



Volume and Issues Obtainable at the Department of Tourism and Hospitality Management-  
The Islamia University of Bahawalpur, Bahawalpur, Pakistan 63100.

**Journal of Tourism, Hospitality, and Services Industries Research**

ISSN: 2958-5570 ISSN (E) 2958-5589

Volume 2, No.1, June 2022

Journal homepage: <https://journals.iub.edu.pk/index.php/jthsir>

DOI: 10.52461/jths.v2i01.1647

## Does COVID -19 Effect Intention to Adopt Mobile Banking Services? Role of Decomposed Theory of Planned Behavior

**Mahrukh Nadeem\***, *Department of Management Studies, Bahria University Karachi, Pakistan*

**Muhammad Rahies Khan**, *Department of Management Studies, Bahria University Karachi, Pakistan*

**Rao Muhammad Rashid**, *Department of Management Studies, Bahria University Karachi, Pakistan*

### ARTICLE DETAILS

#### History

Revised format: May 2022

Available Online: Jun 2022

#### Keywords

*COVID-19, DTPB; Perceived Behavioral Control, Mobile Banking Services.*

### ABSTRACT

**Abstract:** Current study aims to measure the impact of this disruption on customers' intention to adopt Mobile Banking Services (MBS) offered during the pandemic. This model is designed based on DTPB with a modification of COVID-19. The data were collected from 150 respondents through the convenience sampling technique. The data was analyzed using SPSS and Jamovi, to measure the structure model. According to the results, the relationship of attitude with behavioral intention is significantly positive. However, Social influence does not show any significant direct relationship with behavioral intention. The results also showed the significant positive effect of the direct impact of perceived behavioral control over behavioral intention. The variable representing COVID-19 also showed a direct significant effect on behavior. Study provides implications for banking managers to optimize their advanced MBS to attract customers and enhance their attraction towards mobile banking applications. The incorporation of DTPB in the banking sector during COVID-19 could implicate theoretical contribution in disruption situations.



© 2022 The authors, under a Creative Commons Attribution Non-Commercial 4.0

\*Corresponding author: [mahrukh25@gmail.com](mailto:mahrukh25@gmail.com)

## Introduction

A smooth, efficient, and productive business is the dream of every organization (Coe & Yang, 2022). However, disruptions occur and significantly distort the smooth function of a productive business (Sarwar & Marria, 2021). The global financial crises, international functions in oil prices, and currency instability are the economic disruptions. However, natural disruptions like the Swine flu, MERS, SARS, and Ebola viruses are the natural disruptions noted in history (Khan & Manzoor, 2021). The COVID-19 pandemic started in China in December 2019 and has slowly engulfed the entire globe including Pakistan. The COVID-19 is a highly contagious and transmissible virus and spreads very easily towards a large number of people (Khan et al., 2020). It is dangerous for people with older age or having health problems that lead to a poor immunity system. Scientists are trying to find a cure for this disease. However, the only way to fight it now is through prevention through quarantine and complete lockdown (Arumugasamy, 2020). The World Health Organization (WHO) has also endorsed the way of lockdown to prevent COVID-19. This lockdown has resulted in the shutdown of major industries that include manufacturing, tourism, and travel and hospitality, etc. According to World Economic Forum (Scott, 2020), 50 million jobs are at risk worldwide. The impact of this lockdown on one hand is affecting the people worldwide and on the other hand, creating a global economic crisis (Zhang; Rasheed & Luqman, 2020). This lockdown due to Covid has drastically affected the global economy, eventually economy of Pakistan. Along with the effect on almost all industries, the effect on the financial sector is also alarming. The number of consumers has reduced. The protocols of the COVID-19 adopted by banks have also discouraged consumers to visit the branches. To survive in this condition, commercial banks are looking up ways to continue providing services to their consumers. The solution to this problem was found in Mobile banking services (Manu & Girish, 2020).

Mobile banking is transformative (Porteous, 2006). Mobile banking services refer to mobile wallets and over-the-counter transactions that replace the conventional brick to brick banking activities with mobile applications (Rizvi et al., 2017). It is one of the latest financial services that enables the banks to make their services available to their customers at any time and any place. Consumers can conveniently avail all banking facilities through their mobiles, including checking account status and transactions, making electronic bill payments, depositing checks, making P2P payments, and transferring funds to another account or for C2C, C2B, B2C, or B2B, etc. with simple operations in their mobile devices. Some apps also enable copies of statements to be downloaded and sometimes printed by the customers. The built-in mobile security mechanisms and protocols set by banks make all the transactions and information safe and secure.

This has resulted in higher accessibility with the ease of staying within social distancing protocol with lower costs of operations. It has the potential to radically reduce the cost of delivery and increase convenience, flexibility, and mobility for customers. Consequently, mobile banking can increase the financial inclusion of the large public and can provide easy access to services. The growth of banks getting into mobiles is a major opportunity for financial institutions. It has grown worldwide as many practitioners invested in the service to deliver more efficient and convenient services through mobile applications. A major advantage of banking becoming mobile is the ease of handling and maintaining banking products and services with convenience with less space, cost, and time, prompt complaint handlings, quick deliveries, and stress-free banking (Giovanis et al., 2019). Broeders and Khanna (2015) of McKinsey & Co., declared that “Revenues and profits will migrate toward banks that successfully use digital technologies to automate processes, create new

products, improve regulatory compliance, transform the experiences of their customers, and disrupt key components of the value chain.”

Despite the advantages of mobile banking, consumers in some forms are reluctant to use it majorly due to security issues. Hence, marketing practitioners in banking industry must realize factors that can stimulate their customers towards adopting mobile banking services. This will help the banks and financial institutions adopt effective means to promote their new offerings related to mobile services and gain a competitive advantage over their rivals (Shih & Fang, 2004). Most poor M-PESA customers said that they chose the service because of its low cost (Morawczynski & Pickens, 2009). This makes it an attractive proposition to introduce it with modified banking services to low-income potential markets having less access to conventional banking facilities (Liu, Hassan; Chupradit; Ageli; Shoukry; & Aldeek, 2021).

Besides this, disruptions like COVID-19 have recently closed all doors for physical activities. Similarly, the banking sector has drastically converted from traditional to online banking. This study aims to evaluate the role of COVID-19 as a mediator between constructs of DTPB and customer’s intention to adopt mobile application services of banks. Besides this, the study addresses the role of COVID-19 in customer intention to use MBS? The rest of the paper is designed as: section 2 discussed the relevant literature review and theoretical underpinning. Section three discussed the methodology used and section four discussed the findings and results.

## Literature Review

The history of mobile banking starts with the introduction of SMS services, which later was converted to mobile applications that are still progressing towards innovations. “*Fokus Bank*” of Norway launched its application for the first time in 1999 (“Mobile Banking,” 2020). This venture has subsequently attracted considerable attention and speculation in both the financial and information technology communities (Shih & Fang, 2004).

In South Africa, Standard Bank and Mobile Telecommunication Group (MTN) launched one of the first smartphone mobile banking services anywhere in the world in 2005 and invested an estimated US\$ 80 million in the service but fell afoul of the regulator around their application of KYC standards and saw very low uptake. In 2009, the Royal Bank of Scotland (RBS) took the initiative with iPhone and launched an application that provided two basic facilities of viewing a statement and checking account transactions. RBS further launched complete banking services in 2011, but only for Apple users, which was soon available to Blackberry users as well. More than one million users started using this application and transferred around one billion pounds. This was just the beginning of success (Pandey, 2019).

According to the **State Bank of Pakistan (SBP) payment systems review 2019** — Pakistan, branchless banking, especially mobile banking services is growing at a fast pace. The statistics support this statement as the growth in the number of electronic transactions shows 6.6% in volume and 12.9% in value in 2018-19. The quarterly review of October –December 2019 of SBP gives the following statement that signifies the importance of mobile banking services in Pakistan (*Payment Systems Review*, 2019).

	FY19		FY20		FY20		Growth in FY20	
	Quarter – 04		Quarter – 01		Quarter – 02		Quarter - 02	
	Value	Volume	Value	Volume	Value	Volume	Value	Volume
Total	150,413	347	160,402	340.3	149,746.60	361.3	-7%	6%

E-Banking	16,943	233	15,615	224.3	17,628.60	239.2	13%	7%
Share of e-banking	11%	67%	10%	66%	12%	66%	21%	0%
Internet banking	546.2	11.9	574.4	12.2	736	13.3	28%	9%
Mobile banking	300.7	13.4	291.8	15.2	382.5	17.8	31%	17%
% Share of e-banking	1.77%	5.75%	1.87%	6.78%	2.17%	7.44%	16%	10%

**Table 1 Share and Growth of mobile banking**

Table 1 above clearly presents the growth potential of mobile banking services in Pakistan. A special growth trend can be seen after the rise of pandemic lockdown in the country. The statistics present that the COVID-19 pandemic has increased the use of mobile banking, however, still, a huge potential is left in the consumer markets as most of the mobile banking transactions are related to the bank to bank transfers or bill payments. This paves a way to identify the factors that can help banks to increase their customer base in mobile banking, especially during the social distancing protocol of lockdown.

### The Proposed Model

Several types of research have been conducted where usually one well-known model was studied in detail to identify factors influencing Mobile banking adoption (Abayomi et al., 2019; Chaouali & El Hedhli, 2019; Foughi et al., 2019; Naeem, 2020; Rogers, 1995; Shaikh & Karjaluo, 2015; Tam & Oliveira, 2017). The theory of planned behavior (TPB) was first introduced by Ajzen and Fishbein, (1975) and later it was decomposed (DPTB) by Taylor and Todd, (1995). Later, Venkatesh et al.(2003) proposed the unified theory of acceptance and use of technology (UTAUT) by analyzing and integrating constructs from eight renowned theories to develop an integrated model for usage of technology adoption. This enlists; the theory of reasoned action (Fishbein, 1979), the technology acceptance model (Davis et al., 1989), motivational model (MM) (Bagozzi et al., 1992), the theory of planned behavior (Ajzen & Fishbein, 1975), the personal computing utilization model (MPCU) (Thompson et al., 1991), innovation diffusion theory (IDT) (Rogers, 1995), the well-known social cognitive theory (SCT) (Bandura, 1986), and an integrated model of technology acceptance and planned behavior (TAM-TPB) (Taylor & Todd, 1995). This model proposed four variables that included the groups of all eight previous works.

All the theories are based on the findings related to the intention of adoption (Anser et al., 2020; Chang et al., 2022; Zhang, Wu, & Rasheed, 2020). TRA (Ajzen and Fishbein, 1975) was researched by several researchers for measuring the behavior of customers or employees as well. It explains four factors, i.e., belief, attitude, norms, intention, and actual use Here, attitude, and subjective norm play important roles in creating the intention to use such applications. The variable of subjective norm distinguishes it from TAM. It differs from TPB, as it does not take into account the perceived behavioral control (PBC) in its model (Shih & Fang, 2004).TRA model is based on the study of the impact of societal influences on an adoption. TRA explains that every action is based on a reason to achieve a positive outcome. First, attitude is measured through attitudinal belief, a belief that a particular action will result in a particular outcome, and subjective norm is weighed by normative belief, which explains how much an individual is concerned about the

norms set by his/her reference group. It explains that when a positive attitude is combined with the norms that comply with an individual's norms an intention to use a particular product or service is created. Albarq and Alsughayir (2013) investigated TRA to study the impact of adopting internet banking among Saudi consumers, and further by (Ali & Puaah, 2017) to identify factors that influence selection of Islamic credit cards in Pakistan in finding factors of mobile learning at continuing medical education program (Gbongli et al., 2020).

Davis et al., (1989) along with other researchers explored Technology Acceptance Model (TAM) to identify elements that can influence individuals adopt any new technological innovation. Lu et al., (2003) developed a TAM to explain the factors influencing user acceptance for wireless internet through mobile devices. It was further instigated by Min et al. (2019) to find the factors of consumer adoption of the uber mobile application and by Kamutuezu (2016) to study the adoption of digital banking in Namibia. TAM explains that the adoption of new technology is a result of the relationship between "Perceived usefulness and ease of use", which builds the attitude of a consumer and determines the intention to use that technology.

Innovation Diffusion theory was first developed in sociology in 1960 to study the different innovation adoptions and in agriculture or organizations (Tornatzky & Klein, 1982). This theory was investigated by Moore and Benbasat (1991) to find factors that stimulate technology adoption and was followed by other researchers as well (Agarwal & Prasad, 1997; Al-Jabri & Sohail, 2012; Karahanna et al., 1999; Min, So, et al., 2019; Plouffe et al., 2001; Raza et al., 2018).

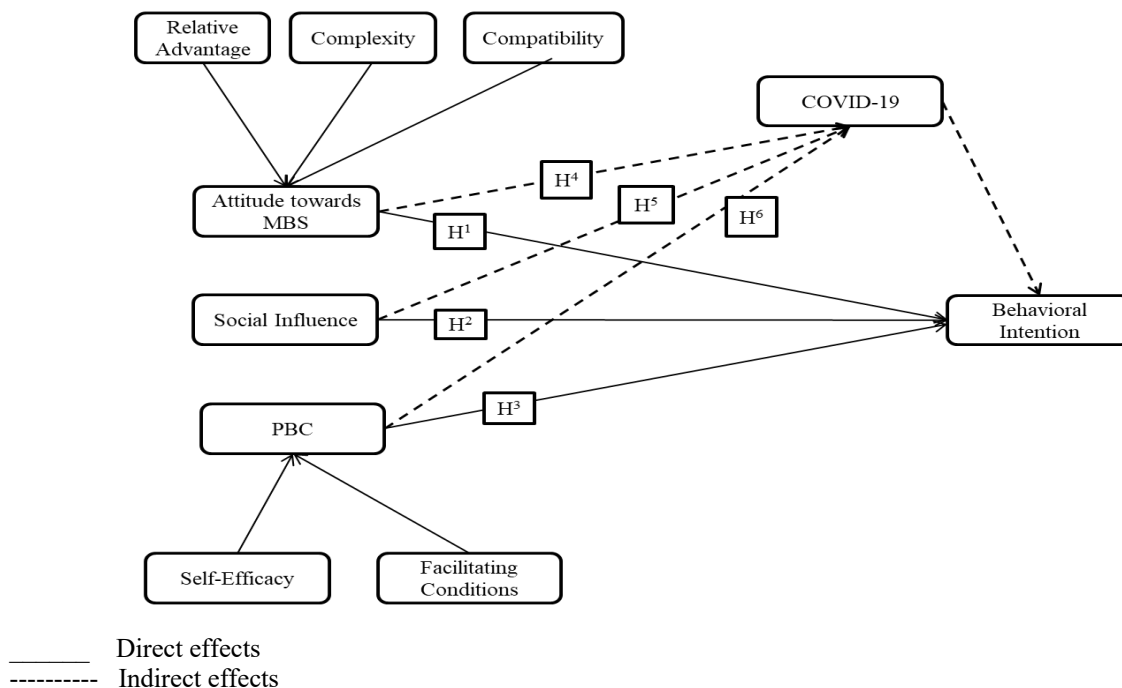
TPB is an improved version of TRA. TPB also considers intention because of attitude and subjective norm, however, it further includes perceived behavioral control as another construct which once included in the model emulates stimulus of intention to adopt. It explains the concept that an individual desire to adopt technology is also affected by how much he/ she perceives that it can be controlled. Madden et al., (1992) found a recognizable relationship between intention and PBC. Efficacy refers to the extent to which the use of technology can be controlled, and facilities include the time and resources available to use the technology. Overall, PBC refers to the perceived difficulty of the usage (Bandura, 1977). Liao et al., (1999) and Tan and Teo (2000) also used TPB to study internet adoption in financial services (Shih & Fang, 2004; Shaikh & Karjaluo, 2015; Giovanis et al., 2019).

DTPB (Taylor & Todd, 1995) is an extension of TPB and TAM that predict the use intention of technology adoption. (Chien et al., 2014) found that DTPB comprises of best factors of both models and overcomes the weaknesses of the previous models. Taylor and Todd (1995) introduced DTPB to illustrate that attitude needs to be understood through its decomposition into various constructs (Shih & Fang, 2004).

Shih and Fang (2004) have proved DTPB to be the best model to study the intended behavior. DTPB is investigated by several researchers in their studies related to varying fields of finance, marketing, sociology, and education (Chien et al. 2014; Sadaf et al. 2012). Alruwais et al., (2016) discussed the Factors that impact the acceptance and usage of e-assessment by academics in Saudi universities with the help of DTPB. Based on the model of DTPB, Shih & Fang (2004) predicted the intention to adopt internet banking in Taiwan. In 2013, Kazemi et al., (2013) studied the Factors Affecting Isfahanian Mobile Banking Adoption. Sahli & Legohérel (2016) used this model to identify the intention to book tourism products online. Garay et al., (2019) related it with sustainability-oriented innovation in tourism. DTPB was mostly used to predict the behavior intention of technology adoption (Lai, 2017; Sumardi & Hanum, 2019). However, DTPB has been a major source of research in technology adoption as well (Aziz, 2017; Gangwal & Bansal, 2016;

Sumardi & Hanum, 2019), especially technology in banking (Hachimi & Salahddine, 2019; Kanimozhi & Selvarani, n.d.; Yazid & Kofarnaisa, 2019, Giovanis et al., 2019, Le et al., 2020)

Baptista and Oliveira (2016) tried to prove in their research that the UTAUT theory proposed by Venkatesh et al.(2003) is the best model to study technology adoption. However, later on, Giovanis et al. (2019) substantiated an argument among the four models, i.e. TAP, TPB, UTAUT, and DTPB based on the theory of comparison approach. The comparison was based on model fit, explanatory power, and statistical significance of path coefficient. They established that DTPB is the best model for exploring elements that stimulate intentions for using MBS, as it assimilates all four models of innovation adoption for intention for adopting MBS. Hence, based on this argument, this study is based on the constructs of DTPB model. As the study is conducted to measure the impact of corona lockdown, a construct of COVID-19 is added. Consequently, this study is based on the DTPB model with an extension of COVID-19 as presented in Figure 1.



**Figure 1. proposed Model**

## Hypothesis Development

### Behavioral Intentions

It is the extent to which an individual's work performance leads to an action behavior (Ajzen & Fishbein, 1975). It is the most important construct that works as a dependent variable in this study and helps in establishing the factors that can determine the adoption of mobile banking services during COVID-19 lockdown. Previous studies establish it as the fundamental driver for the adoption of technology (Raza & Hanif, 2013; Shih & Fang, 2004; Zhou et al., 2010, Thaker et al., 2019). It is categorized into three attributes: attitudes, subjective norms, and person's perceived behavior control.

### **Attitudes towards MBS**

Ajzen and Fishbein (1975) define attitude as “*an evaluative feeling towards the outcome of a specific action*”. In this study, Attitude refers to the evaluation of consumers about the costs and benefits of using mobile banking services. It is composed of three factors:

#### **Relative Advantage**

(Moore & Benbasat, 1991) explained it as, “*the amount of excellence of an innovation that make it apart from the previous technologies*”. In this study, the relative advantage of a mobile application is the degree to which it can be useful in completing the task on hand. Regarding a mobile banking app, a user will be influenced to adopt it only if he/she believes that it will improve their banking operations based on time and convenience. Especially, during the lockdown, the relative advantage would refer to how efficiently an app can cater to all the requirements of banking services without physically going there. 3

#### **Compatibility**

Moore & Benbasat, (1991) explains it as “*how much the innovation relates to present values, needs and expectations of the potential users*”. The argument here is that consumers will accept and use mobile banking it matches with their usual practices and existing requirements related to banking services, where the quality of their work does not compromise even when they are operating it from their home office. For example, an app that saves time and cost during transactions will be easily accepted by business users.

#### **Complexity**

“*What is the level of difficulty in understanding, learning and using the new technology?*” (Rogers, 1995). Therefore, complexity conceives a negative relationship to adopt. In this study, complexity is measured as comfort of use, having a direct relationship with the attitudes. It is also expected that as users conceive mobile apps to be user-friendly, they also expect a mobile banking app to be easy to understand and use without having any complexities. Based on the above discussion, we conceive that:

H1: Positive attitude towards mobile banking leads to positive behavioral intention to adopt MBS.

#### **Social Influence**

Ajzen & Fishbein, (1975) explains that “*an individual’s evaluate their behavior on the basis of whether it will be accepted by the people who are important in their lives.*” Ajzen (1991) further elaborates social influence as the social pressures from significant others that compels an individual to adopt a certain attitude. This study tries to investigate that consumers can be influenced by their colleagues, family members, or supervisor, who has the power to inspire them and adopt a particular app on their recommendation and when they see them using it, especially when their belief is established that mobile apps are as effective as physical transactions and visiting a branch can be harmful. Hence, we establish that:

H2: Social influence positively impacts the behavioral intention to adopt MBS.

#### **Perceived Behavioral Control**

It refers to “*How much difficulty an individual thinks in performing the behavior*” (Ajzen, 1991). However, Taylor and Todd (1995) explains the concept from both *internal and external incapability, feared by an individual in using the new technologies*”. This means that users must

have access and control over the factors that affect the use of an app. This study explains PBC through two factors:

#### **Self- Efficacy**

It can be illustrated as one's competency to use technology for completing a particular task. It is conceived here as how much an individual is comfortable with using a mobile banking service and handling it with comfort.

#### **Facilitating Conditions**

*"The influence of external factors affecting the use of information and technology making a task easier to accomplish"*. These resources include sufficient time, money, and technology and supporting IT staff or in-app supporting facilities.

H3: Perceived behavioral control positively impacts the behavioral intention to adopt MBS.

#### **COVID-19**

It refers to the situation of lockdown that has aroused to prevent and fight the pandemic of Coronavirus. The health practitioners and Government is continuously advising citizens to practice social distance to prevent this virus. The limited space and many customers in banks make it difficult to practice social distancing, hence adopting mobile banking services by downloading applications of the concerned bank can help practice this. Consequently, the pandemic has made it inevitable use new innovations. This study tries to investigate whether COVID-19 mediates the role of all three factors of attitude, social influence, and PBC in the DTPB model. The hypothesis is established as:

H4: COVID-19 mediate impact of attitude towards MBS on behavioral intention.

H5: COVID-19 mediates impact of social influence on the behavioral intention.

H6: COVID-19 mediates impact of PBC on behavioral intention.

### **Research Methodology**

Current research is based on empirical method where procedures and methods are adopted as the quantitative approach of research with a focus on the deduction of the theory (Rasheed, Okumus, Weng, Hameed, & Nawaz, 2020; Rasheed, Weng, Umrani, & Moin, 2021; Saleem, Rasheed, Malik, & Okumus, 2021). This study tries to discover the motivational factors that encouraged banking customers adopt MBS during the pandemic. In this study, a correlational approach was considered out of four quantitative approaches which are descriptive, correlational., casual, and experimental (Sukamolson, 2017). Creswell (2009) defined that correlational research explains the relationship of two variables by measuring their score to identify the cause and reach an outcome Masood, Feng, Rasheed, Ali, & Gong, 2021; Naeem, Weng, Hameed, & Rasheed, 2020; Pitafi, Rasheed, Kanwal, & Ren, 2020; Sattar, Rasheed, Khan, Tariq, & Iqbal, 2017; Sukamolson, 2017). To examine the hypothesis established, deductive approach is promulgated to study theory of self-identification.

The objective of this paper is to find the determining elements that motivates individuals start using MBS. Hence, all users of mobile banking application services are targeted population. The limited time of research has allowed to apply the quota convenience sampling technique. This means that no probability is connected to the entire population so anyone from the population can be selected as a sample (Bougie & Sekaran, 2019). However, a filter was applied in the questionnaire where the respondents who are users of MBS only, were allowed to continue with



their responses. Hair et al., (2013) also states that “*sample size must be equal to the total number of structural paths between variables multiplied 10 times*”. The number of paths is 5, hence the criterion of a minimum of 50 is met. After deleting unilateral and multilateral outliers, the data was reduced to respondents.

The data is gathered with the help of questionnaire adapted from researchers conducted based on DTPB following previous research in related areas (Gulzar, Ahmad, Hassan, & Rasheed, 2022; Hameed et al., 2019; Naeem, Weng, Hameed, & Rasheed, 2020; Rasheed, Okumus, Weng, Hameed, & Nawaz, 2020). The structured instrument based on a Likert scale from 1 to 7 (where 1 represented ‘strongly disagree’ and 7 represented ‘strongly agree’) was used to collect data. Most of the questions were adopted from prior work with a modification of mobile banking services. Most of the items were adopted from studies that worked on DTPB (Baptista & Oliveira, 2015; Giovanis et al., 2019; Shih & Fang, 2004; Venkatesh et al., 2003, 2012). The items of COVID-19 were adopted from (Manu & Girish, 2020).

## Analysis and Results

A total number of 187 responses were collected. Out of which 150 respondents were users of MBS. The data shows that most of the users of Mobile banking services are between 20 to 40 years of age (60 individuals, 40%). Most of the individuals having master's education (86 individuals, 57.3%) use this service. Most of the existing users are using it for more than 1 year (73 individuals, 48.7%). Only 37 individuals (24.7%) have started using it since last month. The cross-tabulation reveals that most of the respondents with a master's degree are either using MBS for more than one year or less than one month.

	Frequency	Percentage
Usage		
Yes	150	80.2
No	37	19.8
Age of Respondent		
Below 20 years	0	0.0
20-30 years	60	40.0
31-40 years	57	38.0
41-50	27	18.0
Above 50 years	6	4.0
Education		
Bachelors	41	27.3
Masters	86	57.3
PhD	15	10.0
Other	8	5.3
Usage Duration		
Less than 1 month	37	24.7
1-3 months	13	8.7
3-6 months	13	8.7

6months-1year	14	9.3
More than 1 year	73	48.7

**Table 2. Demographics of Respondents**

Collected data was tested for normality primitively following previous research (Iqbal et al., 2021; Kanwal, Pitafi, Rasheed, Pitafi, & Iqbal, 2022; Luqman, Masood, Shahzad, Imran Rasheed, & Weng, 2020; Masood, Feng, Rasheed, Ali, & Gong, 2021). The means of observed variables under each latent variable were tested through ANOVA. Once identified, a parametric tool of regression was used to see the relationship of constructs. The mediating effect of COVID-19 was tested with the help of Jamovi software. The model in this study is assessed based on a statistical technique that is least square structural equation modeling. Vinzi et al., (2010) explain that PLS is a second-generation technique that facilitates in assessing highest reliability of all constructs. In addition, it measures structural path coefficients with minimum error terms. PLS helps in identifying and predicting the effect of the relationship among the variables, it analyzes the complex relationships and constructs validity with the help of minimum requirements and it considers all phases of regression, factor analysis, and path analysis during the test of validity (Hair et al. 2013; Henseler et al. 2009). This empirical research is based on data collected test the hypothesis and the relationship of direct and indirect variables through factor analysis. These relationships were further evaluated by developing path analysis using SPSS, Smart PLS, and Jamovi.

### Reliability Results

Reliability of the questionnaire was investigated on the criteria presented by (Hair, Jr. et al., 2016) and validated in several recent studies (Moin, Omar, Wei, Rasheed, & Hameed, 2021; Nisar, Rasheed, & Qiang, 2018; Pitafi, Rasheed, Kanwal, & Ren, 2020). They presented that the instrument can be considered reliable when Cronbach's alpha is greater than 0.7. The results are presented in Table 3 below. The entire instrument proves to be reliable as the results exhibit that Cronbach's alpha of all variables was more than 0.7 ( $\alpha = 0.961$ ). These results allowed us to continue our research and data analysis. According to (Fornell & Larcker, 1981), items are considered reliable if their factor loadings are above 0.7. A confirmatory Factor Analysis test was run on Jamovi. The results in table 3 in the appendices indicate that factor loadings of all items are above 0.70 ( $p < 0.001$ ). The model represents reflective measurement as construct defines the indicators and there is an interchangeable correlation in the indicators as presented in the table (Hulland, 1999).

Variable	Cronbach Alpha	Variable	Cronbach Alpha
Relative Advantage	0.958	Facilitating Condition	0.957
Compatibility	0.957	COVID	0.960
Complexity	0.957	Attitude	0.957
Social Influence	0.965	PBC	0.958
Self-Efficacy	0.956	Behavioral Intention	0.956

**Table 3. Reliability Test**

Discriminant validity assesses how much each variable and its items are distinct from other variables as presented in the theory and is established through assessments of factor correlation tests and HTMT (Hair et al., 2011). The details are presented in table 4 in appendix. Factor covariances table calculated in Jamovi software through confirmatory analysis presents that each variable distinguishes from other variables, confirming validity of the scale for all variables. The summary is presented below.

	RA	CT	CM	SI	SE	FC	CV	AT	PB	BI
RA	1.000	0.911	0.765	0.632	0.720	0.678	0.620	0.659	0.652	0.881
CT		1.000	0.756	0.698	0.686	0.705	0.644	0.654	0.677	0.778
CM			1.000	0.628	0.853	0.660	0.751	0.757	0.622	0.701
SI				1.000	0.687	0.704	0.521	0.486	0.721	0.629
SE					1.000	0.855	0.763	0.678	0.860	0.797
FC						1.000	0.662	0.603	0.834	0.745
CV							1.000	0.714	0.629	0.703
AT								1.000	0.687	0.764
PB									1.000	0.731
BI										1.000

**Table 4. Factor Covariance**

Another criterion for discriminant validity is Heterotrait-Monotrait Ratio (HTMT) is that the values must be below the 0.90 criterion (Clark & Watson, 2016; Henseler et al., 2009). Table 6 presents the result of HTMT calculation conducted through Pearson correlation in SPSS and Excel. Study results indicated discriminant validity of most of study constructs. However, the relationship among Attitude, Social Influence, and PBC combined and Behavioral Intention (0.905) show weak validity.

	AT	SI	PBC	CV	BI
AT		0.738	0.843		
SI				0.822	0.9
PBC					
CV					0.774

**Table 5. HTMT**

Results from factor analysis exhibited that the model is fit for regression. Criteria applied is having RMSEA of between 0.08 to 0.10 provided a mediocre fit and below 0.08 shows a good fit (MacCallum et al., 1996). It is presented below in table 6.

CFI	TLI	RMSEA	RMSEA value 90% CI	
			Lower	Upper
0.707	0.713	0.14	0.14	0.15

**Table 6.****Linear Regression Analysis**

$R^2$  values predicts the level of variation effect size in dependent variable due to the change in independent variable. The result of linear regression of each variable run on SPSS in Table 8 predicts that Attitude significantly explains 71.3% variance ( $f(1, 148) = 366.92, p < 0.05$ ) in behavioral intention. The findings also indicate significant 57% influence of PBC ( $f(1, 148) = 195.86, p < 0.05$ ) on behavioral intention. The latent variable of COVID also has a significant influence of 41.9% ( $f(1, 148) = 106.72, p < 0.05$ ) on behavioral intention. Social Influence has the least significant impact of 20% ( $f(1, 148) = 37.52, p < 0.05$ ) on behavioral intention (Chin, 1998).

	R Square	Adjusted R Square
AT	0.713	0.711
SI	0.202	0.197
PBC	0.570	0.567
CV	0.419	0.415

**Table 7. R-Square through linear regression****Path Analysis and Hypothesis Testing - Direct effects**

Table 9 explains the path analysis of direct relationships. The direct effect of Path analysis was conducted on SPSS and Jamovi software to develop least-square modeling, where both models gave the same answers. The results provide a fit model with R-square of 0.732 ( $f(3, 146) = 133.03, p < 0.05$ ). The estimates of the direct path model are presented in table 9 below. According to findings, H1 is gets accepted, which means that the relationship of Attitude ( $p < 0.05, \beta = 0.728$ ) with behavioral intention is significantly positive. However, Social influence does not show any significant direct relationship ( $p > 0.05, \beta = -0.020$ ) with behavioral intention, hence rejecting H2. The results show a significant positive effect of the direct impact of individuals perceived behavior control over behavior intention ( $p < 0.05, \beta = 0.251$ ) as well, which supports H3. The variable representing Covid - 19 also shows a direct significant effect on behavioral ( $p < 0.05, \beta = 0.646$ ).

Hypotheses	Direct Path	Coefficients	P-Value	Results
H <sub>1</sub>	ATT → BI	0.7282	0.000	Supported
H <sub>2</sub>	SI → BI	-0.0196	0.675	Not Supported
H <sub>3</sub>	PBC → BI	0.2509	0.002	Supported
H <sub>4</sub>	CV → BI	0.6460	0.000	Supported

**Table 8. Direct Path Effects****Path Analysis and Hypothesis Testing - Mediation of COVID-19**

Our model suggests that covid 19 lockdown plays mediating part between Attitude (H4), social influence (H5), and perceived behavioral control (H6). These hypotheses were tested as separate models of mediation least square method with the help of Jamovi software (Hair, Jr. et al., 2016).

#### **Attitude – COVID – Behavioral Intention**

The first model was tested to see the mediating effect of covid between attitude and intention to adopt MBS (H4). The results presented in table 8 ( $p > 0.001$ ,  $t= 1.570$ ) clearly rejects our hypothesis (H4). The mediation percentage also supports this result with only an 8.19% mediation effect.

Effect(term)	Label	Estimates	SE	Z	p	% Mediation
Indirect	$a \times b$	0.0753	0.0481	1.57	0.117	8.19
Direct	C	0.8441	0.0672	12.56	<.001	91.81
Total	$(c + a \times b)$	0.9194	0.0477	19.26	<.001	100.00

**Table 9. Mediation Estimates (AT-CV-BI)**

#### **Social Influence – COVID – Behavioral Intention**

The second model was tested to see the mediating effect of covid between SI and intention to adopt MBS (H5). Table 11 presents supporting evidence to accept the hypothesis (H5). The indirect effect shows a significant result ( $p < 0.001$ ,  $t=4.630$ ) of the mediation of Covid. The 51% mediation level and the reduction in direct impact confirm a partial mediation.

Effect	Label	Estimate	SE	Z	p	% Mediation
Indirect	$a \times b$	0.208	0.0448	4.63	<.001	51.0
Direct	C	0.199	0.0597	3.34	<.001	49.0
Total	$c + a \times b$	0.407	0.0660	6.16	<.001	100.0

**Table 10. Mediation Estimates (SI-CV-BI)**

#### **PBC – COVID – Behavioral Intention**

Table 11 below presents the significant mediating effect of covid between perceived behavioral control and intention to adopt MBS (H6). The results reveal a significant mediation of Covid ( $p < 0.001$ ,  $t=4.020$ ). The change indirect effect and the percentage (23.8%) of the mediation confirm this as a partial mediation effect.

Z	p	% Mediation
4.02	< .001	23.8
8.84	< .001	76.2
14.07	< .001	100.0

**Table 11. Mediation Estimates (PB-CV-BI)**

## Conclusion

This research is conducted to see how social distancing and lockdown impacted the adoption of Mobile Banking Services. For this purpose, the DTPB was deduced to investigate the impact of Covid pandemic over the intention to adopt MBS. Covid 19 was studied as a mediator between attitude, SI, PBC, and the behavioral intention towards MBS. The study concludes based on its findings of an analysis of the model that Covid 19 lockdown does have an impact on the intention to adopt MBS. It shows that when consumers of the banking sector perceive that a technological service can improve their work capacity and perceive that technology easy to use. They tend to adopt the technology. Secondly, this adoption is affected by the influence and opinion of significant others around them. Finally, as suggested by Taylor and Todd (1995), when the user perceives that they can use the technology with complete efficacy and has the time and resources to use it efficiently, their intention to adopt it becomes significant.

## Theoretical Implications

This study presents an extension of DTPB by reviewing whether the intention to adopt a technology is affected by attitudes, SI, and PBC and not influenced by changes in macro and microenvironment. The results prove through different analyses that a major environmental factor like corona lockdown did not change the attitude of users to adopt MBS. However, SI and PBC were significantly mediated by this environmental factor.

## Practical Implications

A study in social science carries several important practical implications (Sattar, Rasheed, Khan, Tariq, & Iqbal, 2017; Yousaf, Rasheed, Hameed, & Luqman, 2019; Zhang, Wu, & Rasheed, 2020). The results of the study can be helpful for the practitioners of mobile banking service applications to understand the factors behind the actions taken by their consumers. Although in Pakistan, usage of Internet Banking, Mobile Cash, and MBS are increasing rapidly, the proper promotion and positioning of MBS applications can improve its number of agents and users. Especially in the rural areas of Pakistan lacks physical facilities of banking is not available, extending the customer base towards the rural areas can prove to be beneficial for the banking sector. Along with this, as proved in this study, banks can also target the educated class of society who has the skill and capabilities to use the technology for their benefit and are technology savvy. The study is an extension of the DPTB model and can be applied to measure the mediating impact of other environmental factors which can impact the technology adoption process as presented in the model.

### Limitations and Future Research Directions

This study generated important research findings, yet its findings should be seen in the light of its limitations (Yousaf, Rasheed, Kaur, Islam, & Dhir, 2022; Zhang, Rasheed, & Luqman, 2019). The number of mobile banking users is still limited. Finding a large sample from this limited population is a critical task. This research is focused on the scenario of Karachi only and can be further investigated for other areas of Pakistan especially the rural areas. Due to the concentration of time, convenience sampling is applied, stratified random sampling is used, where strata are made based on users and non-users. This study is conducted as a term paper for a spring semester. Due to lack of time and resources, no pilot test was conducted which resulted in low reliability and validity of the instrument. The time constraint also influenced the researcher to adopt convenience sampling. It is recommended to use strata random sampling to reach the appropriate target population of Mobile Banking Service application users. For the time being, the researcher was able to gather only 150 responses. Another limitation of sampling was the lockdown situation in the city due to which the respondents were contacted only through Whatsapp. Future researchers can be met in person and that might yield interesting results.

### References

- Abayomi, O. J., Olabode, A. C., Reyad, M. A. H., Teye, E. T., Haq, M. N., & Mensah, E. T. (2019). Effects of demographic factors on customers' mobile banking services adoption in Nigeria. *International Journal of Business and Social Science*, 10(1), 63–77.
- Agarwal, R., & Prasad, J. (1997). The role of innovation characteristics and perceived voluntariness in the acceptance of information technologies. *Decision Sciences*, 28(3), 557–582.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)
- Ajzen, I., & Fishbein, M. (1975). A Bayesian analysis of attribution processes. *Psychological Bulletin*, 82(2), 261.
- Anser, M. K., Zaigham, G. H. K., Imran Rasheed, M., Pitafi, A. H., Iqbal, J., & Luqman, A. (2020). Social media usage and individuals' intentions toward adopting Bitcoin: The role of the theory of planned behavior and perceived risk. *International journal of communication systems*, 33(17), e4590
- Albarq, A., & Alsughayir, A. (2013). Examining theory of reasoned action in internet banking using SEM among Saudi consumers. *International Journal of Marketing Practices*, 1(1), 16–30.
- Ali, M., & Puah, C.-H. (2017). Acceptance of Islamic banking as innovation: A case of Pakistan. *Humanomics*.
- Al-Jabri, I. M., & Sohail, M. S. (2012). Mobile banking adoption: Application of diffusion of innovation theory. *Journal of Electronic Commerce Research*, 13(4), 379–391.
- Alruwais, N. M., Wills, G., & Wald, M. (2016). (PDF) Factors that impact the acceptance and usage of e-assessment by academics in Saudi universities. ResearchGate. INTCESS2016 3rd International Conference on Education and Social Sciences, Istanbul, Turkey. [https://www.researchgate.net/publication/316189720\\_Factors\\_that\\_impact\\_the\\_acceptance\\_and\\_usage\\_of\\_e-assessment\\_by\\_academics\\_in\\_Saudi\\_universities/figures?lo=1](https://www.researchgate.net/publication/316189720_Factors_that_impact_the_acceptance_and_usage_of_e-assessment_by_academics_in_Saudi_universities/figures?lo=1)
- Arumugasamy, D. J. T. P., Dr G. (2020). IMPACT OF CORONA VIRUS IN INDIAN ECONOMY AND BANKING SECTOR - AN OVER VIEW | *Studies in Indian Place Names*. *Studies in Indian Place Names*, 40(18). <https://archives.tpnindia.org/index.php/sipn/article/view/4205>

- Aziz. (2017). Conceptual Framework of Factors Determining Intentions Towards the Adoption of Family Takaful- An Extension of Decomposed Theory of Planned Behaviour by Shahab Aziz, Maizaitulaidawati Md Husin, Nazimah Hussin: SSRN. [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3335712](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3335712)
- Bagozzi, R. P., Davis, F. D., & Warshaw, P. R. (1992). Development and test of a theory of technological learning and usage. *Human Relations*, 45(7), 659–686.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84(2), 191–215. <https://doi.org/10.1037/0033-295X.84.2.191>
- Baptista, G., & Oliveira, T. (2015). Understanding mobile banking: The unified theory of acceptance and use of technology combined with cultural moderators. *Computers in Human Behavior*, 50, 418–430. <https://doi.org/10.1016/j.chb.2015.04.024>
- Bougie, R., & Sekaran, U. (2019). *Research Methods for Business: A Skill Building Approach*. John Wiley & Sons.
- Broeders, H., & Khanna, S. (2015). Strategic choices for banks in the digital age. *McKinsey & Company*, 7.
- Chaouali, W., & El Hedhli, K. (2019). Toward a contagion-based model of mobile banking adoption. *International Journal of Bank Marketing*.
- Chang, Y.-S., Yue, Z., Qureshi, M., Rasheed, M. I., Wu, S., & Peng, M. Y.-P. (2022). Residents' waste mobile recycling planned behavior model: the role of environmental concern and risk perception. *International Journal of Emerging Markets*(ahead-of-print).
- Chien et al., (2014). An investigation of teachers' beliefs and their use of technology-based assessments—ScienceDirect. <https://www.sciencedirect.com/science/article/abs/pii/S0747563213003877>
- Chin. (1998). (PDF) The Partial Least Squares Approach to Structural Equation Modeling. [https://www.researchgate.net/publication/311766005\\_The\\_Partial\\_Least\\_Squares\\_Approach\\_to\\_Structural\\_Equation\\_Modeling](https://www.researchgate.net/publication/311766005_The_Partial_Least_Squares_Approach_to_Structural_Equation_Modeling)
- Clark, L. A., & Watson, D. (2016). Constructing validity: Basic issues in objective scale development (p. 203). American Psychological Association. <https://doi.org/10.1037/14805-012>
- Coe, N. M., & Yang, C. (2022). Mobile gaming production networks, platform business groups, and the market power of China's Tencent. *Annals of the American Association of Geographers*, 112(2), 307-330.
- Creswell, J. W. (2002). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research*. Merrill.
- Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches* (3rd ed). Sage Publications.
- Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science*, 35(8), 982–1003.
- Fishbein, M. (1979). A theory of reasoned action: Some applications and implications.
- Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research*, 18(1), 39. <https://doi.org/10.2307/3151312>
- Foroughi, B., Iranmanesh, M., & Hyun, S. S. (2019). Understanding the determinants of mobile banking continuance usage intention. *Journal of Enterprise Information Management*.
- Full article: Determinants of Mobile Banking Users' Loyalty. (n.d.). Retrieved December 4, 2021, from [https://www.tandfonline.com/doi/full/10.1080/10496491.2020.1729312?casa\\_token=r59e](https://www.tandfonline.com/doi/full/10.1080/10496491.2020.1729312?casa_token=r59e)



- 56z\_DbcAAAAA%3Ad3QPZaJivewXgaI8yWdrEsohFbYF2DhCJxgvb\_6z9bSTBbdProXhZqh0XwR1Q-fC5mLj6LtGLn858Q
- Full article: Exploring factors that influence teachers' intentions to integrate digital literacy using the decomposed theory of planned behavior. (n.d.). Retrieved December 4, 2021, from [https://www.tandfonline.com/doi/full/10.1080/21532974.2020.1719244?casa\\_token=r3RnXDe5HfcAAAAA%3Abtc5zMjEXatOGJCoLIfdIuyTewojJTaz59WuvRr-G2T326Ovfszc3gi-Zm02ysJkjY2GMp4Gr0zjmA](https://www.tandfonline.com/doi/full/10.1080/21532974.2020.1719244?casa_token=r3RnXDe5HfcAAAAA%3Abtc5zMjEXatOGJCoLIfdIuyTewojJTaz59WuvRr-G2T326Ovfszc3gi-Zm02ysJkjY2GMp4Gr0zjmA)
- Gangwal, N., & Bansal, V. (2016). Application of Decomposed Theory of Planned Behavior for M-commerce Adoption in India: Proceedings of the 18th International Conference on Enterprise Information Systems, 357–367. <https://doi.org/10.5220/0005627503570367>
- Garay et al. (2019). Sustainability-Oriented Innovation in Tourism: An Analysis Based on the Decomposed Theory of Planned Behavior—Lluís Garay, Xavier Font, August Corrons, 2019. <https://journals.sagepub.com/doi/abs/10.1177/0047287518771215>
- Gbongli, K., Xu, Y., Amedjonekou, K. M., & Kovács, L. (2020). Evaluation and Classification of Mobile Financial Services Sustainability Using Structural Equation Modeling and Multiple Criteria Decision-Making Methods. *Sustainability*, 12(4), 1288. <https://doi.org/10.3390/su12041288>
- Giovanis, A., Athanasopoulou, P., Assimakopoulos, C., & Sarmaniotis, C. (2019). Adoption of mobile banking services: A comparative analysis of four competing theoretical models. *International Journal of Bank Marketing*, 37(5), 1165–1189. <https://doi.org/10.1108/IJBM-08-2018-0200>
- Gulzar, M. A., Ahmad, M., Hassan, M., & Rasheed, M. I. (2022). How social media use is related to student engagement and creativity: investigating through the lens of intrinsic motivation. *Behaviour & Information Technology*, 41(11), 2283-2293.
- Hameed, Z., Khan, I. U., Sheikh, Z., Islam, T., Rasheed, M. I., & Naeem, R. M. (2019). Organizational justice and knowledge sharing behavior: The role of psychological ownership and perceived organizational support. *Personnel Review*.
- Hachimi, A., & Salahddine, M. M. A. (2019). The Acceptability of Participatory Banking Products by SMEs: A Conceptual Framework. *International Journal of Economics and Financial Issues*, 9(4), 259–266.
- Hair, J. F., Ringle, C. M., & Sarstedt, M. (2011). PLS-SEM: Indeed a Silver Bullet. *Journal of Marketing Theory and Practice*, 19(2), 139–152. <https://doi.org/10.2753/MTP1069-6679190202>
- Hair, J. F., Ringle, C. M., & Sarstedt, M. (2013). Partial Least Squares Structural Equation Modeling: Rigorous Applications, Better Results and Higher Acceptance. *Long Range Planning*, 46(1–2), 1–12. <https://doi.org/10.1016/j.lrp.2013.01.001>
- Hair, Jr., J. F., Sarstedt, M., Matthews, L. M., & Ringle, C. M. (2016). Identifying and treating unobserved heterogeneity with FIMIX-PLS: Part I – method. *European Business Review*, 28(1), 63–76. <https://doi.org/10.1108/EBR-09-2015-0094>
- Henseler, J., Ringle, C. M., & Sinkovics, R. R. (2009). The use of partial least squares path modeling in international marketing. In R. R. Sinkovics & P. N. Ghauri (Eds.), *Advances in International Marketing* (Vol. 20, pp. 277–319). Emerald Group Publishing Limited. [https://doi.org/10.1108/S1474-7979\(2009\)0000020014](https://doi.org/10.1108/S1474-7979(2009)0000020014)
- Hulland. (1999). Use of partial least squares (PLS) in strategic management research: A review of four recent studies—Hulland—1999—Strategic Management Journal—Wiley Online Library. [https://onlinelibrary.wiley.com/doi/abs/10.1002/\(SICI\)1097-0266\(199902\)20:2%3C195::AID-SMJ13%3E3.0.CO;2-](https://onlinelibrary.wiley.com/doi/abs/10.1002/(SICI)1097-0266(199902)20:2%3C195::AID-SMJ13%3E3.0.CO;2-)

- 7?casa\_token=ESG0YHD9IGMAAAAA:CG5H3Tj9CZj9tpSSHTHIK4H1NfROOP5rbc  
X0ZCm4FyHURxN30HVnzLAXYGkMGhsoh0Bb8qZU-zHQ9rXYg
- Iqbal, J., Yu, D., Zubair, M., Rasheed, M. I., Khizar, H. M. U., & Imran, M. (2021). Health consciousness, food safety concern, and consumer purchase intentions toward organic food: The role of consumer involvement and ecological motives. *SAGE Open*, 11(2), 21582440211015727.
- Kanwal, S., Pitafi, A. H., Rasheed, M. I., Pitafi, A., & Iqbal, J. (2022). Assessment of residents' perceptions and support toward development projects: A study of the China–Pakistan Economic Corridor. *The Social Science Journal*, 59(1), 102-118.
- Luqman, A., Masood, A., Shahzad, F., Imran Rasheed, M., & Weng, Q. (2020). Enterprise social media and cyber-slacking: an integrated perspective. *International Journal of Human–Computer Interaction*, 36(15), 1426-1436.
- Masood, A., Feng, Y., Rasheed, M. I., Ali, A., & Gong, M. (2021). Smartphone-based social networking sites and intention to quit: self-regulatory perspective. *Behaviour & Information Technology*, 40(11), 1055-1071
- Moin, M. F., Omar, M. K., Wei, F., Rasheed, M. I., & Hameed, Z. (2021). Green HRM and psychological safety: How transformational leadership drives follower's job satisfaction. *Current issues in Tourism*, 24(16), 2269-2277.
- Nisar, S. K., Rasheed, M. I., & Qiang, W. (2018). They can't safeguard you when they are under stress: An exploratory study on issues and problems of job stress in police. *International Journal of Police Science & Management*, 20(2), 124-133.
- Kamutuezu, E. U. (2016). The Adoption of Digital Banking in Namibia. <https://doi.org/10.13140/RG.2.2.19206.57925>
- Kanimozhi, S., & Selvarani, D. A. (n.d.). APPLICATION OF THE DECOMPOSED THEORY OF PLANNED BEHAVIOUR IN TECHNOLOGY ADOPTION: A REVIEW. 6(2), 5.
- Karahanna, E., Straub, D. W., & Chervany, N. L. (1999). Information technology adoption across time: A cross-sectional comparison of pre-adoption and post-adoption beliefs. *MIS Quarterly*, 183–213.
- Kazemi, Dr. A., Nilipour, Dr. A., Kabiry, N., & Hoseini, M. M. (2013). Factors Affecting Isfahanian Mobile Banking Adoption Based on the Decomposed Theory of Planned Behavior. *International Journal of Academic Research in Business and Social Sciences*, 3(7), Pages 230-245. <https://doi.org/10.6007/IJARBSS/v3-i7/29>
- Khan, M. M. R., Ahmad, B., & Habib, M. (2020). Psychological Impact of COVID-19 Pandemic on University Students at Karachi, Pakistan. *Global Management Journal for Academic & Corporate Studies (GMJACS)*, 32.
- Khan, M. R., & Manzoor, A. (2021). Application and Impact of New Technologies in the Supply Chain Management During COVID-19 Pandemic: A Systematic Literature Review. *International Journal of Economics & Business Administration (IJEBA)*, IX(2), 277–292.
- Lai. (2017). SciELO - Brazil—The Literature Review Of Technology Adoption Models And Theories For The Novelty Technology The Literature Review Of Technology Adoption Models And Theories For The Novelty Technology. <https://www.scielo.br/j/jistm/a/D3NXPz5WF4gQX9cSdLKQv6D/abstract/?lang=en>
- Le, H. B. H., Ngo, C. T., Trinh, T. T. H., & Nguyen, T. T. P. (2020). Factor Affecting Customers' Decision to Use Mobile Banking Service: A Case of Thanh Hoa Province, Vietnam. *The Journal of Asian Finance, Economics and Business*, 7(2), 205–212. <https://doi.org/10.13106/jafeb.2020.vol7.no2.205>
- Leishman, P. (2010). Understanding the Unbanked Customer and Sizing the Mobile Money Opportunity. *GSMA Mobile Money for the Unbanked Annual Report 2009*.

- Liao, S., Shao, Y. P., Wang, H., & Chen, A. (1999). The adoption of virtual banking: An empirical study. *International Journal of Information Management*, 19(1), 63–74. [https://doi.org/10.1016/S0268-4012\(98\)00047-4](https://doi.org/10.1016/S0268-4012(98)00047-4)
- Lu, J., Yu, C.-S., Liu, C., & Yao, J. E. (2003). Technology acceptance model for wireless Internet. *Internet Research*.
- MacCallum, R. C., Browne, M. W., & Sugawara, H. M. (1996). Power Analysis and Determination of Sample Size for Covariance Structure Modeling. 20.
- Madden, T. J., Ellen, P. S., & Ajzen, I. (1992). A comparison of the theory of planned behavior and the theory of reasoned action. *Personality and Social Psychology Bulletin*, 18(1), 3–9.
- Manu, & Girish, V. (2020). “Impact of COVID-19 on Mobile Banking Services” | *Studies in Indian Place Names. UGC Care Journal*, 40(70). <https://archives.tpsindia.org/index.php/sipn/article/view/7332>
- Min, S., So, K. K. F., & Jeong, M. (2019). Consumer adoption of the Uber mobile application: Insights from diffusion of innovation theory and technology acceptance model. *Journal of Travel & Tourism Marketing*, 36(7), 770–783.
- Mobile banking. (2020). In Wikipedia. [https://en.wikipedia.org/w/index.php?title=Mobile\\_banking&oldid=955241443](https://en.wikipedia.org/w/index.php?title=Mobile_banking&oldid=955241443)
- Moore, G. C., & Benbasat, I. (1991). Development of an instrument to measure the perceptions of adopting an information technology innovation. *Information Systems Research*, 2(3), 192–222.
- Morawczynski, O., & Pickens, M. (2009). Poor people using mobile financial services: Observations on customer usage and impact from M-PESA.
- Masood, A., Feng, Y., Rasheed, M. I., Ali, A., & Gong, M. (2021). Smartphone-based social networking sites and intention to quit: self-regulatory perspective. *Behaviour & Information Technology*, 40(11), 1055-1071.
- Naeem, M. (2020). Developing the antecedents of social influence for Internet banking adoption through social networking platforms: Evidence from conventional and Islamic banks. *Asia Pacific Journal of Marketing and Logistics*.
- National University of Singapore, Tan, M., Teo, T., & National University of Singapore. (2000). Factors Influencing the Adoption of Internet Banking. *Journal of the Association for Information Systems*, 1(1), 1–44. <https://doi.org/10.17705/1jais.00005>
- Oliveira, T., Thomas, M., Baptista, G., & Campos, F. (2016). Mobile payment: Understanding the determinants of customer adoption and intention to recommend the technology. *Computers in Human Behavior*, 61, 404–414. <https://doi.org/10.1016/j.chb.2016.03.030>
- Orr, G. (2003). Diffusion of innovations, by Everett Rogers (1995). Retrieved January, 21, 2005.
- Pandey, P. (2019). Mobile Banking: History and what it does. *Shape My App*. <https://www.shapemyapp.com/blogs/mobile-banking-history-and-what-it-does>
- Payment Systems Review. (2019). 15.
- Pitafi, A. H., Rasheed, M. I., Kanwal, S., & Ren, M. (2020). Employee agility and enterprise social media: The Role of IT proficiency and work expertise. *Technology in Society*, 63, 101333.
- Plouffe, C. R., Hulland, J. S., & Vandenbosch, M. (2001). Richness versus parsimony in modeling technology adoption decisions—Understanding merchant adoption of a smart card-based payment system. *Information Systems Research*, 12(2), 208–222.
- Porteous, D. (2006). The enabling environment for mobile banking in Africa. DfID London.
- Rasheed, M. I., Jamad, W. N., Pitafi, A. H., & Iqbal, S. M. J. (2020). Perceived compensation fairness, job design, and employee motivation: The mediating role of working environment. *South Asian Journal of Management*, 14(2), 229-246.

- Rasheed, M. I., Okumus, F., Weng, Q., Hameed, Z., & Nawaz, M. S. (2020). Career adaptability and employee turnover intentions: The role of perceived career opportunities and orientation to happiness in the hospitality industry. *Journal of Hospitality and Tourism Management*, 44, 98-107.
- Rasheed, M. I., Weng, Q., Umrani, W. A., & Moin, M. F. (2021). Abusive supervision and career adaptability: The role of self-efficacy and coworker support. *Human Performance*, 34(4), 239-256.
- Raza, S. A., & Hanif, N. (2013). Factors affecting internet banking adoption among internal and external customers: A case of Pakistan. *International Journal of Electronic Finance*, 7(1), 82–96. <https://doi.org/10.1504/IJEF.2013.051746>
- Raza, S. A., Umer, A., Qazi, W., & Makhdoom, M. (2018). The effects of attitudinal, normative, and control beliefs on m-learning adoption among the students of higher education in Pakistan. *Journal of Educational Computing Research*, 56(4), 563–588.
- Rizvi, S. K. A., Naqvi, B., & Tanveer, F. (2017). Mobile Banking: A Potential Catalyst for Financial Inclusion and Growth in Pakistan. *THE LAHORE JOURNAL OF ECONOMICS*, 22(Special Edition), 251–281. <https://doi.org/10.35536/lje.2017.v22.isp.a11>
- Rogers, E. M. (1995). Diffusion of Innovations: Modifications of a model for telecommunications. In *Die diffusion von innovationen in der telekommunikation* (pp. 25–38). Springer.
- Rogers1985-with-cover-page-v2.pdf. (n.d.).
- Sadaf, A., Newby, T. J., & Ertmer, P. A. (2012). Exploring Factors that Predict Preservice Teachers' Intentions to Use Web 2.0 Technologies Using Decomposed Theory of Planned Behavior. *Journal of Research on Technology in Education*, 45(2), 171–196. <https://doi.org/10.1080/15391523.2012.10782602>
- Sahli, A. B., & Legohérel, P. (2016). The tourism Web acceptance model: A study of intention to book tourism products online. *Journal of Vacation Marketing*, 22(2), 179–194. <https://doi.org/10.1177/1356766715607589>
- Saleem, S., Rasheed, M. I., Malik, M., & Okumus, F. (2021). Employee-fit and turnover intentions: The role of job engagement and psychological contract violation in the hospitality industry. *Journal of Hospitality and Tourism Management*, 49, 385-395.
- Sarwar, B., & Hassan, M. (2021). Impact of economic policy uncertainty on dividend decision: A moderating role of board financial expertise. *Journal of Public Affairs*, 21(3), e2613.
- Sattar, M. A., Rasheed, M. I., Khan, I. U., Tariq, H., & Iqbal, J. (2017). Why adaptable individuals perform better: The role of orientation to happiness. *Australian Journal of Career Development*, 26(3), 134-141.
- Shaikh, A. A., & Karjaluo, H. (2015). Mobile banking adoption: A literature review. *Telematics and Informatics*, 32(1), 129–142.
- Shih, Y., & Fang, K. (2004). The use of a decomposed theory of planned behavior to study Internet banking in Taiwan. *Internet Research*, 14(3), 213–223. <https://doi.org/10.1108/10662240410542643>
- Silva, P. (2015). Davis' technology acceptance model (TAM)(1989). *Information Seeking Behavior and Technology Adoption: Theories and Trends*, 205–219.
- Sukamolson, S. (2017). *Fundamentals of Quantitative Research*. 20.
- Sumardi, L., & Hanum, F. (2019). Social Mobility And New Form Of Social Stratification: Study In Sasak Tribe, Indonesia. 8(10), 6.
- Tam, C., & Oliveira, T. (2017). Understanding mobile banking individual performance: The DeLone & McLean model and the moderating effects of individual culture. *Internet Research*.

- Taylor, S., & Todd, P. (1995). Decomposition and crossover effects in the theory of planned behavior: A study of consumer adoption intentions. *International Journal of Research in Marketing*, 12(2), 137–155.
- Thaker, H. M. T., Pitchay, A. A., & Hussain, H. I. (2019). Continuous Adoption of Internet Banking: Evidence from Islamic Banks in Malaysia. 27.
- The Enabling Environment for Mobile Banking in Kenya.pdf. (n.d.).
- The human impact of COVID-19 – and how business can help. (n.d.). World Economic Forum.
- Thompson, R. L., Higgins, C. A., & Howell, J. M. (1991). Personal computing: Toward a conceptual model of utilization. *MIS Quarterly*, 125–143.
- Tornatzky, L. G., & Klein, K. J. (1982). Innovation characteristics and innovation adoption-implementation: A meta-analysis of findings. *IEEE Transactions on Engineering Management*, 1, 28–45.
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User Acceptance of Information Technology: Toward a Unified View. *MIS Quarterly*, 27(3), 425–478. JSTOR. <https://doi.org/10.2307/30036540>
- Venkatesh, V., Thong, J. Y. L., & Xu, X. (2012). Consumer Acceptance and Use of Information Technology: Extending the Unified Theory of Acceptance and Use of Technology. *MIS Quarterly*, 36(1), 157–178. JSTOR. <https://doi.org/10.2307/41410412>
- Vinzi, V. E., Chin, W. W., Henseler, J., & Wang, H. (2010). *Handbook of Partial Least Squares: Concepts, Methods and Applications*. Springer Science & Business Media.
- Yazid, A. S., & Kofarnaisa, F. U. (2019). Sophisticated strategic information systems and strategic performance of Islamic banks: A review of literature. *International Journal of Business Information Systems*, 30(1), 79–91. <https://doi.org/10.1504/IJBIS.2019.097048>
- Yousaf, S., Rasheed, M. I., Hameed, Z., & Luqman, A. (2019). Occupational stress and its outcomes: the role of work-social support in the hospitality industry. *Personnel Review*.
- Yousaf, S., Rasheed, M. I., Kaur, P., Islam, N., & Dhir, A. (2022). The dark side of phubbing in the workplace: Investigating the role of intrinsic motivation and the use of enterprise social media (ESM) in a cross-cultural setting. *Journal of Business Research*, 143, 81-93.
- Zhang, Y., Rasheed, M. I., & Luqman, A. (2020). Work–family conflict and turnover intentions among Chinese nurses: The combined role of job and life satisfaction and perceived supervisor support. *Personnel Review*, 49(5), 1140-1156.
- Zhang, Y., Wu, S., & Rasheed, M. I. (2020). Conscientiousness and smartphone recycling intention: The moderating effect of risk perception. *Waste Management*, 101, 116-125.
- Zhou, T., Lu, Y., & Wang, B. (2010). Integrating TTF and UTAUT to explain mobile banking user adoption. *Computers in Human Behavior*, 26(4), 760–767. <https://doi.org/10.1016/j.chb.2010.01.013>
- Anser, M. K., Zaigham, G. H. K., Imran Rasheed, M., Pitafi, A. H., Iqbal, J., & Luqman, A. (2020). Social media usage and individuals' intentions toward adopting Bitcoin: The role of the theory of planned behavior and perceived risk. *International journal of communication systems*, 33(17), e4590.
- Chang, Y.-S., Yue, Z., Qureshi, M., Rasheed, M. I., Wu, S., & Peng, M. Y.-P. (2022). Residents' waste mobile recycling planned behavior model: the role of environmental concern and risk perception. *International Journal of Emerging Markets*(ahead-of-print).
- Rasheed, M. I., Okumus, F., Weng, Q., Hameed, Z., & Nawaz, M. S. (2020). Career adaptability and employee turnover intentions: The role of perceived career opportunities and

- orientation to happiness in the hospitality industry. *Journal of Hospitality and Tourism Management*, 44, 98-107.
- Rasheed, M. I., Weng, Q., Umrani, W. A., & Moin, M. F. (2021). Abusive supervision and career adaptability: The role of self-efficacy and coworker support. *Human Performance*, 34(4), 239-256.
- Saleem, S., Rasheed, M. I., Malik, M., & Okumus, F. (2021). Employee-fit and turnover intentions: The role of job engagement and psychological contract violation in the hospitality industry. *Journal of Hospitality and Tourism Management*, 49, 385-395.
- Zhang, Y., Wu, S., & Rasheed, M. I. (2020). Conscientiousness and smartphone recycling intention: The moderating effect of risk perception. *Waste Management*, 101, 116-125.