



## Acceptance of Electronic Banking among University Students in Pakistan: An Application of Technology Acceptance Model (TAM)

Altaf Hussain<sup>1</sup>, Muhammad Sajjad Hussain<sup>2</sup>, Muhammad Yousaf Khan Marri<sup>3</sup>, Ali Zafar<sup>4</sup>

<sup>1</sup> Assistant Professor, Department of Economics, The Islamia University of Bahawalpur, Pakistan  
Email: [altafhussain@iub.edu.pk](mailto:altafhussain@iub.edu.pk)

<sup>2</sup> Visiting Faculty, Superior University, Lahore, Email: [sajjadgift@gmail.com](mailto:sajjadgift@gmail.com)

<sup>3</sup> PARC National Agricultural Research Centre Park Road, Islamabad, Pakistan, Email: [Yousuf.marri@gmail.com](mailto:Yousuf.marri@gmail.com)

<sup>4</sup> Research Scholar, Department of Economics, The Islamia University of Bahawalpur, Pakistan  
Email: [aliizaffaar@gmail.com](mailto:aliizaffaar@gmail.com)

### ARTICLE INFO

#### Article History:

Received: August 08, 2021  
Revised: September 26, 2021  
Accepted: September 29, 2021  
Available Online: September 30, 2021

#### Keywords:

Electronic Banking  
Perceived Ease to Use  
Perceived Usefulness  
Security and Privacy  
Perceived Behavioral Control  
Intention to Use

#### JEL Classification Codes:

E50, E59, F59, G24, G40

### ABSTRACT

Electronic banking has become an essential element for the banking sector's success around the globe and attained the attention of recent studies and regulators. Thus, the present study examines the impact of technology adoption elements such as perceived ease to use, perceived usefulness, security and privacy and perceived behavioral control on the intention to use of electronic banking among university students in Pakistan. This study also examines the mediating role of government support among the perceived ease to use, perceived usefulness, security and privacy, perceived behavioral control and intention to use of electronic banking among university students in Pakistan. The data have been gathered with the help of questionnaires from private university students in Punjab, Pakistan. The present study has adopted the smart-PLS to analyze the nexus among the constructs. The results have revealed that perceived ease to use, perceived usefulness, and perceived behavioral control have significant and positive relationships with the intention to use of electronic banking in Pakistan. The findings also indicated that government support significantly and positively mediates among the relations of perceived ease to use, perceived usefulness, security and privacy, perceived behavioral control and intention to use of electronic banking among university students in Pakistan. These outcomes provide the guidelines to the banking regulatory authorities while developing the policies related to the use of electronic banking.

© 2021 The Authors, Published by iRASD. This is an Open Access Article under the Creative Common Attribution Non-Commercial 4.0

Corresponding Author's Email: [altafhussain@iub.edu.pk](mailto:altafhussain@iub.edu.pk)

## 1. Introduction

The process by which banks construct up a policy for their clients to acquire general material and conduct business automatically without the presence of a bank is merely defined as E-banking (He, You, Li, & Wu, 2021; Shair, Shaorong, Kamran, Hussain, & Nawaz, 2021). In particular, E-banking paves the way for the promotion of common business structures and the banking industry, though it can be used as a weapon by banks to cope with tough routines (Chien, Pantamee, et al., 2021; Rahi, Ghani, & Ngah, 2020). Providing benefits to both customers and banks, only a small population in Ethiopia were convinced to use electronic banking services. Predictable profits cannot be achieved if the customers do not accept electronic banking services: acceptance and continuous use of a product, service or idea coined as acquisition. Using TAM factors having a positive influence towards adopting new technologies lies within simplicity, ethical standards and visible control of behavior while perceiving risks has a negative influence on customers. These play a vital role in acceptance by customers inclined

towards electronic banking system (Baloch et al., 2021; Rahi, Ghani, Alnaser, & Ngah, 2018; Sun et al., 2020).

Banking companies are using advanced information technologies for providing service to their customers twenty-four-seven, throughout the year in effective ways for better growth (Chien, Kamran, et al., 2021; Rahi, Ghani, & Ngah, 2018). The new model of banking transactions via an electronic platform emerged as digitalization of banking processes such as fund deposits & transfers, withdrawals, management of current and savings account, loan management, applications for financial products and account services. Simple admittance to the web, a developing number of web clients, cost-viability, comfort, and productivity are empowering factors for the electronic utilization of banks. Internet banking, phone banking and phone checking, tablet banking, tax exchanges, e-statements and online payments are the most popular digital banking services with low error rates (Chawla & Joshi, 2018; Chien, Sadiq, Kamran, et al., 2021). The operating costs can be reduced up to 20-25% by efficient use of digital banking and increases the competitive edge of banks as a byproduct (Chien, Sadiq, Nawaz, et al., 2021; Rahi, Ghani, & Ngah, 2019). The most popular channels of communication and information transfer among customers are mobile and telecommunications (Adapa & Roy, 2017).

The concept of E-Banking is not something new to Pakistan. Started back in 1987, first-ever ATM was installed in the country. E-Banking channels processed 253.7 million transactions of value Rs.19.1 trillion altogether through Real-Time Online Banking services (RTOBs), Automatic Teller Machine (ATM), Point of Sale (POS), e-Commerce, Banking through Mobile Phone, Internet and Call Centers In the total number of e-Banking transactions, ATM with 53% in volume of transactions holds the highest share among all (Ahmad, Bhatti, & Hwang, 2020). RTOBs have fully processed transactions amounting to Rs.15.5 trillion from July 2020 to September 2020. At the end of the quarter, the total number of ATMs in the country reached 15,770 by investing 158 new ATMs. During the quarter, these ATMs collectively processed 134.9 million transactions amounting to Rs.1.7 trillion. In total, ATM withdrawals have a maximum share of 96% in volume. This quarter with an increase of 8%, the number of POS machines increased to 52,924 (Samar, Ghani, & Alnaser, 2017). To fulfil the need of customers in times of pandemic, mobile banking channels are increasing to provide alternatives to conventional banking. Due to the encouraging policies of the State Bank of Pakistan in challenging circumstances, the promotion of e-banking will lead to a tremendous enhancement in the users in the coming future (Gill, Ansari, Akram, & Tufail, 2021). Call Centers / IVR Banking was the source of 45,000 transactions of about Rs.1.9 billion in the last quarter, with an estimated number of 31.8 million bank's call / IVR centers. E-Commerce subscribers registered with banks jumped to 2,164, accounting for an increase of 27%. These merchants considered a total of \$ 11.9 billion during the quarter (Hassan, Iqbal, & Iqbal, 2018).

In Pakistan, the need for banking services is increasing day by day. Though in order to meet this need, the branches are being increased by the listed banks in Pakistan, still the accuracy and agility in the provision of banking services like fund deposits & transfers, withdrawals, management of current and savings accounts, loan management, applications for financial products and account services are needed (Carranza, Díaz, Sánchez-Camacho, & Martín-Consuegra, 2021; Li et al., 2021; Nawaz, Seshadri, et al., 2021). The accuracy, effectiveness, and agility of banking services can be improved with the use of innovative technology. Our study is being conduction with an intention to remove the problems in the provision of banking services through technology adoption. The main aim of our article is to explore the influences of perceived usefulness, ease to use, & behavioral control, and security & privacy on the intention of the banking personnel to adopt technology in providing services. This article aims to show the mediating effect of government on the nexus among perceived usefulness, ease to use, and behavioral control, security and privacy, and the intention of the banking personnel to adopt the technology. The exploration of the influences of technology perceptions in different categories on intention to use technology in banking processes under TAM is a great contribution to literature as the need shown by (Akbar, Mohan, Subramani, & Sasikala, 2020; Mohsin, Kamran, Nawaz, Hussain, & Dahri, 2021; Nawaz, Hussain, et al., 2021). The use of government support as a mediator between perceived usefulness, ease to use, and behavioral control, security and & privacy, and the intention of the banking personnel to adopt technology is also a considerable extension to literature. Moreover, this is the first study that

examines the predictors of the intention of utilizing technology in banking in the economy of Pakistan.

After the introduction, the 2<sup>nd</sup> portion of the paper is a description of the association between perceived usefulness, ease to use, and behavioral control, security and privacy and the intention of the banking personnel to adopt technology in providing services in the light of previous studies. The 3<sup>rd</sup> portion of the study deals with collecting and analyzing the data from different university students in Pakistan. Based on this data, study results are found out. Through an effective discussion, the study results are compared to and approved by the previous studies. Then, the paper provides implications, conclusions, and limitations of the workout.

## **2. Literature Review**

The utilization of technology plays a significant role in the success of financial institutions like banks as the adoption of innovative technology proves to be fruitful in many ways. The use of up-to-date technology in banking processes increases efficiency, helps in handling information, reduces costs, improves accuracy, customer service, enables easy communication and build strong collaboration with the stakeholders (Rawwash et al., 2020; Zhuang et al., 2021). The electronic banking depends on the intention of the bank employees and customers to avail from the innovative technology but this intention is affected by perception of technology users and features of technology. Our study examines the impacts of perceived usefulness, ease to use, and behavioral control, security and privacy on the intention of the banking personnel to adopt technology. Prior to it, many authors have presented different views about the association between perceived usefulness, ease to use, and behavioral control, security & privacy and the intention of the banking personnel to adopt technology. In the light of these arguments, the study presents its concepts:

A research was conducted by Sugandini et al. (2018) to test the innovation adoption model on Micro Small Medium enterprises which are affected by uncertainty, perceived usefulness, and compatibility. One hundred fifty-one craftsmen are the respondents in this research. Data were examined with the help of SEM. The study results show that the intention to use technology is affected by the perceived usefulness, uncertainty, and compatibility in a positive manner. The literary workout of Nayanajith, Damunupola, and Ventayen (2019) was conducted to investigate the nature of the association between perceived usefulness of the technology, website visibility, and the attention towards online banking services for the Sri Lankan Financial Sector. A simple random sampling technique was adopted to acquire data from 60 students of UWA Welles University. E-SERVQUAL and TAM models were adopted, and ANOVA the mixed-design was applied for data analysis. This study implies that the use of technology and internet for banking services is dependent on the perception of the users that the use of digital technology would be useful for them to perform banking transactions. That is why,

**H1:** The perceived usefulness has a positive association with the intention to use technology.

The authors like Magotra, Sharma, and Sharma (2018) identify the relationship of customer value perception with the technology adoption behavior through the analysis of banking clients in India. 1201 banking clients residing in India were taken as sample through the multistage stratified sampling approach. Integrated Technology Adoption model along with structural modelling technique was taken for data examination. The study results have indicated that the customers value perception like perceived ease to use and usefulness determine their intention to rely on technology to avail themselves from banking services. Raza, Umer, and Shah (2017) present arguments about the association between perceived ease to use and intention towards adopting mobile banking applying the technology acceptance model (TAM). Relevant data were collected from the 300 mobile banking users. Reliability analysis and PLS-SEM were applied for data analysis. According to the results of the empirical analysis, the perceived ease of use enhances the intention to adopt mobile banking. On the basis of the above arguments, it can be hypothesized:

**H2:** The perceived ease to use has a positive association with the intention to use technology.

The study of Lien, Hsu, Shang, and Wang (2021) was written with an aim to investigate the interrelationship among the perceived usefulness, perceived benefits, perceived behavioral control and intention to adopt technology in the banking sector. TAM model and TPB theory were applied. Through the mall intercept approach, empirical research was conducted at an international airport in Taiwan and data were collected from 582 respondents. The study suggests that the perception of the ability to manage the users' behavior towards technology determine the extent to adopt the technology in the performance of economic activities. An empirical investigation was made by Kamble, Gunasekaran, and Arha (2019), to investigate block chain technology and its adoption in the supply chain through a model understanding the user perception of technology adoption. The model is carries three approaches of TAM, TRI, and TPB. The data collected from 181 supply chain practitioners in India were analyzed through SEM. The study findings indicate that the perceived behavioral control has considerable influences on block chain technology adoption. Hence.

**H3:** The perceived behavioral control has a positive association with the intention to use technology.

In-depth research was conducted by Zhang, Lu, and Kizildag (2018) to examine consumers' tendency to adopt mobile technology to render banking services and carry relevant activities and to test the elements affecting the adoption and administration. Through an online survey, the data about the association between factors like customers' perceptions, security & privacy, reliability, and customers' innovativeness and technology adoption were collected. Structural equation modelling was adopted for analysis. The study findings prove that the sense of high security and privacy provided by the technology used in banking processes encourages electronic banking. Similarly, the study conducted by Aboobucker and Bao (2018) analyzed the impact of security & privacy, perceived trust, and perceived risk and technology adoption. The data were collected from 186 customers of internet banking in Sri Lanka, and the results show the positive association between security & privacy and technology adoption. Thus,

**H4:** Security & privacy has a positive association with the intention to use technology.

Empirical research was made by Rahi et al. (2020) to investigate the customers' value perceptions, government support, and technology adoption. According to the results of this study, the customers' perception that the use of innovative technology would be useful in achieving the best quality banking services motivates the government to support and thus, the intention to adopt technology is encouraged. The literary article, which was written by Hu, Ding, Li, Chen, and Yang (2019), examines the association between the perceived ease to use technology and technology adoption along with government support. The study implies that the government support respond to technological change, which is possible the users of technology shows a perception that convenient use could encourage electronic banking. The study conducted by AL-Subari, Zabri, and Ahmad (2018), which deals with the interrelationship of perceived usefulness, reliability, and perceived behavioral control and technology adoption in banks. The study implies that government support plays a linking role between perceived behavioral control and the intention to use technology. Moreover, Setiawan, Nugraha, Irawan, Nathan, and Zoltan (2021), in their study, are of the view that government supports the technology adoption in case the technology users have high security and privacy. That is why:

**H5:** Government support is a mediator between perceived usefulness and the intention to use technology.

**H6:** Government support is a mediator between perceived ease to use and the intention to use technology.

**H7:** Government support is a mediator between perceived behavioral control and the intention to use technology.

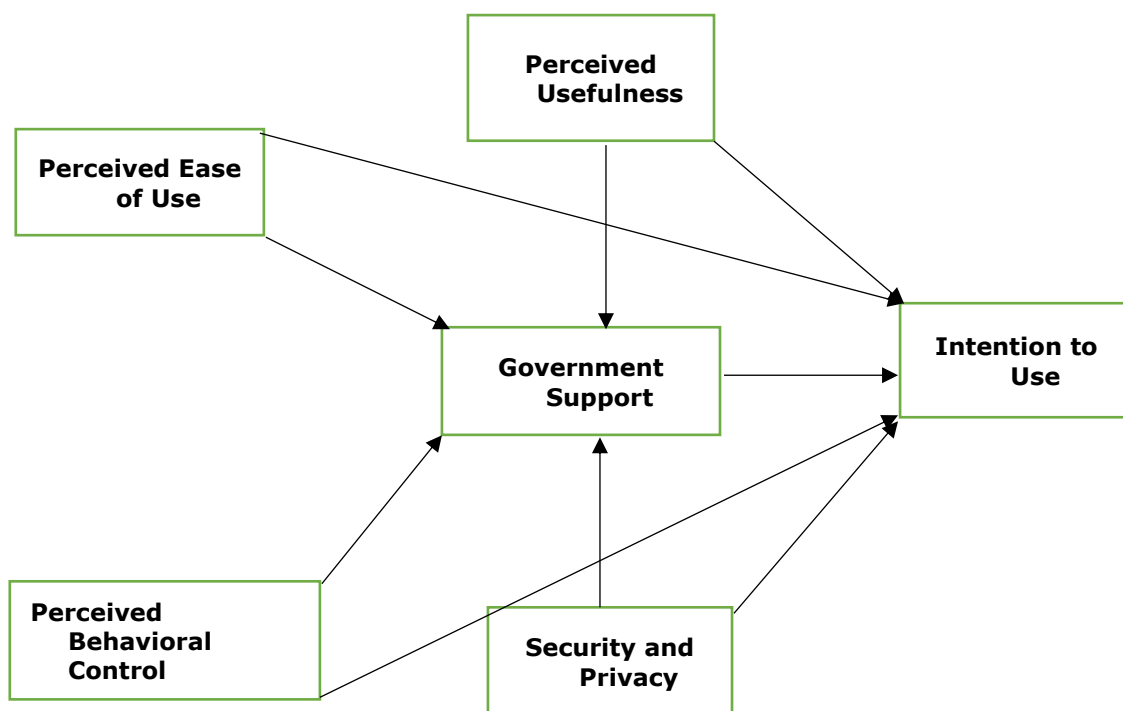
**H8:** Government support is a mediator between security & privacy and the intention to use technology.

### 3. Research Methods

The current research investigates the impact of perceived ease to use, perceived usefulness, security and privacy and perceived behavioral control on the intention to use of electronic banking and also examines the mediating role of government support among the perceived ease to use, perceived usefulness, security and privacy, perceived behavioral control and intention to use of electronic banking among university students in Pakistan. The data have been gathered with the help of questionnaires from private university students in Punjab, Pakistan. These questionnaires were sent to the university students by personal visit and through email taken from the universities databases. The present study has used simple random sampling to select the respondents. The researchers have forwarded the 1100 questionnaires to the selected respondents but only received the 757 after one month, representing about 68.82 per cent response rate.

The present study has adopted the smart-PLS to analyze the nexus among the constructs. Smart-PLS has been selected due to the model complexity and large data set (J. Hair, Hollingsworth, Randolph, & Chong, 2017; J. F. Hair, Ringle, & Sarstedt, 2011). In addition, the current study has used four predictors such as perceived ease to use (PEU) with four items, perceived usefulness (PU) with twelve items, security and privacy (SP) with five items and perceived behavioral control (PBC) with ten items. Moreover, the present research has also taken the intention to use (IU) of electronic banking with ten items as the dependent variable, and government support (GS) has been used as the mediating variable with six items. These constructs have been shown in Figure 1.

**Figure 1: Theoretical Model**



### 4. Research Findings

The results section of the current article has shown the convergent and discriminant validity to check the reliability and validity of the constructs and items and the path analysis to test the hypotheses and relationships among the constructs. Firstly, the findings have been shown the convergent validity that shows the relations among items. The figures have been exposed that high correlation among items and valid convergent validity because the Alpha and composite reliability (CR) values are higher than 0.70 and average variance extracted (AVE), and factor loadings are more than 0.50. These values are mentioned in Table 1.

**Table 1: Convergent validity**

<b>Constructs</b>	<b>Items</b>	<b>Loadings</b>	<b>Alpha</b>	<b>CR</b>	<b>AVE</b>
<b>Government Support</b>	GS1	0.797	0.860	0.896	0.590
	GS2	0.833			
	GS3	0.736			
	GS4	0.748			
	GS5	0.807			
	GS6	0.677			
<b>Intention to Use</b>	IU1	0.691	0.894	0.913	0.514
	IU10	0.711			
	IU2	0.565			
	IU3	0.703			
	IU4	0.741			
	IU5	0.758			
	IU6	0.765			
	IU7	0.720			
	IU8	0.769			
	IU9	0.723			
<b>Perceived Behavior Control</b>	PBC1	0.717	0.885	0.907	0.523
	PBC10	0.793			
	PBC2	0.760			
	PBC3	0.730			
	PBC4	0.623			
	PBC5	0.665			
	PBC6	0.758			
	PBC7	0.754			
	PBC9	0.690			
	<b>Perceived Ease to Use</b>	PEU1			
PEU2		0.747			
PEU4		0.717			
<b>Perceived Usefulness</b>	PU1	0.731	0.907	0.922	0.519
	PU10	0.709			
<b>(Continue Table 1)</b>					
<b>Constructs</b>	<b>Items</b>	<b>Loadings</b>	<b>Alpha</b>	<b>CR</b>	<b>AVE</b>
<b>Security and Privacy</b>	PU11	0.687	0.746	0.811	0.592
	PU12	0.701			
	PU2	0.730			
	PU3	0.629			
	PU4	0.724			
	PU5	0.775			
	PU6	0.771			
	PU7	0.732			
	PU8	0.722			
	SP1	0.637			
SP3	0.851				
SP5	0.803				

Secondly, the findings have been shown the discriminate validity that shows the relations among constructs. Firstly, cross-loadings and Fornell Larcker were used, and the figures have been exposed that low correlation among constructs and valid discriminant validity because the values that indicated the relations with construct itself are larger than the values that exposed the links with other constructs. These values are mentioned in Table 2 and Table 3.

**Table 2: Fornell Larcker**

	<b>GS</b>	<b>IU</b>	<b>PBC</b>	<b>PEU</b>	<b>PU</b>	<b>SP</b>
<b>GS</b>	0.768					
<b>IU</b>	0.654	0.717				
<b>PBC</b>	0.495	0.674	0.723			
<b>PEU</b>	0.501	0.615	0.469	0.777		
<b>PU</b>	0.646	0.817	0.656	0.533	0.720	
<b>SP</b>	0.310	0.254	0.100	0.274	0.256	0.770

**Table 3: Cross-loadings**

	<b>GS</b>	<b>IU</b>	<b>PBC</b>	<b>PEU</b>	<b>PU</b>	<b>SP</b>
<b>GS1</b>	<b>0.797</b>	0.578	0.435	0.375	0.590	0.238
<b>GS2</b>	<b>0.833</b>	0.442	0.366	0.385	0.446	0.296
<b>GS3</b>	<b>0.736</b>	0.478	0.416	0.391	0.439	0.199
<b>GS4</b>	<b>0.748</b>	0.535	0.359	0.366	0.534	0.223
<b>GS5</b>	<b>0.807</b>	0.406	0.324	0.351	0.411	0.254
<b>GS6</b>	<b>0.677</b>	0.529	0.359	0.427	0.509	0.217
<b>IU1</b>	0.502	<b>0.691</b>	0.425	0.364	0.500	0.216
<b>IU10</b>	0.487	<b>0.711</b>	0.501	0.623	0.618	0.207
<b>IU2</b>	0.349	<b>0.565</b>	0.327	0.241	0.488	0.160
<b>IU3</b>	0.474	<b>0.703</b>	0.485	0.472	0.587	0.185

(Continue Table 3)

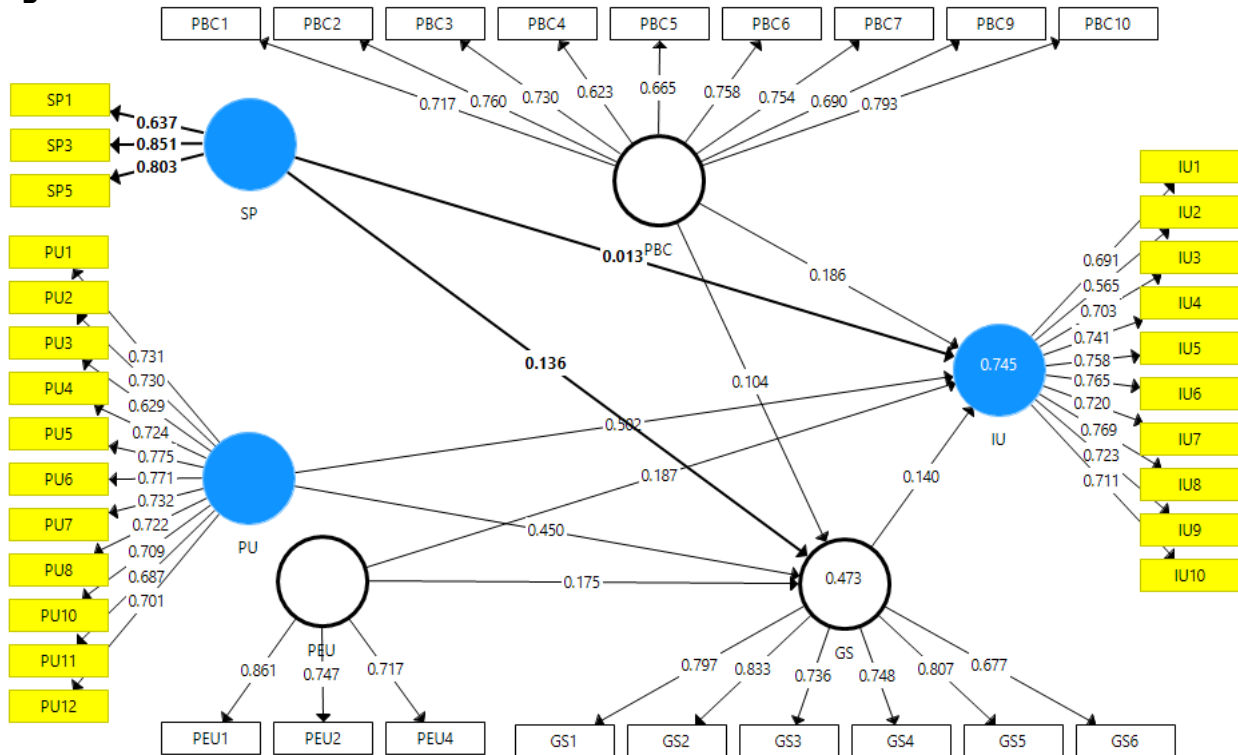
	<b>GS</b>	<b>IU</b>	<b>PBC</b>	<b>PEU</b>	<b>PU</b>	<b>SP</b>
<b>IU4</b>	0.446	<b>0.741</b>	0.528	0.554	0.595	0.144
<b>IU5</b>	0.500	<b>0.758</b>	0.542	0.411	0.598	0.188
<b>IU6</b>	0.497	<b>0.765</b>	0.544	0.393	0.591	0.212
<b>IU7</b>	0.475	<b>0.720</b>	0.452	0.333	0.596	0.185
<b>IU8</b>	0.448	<b>0.769</b>	0.458	0.366	0.634	0.144
<b>IU9</b>	0.495	<b>0.723</b>	0.522	0.564	0.627	0.183
<b>PBC1</b>	0.331	0.454	<b>0.717</b>	0.298	0.433	0.034
<b>PBC10</b>	0.404	0.566	<b>0.793</b>	0.397	0.565	0.085
<b>PBC2</b>	0.376	0.497	<b>0.760</b>	0.291	0.486	0.113
<b>PBC3</b>	0.357	0.498	<b>0.730</b>	0.311	0.441	0.084
<b>PBC4</b>	0.289	0.431	<b>0.623</b>	0.315	0.429	0.006
<b>PBC5</b>	0.365	0.491	<b>0.665</b>	0.322	0.476	0.065
<b>PBC6</b>	0.333	0.475	<b>0.758</b>	0.382	0.459	0.035
<b>PBC7</b>	0.377	0.492	<b>0.754</b>	0.357	0.464	0.064
<b>PBC9</b>	0.375	0.461	<b>0.690</b>	0.375	0.503	0.150
<b>PEU1</b>	0.486	0.585	0.427	<b>0.861</b>	0.498	0.220
<b>PEU2</b>	0.323	0.384	0.287	<b>0.747</b>	0.306	0.265
<b>PEU4</b>	0.331	0.432	0.363	<b>0.717</b>	0.411	0.162
<b>PU1</b>	0.575	0.659	0.499	0.395	<b>0.731</b>	0.197
<b>PU10</b>	0.374	0.536	0.490	0.332	<b>0.709</b>	0.097
<b>PU11</b>	0.371	0.513	0.450	0.340	<b>0.687</b>	0.139
<b>PU12</b>	0.405	0.535	0.455	0.294	<b>0.701</b>	0.107
<b>PU2</b>	0.436	0.649	0.561	0.409	<b>0.730</b>	0.223
<b>PU3</b>	0.472	0.519	0.381	0.399	<b>0.629</b>	0.231
<b>PU4</b>	0.540	0.581	0.465	0.419	<b>0.724</b>	0.203
<b>PU5</b>	0.440	0.643	0.491	0.342	<b>0.775</b>	0.239
<b>PU6</b>	0.524	0.636	0.474	0.482	<b>0.771</b>	0.199
<b>PU7</b>	0.544	0.629	0.500	0.448	<b>0.732</b>	0.194
<b>PU8</b>	0.366	0.521	0.415	0.315	<b>0.722</b>	0.169
<b>SP1</b>	0.190	0.215	0.137	0.195	0.176	<b>0.637</b>
<b>SP3</b>	0.281	0.208	-0.004	0.242	0.233	<b>0.851</b>
<b>SP5</b>	0.235	0.162	0.116	0.188	0.175	<b>0.803</b>

Secondly, the Heterotrait Monotrait ratio was used to check discriminant validity. The figures have been exposed that low correlation among constructs and valid discriminant validity because the values are lower than 0.90. These values are mentioned in Table 4.

**Table 4: Heterotrait Monotrait ratio**

	GS	IU	PBC	PEU	PU	SP
GS						
IU	0.734					
PBC	0.561	0.751				
PEU	0.636	0.759	0.596			
PU	0.711	0.899	0.729	0.658		
SP	0.413	0.337	0.174	0.417	0.328	

**Figure 2: Measurement model assessment**



The path analysis has been highlighted the nexus among the understudy constructs. The results have revealed that perceived ease to use, perceived usefulness, and perceived behavioral control have significant and positive relationships with the intention to use of electronic banking in Pakistan and accept H1, H2 and H3. However, the results have also revealed that security and privacy have insignificant and positive relationships with intention to use electronic banking in Pakistan and reject H4. Table 5 shows the direct relationships among the constructs.

**Table 5: Direct path**

Relationships	Beta	S.D.	T Statistics	P Values	L.L.	U.L.
GS -> IU	0.140	0.031	4.545	0.000	0.077	0.190
PBC -> GS	0.104	0.044	2.391	0.019	0.023	0.188
PBC -> IU	0.186	0.027	6.896	0.000	0.122	0.225
PEU -> GS	0.175	0.040	4.361	0.000	0.097	0.247
PEU -> IU	0.187	0.030	6.235	0.000	0.127	0.245
PU -> GS	0.450	0.048	9.303	0.000	0.340	0.524
PU -> IU	0.502	0.031	16.181	0.000	0.431	0.558
SP -> GS	0.136	0.031	4.360	0.000	0.075	0.197
SP -> IU	0.013	0.021	0.599	0.551	-0.023	0.047

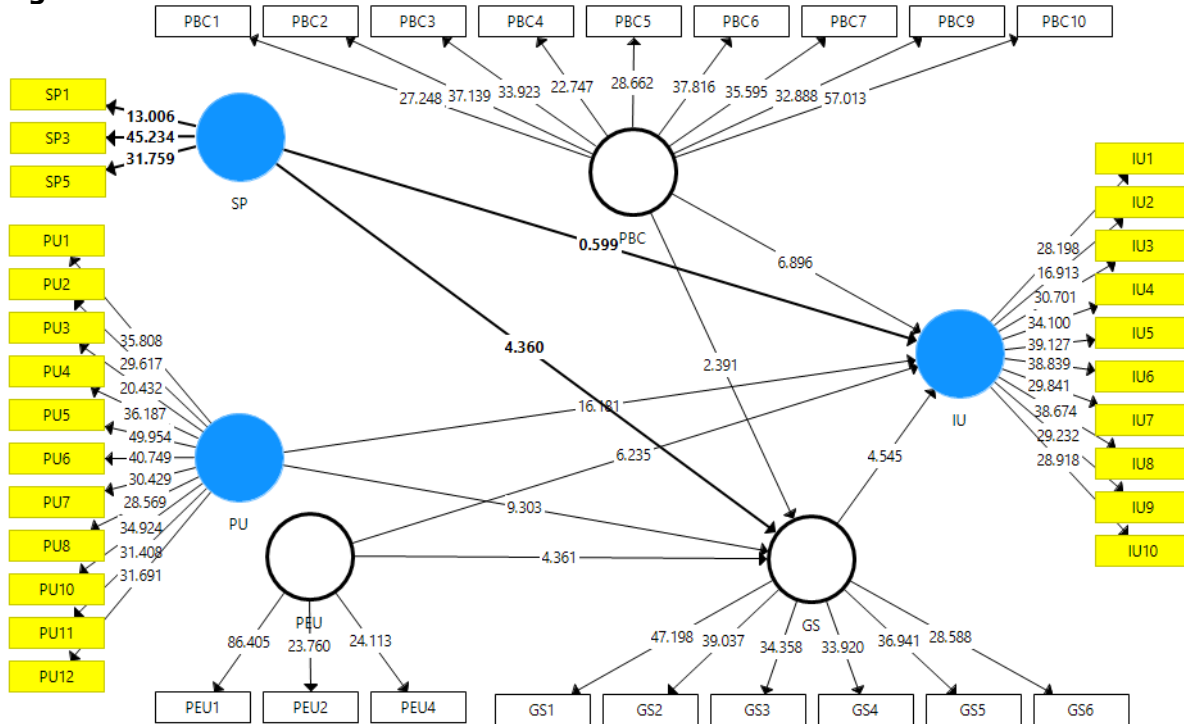


The findings also indicated that government support significantly and positively mediates among the relations of perceived ease to use, perceived usefulness, security and privacy, perceived behavioral control and intention to use of electronic banking among university students in Pakistan and accept H5, H6, H7 and H8. Table 6 shows the indirect relationships among the constructs.

**Table 6: Indirect path**

Relationships	Beta	S.D.	T Statistics	P Values	L.L.	U.L.
PU -> GS -> IU	0.063	0.018	3.574	0.001	0.030	0.095
PBC -> GS -> IU	0.015	0.005	2.726	0.008	0.004	0.025
PEU -> GS -> IU	0.025	0.008	3.127	0.002	0.012	0.040
SP -> GS -> IU	0.019	0.006	3.228	0.002	0.008	0.033

**Figure 3: Structural model assessment**



### 5. Discussion and Implications

It's been indicated by the study results that the perceived usefulness has a significant positive association with the intention to use technology in banking. These results are in line with the previous study of Owusu, Bekoe, Addo-Yobo, and Otieku (2021), which suggests that when the employees feel that the use of innovative technology for providing banking services to the customers will improve their work efficiency and quality of services to clients, they have more intention to adopt technology in their job activities. The results have revealed that the perceived ease of use has a positive and significant association with the intention to use technology in banking. The past study of Sugandini et al. (2018) supports these results as it shows that the employees' perception that it is convenient to use the technology in performing the banking services like receipts of deposits, grant of loans, management of different accounts, or other financial transactions encourages the intention to adopt electronic banking. The results have indicated that the perceived behavioral control is in a positive association with the intention to use technology in banking. These Hansen, Saridakis, and Benson (2018) approves these results. This study states that the perception of the ability how the clients behave towards the use of technology in managing and providing the banking services and their thinking & behavior could be controlled, enables the banking personnel to adopt the technology in banking processes such as fund deposits & transfers, withdrawals, management of current and savings accounts, loan management, applications for financial products and account services.

The results show the positive but insignificant relationship between security and privacy with the use of intention towards electronic banking. The results were confirmed by the past study of Albashrawi and Motiwalla (2019). The results have represented that government support plays a mediating role between the perceived usefulness of technology in banking and the intention to use electronic banking. The past study of Kumar and Singh (2018) confirms these results. This study posits that the sense of knowing that the use of up-to-date technology would be beneficial for the effective performance of financial services enhances government support, which helps in adopting technologies in banking. Similarly, the study results have shown that government support plays a mediating role between the perceived ease to use the technology in banking and the intention to use electronic banking. The past study of Karakara and Osabuohien (2019) supports these results as it indicates that the perception of the convenience while using the technology to avail from banking technology forces the government to support and trigger the intention to adopt banking technology. The study results have also revealed that government support plays a mediating role between the perceived behavioral control towards the use of technology in banking and the intention to use electronic banking. These results are in line with the previous study of Teye and Quarshie (2021) according to which the government gets ready to provide financial and legal support to electronic banking adoption while it has the perception to control the people's behavior towards the technology adoption. The study results show the significant mediating influences of government support on the association between the perceived usefulness of technology in banking and the intention to use electronic banking. These results are in line with the past study of Jere and Ngidi (2020), which also highlights the linking influences of government support on the relationship between the perceived usefulness of technology in banking and the intention to use electronic banking.

The current study saves a significant position in the literature on technology acceptance and financial development. This study elaborates that the influences of the technology perceptions like the perceived usefulness, ease to use, and behavioral control, and security & privacy towards banking technology on the intention of the banking personnel to adopt technology for rendering banking services applying the technology acceptance model (TAM). In the past literature, a few studies have discussed the predictors of intention to adopt technology in the banking process, but due to great detail with such an extent about the different sorts of perception about the technology use and their impacts on the intention to adopt electronic banking, this study proves to be an exception in the literature. This workout proves to be an empirical guideline to policymakers, economists, government, and banking management as it clarifies how it is possible to encourage electronic banking adoption. This study suggests that the intention to use technology in banking processes is enhanced when their high rate of perceived usefulness, ease to use, and behavioral control, and security & privacy.

## **6. Conclusion and Limitations**

The current study was conducted in order to remove the problems in the way of effective banking performance and thus, with the aim to enhance the intention and capacity to adopt technology and digitalization in the banking processes. In order to achieve the study objectives, authors made an empirical analysis of the contribution of perceived usefulness, ease to use, and behavioral control, and security & privacy into the encouragement of the use of technology in banking processes with the help of data collected from university students who avail from the electronic banking in Pakistan. The results of the study were extracted out of these numerical data from university students in Pakistan. These results indicated that the perceptions of the users of electronic banking such as perceived usefulness, ease to use, and behavioral control, and security & privacy toward the use of concerning technology determines the extent to which the users have the intention to adopt the technology in performing banking services. The results also showed that perceived usefulness, ease to use, and behavioral control, and security & privacy enhances government support and thus, leads to the enhanced use of electronic banking.

The current study has some limitations that must be reconsidered by the researchers and authors in the future while replicating the concepts of this study. This study examines the influences of different perceptions of users about the technology like perceived usefulness, ease to use, and behavioral control, and security & privacy on the intention of the banking personnel to adopt technology in providing services. Many other factors like the economic circumstances, technology import, population, and financial position of the banking institutions also determine the intention of technology adoption. Thus authors must pay attention here. This study was

conducted in Punjab, Pakistan. It is applied in different cultures and economics when it ends up with different results. Therefore, we cannot get the results of all the users in another geographical region. Additionally, respondents who share their negative experiences about internet banking usage might be affected while answering questions.

## References

- Aboobucker, I., & Bao, Y. (2018). What obstruct customer acceptance of internet banking? Security and privacy, risk, trust and website usability and the role of moderators. *The Journal of High Technology Management Research*, 29(1), 109-123. doi: <https://doi.org/10.1016/j.hitech.2018.04.010>
- Adapa, S., & Roy, S. K. (2017). Consumers' post-adoption behaviour towards Internet banking: empirical evidence from Australia. *Behaviour & Information Technology*, 36(9), 970-983. doi: <https://doi.org/10.1080/0144929X.2017.1319498>
- Ahmad, S., Bhatti, S. H., & Hwang, Y. (2020). E-service quality and actual use of e-banking: Explanation through the Technology Acceptance Model. *Information Development*, 36(4), 503-519. doi: <https://doi.org/10.1177%2F0266666919871611>
- Akbar, J. N., Mohan, C. R., Subramani, A., & Sasikala, M. (2020). Examining the factors influencing adoption of e-banking services in Chennai City. *Serbian Journal of Management*, 15(2), 181-192. doi: <https://doi.org/10.5937/sjm15-20323>
- AL-Subari, S. N., Zabri, S. M., & Ahmad, K. (2018). Factors influencing online banking adoption: The case of academicians in Malaysian Technical University Network (MTUN). *Advanced Science Letters*, 24(5), 3193-3197. doi: <https://doi.org/10.1166/asl.2018.11342>
- Albashrawi, M., & Motiwalla, L. (2019). Privacy and personalization in continued usage intention of mobile banking: An integrative perspective. *Information Systems Frontiers*, 21(5), 1031-1043. doi: <https://doi.org/10.1016/j.chb.2017.11.010>
- Baloch, Z. A., Tan, Q., Kamran, H. W., Nawaz, M. A., Albashar, G., & Hameed, J. (2021). A multi-perspective assessment approach of renewable energy production: policy perspective analysis. *Environment, Development and Sustainability*, 1-29. doi: <https://doi.org/10.1007/s10668-021-01524-8>
- Carranza, R., Díaz, E., Sánchez-Camacho, C., & Martín-Consuegra, D. (2021). e-Banking adoption: an opportunity for customer value co-creation. *Frontiers in psychology*, 11, 403-419. doi: <https://doi.org/10.3389/fpsyg.2020.621248>
- Chawla, D., & Joshi, H. (2018). The moderating effect of demographic variables on mobile banking adoption: An empirical investigation. *Global Business Review*, 19(3\_suppl), S90-S113. doi: <https://doi.org/10.1177%2F0972150918757883>
- Chien, F., Kamran, H. W., Nawaz, M. A., Thach, N. N., Long, P. D., & Baloch, Z. A. (2021). Assessing the prioritization of barriers toward green innovation: small and medium enterprises Nexus. *Environment, Development and Sustainability*, 1-31. doi: <https://doi.org/10.1007/s10668-021-01513-x>
- Chien, F., Pantamee, A. A., Hussain, M. S., Chupradit, S., Nawaz, M. A., & Mohsin, M. (2021). Nexus between financial innovation and bankruptcy: evidence from information, communication and technology (ict) sector. *The Singapore Economic Review*, 1-22.
- Chien, F., Sadiq, M., Kamran, H. W., Nawaz, M. A., Hussain, M. S., & Raza, M. (2021). Co-movement of energy prices and stock market return: environmental wavelet nexus of COVID-19 pandemic from the USA, Europe, and China. *Environmental Science and Pollution Research*, 1-15.
- Chien, F., Sadiq, M., Nawaz, M. A., Hussain, M. S., Tran, T. D., & Le Thanh, T. (2021). A step toward reducing air pollution in top Asian economies: The role of green energy, eco-innovation, and environmental taxes. *Journal of Environmental Management*, 297. doi: <https://doi.org/10.1016/j.jenvman.2021.113420>
- Gill, A. A., Ansari, R. H., Akram, K., & Tufail, M. W. (2021). Application of Cognitive Motivational Relational Theory to Examine the Influence of E-Banking Quality Factors on Customer Loyalty. *Journal of Accounting and Finance in Emerging Economies*, 7(1), 241-249. doi: <https://doi.org/10.26710/jafee.v7i1.1608>
- Hair, J., Hollingsworth, C. L., Randolph, A. B., & Chong, A. Y. L. (2017). An updated and expanded assessment of PLS-SEM in information systems research. *Industrial Management & Data Systems*, 117(3), 442-458. doi: <https://doi.org/10.1108/IMDS-04-2016-0130>
- 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.

- Hansen, J. M., Saridakis, G., & Benson, V. (2018). Risk, trust, and the interaction of perceived ease of use and behavioral control in predicting consumers' use of social media for transactions. *Computers in Human Behavior, 80*, 197-206. doi: <https://doi.org/10.1016/j.chb.2017.11.010>
- Hassan, M. U., Iqbal, A., & Iqbal, Z. (2018). Factors affecting the adoption of internet banking in Pakistan: An integration of technology acceptance model and theory of planned behaviour. *International Journal of Business Information Systems, 28*(3), 342-370. doi: <https://doi.org/10.1504/IJBIS.2018.092530>
- He, D., You, K., Li, W., & Wu, J. (2021). Determinants of technology adoption: evidence from the Chinese banking industry. *Emerging Markets Finance and Trade, 57*(11), 3167-3189. doi: <https://doi.org/10.1080/1540496X.2019.1678027>
- Hu, Z., Ding, S., Li, S., Chen, L., & Yang, S. (2019). Adoption intention of fintech services for bank users: An empirical examination with an extended technology acceptance model. *Symmetry, 11*(3), 340-364. doi: <https://doi.org/10.3390/sym11030340>
- Jere, J. N., & Ngidi, N. (2020). A technology, organisation and environment framework analysis of information and communication technology adoption by small and medium enterprises in Pietermaritzburg. *South African Journal of Information Management, 22*(1), 1-9. doi: <http://dx.doi.org/10.4102/sajim.v22i1.1166>
- Kamble, S., Gunasekaran, A., & Arha, H. (2019). Understanding the Blockchain technology adoption in supply chains-Indian context. *International Journal of Production Research, 57*(7), 2009-2033. doi: <https://doi.org/10.1080/00207543.2018.1518610>
- Karakara, A. A., & Osabuohien, E. S. (2019). Households' ICT access and bank patronage in West Africa: Empirical insights from Burkina Faso and Ghana. *Technology in Society, 56*, 116-125. doi: <https://doi.org/10.1016/j.techsoc.2018.09.010>
- Kumar, S., & Singh, M. (2018). Big data analytics for healthcare industry: impact, applications, and tools. *Big Data Mining and Analytics, 2*(1), 48-57. doi: <https://doi.org/10.26599/BDMA.2018.9020031>
- Li, W., Chien, F., Hsu, C.-C., Zhang, Y., Nawaz, M. A., Iqbal, S., & Mohsin, M. (2021). Nexus between energy poverty and energy efficiency: Estimating the long-run dynamics. *Resources Policy, 72*. doi: <https://doi.org/10.1016/j.resourpol.2021.102063>
- Lien, C.-H., Hsu, M. K., Shang, J.-Z., & Wang, S. W. (2021). Self-service technology adoption by air passengers: a case study of fast air travel services in Taiwan. *The Service Industries Journal, 41*(9-10), 671-695. doi: <https://doi.org/10.1080/02642069.2019.1569634>
- Magotra, I., Sharma, J., & Sharma, S. K. (2018). Investigating linkage between customer value and technology adoption behaviour: A study of banking sector in India. *European Research on Management and Business Economics, 24*(1), 17-26. doi: <https://doi.org/10.1016/j.iemeen.2017.11.001>
- Mohsin, M., Kamran, H. W., Nawaz, M. A., Hussain, M. S., & Dahri, A. S. (2021). Assessing the impact of transition from nonrenewable to renewable energy consumption on economic growth-environmental nexus from developing Asian economies. *Journal of Environmental Management, 284*. doi: <https://doi.org/10.1016/j.jenvman.2021.111999>
- Nawaz, M. A., Hussain, M. S., Kamran, H. W., Ehsanullah, S., Maheen, R., & Shair, F. (2021). Trilemma association of energy consumption, carbon emission, and economic growth of BRICS and OECD regions: quantile regression estimation. *Environmental Science and Pollution Research, 28*(13), 16014-16028.
- Nawaz, M. A., Seshadri, U., Kumar, P., Aqdas, R., Patwary, A. K., & Riaz, M. (2021). Nexus between green finance and climate change mitigation in N-11 and BRICS countries: empirical estimation through difference in differences (DID) approach. *Environmental Science and Pollution Research, 28*(6), 6504-6519. doi: <https://doi.org/10.1007/s11356-020-10920-y>
- Nayanajith, G., Damunupola, K., & Ventayen, R. J. M. (2019). Website Usability, Perceived Usefulness and Adoption of Internet Banking Services in the Context of Sri Lankan Financial Sector. *Asian Journal of Business and Technology Studies, 2*(1), 28-38. doi: <https://orcid.org/0000-0001-9050-5210>
- Owusu, G. M. Y., Bekoe, R. A., Addo-Yobo, A. A., & Otioku, J. (2021). Mobile banking adoption among the Ghanaian youth. *Journal of African Business, 22*(3), 339-360. doi: <https://doi.org/10.1080/15228916.2020.1753003>

- Rahi, S., Ghani, M., Alnaser, F., & Ngah, A. (2018). Investigating the role of unified theory of acceptance and use of technology (UTAUT) in internet banking adoption context. *Management Science Letters*, 8(3), 173-186. doi: <http://dx.doi.org/10.5267/j.msl.2018.1.001>
- Rahi, S., Ghani, M., & Ngah, A. (2018). A structural equation model for evaluating user's intention to adopt internet banking and intention to recommend technology. *Accounting*, 4(4), 139-152. doi: <http://dx.doi.org/10.5267/j.ac.2018.3.002>
- Rahi, S., Ghani, M. A., & Ngah, A. H. (2019). Integration of unified theory of acceptance and use of technology in internet banking adoption setting: Evidence from Pakistan. *Technology in Society*, 58, 101-124. doi: <https://doi.org/10.1016/j.techsoc.2019.03.003>
- Rahi, S., Ghani, M. A., & Ngah, A. H. (2020). Factors propelling the adoption of internet banking: the role of e-customer service, website design, brand image and customer satisfaction. *International Journal of Business Information Systems*, 33(4), 549-569. doi: <https://doi.org/10.1504/IJBIS.2020.105870>
- Rawwash, H., Masad, F., Enaizan, O., Eneizan, B., Adaileh, M., Saleh, A., & Almestarihi, R. (2020). Factors affecting Jordanian electronic banking services. *Management Science Letters*, 10(4), 915-922. doi: <http://dx.doi.org/10.5267/j.msl.2019.10.004>
- Raza, S. A., Umer, A., & Shah, N. (2017). New determinants of ease of use and perceived usefulness for mobile banking adoption. *International Journal of Electronic Customer Relationship Management*, 11(1), 44-65. doi: <https://doi.org/10.1504/IJECRM.2017.086751>
- Samar, S., Ghani, M., & Alnaser, F. (2017). Predicting customer's intentions to use internet banking: the role of technology acceptance model (TAM) in e-banking. *Management Science Letters*, 7(11), 513-524. doi: <http://dx.doi.org/10.5267/j.msl.2017.8.004>
- Setiawan, B., Nugraha, D. P., Irawan, A., Nathan, R. J., & Zoltan, Z. (2021). User Innovativeness and Fintech Adoption in Indonesia. *Journal of Open Innovation: Technology, Market, and Complexity*, 7(3), 188-198. doi: <https://doi.org/10.3390/joitmc7030188>
- Shair, F., Shaorong, S., Kamran, H. W., Hussain, M. S., & Nawaz, M. A. (2021). Assessing the efficiency and total factor productivity growth of the banking industry: do environmental concerns matters? *Environmental Science and Pollution Research*, 28(16), 20822-20838.
- Sugandini, D., Purwoko, P., Pambudi, A., Resmi, S., Reniati, R., Muafi, M., & Adhyka Kusumawati, R. (2018). The role of uncertainty, perceived ease of use, and perceived usefulness towards the technology adoption. *International Journal of Civil Engineering and Technology (IJCIET)*, 9(4), 660-669. doi: <http://eprints.upnyk.ac.id/id/eprint/17878>
- Sun, H., Awan, R. U., Nawaz, M. A., Mohsin, M., Rasheed, A. K., & Iqbal, N. (2020). Assessing the socio-economic viability of solar commercialization and electrification in south Asian countries. *Environment, Development and Sustainability*, 1-23. doi: <https://doi.org/10.1007/s10668-020-01038-9>
- Teye, E. S., & Quarshie, P. T. (2021). Impact of agricultural finance on technology adoption, agricultural productivity and rural household economic wellbeing in Ghana: a case study of rice farmers in Shai-Osudoku District. *South African Geographical Journal*, 17, 1-20. doi: <https://doi.org/10.1080/03736245.2021.1962395>
- Zhang, T., Lu, C., & Kizildag, M. (2018). Banking "on-the-go": examining consumers' adoption of mobile banking services. *International Journal of Quality and Service Sciences*, 10(3), 279-295. doi: <https://doi.org/10.1108/IJQSS-07-2017-0067>
- Zhuang, Y., Yang, S., Chupradit, S., Nawaz, M. A., Xiong, R., & Koksai, C. (2021). A nexus between macroeconomic dynamics and trade openness: moderating role of institutional quality. *Business Process Management Journal*. doi: <https://doi.org/10.1108/BPMJ-12-2020-0594>