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PROPOSING A FRAMEWORK FOR E-BANKING ADOPTION IN AN EMERGING ECONOMY: AN APPLICATION OF TECHNOLOGY ACCEPTANCE MODEL AND CONSUMER PSYCHOLOGY

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Abstract

The prime objective of the current study is to highlight the application of technology acceptance model and proposing a framework for e-banking adoption. The study has first examined the antecedents to the perceived ease of use of e-banking users. Addition to that the study has also examined the impact of the perceived ease of use on the perceived usefulness e-banking users. Finally, the study has examined the impact of the perceived ease of use and perceived usefulness on the e-banking of e-banking users in Pakistan. Perceived usefulness refers to the perception that e-banking facilitate users to complete their day-to-day financial tasks and has a positive relationship with e-satisfaction. The study has used the SEM-PLS is used for the data analysis. It indicates that Pakistani e-banking users derive their satisfaction from e-banking service usage, since these services satisfy their expectations in terms of online financial transactions. Furthermore, the findings of this study support the positive relation between e-trust and perceived usefulness, which implies that e-banking customers also consider alternative banking service channels to be useful and easily useable, because it takes little mental and physical effort; it is easy to remember codes and passwords; and require no outside help while operating these channels, resulting in satisfied customers.

Keywords: Technology Acceptance Model, e-banking, Pakistan

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Background

The service industry is experiencing rapid growth due to its significant contribution in world economic development and is also drawing considerable attention of the stakeholders and scholars around the globe (Nguyen, 2016). Around two-third of today's world economic output is contributed by the service sector, meanwhile, the trade service sector also accounts for one-fifth of the overall exports and the commercial export services sectors are also experiencing rapid growth (Kaufmann, Kraay, & Mastruzzi, 2017). However, in case of USA, Canada, Japan and other European industrialized economies, their service sector's contribution in employment generation and GDP development cannot be underestimated (Kaufmann et al., 2017). In USA, the service sector generates around 80-88% of jobs, and thus facilitates in achieving trade surplus by exporting their services (Nguyen, 2016).

Besides developed nations, the developing economies of Latin America, Africa and Asia are also achieving tremendous growth and benefits arising from the growth in their service sectors. Additionally, the service sector in Singapore, Malaysia, Thailand, and Hong Kong has also greatly influence their economic prosperity, because of their reliance on the service and tourism sectors. Africa on the other hand, has also been experiencing significant growth in service sector, since this sector offers various opportunities in terms of consumer goods and services (Siddiqui, Siddiqui, & Maithani, 2018). According to a report, the annual revenue from the service sector will be higher than the revenues generated by other sectors, including infrastructure and agriculture, and is expected to reach to the level of $520 billion by the year 2020.

Generally, the banking sector also plays a crucial role in the world economic development since this sector drives and supports the real services sector by mobilizing funds to the deficit end from the surplus end (Mushtaq, Khan, & Haq, 2018). Nowadays, banks are the prime focus of global service industry, and thus allow to perform businesses across the border by increasing internet penetration and introducing information technology. According to the state bank of Pakistan (2009), the banks in Pakistan are substantially contributing to the country's GDP, thereby enabling it to reach to 35% in year 2009. According to the recent figures, the service sector's share in Pakistani GDP has reached to 37% in 2013 which was initially recorded as 25% in year 1990 (Baloch, 2018).

In today's business environment, internet appears as an essential technological tool that has been generally employed by business organizations for the development of the world economy (Soomro, 2018). It is probably because all human endeavors and their various aspects, including, buying, selling, communications, banking, governance, learning, etc. have been touched with the expansion of the World Wide Web (Rofiat, 2017). Most importantly, the fields of electronic, computing and communication engineering have experienced technological breakthrough which enabled the banking organizations to embrace e-banking to improve their customer service (Zhang, Weng, & Zhu, 2018). Globalization of service innovations and business activities and recent revolutions in today's banking industry have increased the competition which put pressure upon banks to offer more customer choices (Asiyanbi & Ishola, 2018).

Furthermore, such developments have also provided service providers with enormous opportunities to achieve flexibility in service provision, because in modern times customer demand better facilities and services. Therefore, in recent times e-banking is considered as the bank's most flexible service.

Different authors have defined e-banking, for instance, 'it is a banking service which allow banks' customers to settle bills, make account related enquiries, transfer funds, perform other transactions, and manage stock with the help of electronic communication channels, with no direct interaction with the bank officials' (Aboobucker & Bao, 2018; Deraz & Iddris, 2019). E-banking channels involve Automated Teller Machines (ATM), Internet banking, mobile banking, electronic cheque clearing system, PC banking, etc. (Demir & Fakhir, 2017; Zhang et al., 2018). These channels are deemed as the alternative channels, which have evolved and thus transformed the e-commerce and the banking industry.

This paradigm shift from traditional banking to electronic banking has provided various benefits both for the banks and the customers. In context to customers, the introduction of e-banking has resulted in the reduction of physical cash transfer from one to the other, facilitates in risk reduction and robbery, offers easy transaction anytime and with convenience, provided easy access to better tools and information for rapidly managing businesses and also enhance money

value (Aboobucker & Bao, 2018; Rofiat, 2017; Salimon, Yusoff, & Mokhtar, 2016b). While in context to banks, e-banking has significantly reduced the overhead, provided multiple opportunities of selling their services across the border which consequently improved the profit pool, and reengineered the business processes. Besides, e-banking also offer effective management of bank customers by offering them with efficient settlement and payment systems, and variety of innovative products (Demir & Fakhir, 2017; Rofiat, 2017). In Demir and Fakhir (2017) study, they found that with e-banking, banks spend around $.01 for each transaction, while similar transaction that is made through branch cost bank $1.07 on average for each transaction. It thus indicates considerable overhead cost saving through e-banking.

As a result, e-banking has become one of the important electronic banking channels since the past few decades, which enable banks to offer their services to customers in various countries. In addition, it became an essential banking tool to achieve in international business arena, since in today's world most countries have been carrying out their businesses through e-banking (Aboobucker & Bao, 2018). It has also been estimated that huge number of e-banking websites are making transactions across the globe to facilitate across the border business activities and to achieve business development (Zhang et al., 2018).

Hypothesis Development

The structure of this study has been developed after thorough examination of previous research. The resulting structure centered on Blair, Miller, and Ong (2017) TAM succeeding Alkraiji (2020) modification of the model for the countries which are developing. Blair et al. (2017) established a theory that was reformed from TRA to evaluate the variables that encourage people to accept the technology or in other case people would reject the technology. The hypothetical background of the TAM philosophy is the theory of reason action which hypothesize the essential relationship among perceived usefulness (**PUFLN)** and perceived ease of use (PREOU), usage of technology, attitudes of individual and behavioral intentions. The further eradication facilitated in the workplace for estimation along with the recognition and usage of information technology. The concept of TAM determined that, there are two factors of technology acceptance which are; **PUFLN** and PREOU. **PUFLN** is the measure that how people would anticipate about technology acceptance that it will increase their performance in job, on the other hand, PREOU is the measure that people have faith that usage of a specific system demands no effort Blair et al. (2017). Generally, the main focus of TAM is on the technology usage and acceptance.

TAM hypothesize that PREOU and **PUFLN** influences individual point of view in the usage of equipment. Moreover, the attitude and behavioral intention (BI) is forecasted by PU of an individual usage of technology. In the same way, PU is affected by PREOU. PREOU influences the acceptance of technology indirectly by **PUFLN**. In TAM acceptance behavior is connected with behavioral intention (BI). According to TAM theory the factors which are considered as external factors for PU and PREOU could be influenced indirectly. According to Lim (2018), in the following model of TAM the concept of attitude was removed because of the reality that it had fragile correlation with perceived usefulness (**PUFLN**) and behavioral intentions.

The structure of this study has been developed after thorough examination of previous research. The resulting structure centered on Blair et al. (2017) TAM succeeding Alkraiji (2020) modification of the model for the countries which are developing. According to the research by Zainab, Awais, and Alshagawi (2017) the significance of the computer self-efficacy on PREOU was emphasized which indicated the important impact of the concept on PREOU.

Among the different factors that were indicated the study revealed that computer self-efficacy was the most dominant and interpreted the simplicity of use. Based on the hypothetical reasoning studies have shown a positive linkage of PREOU in terms of system usage with computer self-efficacy. This has established a mediating relationship due to PREOU in between recognition of technology and computer self-efficacy associated concerns. They further explained that the users will be positive and have confidence on the comport of usage and practicality amplification of technology when they have high level of computer self-efficacy. In addition to this, earlier researches (Zainab et al., 2017) in which these researchers determined that computer self-efficacy has an important influence on acceptance. Therefore, Zainab et al. (2017) claimed that PREOU insignificantly influenced by computer self-efficacy. However, this research hypothesis is that:

H1: Computer Self efficacy (CSE) has significant impact on the PREOU.

In an organization where the facility of well-designed technological infrastructure is available, it supports the organizations to develop capability through which it can easily and effectively implement technological solutions. Development in the economies of scale and scope is due to the infrastructure (Wijesinghe, Scheepers, & Korthaus, 2019). This includes multiple initiatives for implementation that would decrease the total cost both for the implementation of system and cost used for learner's which are linked with the new system. When the technological infrastructure does not exist in an organization the workers have a lack in positive opinion on the feasibility of e-training which would result in delay for their acceptance. The facility of technological infrastructure guarantees the acceptance from the organizational side which create positivity in the opinion of workers. According to the research, PREOU would affect the technological infrastructure (Smeda, Shiratuddin, & Wong, 2017). This research recognized the positive link in between the two theories. Therefore, Zhang et al. (2018) recognized that in new system acceptance there was not much influence of technological infrastructure. However, on the implementation and acceptance of new system through PREOU indirectly, the infrastructure has an effect, therefore it can be stated that PREOU facilitates the correlation between e-training acceptance and technological infrastructure. Hence, this research hypothesis that:

H2: Technological Infrastructure (TINN) has significant impact on the PREOU.

Zainab (2016) argued about the importance of internet connectivity in Pakistan, with the support and use of internet the data transfers quickly among the individual, companies and nations. The use of internet assists the nations to find answers to several national issues such as environmental, educational and health related. He stated that it is very helpful to encourage challenges which are in nature for the progress of a country in the developing countries. According to the earlier studies it was considered as a progressive step that Pakistani civil service accepted the e-training. Bello (2019) and Teo, Zhou, and Noyes (2016) all these researchers claimed that the availability of internet on electronic learning was very beneficial and considered as comfort. However, this research hypothesis that.

H3: Internet Facilities (INF) has significant impact on the PREOU.

One of the essential requirements for the acceptance of e-training was the facility of consistent power supply. Power supply disruption was a major problem for Pakistan. Many areas of Pakistan are not connected with the power grid stations: on the other hand the areas which are connected were are not facilitated with reliable power supply. However, the power sector in Pakistan was recently privatized, but the issue of disruption in supply of power, rationing and frequent outages in country still existed. Tijani (2019), Wordu and Emamorose (2017) and Siddiquah and Salim (2017) claimed that power supply was one of the

important variable in new system acceptance. It has also been proved that reliable powers supply facilitates and would be useful in e-training acceptance while on the contrary it's difficult for acceptance if the facility of power supply is unstable. However, this research hypothesizes that:

H4: Power supply (PWS) has significant impact on the PREOU.

It is respected and valued when an organization shows its encouraging gesture for the acceptance and discuss the requirements of their workers. Support from the organization gives an advantage to increase the encouraging attitude inside an organization. Worker's opinion changes with the support of organization towards benefits and easy practice of new system, and acceptance in new system (Blair et al., 2017; Hwang, 2019). However, Sanderford, McCoy, and Keefe (2018) argued that support by the organization plays an insignificant role in the acceptance of internet, author proved that support of organization has no relation with PREOU, Sun, Teh, and Linton (2018) acknowledged the positive linkage in between organizational support and system usage. In the same way, different authors also determined that organizational support has a positive link with PREOU. Latikka, Turja, and Oksanen (2019) claimed that when there was no support by the organization it had a negative influence on the system usage. Researchers determined that there was a link in between PREOU and organizational support. However, when an organization would be providing support then the trust level among workers would increase because they would have faith for the acceptance of system their organization would support and deliver all efforts which were required. Workers would have faith that would be an easy way for e-training acceptance and will be by supportive of the organization. However, this research hypothesizes that:

H5: Organizational support (OST) has significant impact on the PREOU.

According to the earlier research work, during e-training acceptance technical support was considered as one of the supporting variables. In e-training acceptance the expertise of skilled employees that are available by organizations plays a vital role. High technical support would certainly create motivation and stress-free acceptance (Ghavifekr & Mahmood, 2017). On the other hand, when technical support is low then it would be discouraging and stress-full acceptance. Organizations show no assurance due to the occurrence of this negative impact. It's a fact that electronic learning has positive influence by the availability of technical support. According to Torres, Sandoval, and Alzate (2018), they could not find any prove for the new system acceptance that was effected by technical support. Although, in some research works it was claimed that technical support has a significant link in new system acceptance (Ghavifekr & Mahmood, 2017; Smeda et al., 2017). However, the hypothesis of this study is that:

H6: Technical Support (TCNS) has significant impact on the PREOU.

Government support is a key aspect in technology acceptance which has been recognized by Zhang et al. (2018). According to their research it has been demonstrated that the acceptance in new system the role of government support is very important. However on the other hand, Sunday and Vera (2018) argued conversely that government support had no relation with the acceptance in new system. According to author, government support in the form of donations and tax freedom could be the assistances in new system acceptance. According to earlier research it has been emphasized that the services such as power supply, internet, and infrastructure for technology is required for progression in e-training and easy acceptance. These services require important consideration. Smooth acceptance of e-training with the government support after fixing all of the issues. Moreover, it has been argued in early studies that Pakistani

workers had no knowledge about computer handling and therefore a price value has been assigned to it. Computer availability for the government employees can certainly be made possible through government support. This will create relax environment for employees to grasp their practice and encourage workers to acquire that expertise which are favorable for them in e-training acceptance. However, this research hypothesis that:

H7: Government Support (GOVS) has significant impact on the PREOU.

PUFLN and PREOU have positive and direct effect on usage behavior. Their findings are in line with who suggested that PUFLN mediates the relationship between PREOU in system acceptance. Furthermore, Zainab et al. (2017) found that in acceptance of system, PUFLN is an important antecedent and have more predictive power than PREOU. They opined that PREOU can have indirect effect on acceptance through PUFLN. The findings of their study on PUFLN and PREOU relationship are similar with findings of other researchers. Furthermore, Behl and Pal (2019) noted that previously conducted research work on the relationship between PUFLN and PREOU on behavior highlights positive effect of PU on PREOU. The results of their analysis also confirm there is positive relationship between PREOU and PUFLN. Consequently, over the years findings of the effect of PUFLN on the relationships between PREOU has been contradictory. Alkraiji (2020) found no significant effect of PU in system acceptance. Furthermore, studies have also shown that PREOU have no significant effect on acceptance (Zhang et al., 2018). However, many studies have shown that PREOU through PUFLN has significant effect on acceptance. Furthermore, studies have revealed that PUFLN mediates PREOU influence towards usage. These studies have shown that PREOU can affect attitude indirectly via PUFLN depending on the study factors which are external to TAM. Therefore, this study hypothesis is that:

H8: PREOU has significant impact on the PUFLN.

Demir and Fakhir (2017) defined perceived ease of use as 'to what extent a person perceives that adopting a particular system would not involve any effort'. Often this concept is considered as a system's effortlessness that influence technology adoption. Perceived ease of use is also important since it determines delivery, acceptance and development of e-banking services. Another study stated that the longer a system is used overtime the greater will be its proclivity of acceptance. Demir and Fakhir (2017) define perceived ease of use in context to organization, where the main focus was on computer usage. In Davis research, the findings suggest that in comparison to perceived usefulness, the perceived ease of use was found to significantly predict future as well as current system usage at a lower degree. Furthermore, several existing authors have gathered substantial empirical evidence on the significant association among perceived ease of use and adoption of e-banking system (Rofiat, 2017; Salimon et al., 2016b).

Researcher gathered responses from 532 staff members from Jordanian University, to analyze factors which led to the adoption of e-banking system. In their study, they considered Innovation Diffusion Theory (IDT) and employed structural equation modeling technique for data analysis.

In another study Lew, Lau, and Leow (2019), the factors which affect e-payment were investigated in Malaysian context, by employing self-efficacy, security, ease of use and benefits as the predictors. For data analysis, 183 questionnaires were used and the data obtained from these questionnaires was analyzed by performing multiple regression analysis. The study findings indicate a significant influence of perceived ease of use together with self-efficacy and perceived usefulness on the perception of e-payment in Malaysia. The findings also support that users fully adopt e-payment channel when it can be operated easily. Results also identify the need to spread awareness among consumers and educate them regarding the use of e-

payment channels and also share required information, including return policies, terms and conditions for guiding payment, warranty, etc. with the users. These factors boost the adoption rate, especially when the operational procedures are continuously reviewed on the basis of customers' feedback.

Hassan, Iqbal, and Iqbal (2018) also investigated factors which are likely to affect e-banking acceptance in India, using responses from 116 respondents. The Statistical Package for Social Sciences (SPSS) was used for analyzing data and performing multiple regression. The predicting variable employed in this study were perceived risk, perceived ease of use and perceived usefulness. These variables were included to ascertain factors which determine and drive the adoption and use of e-banking. Study results suggest a significant influence of perceived ease of use on the adoption of internet banking in India. The study offer implications suggesting that customers' willingness to use e-banking is driven by the ease of system usage. The study also offered practical implications for the bank officials, suggesting that various users, including public members must be informed about the benefits and convenience associated with the use of e-banking services, since these benefits improve the rate of adoption.

H9: PREOU has significant impact on the EBAD.

The term perceived usefulness refers that 'to what extent a person perceives that a particular system integration will improve a person's job performance' (Demir & Fakhir, 2017). According to Davis perspective, perceived usefulness is 'the individual's productivity and effectiveness at work because of the relative importance of using system and the time saved'. Thus, the Davis research has shown that perceived usefulness predicts both current and future system usage. However, various studies have also been conducted by several authors on self-support banking system or e-banking system, where customers are regarded as the focal point of banking system (Asiyanbi & Ishola, 2018; Salimon et al., 2016b; Zhang et al., 2018). Hence, the subsequent paragraphs present the discussion of these studies.

The Technology Acceptance Model (TAM) was extended by Asiyanbi and Ishola (2018), who added core constructs namely computer self-efficacy and perceived capability to investigate the case of 292 e-banking users from different Pakistani banks. Their study attempted to critically analyze factors which may determine the use of e-banking in the banking sector in Pakistan, in relation to customer confidence and attitude. Multiple regression analysis was performed in their study which revealed that perceived usefulness together with computer efficacy, perceived ease of use and perceived credibility effectively predict the attitude of customers regarding e-banking adoption in Pakistan. The primary objective of Afshan, Sharif, and Waseem (2018) study was to examine factors which determine the need for e-banking usage. In addition, they also analyzed those factors which may affect the adoption of e-banking in Spain, by employing product involvement, trust, perceived usefulness, perceived ease of use and perceived risks as the predictors for investigating the behavior of 511 e-banking users in Spain, using the structural equation modeling (SEM) technique. Their study reveals a direct and significant impact of perceived usefulness along other variables on e-banking adoption in Spain. Results also show that customer needs must be seriously considered while developing e-banking website. Thus, carefully designed e-banking website by keeping in view the customer needs, what they want in terms of services, and in which manner they must be contacted, will likely to improve their perception towards the usefulness of e-banking (Afshan et al., 2018). This study has a major gap as noted in other social science research, i.e. the potential response bias which might occurred because the data for the dependent and independent variables was obtained through self-reporting.

Zhang et al. (2018) conducted an empirical study to examine those factors which affect the e-

banking adoption. For this purpose, they collected responses from 103 Vietnamese respondents by including the variables, such as, trust, perceived ease of use, government support and perceived usefulness. They analyzed data by performing correlation analysis and multiple regression analysis. The result shows that perceived usefulness influences the customer's intention to use e-banking through trust and government support variables. Their study also revealed that e-banking adoption can be increased by embedding necessary features in online services and facilities which are useful for the users, in addition, the users must also be informed about these characteristics. In another study (Salimon et al., 2016b), those factors were examined which are likely to affect e-banking adoption in Mauritius. In their study, demographic variables, as well as variables like users trust, awareness level and e-banking security are included. They also considered the theory of reasoned action, technology acceptance model and theory of planned behavior in their study. The model was validated by distributing 384 questionnaires to the respondents in banks in nine districts. The data was analyzed using SPSS and obtained the descriptive and inferential statistics. The results show that perceived usefulness together with perceived ease of use, subjective norms, attitudes, trust, awareness, behavioral intentions and security positive affect the e-banking adoption.

As a result, various researchers have created an important linkage among online service adoption and e-satisfaction under different contexts. For instance, other studied whether personality influences the instant messaging usage and continuance intention in China. Therefore, a model was developed and validated in their study by employing perceived enjoyment, customer satisfaction and perceived usefulness. Results reveal that there exists a positive impact of customer satisfaction on continuous intention, with the role of a mediator. In the following year, author also examined the influence of customer satisfaction, system quality, perceived enjoyment, and information quality on the continuance usage of mobile site in China. For data collection, they selected 231 respondents and reported a positive impact of customer satisfaction for mobile internet usage on the continuous usage, and also found a positive role of a mediator. In Salimon, Yusoff, and Mokhtar (2016a) study, e-satisfaction is reported to have a mediation effect on the relationship between e-customer loyalty and perceived security in Saudi Arabia's e-commerce. All implications of this study suggest that developing a good interface system with desirable features may increase customer satisfaction, which leads to a continuous system usage. However, it is noteworthy that prior researches overlooked the need to fully examine the role of e-satisfaction as a mediator in context to e-banking adoption, which thus identify a research gap that needs to be filled through extensive research. Such as, Agolla, Makara, and Monametsi (2018) studied satisfaction as an endogenous variable, by adding accessibility, trust and ease of use and usefulness as the predicting variables. Similarly, Agolla et al. (2018) also included variable of satisfaction as the endogenous variable and perceived usefulness, perceived ease of use and perceived security as the predicting variables. Ong and Puteh (2017) also failed to estimate full mediating effect of e-satisfaction in their studies and reported it as an intervening variable.

Based on the above arguments and facts about the relationship between perceived usefulness, perceived security, e-satisfaction, perceived ease of use, and facilitating conditions. However, there is a lack of consensus among scholars regarding the introduction of a mediator which could cover predictors' effects on e-banking adoption, in order to increase the adoption rate (Henseler, Hubona, & Ray, 2016; Ramayah, Cheah, & Memon, 2018). Similar findings were obtained from Agolla et al. (2018) study, who suggested that further testing must be done on the indirect effects of satisfaction by considering

the users' actual behavior and not their intention. Thus, following direct and indirect hypotheses are proposed in this study based on the above arguments.

H10: PRUFLN has significant impact on the EBAD.

Methodology

A well-developed questionnaire was constructed for this study. Items and measures of the questionnaire were adopted from the relevant prior researches (Basheer, Hafeez, Hassan, & Haroon, 2018; Hafeez, Basheer, & Rafique, 2018; Hameed, Basheer, & Anwar, 2018). In addition, a five-point Likert scale was adopted to rate the responses from 1 to 5, where 1 represents strongly disagree and 5 represents strongly

agree. Questionnaires were then sent to the targeted sample of 380 respondents, and 325 of them were returned. As a result, 83.6% response rate was obtained. Data was then imported into SPSS v.22 for detailed statistical analysis. The data for 318 valid questionnaires was then checked for missing values and the study then proceeded for further data analysis. The measurement of the items is taken from the previous studies of Suhartanto et al., (2019), JebaKumar and Govindaraju, (2009), Oko and Linus (2013), Celep, and Yilmazturk (2012) Chong et al., (2010), and Poon (2008).

Data Analysis

Smart PLS 3 is adopted for data analysis in present research. The PLS-SEM analysis is chosen because of its popularity as an advanced estimation technique (Hair, Hult, & Ringle, 2016; Hameed, Nawaz, Basheer, & Waseem, 2019). PLS approach or PLS path modeling (PLS-SEM) is an effective approach for Structural Equation Models (Basheer, Hameed, Rashid, & Nadim, 2019; Hair et al., 2016; Henseler et al., 2016; Ong & Puteh, 2017; Zahra, Hameed, Fiaz, & Basheer, 2019). It is generally used for modeling latent path models and multiple indicators of latent variables. Indeed, it is one of the favorable techniques that are used by researchers to estimate large complex models, as it ensure less complexity and more theoretical parsimony (Hair et al., 2016; Henseler et al., 2016; Naala, Nordin, & Omar, 2017; Ramayah et al., 2018). In particular, PLS-SEM is used for developing complex, large, and hierarchical models (Akter, Fosso Wamba, & Dewan, 2017; Hair et al., 2016; Hatamifar, Darban, & Rezvani, 2018).

There are two distinguished components of SEM models, 1) the measurement component that shows the nature of association between indicators and their respective latent variables, and 2) the structural component, which explains the potential causal dependencies among exogenous and endogenous variables. For measurement and structural components, the bootstrapping and PLS algorithm can be employed.

In this regard, construct validity refers to estimating a variable and concerns more about the instrument choice and the instrument's ability to represent its respective latent construct. Furthermore, the individual item reliability was also ensured for all the items through calculating the outer loadings of all the indicators that are involved in the study. After obtaining outer loadings for all items, we removed the ones which had weak loadings as they can influence the values of AVE and composite reliability (Hair, Matthews, Matthews, & Sarstedt, 2017). This is a common practice that has been reported in several prior studies, particularly in social science context (Hair, Sarstedt, & Ringle, 2019).

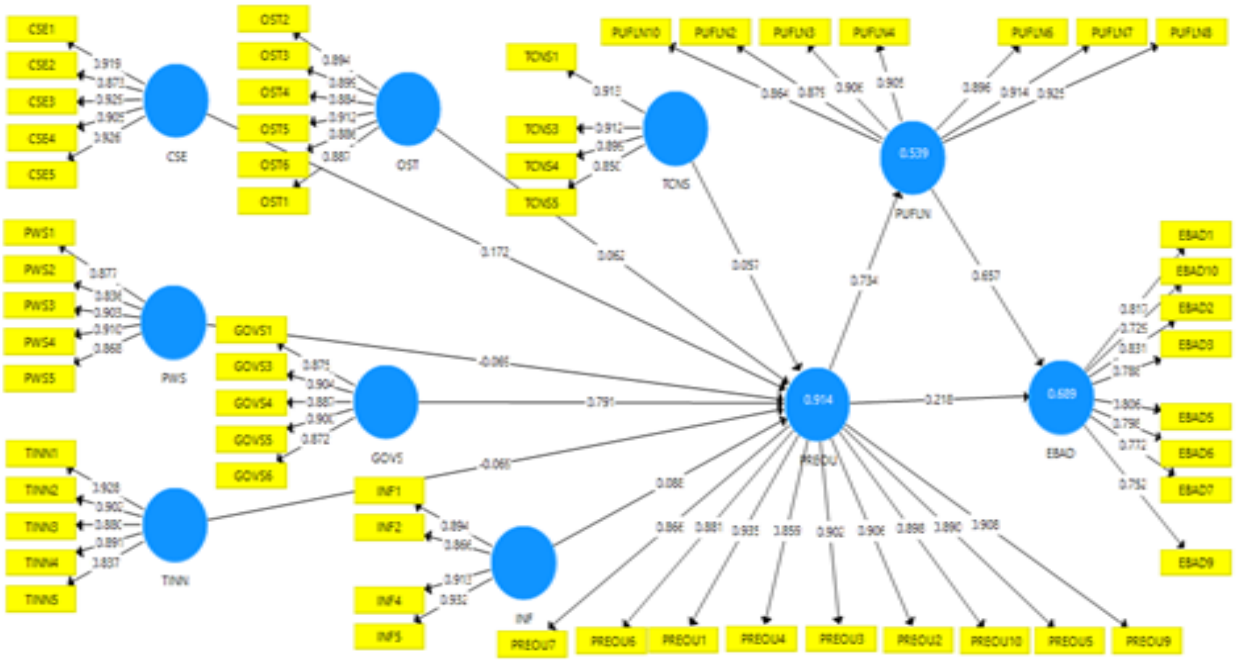

Figure 1: Measurement Model

Table 1: Outer Loadings

	CSE	EBAD	GOVS	INF	OST	PREOU	PUFLN	PWS	TCNS	TINN
CSE1	**0.919**									
CSE2	**0.873**									
CSE3	**0.929**									
CSE4	**0.905**									
CSE5	**0.926**									
EBAD1		**0.817**								
EBAD10		**0.729**								
EBAD2		**0.831**								
EBAD3		**0.788**								
EBAD5		**0.806**								
EBAD6		**0.798**								
EBAD7		**0.772**								
EBAD9		**0.752**								
GOVS1			**0.875**							
GOVS3			**0.904**							
GOVS4			**0.887**							
GOVS5			**0.900**							
GOVS6			**0.872**							

INF1	**0.894**					
INF2	**0.866**					
INF4	**0.913**					
INF5	**0.932**					
OST1		**0.887**				
OST2		**0.894**				
OST3		**0.899**				
OST4		**0.884**				
OST5		**0.912**				
OST6		**0.886**				
PREOU1			**0.935**			
PREOU10			**0.898**			
PREOU2			**0.906**			
PREOU3			**0.902**			
PREOU4			**0.859**			
PREOU5			**0.890**			
PREOU6			**0.881**			
PREOU7			**0.866**			
PREOU9			**0.908**			
PUFLN10				**0.864**		
PUFLN2				**0.879**		
PUFLN3				**0.906**		
PUFLN4				**0.905**		
PUFLN6				**0.896**		
PUFLN7				**0.914**		
PUFLN8				**0.925**		
PWS1					**0.877**	
PWS2					**0.836**	
PWS3					**0.903**	
PWS4					**0.910**	
PWS5					**0.868**	
TCNS1						**0.913**
TCNS3						**0.912**
TCNS4						**0.899**
TCNS5						**0.850**
TINN1						**0.928**
TINN2						**0.902**
TINN3						**0.880**
TINN4						**0.891**
TINN5						**0.837**

For measurement model assessment, researchers generally observe some important criteria including the validity and reliability criteria. For reliability, Cronbach alpha is an important criterion and 0.70 value for alpha coefficient is considered acceptable (Henseler et al., 2016; Ong & Puteh, 2017). Several research design factors influence the scale reliability, therefore it is important to ensure the reliability and validity of the instruments (Hair et al., 2019).

Table 2: Reliability

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
CSE	0.948	0.950	0.960	0.829
EBAD	0.916	0.932	0.929	0.620
GOVS	0.933	0.934	0.949	0.788
INF	0.923	0.925	0.945	0.813
OST	0.950	0.950	0.960	0.799
PREOU	0.969	0.969	0.973	0.799
PUFLN	0.960	0.961	0.967	0.808
PWS	0.926	0.928	0.944	0.773
TCNS	0.916	0.921	0.941	0.799
TINN	0.933	0.936	0.949	0.789

The average variance extracted (AVE), outer loadings and composite reliability were observed to determine the convergent validity for the evaluation of the measurement model. The average variance extracted (AVE) provides a construct's explained variance. Thus, for all the constructs involved in this study, the AVE values were found to be greater than the threshold level i.e. 0.50 following Hair et al. (2016) recommendation. Similarly, all composite reliability values are also in line with the threshold level i.e. 0.70.

Discriminant validity verifies that a particular construct measure represents or estimates which other SEM measures do not measure and is empirically unique from the other measures (Hair et al., 2019). Examination of cross-loadings and Fornell-Larcker criterion are the two key approaches for discriminant validity evaluation. In this study, the Fornell-Larcker criterion was adopted. In this criterion, we test that if every AVE's square root value for all the latent constructs exceed the correlation between any pair of latent constructs. Generally, a comparison between the correlation coefficient and AVE is done to check whether a particular construct can explain more as compared to items of other constructs.

The evaluation of structural model was done after the measurement model assessment. Therefore, the model significance is analyzed in this study based on the standard errors, path coefficients and the t-values. Following Ringle, Sarstedt, and Mitchell (2018), the main (direct) and indirect effects in the model were analyzed through hypothesis testing, using a bootstrapping procedure. Smart PLS 3 was employed to carry out the bootstrapping procedure. Therefore, 5000 re-samples were taken in order to perform the bootstrap procedure for analyzing the significance of path-coefficients. Table 4 shows the results of empirical testing of hypotheses which were found to be empirically significant

Table 3: Validity

	CSE	EBAD	GOVS	INF	OST	PREOU	PUFLN	PWS	TCNS	TINN
CSE	**0.899**									
EBAD	0.739	**0.887**								
GOVS	0.613	0.651	**0.888**							
INF	0.670	0.659	0.676	**0.899**						
OST	0.892	0.698	0.615	0.673	**0.894**					
PREOU	0.702	0.700	0.641	0.716	0.688	**0.894**				
PUFLN	0.795	0.817	0.654	0.651	0.803	0.734	**0.899**			
PWS	0.916	0.722	0.652	0.725	0.810	0.717	0.793	**0.879**		
TCNS	0.691	0.618	0.647	0.892	0.668	0.698	0.654	0.710	**0.894**	
TINN	0.649	0.633	0.650	0.721	0.690	0.682	0.635	0.695	0.876	**0.888**

.

Table 4: Regression Results

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
CSE -> PREOU	0.172	0.169	0.056	3.061	**0.002**
GOVS -> PREOU	0.791	0.785	0.057	3.920	**0.000**
INF -> PREOU	0.088	0.085	0.072	4.224	**0.000**
OST -> PREOU	0.062	0.060	0.069	3.904	**0.000**
PREOU -> EBAD	0.218	0.219	0.075	2.901	**0.004**
PREOU -> PUFLN	0.734	0.736	0.055	3.255	**0.000**
PUFLN -> EBAD	0.657	0.658	0.064	5.187	**0.000**
PWS -> PREOU	-0.069	-0.063	0.087	3.788	**0.000**
TCNS -> PREOU	0.057	0.062	0.055	4.033	**0.000**
TINN -> PREOU	-0.069	-0.067	0.067	4.032	**0.000**

For all the endogenous constructs, the R^2 value determines the predictive power of complex and large models by determining the structural and the measurement parameters. The R^2 value is calculated to see the percentage of variability in dependent variable that is explained by the independent variables (Hair et al., 2016; Hair et al., 2019; Henseler, Ringle, & Sarstedt, 2015) and

the minimum acceptable level proposed by Ramayah et al. (2018) for R-square is 0.15.

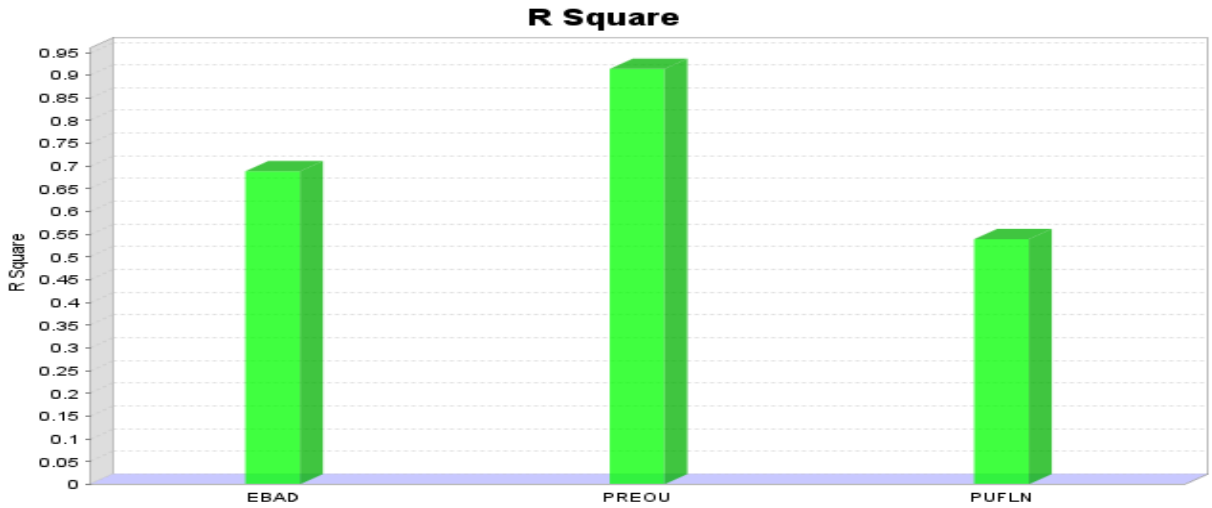

Figure 2: R^2

In addition to the R^2 size, the predictive sample re-use method is an effective criterion for predictive relevance (Hair et al., 2016; Henseler et al., 2016; Naala et al., 2017; Ramayah et al., 2018). Using PLS, the Q^2 estimates the predictive validity of complex and large models. Blindfolding method was used to calculate the Q^2 value using two different techniques, i.e. cross validated redundancy and cross validated communality, and shows how well the collected data can empirically be reconstructed by using the model and the parameters (Mikalef & Pateli, 2017). A cross validated redundancy model with $Q^2 > 0$ indicates that it is a predictive model and vice versa.

Table 5: Q^2

	Q^2 (=1-SSE/SSO)
EBAD	0.389
PREOU	0.723
PUFLN	0.432

According to Henseler et al. (2016), effect size shows the increase in R^2 in relation to the percentage of variance in dependent variable which remain unexplained. In addition, effect size (f^2) measures each predicting variable's strength or ability to explain the endogenous variables and is an important measure for structural model assessment.

Table 6 : f^2

	EBAD	PREOU	PUFLN	
CSE			0.230	
EBAD				
GOVS			0.511	
INF			0.310	
OST			0.306	
PREOU	0.270			0.173
PUFLN	0.638			
PWS			0.206	
TCNS			0.406	
TINN			0.507	

Conclusion

From twelve proposed hypotheses all hypothesis was supported in this study. As hypothesized, the e-satisfaction is found to positively mediate the relationship between perceived ease of use and perceived usefulness. It explains that e-banking users feel that it only took their little effort to complete the e-banking operations, rather it is the e-banking channels which help in performing financial transactions. In addition, e-satisfaction also plays the role of a mediator between facilitating conditions and perceived security, which implies that these variables can influence the e-banking adoption with the help of online satisfaction. According to a research by AYANAW (2019) emphasized that IT & Telecommunication Infrastructure played a vital role in the e-banking implementation, however they highlighted other factors that included; Scalability & Capacity Issue, Security & trust Issues. Hassan et al. (2018), conducted research that showed a significant relationship of IT Infrastructure, technological advancement, Trust and security on the implementation and acceptance of e-banking in Pakistan. Several challenges were highlighted for the implementation of e-banking in Pakistan that include the Technological Issues, Network and Security Issues however it was also highlighted that the Non-Technical or lack of training and information related to personnel was another key risk that was faced by the banking industry in Pakistan (Daka & Phiri, 2019).

The result suggests that perceived ease of use combined with awareness, trialability, compatibility and trust positively and significantly influence the adoption of e-banking system. Their study also provide important implications for the service providers, i.e. in order it to be fully functional, the e-banking channels must be easy to use. Besides, another study examined those factors which may predict e-banking adoption in Pakistan, and the research framework used in this study was modified TAM (Rofiat, 2017; Zhang et al., 2018). The nature of the study was cross-sectional, therefore, 249 questionnaires were obtained and the data was analyzed in SPSS using Liner and Multiple Regression analyses. The research findings show that among other factors like perceived usefulness, perceived benefit, perceived risk, and perceived enjoyment, the perceived ease of use have a significant impact on the adoption of e-banking in Pakistan. According to the study implications, a user-friendly system will likely to be more acceptable among the users. Thus, bank officials, e-banking hardware and software developers, and all stakeholders must continuously improve e-banking channels in order to increase the e-banking acceptance and adoption.

Moreover, different studies carried out a research to analyze those factors which may affect the e-banking service adoption in Malaysia, by collecting data from 231 respondents through self-administered questionnaires. In addition, the variables like social influence, perceived ease of use, perceived financial cost, perceived usefulness, trust and perceived security were critically examined in this study as the predictors of e-banking acceptance. The multiple regression analysis revealed a significant influence of perceived ease of use on the intention to adopt e-banking in Malaysia. Thus, in order to significantly improve the rate of e-banking, the e-banking portals are required to be user-friendly. The implications suggest bank officials to focus more on enhancing channels and offering necessary functionality to meet each user's different needs. Apart from this, the banks are required to conduct trainings to improve operational skills of users, which will likely to improve their perception towards the ease of its use.

In a service setting, customer satisfaction is of critical importance, and has also been drawing significant attention from the marketing scholars. Customer satisfaction is generally considered for measuring product performance, examining buying and consuming behavior both in short and in the long run since it is one of the essential variable for consumer responses (Deraz & Iddris, 2019). The management and marketing experts' teams have been taking significant interest in the organizational ability to make extra efforts in satisfying the customers' needs. This ability of organizations determine repeated patronage and consumers' future purchase behavior (Aboobucker & Bao, 2018). Particularly, in recent banking era where new features and services are introduced, it is not easy to estimate customer satisfaction, therefore new ways must be introduced to satisfy the needs of the customers. It is even more important since e-banking is emerging and customers are not in direct contact with the bank officials, rather they use services through mobile phones, website, automated teller machine (ATM), etc. A business's good policies, thoughtfully designed website, ongoing business procedures and excellent customer service determine its customers experience for a particular online business (Gbadebo, 2016).

Thus, keeping in view the above arguments, the e-banking users would adopt and regularly use e-banking services only if they are satisfied with the nature and quality of the provided service; if they perceive e-channels to be useful in carrying out daily objectives; if they feel secured; if the e-banking operations are user-friendly; and if there is availability of necessary facilities to use e-banking (Deraz & Iddris, 2019).

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