User Motivation and Role of the Technology Acceptance Model (TAM) in Banking Services

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Abstract

The development of financial technology and the ubiquity of the Internet are causing changes in consumer behavior, increasing competition in the financial services sector, and encouraging banks to actively implement digital technologies in their activities. Various initiatives and implemented innovations have attracted the attention of researchers in this industry. Previously, the main focus of researchers has been on technological development, but is now shifting to user-centered research. As practice shows, potential users may not use innovations despite their availability. This points to the need for additional research. The study was designed based on the Technology Adoption Model (TAM), and the model empirically examines changes in traditional banking services using a sample of 93 customers. The questionnaire included three parts. In the first part, respondents were asked what motivations for using online banking and traditional bank services are the most important for customer retention in the context of emerging technology. The second part asked about attitudes towards changes in bank services. The third part was demographic questions about the participants. According to the results, perceived usefulness, perceived ease, and attitudes toward

use are determinants in the use of online banking services; the main motivators are getting banking services easier and faster, more control over financial banking activity, and a better customer experience. The implications of the results are discussed and suggestions for the future are made.

Keywords: online banking, technology acceptance model (TAM), change in banking, finance technology, research

JEL codes: O14, G21

Introduction

The move into the online space is critical for banks, as the continued use of online banking increases the potential for the development of long-term, mutually beneficial customer-bank relationships that result in bank success (Oertzen & Odekerken-Schröder, 2019). The introduction of innovations and digitalization of financial services in the banking sector are some of the main elements of economic development. There is interest in Fintech research in the banking industry, but not enough research has been done to date to provide a systematization of the subject area (Elia et al., 2021). Online banking and various mobile applications in the financial sector are considered innovations and self-service technologies (Yousafzai & Yani-de-Soriano, 2012) implemented to increase customer loyalty and reduce bank costs. The move to online banking services does not limit the user to geolocation or a bank's mode of operation, allows working new markets, increases customer satisfaction, and reduces operational costs (Talafha & Abu-Shanab, 2015) In addition, customers benefit from personalized service and reduced waiting time for the sake of a more convenient service (Yee & Faziharudean, 2010). Online banking has become popular, and more and more customers prefer online banking to traditional banking, mainly because it offers 24/7 accessibility, simple and secure transactions, and no queues (Patel & Patel, 2018). With strong competition and increasing customer demands (Devlin, 2001), it is important that customers continue to use the bank's financial services in the new format. It is also indispensable that they cooperate with the bank when changes are introduced, and that they give feedback.

Some researchers argued that highly educated people are quicker to adopt innovations such as online banking and there is also a correlation to age and gender (Talafha & Abu-Shanab, 2015). Some scholars think that there is no difference according to gender, age, or education, other scholars have noted that men are more likely to use online banking (Okeke & Okpala, 2014). This paper seeks to examine 93 customers' attitudes toward the changes introduced by banks from EU countries, experiences using banking services, and explores motivations for using both traditional offline banking services and online banking.

The purpose of this study is to determine the relationship between the main factors that lead to the use of online banking and the motivation to switch from traditional banking to online format. In turn, this article makes three major contributions: first, the newly developed model offers a way to examine drivers, attitudes, and behaviors during the online banking use phase, thereby suggesting which items can help retain the existing customer base and attract potential customers. Second, the author makes a case for using the changes introduced depending on gender, age, and education level. This can increase the understanding of current customer attitudes, intentions, and behaviors regarding online banking services. Third, this study extends the technology adoption model (TAM; Davis, 1993) in the context of online banking services and shows the impact on current customer behavior.

This paper begins with a literature review that covers online banking, TAM and additional hypotheses. Then the methodology section details the data collection process, sampling, and then the analysis. This is followed by a discussion of the contributions made to this research area and suggestions for future research.
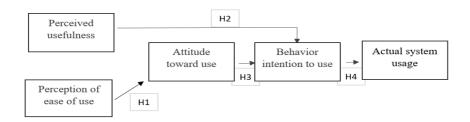
1. Technology acceptance model (TAM)

In the field of study, technology adoption has been one of the broadest and most comprehensively studied topics, the most popular being TAM (Technology Adoption Model) - the dominant model for understanding technology adoption and the factors leading to adoption decisions (Tam & Oliveira, 2017). TAM, according to Davis (1986) is based on the theory of TRA (Theory of Reasonable action). There are two main factors – perceived usefulness and perceived ease of use – that influence the behavioral intention to use, and then, the actual use (Juinn et al., 2012).

Today, there are many different additions to TAM, for example, Kumra and Mittal (2004) focused on studying the importance of trust in online banking. In their research, they confirm that opportunistic behavior and social communication have a significant impact in terms of building trust in the use of online bank services (Bashir & Madhavaiah, 2015)paying special attention to the role of perceived risk, trust, enjoyment, website design and social influence. Design/methodology/approach – A research model grounded on the technology acceptance model (TAM. Also, personal factors influence the ultimate decision (Khare et al., 2010) to switch from traditional offline banking to online banking. Other researchers, for example, Safeena et al. (2010) and Dash et al. (2012) studied in detail the effects of perceived risk, when switching to online banking, which is a major deterrent. Moreover, website navigation, perceived behavioral control, attitude, social influence, and subjective norms are determinants of intention (Bashir et al., 2013). Most of the research has focused on the importance of factors such as usefulness, adaptability, ease of use, level of risk and security, but little has been studied on systemic characteristics such as UX, UI design, or perceived attitudes towards innovative solutions (Kesharwani & Singh Bisht, 2012). Thus, to fully understand the motivations and drivers of online banking usage, it is necessary to examine all of these beliefs simultaneously.

Figure 1: Technology Acceptance Model

Source: Davis (1989)

TAM is the most widely used model for evaluating decision-making regarding online banking issues and the determinants that lead to adoption decisions. However, to maintain the current customer base and attract new customers, more research is needed on the drivers and motivations for moving to online banking (Tam & Oliveira, 2017). Specifically, this paper includes the TAM model's cognitive (perceived usefulness), affective (attitudes toward using online banking), behavioral (intention to continue), and actual (system use) properties (Figure 1).

1.1. Perception of Ease of Use

Given the introduced changes in banking processes due to the shift in customer experience from traditional offline banking services to online banking, technology will be more useful if it is easier to use (Venkatesh & Davis, 2000). If the customer cannot understand how to use the online service, and it proved to be very difficult to use, customers are more likely to choose another way to make a transaction. The more difficult a system is to use, the less likely it is to be popular. Venkatesh and Davis (2000) identified several determinants of perceived ease of use by integrating computer literacy and the facilitation condition into a technology acceptance model (Rahi et al., 2017)the disruptive innovative technology has accelerated changes in the way of banking business. The purpose of this paper is to explore the factors that influence on Pakistani customer's intentions to adopt internet banking. The sample used in this empirical study includes 265 responses of internet banking users collected through structured questionnaire. For statistical analysis, structural equation model (SEM. In this study, a parallel can be drawn between ease of use, gender and the availability of higher education. Due to the above, the following hypothesis is formulated:

H1: There is a positive relationship between perceived ease of use and attitudes towards the use of online banking.

1.2. Perceived usefulness

Perceived usefulness is defined as the extent to which a customer believes that using a mobile app or online banking will increase their productivity (Wang et al., 2003). For example, for online banking, perceived usefulness may be in payments, money transfers, billing, etc., which in turn saves time and improves service efficiency (Kesharwani & Singh, 2012). And with the introduction of new technologies and innovations, and the development of Fintech, the benefits will accumulate and grow. The more benefits for potential customers, the more likely the intention to use online banking (Rahi et al., 2017)the disruptive innovative technology has accelerated changes in the way of banking business. The purpose of this paper is to explore the factors that influence on Pakistani customer's intentions to adopt internet banking. The sample used in this empirical study includes 265 responses of internet banking users collected through structured questionnaire.

For statistical analysis, structural equation model (SEM. Empirical evidence shows that perceived usefulness has a significant impact on behavioral intentions toward technology usage (Kesharwani & Singh, 2012). Thus, the following hypothesis is formulated:

H2: Perceived usefulness will have a positive effect on consumer behavior and intention to use online banking.

2.3. Attitude toward use

Previous research has defined attitude as „the degrees of evaluative effect that an individual associates with the use of the target system" (Davis, 1993) or as „the degree to which an individual has a favorable assessment or evaluation of the behavior in question" (Ajzen & Fishbein, 1980). In general, based on empirical evidence, in the field of technology attitude has a large impact on behavioral intentions (Al-Ajam & Md Nor, 2015), including banking. Attitudes toward the use of traditional offline or online banking services is an effective response that is influenced by cognitive stimuli, which further determines behavioral responses. In other words, attitudes toward usage have an evaluative effect, that is, they reflect customers' positive or negative feelings (Ma & Liu, 2011). Regarding banking services, TAM predicts that attitude toward usage is a function of the perceived usefulness of online banking services and determines whether a customer uses those services (Çelik, 2008). Negative attitudes or unsuccessful experiences with digital banking services may not only cause a desire to stop using online banking, but also to respond negatively. In general, not only social or psychological aspects shape the outcome of customer behavior regarding banking services, but behavioral aspects also play an important role. For example, the belief or perception of the person can play a decisive role in whether he will use the services of the bank or not (Bashir & Madhavaiah, 2015)paying special attention to the role of perceived risk, trust, enjoyment, website design and social influence. Design/methodology/approach – A research model grounded on the technology acceptance model (TAM. Due to the fact that attitude plays a significant role in individual intention to adopt online banking, the following hypothesis emerges:

H3: Customer attitude positively influences intention to use online banking services.
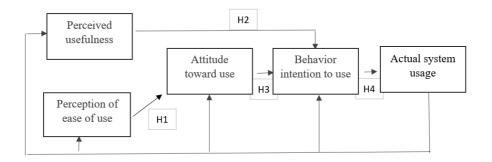
2.4. Behavioral intention to use

According to Fishbein and Ajzen (1980), the main factor of actual use is the behavioral intention to use. In other words, intention and actual use of Internet banking are highly correlated (Marakarkandy et al., 2017). A strong causal relationship between intention to use introduced changes in banking services and actual use has been confirmed by various studies on information systems (Sheppard et al., 1988; Venkatesh & Davis, 2000). Since behavioral intentions are the middle ground between the attitude variables and the resulting behavior, these intentions predict future client behavior (Oertzen & Odekerken-Schröder, 2019). Due to the fact that, in online banking, usage intentions are a dominant determinant of usage behavior (Arenas-Gaitán et al., 2015; Farah et al., 2018), the following hypothesis can be proposed:

H4: Behavioral intention to continue using the bank's digital products positively affects the actual use of mobile banking.

As part of the study, 4 hypotheses were proposed to test, which resulted in the research model shown in Figure 2.

Figure 2: Research model

Source: Authors own editing

2. Method

This study uses the Technology Acceptance Model (TAM) as a theoretical framework for understanding technology acceptance and the factors that lead to decisions to accept ongoing changes in banking. It does so by analyzing key factors such as utility, perceived ease of use, attitude toward use, behavioral intention to use, and system use. The survey instrument consisted of three parts. The first part included motivation, attitudes toward changes in banking services, perceived usefulness, and perceived ease of use. The second part asked about attitudes toward changes in banking services. The third part was demographic questions about the participants, such as marital status, age, gender, education, and work experience. For the detailed research, some variables such as customer evaluation, quality of banking services, and development of new services, for example, cryptocurrency, digital documents, non-banking services via banking applications and etc. may be suitable and can be included.

The factor intent items were determined based on Rahi et al. (2017) the disruptive innovative technology has accelerated changes in the way of banking business. The purpose of this paper is to explore the factors that influence on Pakistani customer's intentions to adopt internet banking. The sample used in this empirical study includes 265 responses of internet banking users collected through structured questionnaire. For statistical analysis, structural equation model (SEM, the remaining factors such as perceived usefulness, perceived ease of use, and attitude were adapted from the writings of Davis (1989). The items are anchored in a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree).

2.1. Data Collection

Data collection was conducted online from March to April 2022. The target respondents are banking users from different countries, regardless of the form of banking service used - online banking or traditional offline banking. The author developed an online questionnaire using Google Forms and sent it directly to the target respondents. In order not to duplicate the sample, when filling out the questionnaire, the target respondents had to log in through an email account. A total of 200 invitations were sent to potential respondents. The sample for the study consisted of 93 fully completed, valid questionnaires. Specifically, there were 93 respondents (47 men and 46 women), and most with a master's degree (43 respondents). 82 respondents had work experience, and the average age ranged from 24 to 29 years old. The demographic profile of respondents is presented in Table 1.

Table 1: Respondents' demographic characteristics

Source: Authors own editing

Classification	Respondents	
	Frequency	**Percentage (%)**
Gender		
Male	47	51%
Female	46	49%
Age		
18–20 years old	8	9%
21–25 years old	29	31%
25–30 years old	33	35%
31–35 years old	13	14%
Above 35 years	10	11%
Education		
No degree	14	15%
Bachelor	27	29%
Master	43	46,20%
Doctoral	9	9,70%
Marital status		
Single	44	47%
In relationship	26	28%
Married	23	25%
Work experience		
Full-time/ part-time job	82	88%
Internship	7	8%
Without work experience	4	4%

2.2. Data analysis

This study used the statistical software package SPSS for Windows (version 25), to conduct a regression analysis of the TAM model on the above described surveys. Regression analysis remains one of the most sought-after and popular quantitative methods in the social sciences. Regression analysis works well on small samples (Juinn et al., 2012). The ability to study an unlimited number of objects at the same time, as well as the transparency of the technique, has created its reputation as a reliable tool of analysis. The strength of the method lies in the fact that it aims not just to study change, but to deduce cause and effect (Wagschal, 2016). For the preparation of data analysis, it is important to summarize the measurement scale of the respondents' answers, which are presented in Table 2.

Table 2: Summary of measurement scales

Source: Authors own editing,

Constructs Measures		Measures
Perceived Usefulness (PU)	PU1	I think using online banking can make life more convenient
	PU2	Personalized services are the most important
	PU3	I can get what I need easier and quicker by online banking
	PU4	Personal human contact
	PU5	No need visit bank offices frequently
	PU6	I must be careful when using technologies because criminals may use the technology to target me
Perceived Ease of Use (PEOU)	PEOU1	I am overly dependent on technology
	PEOU2	New technology makes it too easy for companies and other people to invade my privacy
	PEOU3	Technology helps me make necessary changes in my life
	PEOU4	I can figure out new high-tech products and services without help from others.
Attitude Toward Use (ATU)	ATU1	Online banking tools are easy to use
	ATU2	I prefer online banking services
	ATU3	Faster service and processes
	ATU4	I believe the transaction system of banking service is secured and trusted
	ATU5	Is it important to have an online banking app
Behavioral Intention to Use (BIU)	BIU1	I have positive attitudes toward using online banking services
	BIU2	I think online banking provides better customer experience
	BIU3	I think using online banking can make life more convenient
	BIU4	I am interested to hear about new technological developments in banking services
	BIU5	Personal digital contact is important
	BIU6	I am motivated to use offline traditional banking services
Actual System Usage (ASU)	ASU1	I feel comfortable changing and using online banking services for my financial activities
	ASU2	I usually use online banking services; it is faster in terms of service and processes
	ASU3	I feel comfortable changing and using online banking services for my financial activities
	ASU4	Design of interface and platform are the most important
	ASU5	Costs are the most important areas for customer retention

3. Results

Proposed hypotheses for this study were tested using factor analysis. The results in Table 3 show the path coefficients of the respective constructs with an indication of the level of significance. Also, the results of the Kaiser-Meyer-Olkin (KMO) test confirm the adequacy of the data sample, the variables that are used to measure a particular concept measure exactly the concept that was intended.
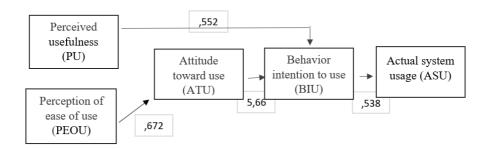
Table 3: Hypothesis testing

Source: Authors own editing

	Constructs	KMO	Bartlett's Test of Sphericity	Sig.	Result
H1	PEOU>ATU	0,672	102,8	<0,001	Supported
H2	PU>BIU	0,552	111,1	<0,001	Supported
H3	ATU>BIU	0,566	43,3	<0,001	Supported
H4	BIU>ASU	0,538	40,5	<0,001	Supported

The results show that all five hypotheses have a significant relationship with the corresponding endogenous variables. It can be seen that a positive relationship between perceived ease of use and attitudes toward using online banking is supported by hypothesis H1. Perceived usefulness will have a positive effect on consumer behavior and intention to use online banking is supported by H2. H3 showed that customer attitude positively influences intention to use online banking services. Behavioral intention to continue using the bank's digital products positively affects the actual use of mobile banking is supported by hypothesis H4. It is worth noting that significance level values are *p < 0.05, **p < 0.01.

Figure 3: The result of research model

Source: Authors own editing

This research was based on attitudes regarding the various motivations and behavioral intentions to use online banking through factors named perceived usefulness and perceived ease of use. Still, there is a positive correlation between these factors, and attitudes and use. The results reveal that all four hypotheses proved to be correct, a significant relationship was shown between the variables according to the Pearson Correlation (β). The relationship between Perceived Ease of Use (PEOU) and Attitude Toward Use (ATU) defined in H1 is supported by the following result: (β =,342, p< 0.001). Next, the relationship between Perceived Usefulness (PU) to Behavioral Intention to Use (BIU) formulated in H2 is supported as well: (β = ,490, p< 0.001). H3 showed that Attitude Toward Use (ATU) is positively related with Behavioral Intention to Use (BIU) by (β = 0.489, p< 0.001). Finally H4 defining the relationship between Behavioral Intention to Use (BIU) to Actual System Usage (ASU) is supported by (β = ,479, p< 0.001).

In addition, the authors decided to test the use of innovations depending on gender, age, and level of education. According to the results of regression analysis shown in Table 4, the R value is 0.203, indicating a low degree of correlation between the samples. The R2 value indicates how much of the total variation in changes in the use of banking services can be explained by independent variables such as education level, gender, marital status, and age.

Table 4: Regression model summary

Source: Authors own editing

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,203a	,041	,014	5,248
a. Predictors: (Constant), Work experience, Gender, Marital status, Education, Age				
b. Dependent Variable: changes in banking services				

In this case 4,1% can be explained, which is not a very high level, which makes the regression questionable. On the other hand, 7,6% of the total variation in the use of technology transforming financial services can be explained by the mentioned independent variables (Table 5). In general, users of banking services are positively influenced by the changes introduced, and the majority of respondents indicated that they feel comfortable with the innovations introduced in banking services.
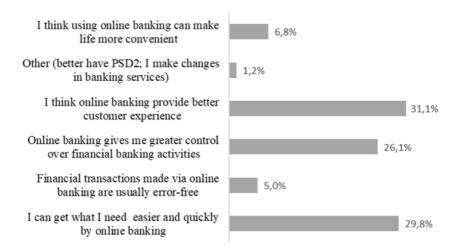
Table 5: Regression model summary

Source: Authors own editing

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,277a	,076	,0235	15,077
a. Predictors: (Constant), Marital status, Education, Work experience, Gender, Age				
b. Dependent Variable: Technologies are set to transform the way financial services				

To improve understanding of current customer attitudes, intentions, and behaviors toward online banking services, the authors asked respondents to identify what motivates them to use online banking services as part of the study. The result of the survey is presented in Figure 4.

Figure 4: Motivation for using online banking services

Source: Authors own editing

Conclusion and Discussion

With the development of technology, introduction of financial innovations in online banking is becoming more and more accessible (Rahi et al., 2017) the disruptive innovative technology has accelerated changes in the way of banking business. The purpose of this paper is to explore the factors that influence on Pakistani customer's intentions to adopt internet banking. The sample used in this empirical study includes 265 responses of internet banking users collected through structured questionnaire. For statis-

tical analysis, structural equation model (SEM. Today, traditional banking services go beyond the familiar and the digitalization of services provides additional opportunities and increases customer loyalty. According to the results, perceived usefulness, perceived ease of and attitudes towards use are determinants in the use of online banking services. The main motivators are getting banking services easier and faster, more control over financial banking activity and better customer experience. Users of banking services are positively influenced by the changes introduced, and the majority of respondents indicated that they feel comfortable with the innovations introduced in banking services. Total variation in changes in banking services can be explained by education level, gender, marital status, and age only at 4,1%. The model presented in this study identifies key determinants of technology adoption that will be beneficial for online banking users. Customers' intentions and attitudes were measured using factors like perceived usefulness, perceived ease of use, and attitude, and the findings also confirm previous research (Bashir & Madhavaiah, 2015) paying special attention to the role of perceived risk, trust, enjoyment, website design and social influence. Design/methodology/approach – A research model grounded on the technology acceptance model (TAM. The results can be taken into account from the banking strategy side. The crucial questions raised: are banks ready to accept customers' intentions and make banking fit into customers' daily lives? Nowadays, most strategies need to be changed, adjustments must be made in management policies, and digitalization must be based on research data to mitigate the negative effects of the changing processes and resistance to these changes. The implementation strategies, including digital transformation, can create an additional advantage in communication between banks and customers based on perceived usefulness, perceived ease of use, and attitude.

The limitations of this study are the relatively small number of respondents. The number of respondents must be increased to increase statistical reliability. This is a challenge for the next research project. Internet banking behavior, motivations and continuous innovation cannot be static. In the process of adopting or using the introduced changes, including the digitalization of banking services, the respondents' perception may change. Other limitations are the variables that were defined in the survey but not included in the model used in this study. This also provides an opportunity for a more detailed analysis in future studies.

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Appendix

Questionnaire

1. How often do you visit a traditional bank (bank office, branch)?

- Once per week

- 1-2 times per month

- 1-2 times per quarter

- Very rare (1-2 times per year)

- Other:

2. Is it important for you to have an online banking app? *

- Yes

- No

- I usually use website

- Other

3. Your motivation for using online banking services? *

- I can get what I need easier and quickly by online banking

- Financial transactions made via online banking are usually error-free

- Online banking gives me greater control over financial banking acti-vities

- I think online banking provide better customer experience

- I think using online banking can make life more convenient

- Other

4. What do you think are the most important areas for customer retention in the context of emerging technology?
(1 - strongly disagree, 5 - strongly agree)

- Personal digital contact

- Personalized services are the most important

- Faster service and processes

- Design of interface and platform

- Personal human contact

- Trust

- Costs

- 24/7 customer

- Support

- No need visit bank offices frequently

5. Describe yourself based on the following statements:
(1 - strongly disagree, 5 -strongly agree)

- I am overly dependent on technology.

- I can figure out new high-tech products and services without help from others.

- I must be careful when using technologies because criminals may use the technology to target me.

- New technology makes it too easy for companies and other people to invade my privacy.

- Technology helps me make necessary changes in my life.

- I seem to have more trouble using technology than other people.

- Usually I ask for help in using new technology

- I am interested to hear about new technological developments in banking services

6. How do you feel about changes in banking services?

- I am interested to hear about new technological developments

- I do not trust to new technological developments

- Technological developments have enhanced our lives

- I feel comfortable in changing and using online banking services for my financial activities

- I am not comfortable in changing and using online banking services for my financial activities

- Other

7. Please, describe yourself based on the following statements:
(1 - strongly disagree, 5 -strongly agree)

- I usually use online banking services; it is faster service and processes financial plans.

- Online banking tools are easy to use

- I prefer online banking services

- I prefer traditional offline banking services

- I believe the transaction system of banking service is secured and trusted

- Is it important to have an online banking app

- I have positive attitudes toward using online banking services

8. In your opinion, which technologies are set to transform the way financial services are delivered within the next two years?

- Internet of Things (IOT)

- Artificial intelligence

- Cloud

- Blockchain

- Voice technology, including natural language processing

- Robotic process automation

- Big data

9. Please, enter your gender *

- Female

- Male

- Other

10. Your marital status? *

- Single

- In relationship

- Married

- Divorced

- Widowed

11. Please, tell me your age?

12. Please, indicate your level of education?

- High school

- College

- Bachelor degree

- Master's degree, MBA

- Ph.D, Postdoc

13. Do you have work experience? *

- Yes

- No

- Only internship