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Review Article

Analysis User Acceptance of Saudi Banks Applications in Qassim Region Using UTAUT

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Abstract. M-Banking is a mobile technology innovation that is compatible with banking financial services. This study aims to determine the factors that affect the customer's acceptance of using mobile banking services. The UTAUT model was used in this study. The data collection process was carried out through a hard copy and electronic questionnaire through which 318 usable answers were collected from users of mobile banking services in the Qassim region in the Kingdom of Saudi Arabia. The study results indicate that there is a statistically significant relationship between performance expectancy and behavioral intention to use. The results, statistically speaking, demonstrate the factors that affect the customer's adoption of mobile banking services. The performance expectancy factor was the most influencing factor on the intention to use mobile banking services in Qassim.

Keywords. M-banking, The Unified Theory of Acceptance and Usage Technology (UTAUT), Performance expectancy, Behavioral intention

Mathematics Subject Classification (2020). 53E10, 26E60

1. Introduction

lecture-based classroom model due to the continuous development in modern information technology and the increase in the number of mobile phone users, this has led to the emergence of a new trend in banking operations, the so-called mobile banking services [9]. Mobile banking is a mobile application that uses mobile facilities to conduct transactions and banking services. The human social life is positively affected by the development of information technology, such as education, medicine, aviation, commerce, administration, entertainment, and others, including

banking services. With the strong popularity and accessibility of the smart phone market, the banking industry encourages the creation of innovative applications that facilitate customers to conduct transactions easily, especially mobile banking services.

Currently, most banks are increasingly using mobile banking services. Mobile banking services provide additional value to banks as incentives to customers. This service attracted customers' attention greatly because it provided traditional services such as money transfer, balance disclosure, bill payment, and adding users. With mobile banking services, customers can benefit by accessing many banking facilities 24 hours a day to conduct transactions, as these services provide convenience, ease to use and speed for customers, and for banks, this technology has significantly reduced costs [12]. In the Kingdom of Saudi Arabia, the number of active internet users reached 32.23, a rate of 93.31% in 2020 [16]. In view of this, the rapid growth of the Internet has led to a significant and robust change in the service channels used by banks and financial institutions. Many banks have established electronic websites and applications that enable customers to conduct transactions through the Internet [2]. Currently, developments in the field of mobile phone technologies have radically altered the use of mobile banking services in the financial sector. Owning a mobile phone will enable customers to conduct banking transactions by dispensing with fixed devices (Consumer use of mobile banking (M-Banking) in Saudi Arabia: Towards an integrated model). Barnes defined mobile banking services as a media in which the customer communicates with banks using a mobile device and through which banking operations are performed [14]. People in Saudi Arabia are interested in integrating mobile phone systems in all aspects of daily life. This interest leads to new dimensions that have been adopted by the Saudi government to invest in innovative applications effectively, to make people's lives easier. This applies the vision of the Kingdom of Saudi Arabia 2030 [5]. In light of the new developments in the technical sector, promised opportunities opened for faster and smarter services [14]. To adopt and enhance the use of mobile banking services, it is essential for both businesses and consumers to deepen their understanding of these services [10]. Innovative technologies have transformed powerful ways to improve the quality of life [7]. User acceptance of technology is an important issue, as it determines the success or failure of a new service. User acceptance means the user's intention to adopt the technology designed to support the tasks. While a lack of acceptance is the lack of awareness of the fruits of the new information system. The system that produces great performance, users often want to adopt and benefit from it. Therefore, user acceptance is an important part of success [13]. Researchers in different regions of the world have conducted studies to understand the adoption of mobile banking services using several common technologies and models [14]. In this study, it was understood how UTAUT factors influence user intent to use mobile banking.

This paper is structured as follows: Section 2 presents the Literature Review, Section 3 related work, Section 4 reports the methods of the study, and Section 5 outline the results and discussion. Finally, Section 6 concludes the paper.

2. Literature Review

To understand the theoretical framework of mobile banking services, the first part of this chapter covers the explanation of the *Unified Theory of Acceptance and Use Technology* (UTAUT) model and the influencing factors, while the second part talks about the previous studies related to banking services based on UTAUT.

UTAUT. It is an information system theory designed and formulated by Venkatesh in 2003 and others in "User acceptance of information technology: toward a unified view" [4]. UTAUT integrates eight theories of technology adoption and provides a comprehensive view of the factors affecting users' adoption behavior [3].

The UTAUT model identifies the key factors in acceptance of technology as measured by behavioral intention to use the technology and actual usage and as demonstrated by the results of pilot studies that have shown that the UTAUT model is the most effective model for analyzing technology acceptance. The UTAUT model could explain 70% of the variance in user intent. UTAUT consists of four main variables: performance expectancy, effort expectancy, social influence, and facilitating conditions. Through three variables: performance expectancy, effort expectancy, and social influence the behavioral intent to use technology is determined. The actual use of the system is then determined by two factors, the behavioral intention of the use and the facilitating conditions. The impact of these key variables on intent to use can be mitigated by several factors like gender, age, experience, and voluntariness of use as shown in Figure 1 [4].

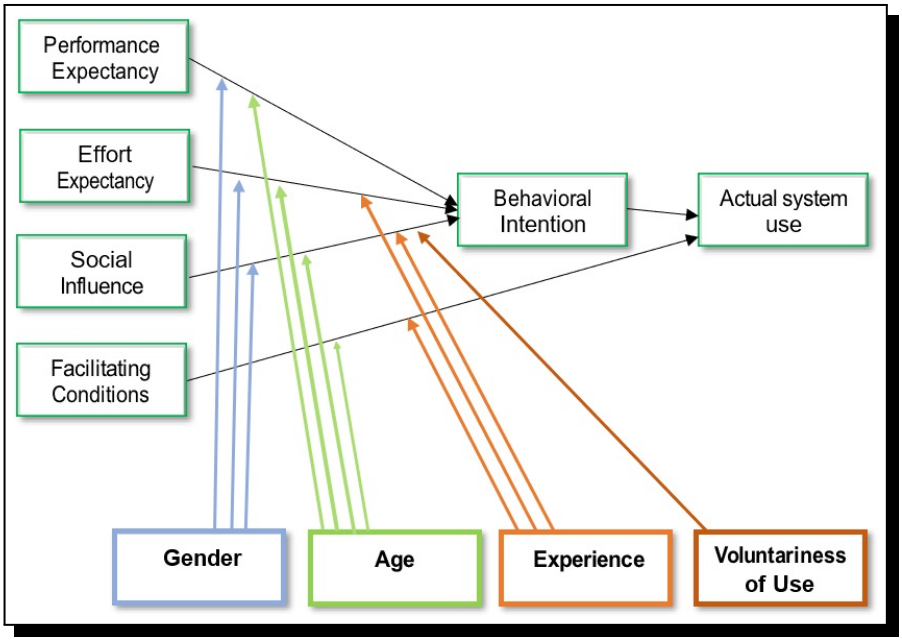

Figure 1. Unified Theory of Acceptance and Use of Technology (UTAUT) [4]

Variables used in UTAUT

Performance Expectancy (PE). The degree to which a user believes that using technology will improve their performance and help them achieve job tasks. In the context of mobile banking, the user believes that using this service facilitates his banking activities [9]. A user's intention to adopt and adopt a new technology is influenced by their expectations regarding the performance of that technology. Previous studies have demonstrated the effect of perceived performance on the behavioral intent of adopting mobile banking services. Ammenwerth [4], provide evidence that there is a close relationship between a customer's intent to embrace the technology and how they perceive the technology's usefulness [14].

Effort Expectancy (EE). is the user's perception of the ease of use of the system. In the context of mobile banking, the easier it is to use this service, the more likely it is to conduct banking transactions [9]. One of the main reasons for technology acceptance is user perception of ease of use and less effort. The user-friendly interface of the application attracts the customer by providing ease and speed of use [14].

Social Influence (SI). it is the extent to which the individual realizes that significant others believe they must use the new system. Social influence occurs when people are affected by a certain technology by switching their friends or family from one technology to another. SI is one of the important stages in the development of new technologies. The users do not have experience about the new technology, and thus will depend on the opinions of others, it is the effect of the environment on the individual (including family members, friends, relatives, and neighbors) in his perceptions about a particular use of technology or activity [9]. In an era when social media has dominated the online world, the influence of social relationships can either maintain or increase the use of certain services or convert users to new technologies. The positive role of SI in the use of mobile banking is emphasized [5].

Facilitating Conditions (FC). FC is defined as the degree to which an individual believes there is an organizational infrastructure in place to support the use of the system. Individuals' perceptions of the infrastructure are affected, which may motivate them to continue using a particular service. Given the development of technology in the Kingdom of Saudi Arabia, we can say that the ease of use of the Internet and great support can influence customers in choosing their online banking systems [5]. To accredit M-banking, an individual needs skill, a mobile phone, internet connection, and security. The ability to log in and access personal accounts and transfer funds from one account to another supports the use of M-banking. In a previous study, it indicated that direct transfer affects a user's intention to use and consent to mobile banking services. The better FC is available to the user, the greater the individual's willingness to accept the technology [11].

3. Related Works

Mobile banking originated in the late 1990s, when it relied on text messaging on cell phones. With the proliferation of tablets and smartphones, the financial institution has developed and introduced its mobile banking software, commonly called a mobile banking application, to allow customers to conduct banking operations remotely [8].

There are a large number of studies that have identified the factors and variables that affect the adoption of mobile banking services using the Unified Theory of Acceptance and Use of Technology Technologies (UTAUT). As such, in 2017, Abdullah and others found a strong relationship between the actual use of mobile banking and customer loyalty. The positive impact of actual use increases when there are successful system quality, information quality, and service quality. This study conducted a paper questionnaire on 429 customers of the Saudi Bank's clients from the six largest cities in the Kingdom of Saudi Arabia (Riyadh, Jeddah, Makkah, Madinah, Al-ahsa and Taif) to achieve more generalization and cover a large part of the Saudi society. from the study, about 59% of respondents were male and 41% female. It was observed that the majority of the respondents were within the age groups 21-29 representing 55% and 30-39 represent 21%. Most of the respondents have a bachelor's degree (44%), followed by those

with a high school diploma (19%). About 51.2% of the respondents work in the government sector, while about (21%) work in the larger private sector. The number of respondents (44.2%) whose income ranges between 8001 and 14,000 riyals. A strong relationship was observed between the actual use of mobile banking and customer loyalty. In this regard, it is likely that customers who use mobile banking services a lot will continue to do business with their banks in the future, and a direct relationship has also been found between customer satisfaction and customer loyalty. In addition, the study found that three factors (anticipation of effort, social impact, and quality of information) fail to predict any variation in the use of mobile banking services. This means that Saudi customers are not concerned with the level of ease of use in mobile banking services. According to the sample participants, most of them are well educated, younger, and have enough experience with technology and the Internet. Thus, they are expected to overcome any problem related to the level of complexity and difficulty in using mobile banking services. This study applied to actual users of mobile banking using the UTAUT2 model. This study aims to determine the factors that contribute to customer satisfaction and loyalty [5].

While Sarfraz collected the results of a survey in 2017 of 340 evaluators to understand the reasons for adopting mobile banking in Jordan, it found that performance expectations influence effort expectations and risk perception in a user's intent to adopt mobile banking. Consumers are more likely to adopt mobile banking services if they are sure of the integrity of the transactions having the expected performance and an easy-to-use system, as the lack of correct knowledge and a perceived fear of security hinder people from using mobile banking services. The study emphasized that the behavioral intentions of adopting technology can differ from one culture to another and depend on the information technology infrastructure in the region. The purpose of the study was to understand the drivers behind the adoption of mobile banking services within the framework of the Unified Theory of Acceptance and Use of Technology (UTAUT) [9].

In 2018, Raza *et al*., studied mobile banking in Pakistan using UTAUT2 Mobile banking services were introduced in Pakistan in the year 2009, as mobile trans- actions increased dramatically in Pakistan according to the annual report presented by the State Bank of Pakistan. Islamic banking and traditional banking services are similar in money transfer, purchases, and payments, but differ in their context, as lottery payments are considered gambling and prohibited in Islamic law. The majority of studies have been conducted in conventional banks and a very limited number of studies have been conducted in the context of Islamic banking. Data for this study were collected in Pakistan through a survey questionnaire and the target population was the users of Islamic banks. The final sample size used in the study was 229. The questionnaire was based on a five-point Likert scale from Strongly Disagree (1) to Strongly Agree (5). On the basis of the research form, the questionnaire was created in English and was validated and revised by a group of researchers. Eight hypotheses were made in the study which are that all seven variables of UTAUT2 (performance expectancy (PE), facilitating conditions (FC), social influence (SI), and effort expectancy (EE), price value (PV), hedonic motivation (HM) and habit (H)) It has a positive effect on the intention of the individual. In addition to the eighth hypothesis, that behavioral intent has a significant impact on the actual use of mobile banking services. Hypotheses were tested on the basis of the sign, size, and statistical significance of the parameters between each latent and dependent variable. All hypothesis pathways showed a positive significant association with behavioral intent, except for social influence. Thus, the result indicates the acceptance of seven out of eight hypotheses. Where

the study showed that all UTAUT2 variables, except for the social influence, have a significant impact on an individual's acceptance of Islamic mobile banking services [11].

In 2019, Siyal *et al*., conducted a study aimed at identifying the factors that affect the acceptance and intent to use banking services for bank customers in China using the Unified Theory of Acceptance and Use of Technology (UTAUT). Study focused on individuals with a mobile phone and bank account. The study also targeted students and staff from three universities in the Hefei region of China, including electronic banking users and nonusers. The survey was sent randomly to participants from these universities via email and WeChat. During the eight weeks from February to March 2018, 200 valid samples were obtained from different universities. The sample collected was distributed between the sexes: males 52.5% and females 47.5%. It included different age groups with 45% of the 18-30 age group, 25% of the 31-40 age group, 17.5% of the 41-50 age group, and 12.5% of the 50+ age group, respectively. This proves that the sample is free from bias. Research results confirmed a significant positive effect of awareness regarding services and their relative benefits on the position of Internet users in China, as most of them are unaware of the services and advantages of the underlying technology. Awareness can be created by banks establishing priority marketing strategies aimed at educating consumers about the latest services and benefits of technology. Marketing campaign design should include customers to try out mobile banking services through fake apps before their actual transactions. Where the comparison campaigns that distinguish mobile banking services and the features of traditional banking services reveal that using banking services via mobile phone, they can make all kinds of financial transactions without any restrictions spatial or temporary, as well as saving valuable time and effort, and money, while requiring banking through the traditional visit to bank branches in person to make any transaction [15].

In 2020, Saparudin *et al*., assessed the customer intent parameters to continue using mobile banking services. This study used the UTAUT model in the context of M-banking by integrating it with trust. Data were collected in five regions of Jakarta; East, West, South, North, and Central Jakarta through an online questionnaire to facilitate its dissemination to users of mobile banking services and was conducted during four months from September to December and included 402 respondents, including 201 males and 201 females. 177 of the study participants were under the age of 35. 298 participants were employees of the private sector. Regarding income of the participants, the largest group was 5-10 million Rp with 210 respondents, followed by income between 11-15 million Rp with 89 participants. Study results showed that performance expectancy, effort expectancy, social influence, and trust are closely related to the continued use of mobile banking services. Trust was the most decisive factor in predicting intent to continue to be used in the context of mobile banking in Indonesia. Because trust is a personal matter, a bank must be able to assure that it has the capacity and quality of customer service. While effort expectancy was the second determining factor in anticipating intention to continue using mobile banking services. This means that it must be taken into account that the mobile banking application is easy to use so that the customer does not feel any difficulties in learning and operating it. Social influence is the third factor that influences behavioral intention. The support of parents and friends contributes to the effect of the intention to continue using the mobile banking application. The last factor that also affected the intent to continue to use was performance expectancy. It had the least effect compared to other factors [13].

In 2021, a study was conducted in Yemen using (UTAUT) to indicate the factors that affect internet banking adoption. Data were collected by survey questionnaire distributed to the bank's customers and the number of usable responses was 354. The result of the study indicates that the most influential factors are: effort expectancy, performance expectancy, awareness, and trust. While the social influence has no role in adopting IB services [1].

4. Methodology

4.1 Research Model

In this study, the UTAUT model which is PE, EE, SI and FC was used

4.2 Data Collection

The required data were collected through a hard copy and an electronic questionnaire, and 100 questionnaires were distributed by employees of several branches of different banks in the Qassim region to customers using mobile banking services. 64 answers approved. 254 answers were collected from the electronic questionnaire out of 378 answers and 124 answers were excluded from outside Al-Qassim region. The final sample number used was 318.

4.3 Data Analysis Method

The questionnaire includes data measured on a five-point Likert scale as shown in Table 1, with the number 1 (Strongly Disagree) crossing to 5 (Strongly agree). Analysis of the data collected through the questionnaires was performed using the SPSS statistical program. Reliability analysis was performed by means of calculation of the Cronbach alpha coefficient, as well as a descriptive statistical analysis of the sample structure.

Table 1. Five-point Likert scale

Likert-scale	Interval	Difference	Description
1	1.00 - 1.79	0.79	Strongly Disagree
2	1.80 - 2.59	0.79	Disagree
3	2.60 - 3.39	0.79	Neutral
4	3.40 - 4.19	0.79	Agree
5	4.20 - 5.00	0.80	Strongly Agree

5. Analysis and Discussion

Statistics in Table 2 show that the majority of respondents were within the age groups 18-25 (44%) and 26-35 (27%). Referring to gender, most of the people questioned are female (70.1%), while men have the least answers (29.9%).

Table 2. Sample structure

	Attribute	Frequency	Percentage (%)
Gender	Male	95	29.8%
	Female	223	70.1%
Age	Less than 18	4	1.2%
	18 - 25	142	44.6%
	26 - 35	87	27.3%
	36 - 45	52	16.3%
	46 - 55	33	10.3%
	More than 55	0	0

The Cronbach alpha is an important indicator for measuring test reliability, as the ratios of variance are assessed and tested on a range of scores for the test. It may change between 00.0 and 1.00. The closer the ratio is to 1.00, the more reliable and reliable it is [6].

In this paper, the Cronbach alpha value was calculated to test whether the result is reliable, and the researchers can confirm the results, according to Table 3, it was shown that the alpha value is equal to 0.733, which means a good value.

Table 3. Cronbach's alpha

Reliability Statistics	
Cronbach's Alpha	N of Items
.733	8

Based on the above mentioned in the data collection section, the questionnaire responses were collected, and they were 318 responses. Table 4 shows the correct answers for each question, and it is worth noting that there was no missing data.

Table 4. Frequencies statics

Statistics									
		Mobile banking enables me to accomplish banking activities more quickly	Mobile banking gives me greater control over financial banking activities	Interaction with mobile banking apps/ websites is clear and understandable	I think the interaction with mobile banking does not require a lot of mental effort	I expect my use of mobile banking for handling my financial transactions to continue in the future	I will strongly recommend others to use mobile banking.	Most people surrounding with me use mobile banking.	I can get help from others when I have difficulties using mobile banking services
N	Valid	318	318	318	318	318	318	318	318
	Missing	0	0	0	0	0	0	0	0

In the same regard, the answer to each question is explained separately, and for an explanation of that, tables from 5 to 12 show the number of agrees, opponents, and neutrals in relation to Likert's five points, thus showing us a rate and a detailed explanation of the answers to each question.

Mobile banking enables me to accomplish banking activities more quickly.

Table 5. Statistical description of Question 1

		Frequency	Percent	Valid Percent
Valid	neutral	2	.6	.6
	agree	73	23.0	23.0
	I totally agree	243	76.4	76.4
	Total	318	100.0	100.0

Mobile banking gives me greater control over financial banking activities

Table 6. Statistical description of Question 2

		Frequency	Percent	Valid Percent
Valid	I do not agree	12	3.8	3.8
	neutral	18	5.7	5.7
	agree	125	39.3	39.3
	I totally agree	163	51.3	51.3
	Total	318	100.0	100.0

Interaction with mobile banking apps/websites is clear and understandable

Table 7. Statistical description of Question 3

		Frequency	Percent	Valid Percent
Valid	I do not agree	6	1.9	1.9
	neutral	10	3.1	3.1
	agree	121	38.1	38.1
	I totally agree	181	56.9	56.9
	Total	318	100.0	100.0

I think the interaction with mobile banking does not require a lot of mental effort

Table 8. Statistical description of Question 4

		Frequency	Percent	Valid Percent
Valid	Strongly Disagree	1	.3	.3
	I do not agree	8	2.5	2.5
	neutral	20	6.3	6.3
	agree	128	40.3	40.3
	I totally agree	161	50.6	50.6
	Total	318	100.0	100.0

I expect my use of mobile banking for handling my financial transactions to continue in the future

Table 9. Statistical description of Question 5

		Frequency	Percent	Valid Percent
Valid	I do not agree	2	.6	.6
	neutral	19	6.0	6.0
	agree	93	29.2	29.2
	I totally agree	204	64.2	64.2
	Total	318	100.0	100.0

I will strongly recommend others to use mobile banking.

Table 10. Statistical description of Question 6

		Frequency	Percent	Valid Percent
Valid	Strongly Disagree	1	.3	.3
	I do not agree	11	3.5	3.5
	neutral	38	11.9	11.9
	agree	105	33.0	33.0
	I totally agree	161	50.6	50.6
	7.00	2	.6	.6
	Total	318	100.0	100.0

Most people surrounding with me use mobile banking.

Table 11. Statistical description of Question 7

		Frequency	Percent	Valid Percent
Valid	I do not agree	9	2.8	2.8
	neutral	12	3.8	3.8
	agree	137	43.1	43.1
	I totally agree	160	50.3	50.3
	Total	318	100.0	100.0

I can get help from others when I have difficulties using mobile banking services

Table 12. Statistical description of Question 8

		Frequency	Percent	Valid Percent
Valid	Strongly Disagree	5	1.6	1.6
	I do not agree	10	3.1	3.1
	neutral	38	11.9	11.9
	agree	140	44.0	44.0
	I totally agree	125	39.3	39.3
	Total	318	100.0	100.0

Table 13 was extrapolated and it became clear that the arithmetic average of the paragraph that states “Mobile banking enables me to accomplish banking activities more quickly” came first among the paragraphs with the highest average, equal to: 4.76, which corresponds to the trend “strongly agree" in the estimated balance for the five-dimensional Likert scale.

Therefore, the influencing factor through the questionnaire responses was the Performance Expectancy.

Table 13. Descriptive Statistics

	N	Mean	Std. Deviation
Age	318	2.8994	1.03378
Mobile banking enables me to accomplish banking activities more quickly	318	4.7579	.44351
Mobile banking gives me greater control over financial banking activities	318	4.3805	.75971
Interaction with mobile banking apps/websites is clear and understandable	318	4.5000	.65379
I think the interaction with mobile banking does not require a lot of mental effort	318	4.3836	.74341
I expect my use of mobile banking for handling my financial transactions to continue in the future	318	4.5692	.63539
I will strongly recommend others to use mobile banking.	318	4.3270	.86281
Most people surrounding with me use mobile banking.	318	4.4088	.69893
I can get help from others when I have difficulties using mobile banking services	318	4.1635	.86920
Valid N (listwise)	318		

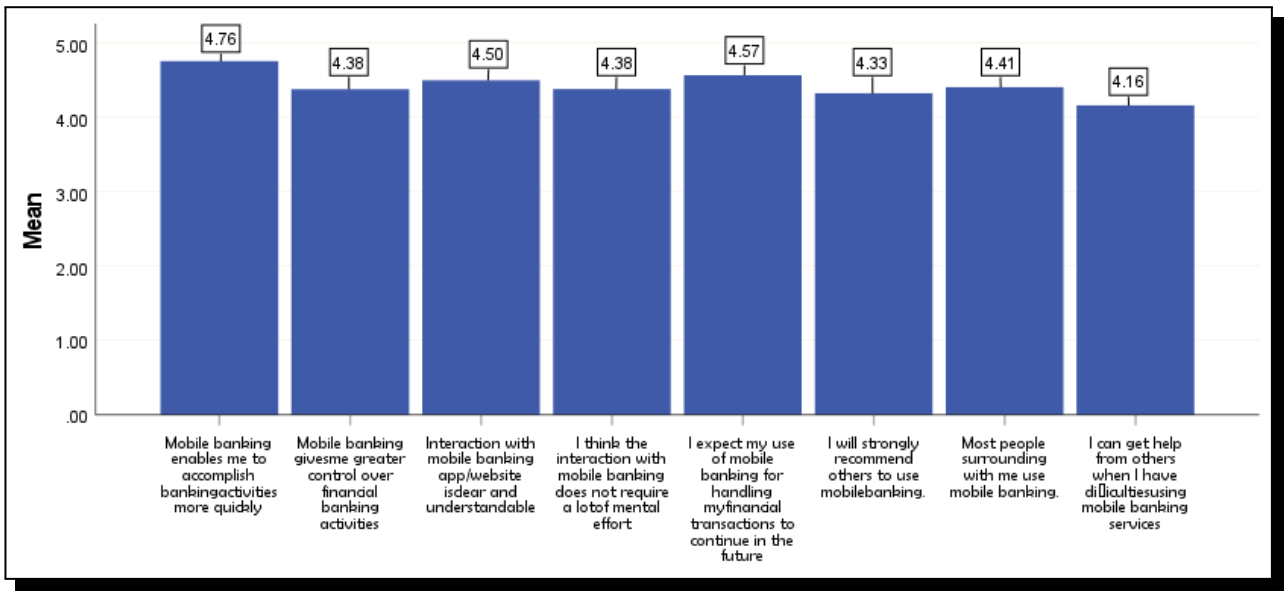

Figure 2. The Arithmetic Mean of the Survey Questions

It is followed by the paragraph that states "I expect my use of mobile banking for handling my financial transactions to continue in the future" and it corresponds to the behavioral intention factor.

Performance expectations and behavioral intent to use are playing increasingly important roles in a customer's acceptance and adoption of mobile banking. In line with what was mentioned in Table 13, the arithmetic mean is shown in the form of a graph in Figure 2.

6. Conclusion

Mobile banking services are highly positioned and have high market potential. The aim of this study is to know and determine the factors of acceptance of mobile banking services using the UTAUT form. The study was applied to a sample of 318 respondents in Al-Qassim region, Kingdom of Saudi Arabia. There may be differentiating factors around the acceptance and adoption of mobile banking services in other cities and rural areas of the country. To analyze the collected data, the researchers used the statistical program SPSS. The performance expectation was highlighted as it was the most influential factor, while the least influencing variable was facilitation of conditions. Therefore, it is important to increase the support of the technical infrastructure as it is one of the requirements to enable people to use mobile banking services without facing any difficulties. In addition, the results indicate that all UTAUT variables play an important role in people's acceptance of mobile banking. It is imperative that banks provide different mobile banking services according to the needs of customers, as users are more interested in expecting performance if it is fast, while others focus on reliable and easy banking services. Banking provision will bring services according to the needs of individuals to improve the acceptance and adoption of mobile banking services. Moreover, banks must convince customers that choosing mobile banking services will save time, cost, and effort to increase the perceived value among customers, which will ultimately lead to the customer's intention to choose mobile banking services. Where the behavioral intent to use plays an important role in influencing the adoption of mobile banking services. The results of the research conducted by the researchers enable us to gain new information about the factors affecting mobile banking.

This is very important that you add as much information as possible while compiling the references. DOIs, page numbers, volume and issue numbers, ISBN/ISSN etc. need to be included. References should be in IEEE Reference Order. For more details on referencing style and examples, please visit Instructions page of AETiC website.

This research was based on a small sample of respondents in the Qassim region. For the accuracy of the results, we recommend increasing the sample of respondents for future research. And because the sample number does not represent the average population in the Qassim region, the results cannot be generalized.

Competing Interests

The authors declare that they have no competing interests.

Authors' Contributions

All the authors contributed significantly in writing this article. The authors read and approved the final manuscript.

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