the evolution of the customer satisfaction indices and assesses their development parameters.

### **2.1.1 Swedish Customer Satisfaction Index**

The SCSB was the first model proposed by Fornell (1992). It builds on the theoretical contributions of Hirschman (1970) and Oliver (1980). This index proposes perceived performance (value) and customer expectations as antecedents of customer satisfaction. This study assumes a direct relationship between perceived value, customer expectations and customer satisfaction. Hirschman (1970) mentioned that dissatisfied customers react in two ways. The customer can either exist or voice his complaints. The final result is customer loyalty. As per Hirschman (1970), customer loyalty is an intention to consume or repurchase a product or service. Fornell (1992) cited that this study is a pioneer study that explored the connection between customer complaints and customer loyalty.

### **2.1.2 US Customer Satisfaction Index**

The ACSI, one of the most popular national indicators, was developed by Fornell et al (1996). This was a pioneering study conducted to measure customer satisfaction, as economic changes had reduced US consumer satisfaction. This index measured customer satisfaction with the quality of various products and services expended by US consumers. This model uses perceived value as a function of perceived quality and customer expectations.

In addition, perceived value, customer expectations and perceived quality were considered as antecedents of customer satisfaction. This model considers that the perceived quality as expected by the customer depends on the extent of customisation and reliability of the services provided by the manufacturer and the service provider. This model also considers overall customer satisfaction as an antecedent of customer

complaints and customer loyalty. This means that the level of customer complaints and customer loyalty are the outcomes of customer satisfaction. This model likewise considers perceived quality which is an extra build added to the SCSB. Fornell et al (1996) used reflective indicators to measure the latent concepts considered in the model.

The ACSI model considers perceived value in terms of both price and quality and therefore treats it as an outcome of expectations and quality. ACSI has also been considered as an indicator of financial strength (Fornell et al., 1996).

The ACSI was useful for the SWOT analysis of the company, in addition to being used for benchmarking companies over a period of time. The ACSI also provided an independent and reliable source of market research to rank the performance of products/services from the customer's perspective. This ranking was better than the product rankings published by magazines and private research companies.

### **2.1.3 CSI in Switzerland**

The SWICS was created by Bruhn and Grund (2000). It focused on 20 distinct industries in Switzerland to look at the connection between customer satisfaction and loyalty. The study focused on the intense competition and dynamic developments taking place in the industry and the companies. Changes in marketing strategies that focus on customer satisfaction and loyalty were also examined by Bruhn and Grund (2000). This study mentions that increased customer loyalty results in an increase in the customer's and consumer's re-purchase and cross-purchase potential. Willingness to pay a higher price (Pandey et al., 2019), willingness to recommend and reduced switching behaviour are outcomes of customer loyalty.

Customer satisfaction is a precursor to customer loyalty and therefore analysis of the preconditions for customer satisfaction and loyalty is necessary (Fornell, 1992; Fornell et al., 1996). This study referred to a chain of success that consisted of links between constructs. These links start with quality and end with economic success. Unlike the previous study, this study did not consider the preconditions for customer satisfaction. This study treated customer satisfaction as a consequence of customer dialogue and customer loyalty.

### **2.1.4 Norwegian Customer Satisfaction Index**

The CSI was measured at national level as a first step to improve the generalisation of the model. Researchers from different countries such as the USA, Sweden and Norway collaborated and proposed a new Norwegian Customer Satisfaction Barometer (NCSB). The collaboration involved the development of numerous customer satisfaction indices. The NCSB model has taken into account the role of corporate image and its interrelation with customer satisfaction and loyalty (Johnson et al., 2001). The image of the company contributes to a positive attitude and has an impact on customer satisfaction. NCSB considers commitment as one of the antecedents. This study proposed a new NCSB model using the partial least squares (PLS) method as the Swedish, American and European CSIs were all estimated using the casual modelling procedure. This study

replaced the concept of customer expectations with that of corporate image. Company image is an outcome of customer satisfaction rather than a driver of customer satisfaction. Complaint behaviour has been replaced by complaint handling in this model. He recommends the use of the concept of perceived price instead of the concept of perceived value. Furthermore, he proposes customer loyalty as a standard for customer satisfaction, as loyalty appears directly as a side effect of price or quality.

### **2.1.5 European Customer Satisfaction Index**

ECSI thought about the image, expectations, perceived value, customer satisfaction, customer loyalty and perceived quality in the projected structural model. This model dealt with perceived quality in the form of material and human material, which implied the product and service dimensions of customer satisfaction and loyalty. .

As per Eklöf (2000), the ACSI model didn't think about the company's image as a factor in consumer satisfaction. Kristensen et al (2000) explained the ECSI methodology. The ECSI methodology has been applied to measure customer satisfaction in Denmark. Golovkova et al (2019) tracked down a positive association between ECSI measures and financial performance of banks in Europe.

### **2.1.6 Russian Customer Satisfaction Index**

Dermanov and Eklöf (2001) have studied the challenges and problems of comparing CSIs in different countries, including Russia. The studies on SCIs started in Russia in 1999. 8,000 individual meetings were led in five distinct areas (eight ventures), including handled food, clothing retailing, broadcast communications, media and domestic devices in St. Petersburg. The main criteria for measuring customer satisfaction were perceived quality, retention and loyalty. The authors concluded that any comparison of CSI between countries/sectors must take into account the nature of the product/service, the state of the economy, the market environment, the level of disposable income, etc. The researchers concluded that in the future, researchers should focus on discovering the drivers of satisfaction with different products or services and the reasons for dissatisfaction.

### **2.1.7 Hong Kong Consumer Satisfaction Index**

Chan et al (2003) developed the HKCSI. This index is based on a large survey conducted in Hong Kong between 1998 and 2000. The researchers interviewed about 10,000 people through telephone interviews. The authors focused on the quality of goods and services. The number of products covered was about 60. The researchers pointed out that since the manufacturing facilities in Hong Kong were minimal, the HKCSI placed more emphasis on the services consumed by consumers. They said that cumulative consumer satisfaction is assessed by considering a consumer's overall approach to buying and consuming a product or service they use over a period of time. The HKCSI used criteria such as desire for additional purchase, substitution preference, consumer response to price and quality changes as a measure of consumer loyalty resulting from satisfaction.

## 2.2 e-satisfaction and e-fidelity and mobile banking

Online satisfaction refers, according to Anderson and Srinivan (2003), to the *"customer's satisfaction with his or her past shopping experience with a given e-commerce company"*. According to Zeithaml and Bitner (2000), this feeling stems from the fact that the product or service offered by the company in question meets the needs and expectations of the customer. A wealth of research across a wide range of sectors and contexts, including online business-customer relationships, has confirmed a significant relationship between customer satisfaction and loyalty (Anderson and Srinivasan, 2003; Floh and Treiblmaier, 2006; Ghane et al., 2011; Ribbink et al., 2004; Shanker et al., 2003). Furthermore, Shanker et al (2003) suggest that this relationship is stronger in an online context than in a traditional (offline) context.

For several authors, customers' online satisfaction motivates them to repeat their online purchases, generates favourable word-of-mouth and is thus a key variable for maintaining long-lasting relationships between customers and the online company (Chang et al., 2009; Casaló et al., 2008; Cristobal et al., 2007).

This stands out as a key element shaping customer behaviour. With regard to e-banking, Ettis and Haddad (2014) argue that *"when customers perceive clear benefits offered by online banking, they adopt a positive attitude towards these services"*. In this sense, in this research, we retain the idea that after using mobile banking applications, satisfied customers are encouraged to speak positively about their online experience and to recommend the application in question and thus the bank to their relatives.

Otherwise, *"a dissatisfied customer will tend to look for another alternative and is likely to give in to competitors' proposals"* (Anderson and Srinivasaan, 2003). Casaló et al. 2008 and Ghane et al. 2011 showed that e-satisfaction is an important antecedent of e-fidelity based on a study of bank customers in Spain and Iran respectively. Masrek et al (2012) reached the same result through empirical research exploring the consequences of using mobile banking services in Malaysia.

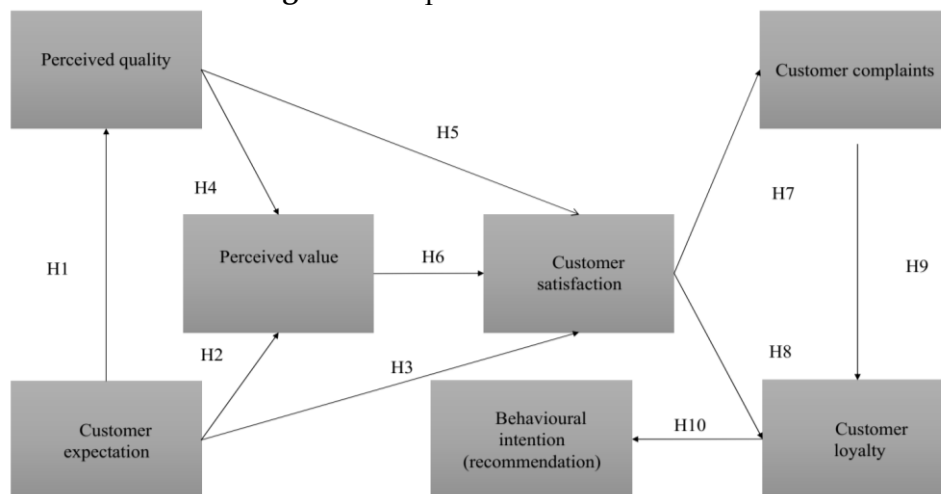
With the evolution of mobile technology, mobile banking has become the new concept adopted by society and has become part of everyday life (Lee and Chung, 2009). The expansion of sales of smartphones, which are considered a social phenomenon and usually come with Internet access, is accompanied by the evolution of mobile banking usage. Laukkanen and Lauronen, (2005) have distinguished the primary factors that might impact clients to embrace mobile banking: perceived usefulness and benefits (Lee et al., 2003), perceived cost savings (Luarn and Lin, 2005), and perceived ease of use (Luarn ease of use (Luarn and Lin, 2005). These factors are supposed as perceived values. In the financial sector, banks have tried to diversify their services to customers through the use of technology. In the financial sector, banks have tried to diversify their services to customers through the use of technology. The online services offered are the new trend. new trend. Among these services, the mobile application remains the most popular service to satisfy a clientele of professionals who use smartphones (Pousttchi and Schurig, 2004).

### 3. Methodology

Many countries around the world have begun to pay more attention to measuring customer or consumer satisfaction at the national level, notably in Africa, America, Asia and Europe. Nations that have embraced the ACSI model and created it for their own country setting incorporate New Zealand and Taiwan (Fornell et al., 1996), Austria (Hackl et al. 1996), Norway (Andreassen and Lervik, 1999; Andreassen and Lindestad, 1998) and Thailand (TCSI) (Thailand Productivity Institute, 2012). The current study used a modified ACSI as the model of analysis.

Therefore, an important question for the current study is whether the ACSI model can explain customers' behaviour in using mobile banking services as provided by Moroccan commercial banks in the same way as it has done for other countries that have used the ACSI model. To answer this question, the researcher developed a conceptual model consisting of ten hypotheses with an additional hypothesis to the ACSI model, relating to the recommendation of mobile banking services, as shown in Figure 1.

**Figure 1:** Proposed research model



**Table 1:** Abbreviations of variables

Abbreviations	Name of the variable
CE	Customer expectation
PQ	Perceived quality
PV	Perceived value
CC	Customer complaints
CL	Customer loyalty
BIR	Behavioural intention (recommendation)
CS	Customer satisfaction

The assumptions are as follows:

**Hypothesis 1 (H1):** There is a positive connection between customer expectation and perceived quality of use of the mobile banking service offered by banks.



**Hypothesis 2 (H2):** There is a positive connection between customer expectation and the perceived value of using the mobile banking service offered by banks.

**Hypothesis 3 (H3):** There is a positive connection between customer expectations and satisfaction with the use of the mobile banking service offered by banks.

**Hypothesis 4 (H4):** There is a positive connection between perceived service quality and perceived value on the use of the mobile banking service offered by banks.

**Hypothesis 5 (H5):** There is a positive connection between perceived service quality and customer satisfaction with the use of the mobile banking service offered by banks.

**Hypothesis 6 (H6):** There is a positive connection between perceived service value and customer satisfaction with the use of the mobile banking service offered by banks.

**Hypothesis 7 (H7):** There is a negative connection between customer satisfaction and customer complaint on the use of mobile banking service offered by banks.

**Hypothesis 8 (H8):** There is a positive connection between customer satisfaction and customer loyalty on the use of the mobile banking service offered by banks.

**Hypothesis 9 (H9):** There is a negative connection between customer complaints and customer loyalty on the use of mobile banking service offered by banks.

**Hypothesis 10 (H10):** There is a positive connection between customer loyalty and recommendation to use the mobile banking service offered by banks.

### 3.1 Sampling plan and data collection

In order to test our hypotheses mentioned above, our approach is based on a quantitative methodology. The data was collected through an online survey of Moroccan mobile bank customers.

The aim of this questionnaire is to find out the impact of the quality of services offered by Moroccan mobile banks on customer satisfaction. A total of 530 survey forms were distributed. Of the completed survey forms, excluding those with omissions or randomly repeated responses, 504 usable responses were obtained, giving an acceptable response rate of 95%. Table (I) presents the demographic data of the community.

**Table 2: Demographics of the sample**

		<b>Members</b>	<b>%</b>
<b>Type</b>	Man	328	65%
	Woman	176	35%
	<b>Total</b>	<b>504</b>	<b>100%</b>
<b>Age</b>	18-30	168	33.3%
	30-50	280	55.6%
	> 50	56	11.1%
	<b>Total</b>	<b>504</b>	<b>100%</b>
<b>Level of education</b>	Illiterate	28	5.6%
	College	112	22.2%
	Academic	364	72.2%
	<b>Total</b>	<b>504</b>	<b>100%</b>

### 3.2 Measurement model

This study uses a structural equation modelling (SEM) approach, using AMOS 24.0, to develop a model that represents the causal relationships between the variables (Chin, 2001). The items used to collect the data were adapted from the ACSI model.

A confirmatory factor analysis (CFA) was conducted to empirically test the measurement model. Multiple tests of construct validity and reliability were conducted. The fit of the model was assessed using the maximum likelihood (ML) method.

**Table 3:** Principal component analysis PCA

	Initial	Extraction	Total	of Variance	Cumulative
CE1	1	0.911	2.746	91.545	91.545
CE2	1	0.911	0.14	4.65	96.196
CE3	1	0.924	0.114	3.804	100
PQ1	1	0.917	2.739	91.296	91.296
PQ2	1	0.892	0.163	5.427	96.724
PQ3	1	0.93	0.098	3.276	100
PV1	1	0.89	1.779	88.969	88.969
PV2	1	0.89	0.221	11.031	100
CC1	1	0.98	1.961	98.031	98.031
CC2	1	0.98	0.039	1.969	100
CL1	1	0.948	1.897	94.833	94.833
CL2	1	0.948	0.103	5.167	100
BIR1	1	0.971	1.943	97.131	97.131
BIR2	1	0.971	0.057	2.869	100
CS1	1	0.813	2.653	88.434	88.434
CS2	1	0.887	0.286	9.526	97.96
CS3	1	0.952	0.061	2.04	100

Reliability was assessed using Cronbach's  $\alpha$ , composite reliability (CR) and average variance extracted (AVE) using CFA.

**Table 4:** Cronbach's  $\alpha$  reliability test

	Cronbach's Alpha	N of Items
CE	0.949	3
CS	0.933	3
CC	0.979	2
CL	0.942	2
PQ	0.951	3
PV	0.874	2
BIR	0.97	2

**Table 5: Discriminatory validity matrix**

	CR	AVE	MSV	MaxR (H)	CE	CS	CC	CL	PQ	PV	BIR
CE	0.951	0.867	0.927	0.963	<b>0.931</b>						
CS	0.943	0.847	0.876	0.955	0.733***	<b>0.92</b>					
CC	0.98	0.962	0.893	1.007	0.878***	0.827***	<b>0.981</b>				
CL	0.946	0.897	0.893	0.95	0.901***	0.913***	0.945***	<b>0.947</b>			
PQ	0.951	0.866	0.927	0.967	0.913***	0.779***	0.856***	0.927***	<b>0.931</b>		
PV	0.887	0.798	0.861	0.972	0.775***	0.920***	0.843***	0.927***	0.848***	<b>0.893</b>	
BIR	0.971	0.943	0.282	0.979	0.473***	0.310***	0.531***	0.531***	0.378***	0.209***	<b>0.971</b>

Significance level: † p < 0.100, \* p < 0.050, \*\* p < 0.010, \*\*\* p < 0.001

As the  $\alpha$  values for all constructs are above the guideline of 0.70, it very well may be inferred that the scales can be applied for analysis with acceptable reliability (Saunders et al., 2003). The CR and AVE were determined from the model estimates using the CR formula and the AVE equation given by Fornell and Larcker (1981).

In the measurement model, all constructs had a CR over the threshold of 0.70 and the AVE for all surpassed the suggested level of 0.5 (Bagozzi & Yi, 1988). In light of these appraisals, the measures used in this study were within acceptable levels supporting the reliability of the constructs.

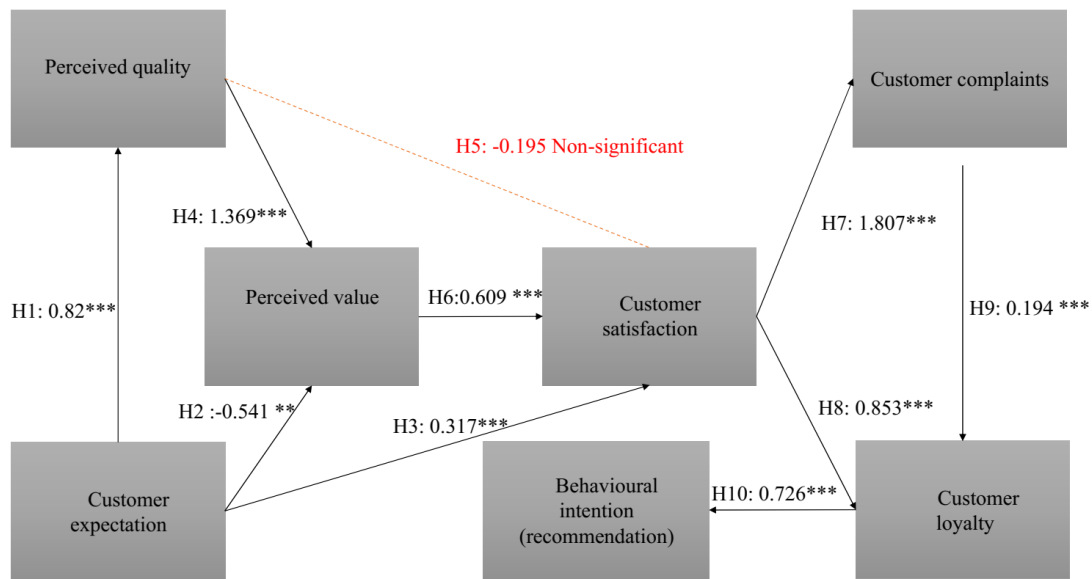
To survey discriminant legitimacy, Fornell and Larcker's (1981) criterion that the square root of the AVE for each construct should be superior to the correlation between constructs. Table 5 shows that the AVE square root values are all greater than the correlations between constructs. Common measures of model fit were used to assess the overall quality of model fit.

As shown in Tables 3, 4 and 5, all model fit indices exceeded the respective common acceptance levels suggested by previous research (Kim et al, 2004), demonstrating that the measurement model has a good fit with the data collected.

#### 4. Structural model results

Bootstrapping with 504 resamples was performed to derive t-statistics to assess the significance level of the model coefficients and to test the hypotheses (Chin, 2001). Using AMOS version 24.0, the researcher determined the path coefficients. The following figure shows the results of the structural model.

**Figure 2:** The results of the structural model of our study



Notes: \*\*\*p<0.001, \*\*p<0.05 and --- not significant

**Table 6:** Results of hypothesis testing

				Coefficients	H.E.	C.R.	p-value	Result
H1	PQ	←	CE	0.82	0.031	26.32	***	significant
H2	PV	←	CE	-0.541	0.209	-2.587	0.01	significant
H3	CS	←	CE	0.317	0.117	2.703	0.007	significant
H4	PV	←	PQ	1.369	0.252	5.438	***	significant
H5	CS	←	PQ	-0.195	0.184	-1.056	0.291	Non-significant
H6	CS	←	PV	0.609	0.083	7.311	***	significant
H7	CC	←	CS	1.807	0.087	20.814	***	significant
H8	CL	←	CS	0.853	0.078	10.883	***	significant
H9	CL	←	CC	0.194	0.036	5.35	***	significant
H10	BIR	←	CL	0.726	0.088	8.27	***	significant

Notes: \*\*\*p<0.001, \*\*p<0.05

The data provided by the respondents supports the model created for this study. This indicates that the model fits the data received in the study.

In the analysis of the structural model, only one hypothesis was rejected (Hypothesis 5) and the other nine were accepted. The details are as follows.

**Hypothesis 1 (H1):** There is a positive connection between customer expectation and perceived quality of use of the mobile banking service offered by banks.

The test of the model revealed that the regression coefficient between customer expectations and perceived service quality is 0.82, a positive and statistically significant relationship. This is consistent with the hypothesis that customer expectations are positively correlated with perceived service quality. Those with high expectations of mobile banking services tend to be the ones who get better perceived service quality.

**Hypothesis 2 (H2):** There is a positive connection between customer expectation and the perceived value of using the mobile banking service offered by banks.

The coefficient between customer expectations and the perceived value of mobile banking is statistically significant but negative. This is contrary to the previous hypothesis. This means that customer expectations have a negative effect on the perceived value of services. Respondents with high and low expectations perceived the value of the services in the same way.

**Hypothesis 3 (H3):** There is a positive connection between customer expectations and satisfaction with the use of the mobile banking service offered by banks.

The relationship between customer expectations and customer satisfaction is statistically significant. This is consistent with the hypothesis that customer expectations are related to customer satisfaction.

**Hypothesis 4 (H4):** There is a positive connection between perceived service quality and perceived value on the use of the mobile banking service offered by banks.

The regression weight between perceived quality and perceived service value is 1.364, which is positive and statistically significant. This indicates that perceived quality is related to perceived service value. This suggests that commercial banks need to improve the quality of their mobile banking services as this will have a very significant impact on the perceived value of their services.

**Hypothesis 5 (H5):** There is a positive connection between perceived service quality and customer satisfaction with the use of the mobile banking service offered by banks.

The relationship between perceived service quality and customer satisfaction is insignificant, this result is inconsistent with the hypothesis that perceived quality of mobile banking services has a significant effect on customer satisfaction.

**Hypothesis 6 (H6):** There is a positive connection between perceived service value and customer satisfaction with the use of the mobile banking service offered by banks.

The results of the model test show a positive and statistically significant relationship between perceived service value and customer satisfaction of 0.609. This is consistent with the hypothesis that perceived service value has a direct impact on customer satisfaction.

**Hypothesis 7 (H7):** There is a negative connection between customer satisfaction and customer complaint on the use of mobile banking service offered by banks.

The relationship between customer satisfaction and customer complaints is statistically significant with a coefficient of 1.807 but it does not fit the hypothesis that customer satisfaction affects customer complaints negatively. It also indicates that customers in Morocco are unlikely to complain to the bank.

**Hypothesis 8 (H8):** There is a positive connection between customer satisfaction and customer loyalty on the use of the mobile banking service offered by banks.

Customer satisfaction and customer loyalty have a regression weight of 0.853, thus a positive and statistically significant relationship. It is consistent with the hypothesis that satisfied customers are loyal customers. They will continue to use the service.

**Hypothesis 9 (H9):** There is a negative connection between customer complaints and customer loyalty on the use of mobile banking service offered by banks.

The relationship between customer complaints and customer loyalty is statistically significant with a coefficient of 0.194. In other words, customer complaints have no effect on customer loyalty or customer use of mobile banking. Therefore, customer complaints have a large impact on customer loyalty towards mobile banking use.

**Hypothesis 10 (H10):** There is a positive relationship between customer loyalty and recommendation to use the mobile banking service offered by commercial banks.

This is consistent with the hypothesis proposed in our model which means that customers will suggest to others to use the mobile banking service as well.

## 5. Discussions and Conclusions

The overall findings on the factors affecting customer satisfaction and the recommendation effect of mobile banking show that customers' expectations of service quality and value have an effect on their satisfaction and loyalty. These elements are predictable with past discoveries and with the ACSI model.

The results also show that the model can help identify factors that affect other important factors, allowing these factors to be used to develop and improve a bank's mobile banking services.

The expectations factor suggests that information provision and customer awareness - which lead to customer expectations - may not directly affect customer satisfaction, but may affect it indirectly through perceived quality and value.

This means that focusing on the quality of the service, its convenience and ease of transferring funds between accounts in the same bank or even inter-bank transfers, a wide range of bill payment options and guaranteed accuracy with clear help windows, affects the perceived value.

The value given to customers, such as reasonable transaction fees, no fees for funds transfers within the bank or low fees for interbank transfers within the same area, has a significant effect on customer satisfaction. A more satisfied customer is a more loyal customer, which ultimately affects the bank's profits (Reichheld and Sasser, 1990). The combination of these elements is the key to the success of a service company. Satisfied customers rarely complain and are more loyal to the bank overall.

This study provides a better understanding of the factors that are important for the development of an effective mobile banking system that meets the needs and expectations of customers. This in turn will translate into customer satisfaction, loyalty and service recommendation.

Using these factors to further progress the mobile banking system would not be a waste of resources, as banks would undoubtedly see the factors that would lead to the satisfaction of customers' needs and hence their satisfaction.

In addition, the study can be used as an indicator to assess whether the existing system is meeting customer needs and the level of customer satisfaction, which leads to greater competitiveness in the mobile banking arena.

At the same time, the development of the mobile banking system cannot be limited to the factors in this study alone but must take into account other elements that correlate with the customer satisfaction model in order to maximise the benefits for customers and further develop the sector.

As a general rule, the model should be run once a year to determine current levels of customer satisfaction with mobile banking. The researcher hopes that the results of this study will be useful to the business sector and help them achieve greater success in their business operations.

### **Conflict of Interest Statement**

I certify that I have NO affiliations with or involvement in any organization or entity with any financial interest (such as honoraria; educational grants; participation in speakers' bureaus; membership, employment, consultancies, stock ownership, or other equity interest; and expert testimony or patent-licensing arrangements), or non-financial interest (such as personal or professional relationships, affiliations, knowledge or beliefs) in the subject matter or materials discussed in this manuscript.

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