




Electronic Banking Services Adoption in Pakistan: Extending The Unified Theory of Acceptance and Use of Technology (UTAUT2) Model among Pakistani Consumers

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ABSTRACT

Pakistan's banking sector has shown notable commitment to embracing modern financial services, like electronic banking, mobile banking, and payments through mobiles, electronic wallets, and engagement with these services. This study primarily aims to assess customer receptiveness toward adopting diverse e-banking services within emerging economies. The study employs the UTAUT2 framework, Unified Theory of Acceptance and Use of Technology, and extends it by incorporating additional components: awareness, security and privacy as a mediator and trust as a moderator. A survey-based approach gathered responses from 250 customers, and covariance-based structural equation modelling (CB-SEM) was employed for testing hypotheses. An empirical examination of the UTAUT2 model sheds light on the relationship between its dimensions and individuals' inclination to use e-banking services. The study highlights the significance of recently integrated variables in explaining consumers' willingness to embrace electronic banking services, offering valuable insights for the banking industry and contributing to the existing knowledge base. Additionally, the study provides recommendations for banks to enhance customer satisfaction and also to develop such strategies that will be helpful in attracting customers towards the usage of electronic services offered by the banks.

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1. Introduction

With the advent of digital connectivity, geographical barriers have been greatly diminished, allowing individuals to bridge vast distances with mouse clicks effortlessly. The Internet has significantly transformed several aspects of society, particularly in commerce. Consequently, the field of commerce is undergoing redefinition, while the marketing field is also experiencing a redefinition. Indeed, business concept is also undergoing a redefinition (Abid & Noreen, 2006). E-banking refers to a framework established by financial institutions to enable their clients to engage in automated transactions and access general resources without needing a physical bank presence (Hussain, Hussain, Marri, & Zafar, 2021). E-banking services were introduced in Pakistan in the late 1990s. Still, in the early 2000s, e-banking began to gain significant traction. Despite the passage of more than 20 years, the prevalence of this phenomenon remains relatively low in Pakistan.

Internet banking is growing worldwide, and trends indicate that industrialized countries are well ahead of emerging economies. E-banking is used by 80% of people in developed nations like the United States, 90% in the United Arab Emirates, 80% in Nordic countries, and 76% in Britain (Seth, 2020; Stevanovic, 2022; wam, 2019). In 2022, e-banking reached 67.5 million people in Pakistan, or just over 29% of the country's population (Hassan, 2022). This demonstrates that customers and service providers in industrialized countries successfully utilize these services (Kannabiran & Narayan, 2005). However, clients appear reluctant to use e-banking in Pakistan. The current study sheds insight into variables influencing user intentions by encouraging and discouraging Pakistan's e-banking adoption. Pakistan ranks 20th in technological adoption. It has significant growth potential for e-banking due to the country's massive internet user base (nearly 82.90 million in 2022, expected to reach over 357 million by 2025). The increasing number of mobile internet users in Pakistan will add 22 million (35.9%) users between 2021 and 2022 and over 186.9 million smartphone users by 2022 (kemp, 2022). Several prospects for electronic banking platforms, including mobile banking and payments and electronic wallet services, represent the e-banking future since more people are using the Internet, primarily through mobile devices (Dospinescu, Anastasiei, & Dospinescu, 2019).

Numerous academics have focused on examining user behavior, adoption intentions, and attitudes toward e-banking. The majority of studies are restricted to underdeveloped nations. There isn't much research accessible in the context of Pakistan. Previous researchers have used a variety of information system theories, including "Diffusion of Innovation theory," "Technology Acceptance Model," "UTAUT2," and "Valence Framework," to understand how consumers react to various technological innovations (Slade, Williams, & Dwivedi, 2013). Most recent work in E-banking shows the use of the UTAUT2 Model to know consumer behavior as it has better descriptive power than the rest of the models (Chauhan, Yadav, & Choudhary, 2022). As suggested by researchers, the study model advances the theory of current technology by embracing literature by going beyond the initial context within which technology adoption, acceptance models, and theories were established (Venkatesh, Thong, & Xu, 2012). The model was extended with three additional constructs. Awareness, security, and privacy as mediator and trust as moderator. These additional variables add value to address the research question of the current study. RQ1: What is the effect of various factors of UTAUT2 model on the use of electronic banking services? RQ2: what is the mediating role of privacy and security and the moderating role of trust in understanding the intention to use electronic banking services? No research that takes a comprehensive look at all three structures has yet to be done. The current research assists Pakistani bank directors and policymakers in developing strategies to raise customers' adoption of electronic banking.

2. Literature Review

2.1. Theory

The UTAUT2, also known as the Unified Theory of Acceptance and Use of Technology, was created by (Venkatesh, Morris, Davis, & Davis, 2003). Seven factors, in theory, are Performance Expectancy (PE), described as "the extent to which a person believes that using the system will aid to attain gains in job performance" (Venkatesh et al., 2003). Effort Expectancy (EE), is described as the "degree of ease linked with the use of the system." Social Influence (SI) is the degree to which people think they should employ a new technique (Venkatesh et al., 2003). Hedonic Motivation (HM) is "the fun or pleasure derived from using a technology" (Limayem, Hirt, & Cheung, 2007). Price Value (PV) is "consumers' perceptual coordination between the perceived benefits of products and services and the monetary cost for using them"(Venkatesh et al., 2012). Habit (HAB) is an " eminent tendency to do something repeatedly" (Venkatesh et al., 2003).

2.2. Hypothesis Development

Hypothesis applies to the adoption of information technology, and it is becoming popular among researchers who study user acceptance of cutting-edge technology (Gupta & Arora, 2020; Tarhini, El-Masri, Ali, & Serrano, 2016). UTAUT2 is the second-most common theoretical framework for analyzing customer electronic payment acceptance (Gupta & Arora, 2020). For example, Ali Abdallah Alalwan, Dwivedi, Rana, and Algharabat (2018); Tarhini et al. (2016) used UTAUT2 to forecast Internet banking in customers Patil, Tamilmanni, Rana, and Raghavan (2020) and study of consumer acceptability of mobile payments. So, the following hypotheses can be made:

- H1: Performance Expectancy positively impacts consumers' intention to use E-Banking services
 H2: Effort Expectancy positively impacts consumers' intention to use E-Banking services
 H3: Social Influence positively impacts consumers' intention to use E-Banking services
 H4: Hedonic Motivation positively impacts consumers' intention to use E-Banking services
 H5: Price Value positively impacts consumers' intention to use E-Banking services
 H6: Habit positively impacts consumers' intention to use E-Banking services

Incorporating Additional Relationships and Constructs in the UTAUT2 Model

2.3. Awareness

Knowledge and comprehension that something is happening or exists are characteristics or states of awareness. This information is connected to the actual degree of users' digital skills in IT implementation literature (Sadowski, 2017). Consumers must know it before intending to utilize the new item for consumption. For any consumer who desires to use the service, it is essential to increase consumer awareness of it (Alnsour, 2013; Alnsour & Al-Hyari, 2011; Sathye, 1999). Therefore, if Pakistani consumers are not using e-banking, they may be unaware of its existence or advantages. The hypothesis for this is as follows:

- H7: Awareness positively impacts consumers' intention to use E-Banking services

2.4. Privacy & Security

Concerning e-banking, privacy & security are described as "a potential loss due to fraud or hacker weakening the security of an online bank user" (Lee, 2009). The establishment of a sense of security during online transactions is widely recognized as crucial in alleviating client apprehensions related to online purchases (Salisbury, Pearson, Pearson, & Miller, 2001). According to Cheng, Lam, and Yeung (2006) customers tend to augment their utilization of electronic services solely when they perceive a sense of security in their transactions. Security considerations impact the employment of electronic banking services since a greater level of security is linked with a corresponding rise in the adoption of e-banking services.

- H8: Privacy & Security positively impacts consumers' intention to use E-Banking services

2.5. Mediating Role of Privacy & Security

Privacy and security mediate between PE and BI in electronic banking adoption. The characteristics of e-banking services consumers search for, such as speed, accuracy, and convenience, are performance expectations. High-performance criteria and P&S worries may prevent someone from using e-banking. A person may wish to use e-banking if they have high-performance requirements and confidence in security mechanisms.

- H9: Performance Expectancy positively impacts Privacy & Security
 H10: Privacy & Security mediate the relationship between Performance Expectancy and intention to use E-Banking services

Regarding adopting e-banking, P&S serves as a mediator between EE and BI. A person's estimate of the simplicity and effort needed to utilize electronic banking services is their effort expectation. Even if e-banking is user-friendly, they could decide not to utilize it if they have security and privacy concerns. Someone might choose e-banking if they think it is modest to bring into play and have faith in security mechanisms.

- H11: Effort Expectancy positively impacts Privacy & Security
 H12: Privacy & Security mediate the relationship between Effort Expectancy and intention to use E-Banking services

Furthermore, P&S significantly affects how customers behave and influence others regarding e-banking. People commonly rely on advice and references from others. Therefore, the choice to adopt electronic banking services might be affected by their confidence in the privacy & security offered by these services.

H13: Social Influence positively impacts Privacy & Security

H14: Privacy & security mediate the relationship between Social Influence and intention to use E- Banking services

Privacy and security play pivotal roles in mediating the connection between HM and BI to embrace electronic banking. Hedonistic motivation stems from customers' pleasure derived from using a service, like the convenience and flexibility of e-banking. However, financial and personal data security concerns can dampen these motivations, potentially leading consumers to forgo e-banking if they perceive it as unsafe or risky to their personal information.

H15: Hedonic Motivation positively impacts Privacy & Security

H16: Privacy & Security mediate the relationship between Hedonic Motivation and intention to use E-Banking services

In adopting e-banking, the interplay of P&S and price value holds significance. Clients are willing to pay more if they perceive e-banking as a good value, but concerns about privacy and security can outweigh price considerations. A sense of data security can drive e-banking usage despite higher costs.

H17: Price Value positively impacts Privacy & Security

H18: Privacy & Security mediate the relationship between Price Value and intention to use E-Banking services

In e-banking adoption, the interplay between habit and BI is mediated by privacy and security considerations. The likelihood of e-banking adoption is positively influenced when users have confidence in the service's security. In contrast, concerns about privacy and security can deter individuals from making e-banking a habitual practice, highlighting the pivotal part of trust in shaping the degree of habit formation in e-banking adoption.

H19: Habit positively impacts Privacy & Security

H20: Privacy & Security mediate the relationship between Habit and intention to use E-Banking services

Services Since they impact how comfortable consumers use online banking services, P&S links BI and awareness. Knowing about and comprehending e-banking and its capabilities is the state of being aware. Even if someone knows e-banking, they might not use it if they don't trust security safeguards. To protect their customers' information confidentiality, e-banking companies must implement strong security measures. If people think their personal information has been compromised, they might be reluctant to use electronic banking.

H21: Awareness positively impacts Privacy & Security

H22: Privacy & Security mediate the relationship between Awareness and intention to use E-Banking services

2.6. Trust

A specific instance of electronic banking, characterized by the absence of a physical bank branch and face-to-face dealings between bank staff and clients, creates a distinct setting where trust assumes great significance. Aladwani (2001) recognized customers' trust as a crucial forthcoming obstacle in online banking. Trust can be defined as the strong trust that users of electronic banking place in the capabilities and mechanisms of institutions. Clients often express skepticism regarding the trustworthiness of electronic banking in privacy standard terms. The effect of trust on the individual's willingness to engage in online transactions involving financial resources and sensitive personal data has been widely recognized (Friedman, Khan Jr, & Howe, 2000).

2.7. Moderating Role of Trust

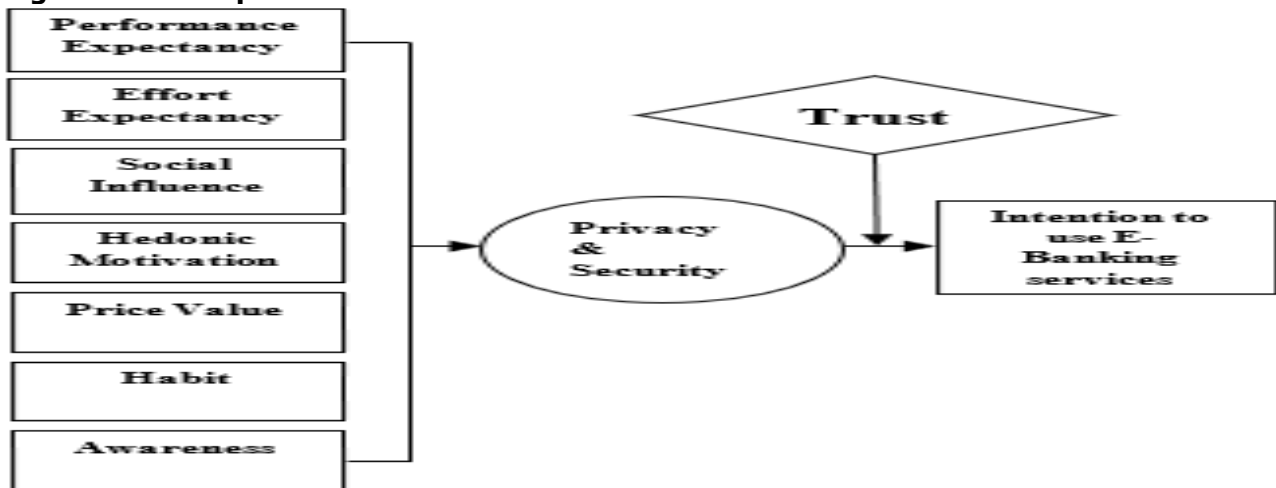
A study by Venkatesh et al. (2003) found that in e-banking, trust can mediate between BI and P&S. If they trusted it, people were more likely to feel at ease and have constructive behavioral intentions toward using an e-banking platform or organization. This is because people's faith in the platform's dependability and security improved due to trust. Customers were less likely to feel secure. They were more feasible to have unfavorable behavioral

intentions toward e-banking if they did not trust the e-banking platform or company. Trust is moderated by affecting relationships between BI and P&S. The study's findings show how trust influences people's online banking behavior. Higher levels of trust resulted in more positive behavioral intentions toward e-banking, which is critical in determining the link between P&S and BI (Liu, Marchewka, Lu, & Yu, 2004). Consequently, based on the suggested literature:

H23: Trust has a moderating role between Privacy & Security and intention to use E-Banking services

3. Conceptual Framework

Figure 1: Conceptual Model



4. Research Methodology

4.1. Data Collection

This research is quantitative, in which we use a deductive approach. Google-based survey forms were used to gather data, and purposive sampling was used to collect final data. Consequently, 250 valid responses were gathered from delivered surveys. All were measured for conclusion analysis because each questionnaire item on Google Forms contains a necessary option, so there was no need to treat and remove incompleteness and inconsistency (outliers). Steven's formula ($IV \times 15$) was used to select sample size. According to Steven, 15 responses against one independent variable are enough. This study contained seven independent variables, according to which a sample size of 250 is more than enough for ten variables. The demographic breakdown of the sample is given in section 1. Both procedural and statistical methods were utilized to examine common method biased (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Respondents were also informed that there was no correct or incorrect response and that their comments would remain anonymous. Items used to measure structures were improved after the pre-test. Results confirmed that data were reliable against any typical technique bias.

4.2. Instrument

The questionnaire was created by incorporating questions from a thorough literature research on e-banking services. Section 2 lists items of the questionnaire and points of their adoption. A total of ten variables in our model have 37 items. Performance expectancy was assessed through a 4-item scale, Effort expectancy was evaluated by 4-item scale, Social influence was assessed through a 3-item, hedonic motivation was evaluated by 3-item scale, Price value was assessed through 3-item scale, Habit was evaluated through 4-item scale, Awareness was assessed through 4-item scale adopted from (Venkatesh et al., 2012). Privacy & security were assessed by a 5-item scale, trust was assessed through a 4-item scale adopted from (Mehmood, Shah, Azhar, & Rasheed, 2014). Behavioral intention was evaluated through 3-item scale (Venkatesh et al., 2012). On five-point Likert scale, respondents expressed their agreement or disagreement level with each relevant construct item, ranging from strongly disagree (1) to strongly agree (5).

4.3. Common Method Bias

As there was a likelihood of standard method bias occurring in a dataset, data for the study were acquired from students of the university themselves. Previous studies suggested applying the multi-collinearity test to authorize presence of CMB in the data (Kock, 2015). According to the above information, a collinearity test was carried out, and findings demonstrated that VIF value was within five and significant. The data are not causing any problems with CMB.

5. Data Analysis

Data were investigated through the Partial least squares (PLS) path modelling variance-based structural equation modelling (SEM) method. Its capability to model composites and aspects makes it a formidable statistical instrument for new technology research. Regarding demographic profile, there were 32.8% more male employees than female employees among the legitimate replies. The majority of students in universities had completed their undergraduate education (70.0%), 18.4% had earned their master's degrees, 5.6 % had M.Phil degrees, and the rest percentage held Ph.D. degrees. According to the outcomes of our Research, approximately 21% of students were aged below 20 or younger, 60.4% were aged 20–25, 13.2% were aged 26–30, and only 32.75.2% were aged 30 or more. According to mobile banking usage, 20.4% of students have been using mobile banking services daily, 24.8% have used them once a week 26.8% once a month, 28% of students never use mobile banking.

Table 1: Respondent Profile

Demographic variables	Categories	Frequency	Percentage
Gender	Male	82	32.8
	Females	168	67.2
Age	Below 20	53	21.2
	20-25	151	60.4
	26-30	33	13.2
	Above 30	13	5.20
Qualification	Bachelor	185	74.0
	Masters	46	18.4
	PhD	14	5.60
	Intermediate	3	1.20
	Undergraduate	2	0.80
Mobile banking usage	Daily	51	20.4
	Once a weak	62	24.8
	Once a month	67	26.8
	Never	70	28.0

5.1. Empirical Findings

This study assesses all variables and their correlations using the Smart PLS 4.0 software, as outlined in our model. Researchers have carried out the analyses. PLS-SEM is the current measuring method that employs multivariate approaches to assess the "measurement model simultaneously" and "structural model" (Hair, Ringle, & Sarstedt, 2011). The constructs employed are subjected to reliability and soundness testing in the measurement model. A structural model assessment was done to check the hypothetical link. To investigate the relevance of the path coefficient's correlations, the PLS-SEM bootstrapping technique employs a one-of-a-kind method that typically consists of 500 resamples.

5.2. Measurement Model Assessment

We conduct "confirmatory factor analysis" here by determining convergent and discriminant validity. Concurrent validity is assessed by examining factors such as factor loading, Cronbach's alpha, composite reliability (CR), and average variance extracted (AVE) (J. Hair Jr, Hair Jr, Hult, Ringle, & Sarstedt, 2021) to ensure, used constructs are highly connected (Hair Jr, Hair Jr, Hult, Ringle, & Sarstedt, 2021). Factor loadings should be more than 0.5, Cronbach's alpha will be more than 0.7, the CR will be more than 0.70, and AVE will be more than 0.5 (Hair Jr et al., 2021). The results of concurrent validity tests that meet requirements are shown in Table 2. In Figure 2, our data confirmed the hypothesis of convergent validity. Most factor loadings in our data are more significant than 0.7, and entire loadings are greater than 0.5. Cronbach's alpha shows that item scales are related and that more remarkable similarity is desired (Hair Jr et al., 2021). The range is more significant than

0.70, from 0.805 to 0.90. CR ranges from 0.856 to 0.917 likewise meet criterion of > 0.70; CR assesses the internal consistency of the scale item. A substantial measure of internal consistency, AVE recorded variation of construct related to variance of measurement error. Our data has AVE higher than threshold of >0.5, which is generally accepted.

Table 2: Convergent Validity

Constructs	Items	Loadings	Alpha	CR	AVE
Performance Expectancy	PE1	0.658	0.889	0.891	0.675
	PE2	0.842			
	PE3	0.887			
	PE4	0.897			
Effort Expectancy	EE1	0.595	0.846	0.846	0.588
	EE2	0.712			
	EE3	0.719			
	EE4	0.986			
Social Influence	SE1	0.761	0.823	0.823	0.608
	SE2	0.765			
	SE3	0.812			
Hedonic Motivation	HM1	0.614	0.768	0.769	0.526
	HM2	0.682			
	HM3	0.777			
Price Value	PV1	0.536	0.669	0.687	0.425
	PV2	0.598			
	PV3	0.588			
Habit	HAB1	0.725	0.875	0.874	0.634
	HAB2	0.827			
	HAB3	0.842			
	HAB4	0.856			
Awareness	AWA1	0.51	0.812	0.814	0.538
	AWA2	0.55			
	AWA3	0.847			
	AWA4	0.934			
Privacy and Security	PS1	0.521	0.865	0.869	0.575
	PS2	0.576			
	PS3	0.579			
	PS4	0.584			
	PS5	0.645			
Trust	TRU1	0.618	0.898	0.906	0.712
	TRU2	0.887			
	TRU3	0.932			
	TRU4	0.941			
Intention To Use E-Banking	BI1	0.698	0.864	0.864	0.679
	BI2	0.787			
	BI3	0.818			

Table 3: Fornell-larcker

	AWA	IEB	EE	HAB	HM	PE	PV	P&S	SI	TRU
AWA	0.734									
IEB	0.771	0.824								
EE	0.495	0.533	0.767							
HAB	0.727	0.941	0.52	0.796						
HM	0.589	0.647	0.69	0.584	0.725					
PE	0.381	0.529	0.711	0.54	0.681	0.821				
PV	0.733	0.724	0.648	0.778	1.05	0.609	0.652			
P&S	0.922	0.645	0.523	0.588	0.633	0.358	0.68	0.758		
SI	0.616	0.569	0.638	0.644	0.876	0.676	0.798	0.566	0.780	
TRU	0.757	0.575	0.497	0.533	0.502	0.374	0.641	0.753	0.479	0.844

Fornell-Larcker and (HTMT) ratio criteria were used to assess the discriminatory power of measurement variables. Table 3 demonstrates that all variable diagonal values satisfy Larcker criteria (Fornell & Larcker, 1981). Table 4 displays the HTMT ratio score for every hidden variable. Setting the HTMT threshold at less than 0.90 Gold, Malhotra, and Segars (2001) and less than 0.85 accordingly is advised by (Gold et al., 2001; Kline, 2023). Table 4 has only valid numbers, all under the cut-off. Table 5 provides significant cross-loading values (Hair Jr et al., 2021). No issues with discriminate validity were found in our testing of

measurement models. The findings of these empirical tests supported the measurement model's convergent validity and discriminate validity, demonstrating its sufficient dependability.

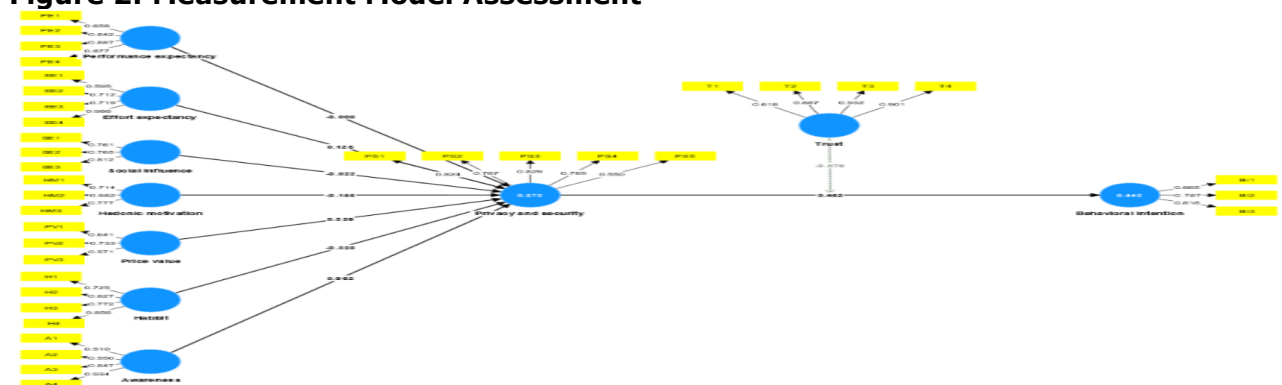
Table 4: HTMT Ratio

	AWA	IEB	EE	HAB	HM	PE	PV	P&S	SI	TRU
AWA										
IEB	0.853									
EE	0.492	0.525								
HAB	0.791	0.939	0.515							
HM	0.637	0.65	0.691	0.587						
PE	0.418	0.533	0.733	0.545	0.684					
PV	0.807	0.761	0.657	0.829	1.057	0.624				
P&S	0.908	0.643	0.523	0.587	0.636	0.358	0.702			
SI	0.645	0.57	0.638	0.645	0.878	0.683	0.815	0.567		
TRU	0.754	0.578	0.507	0.532	0.513	0.382	0.663	0.78	0.486	

Table 5: Cross Loadings

	AWA	IEB	EE	HAB	HM	PE	PV	P&S	SI	TRU
AWA1	0.510	0.488	0.31	0.617	0.472	0.342	0.438	0.47	0.414	0.413
AWA2	0.550	0.501	0.32	0.643	0.497	0.355	0.483	0.507	0.421	0.449
AWA3	0.847	0.671	0.387	0.671	0.522	0.426	0.496	0.781	0.469	0.653
AWA4	0.934	0.725	0.431	0.684	0.595	0.458	0.543	0.861	0.473	0.686
IEB1	0.522	0.698	0.431	0.731	0.478	0.468	0.528	0.514	0.421	0.412
IEB2	0.587	0.787	0.433	0.75	0.54	0.475	0.576	0.516	0.434	0.443
IEB3	0.698	0.818	0.453	0.763	0.586	0.494	0.628	0.533	0.522	0.465
EE1	0.295	0.287	0.595	0.29	0.45	0.51	0.388	0.311	0.317	0.308
EE2	0.31	0.377	0.712	0.38	0.471	0.526	0.415	0.372	0.389	0.392
EE3	0.352	0.397	0.719	0.397	0.503	0.618	0.455	0.376	0.523	0.412
EE4	0.521	0.536	0.986	0.502	0.438	0.644	0.644	0.516	0.608	0.436
HAB1	0.529	0.682	0.349	0.725	0.445	0.363	0.61	0.427	0.485	0.378
HAB2	0.54	0.76	0.424	0.827	0.487	0.471	0.627	0.486	0.531	0.449
HAB3	0.569	0.78	0.488	0.842	0.504	0.489	0.667	0.494	0.546	0.451
HAB4	0.577	0.794	0.497	0.856	0.530	0.499	0.678	0.503	0.594	0.46
HM1	0.361	0.432	0.432	0.472	0.614	0.362	0.58	0.412	0.488	0.309
HM2	0.376	0.449	0.442	0.484	0.682	0.427	0.79	0.431	0.526	0.374
HM3	0.432	0.478	0.455	0.499	0.777	0.493	0.907	0.491	0.593	0.408
PE1	0.292	0.406	0.555	0.421	0.485	0.658	0.474	0.235	0.528	0.286
PE2	0.335	0.453	0.575	0.447	0.496	0.842	0.522	0.301	0.625	0.292
PE3	0.351	0.463	0.604	0.458	0.55	0.887	0.533	0.307	0.664	0.355
PE4	0.37	0.481	0.607	0.476	0.573	0.897	0.677	0.314	0.673	0.396
P&S1	0.808	0.494	0.431	0.377	0.463	0.215	0.521	0.724	0.429	0.368
P&S2	0.813	0.502	0.442	0.404	0.476	0.254	0.576	0.787	0.439	0.405
P&S3	0.87	0.613	0.451	0.527	0.551	0.315	0.579	0.829	0.469	0.43
P&S4	0.881	0.679	0.471	0.586	0.566	0.332	0.584	0.865	0.474	0.469
P&S5	0.89	0.689	0.479	0.591	0.568	0.386	0.645	0.875	0.492	0.543
PV1	0.434	0.408	0.382	0.379	0.611	0.415	0.641	0.536	0.492	0.461
PV2	0.525	0.423	0.416	0.423	0.804	0.457	0.733	0.598	0.605	0.478
PV3	0.65	0.616	0.437	0.769	0.891	0.47	0.771	0.588	0.651	0.498
SE1	0.461	0.389	0.443	0.433	0.648	0.409	0.571	0.431	0.761	0.304
SE2	0.472	0.407	0.468	0.481	0.672	0.454	0.605	0.433	0.765	0.34
SE3	0.48	0.436	0.486	0.495	0.68	0.518	0.692	0.46	0.812	0.377
TRU1	0.467	0.355	0.362	0.307	0.392	0.268	0.497	0.538	0.329	0.618
TRU2	0.611	0.451	0.445	0.497	0.416	0.299	0.526	0.679	0.429	0.887
TRU3	0.671	0.536	0.451	0.498	0.434	0.345	0.581	0.684	0.439	0.932
TRU4	0.698	0.558	0.479	0.51	0.459	0.388	0.595	0.697	0.472	0.941

Figure 2: Measurement Model Assessment



5.3. Structural Model Assessment

In Smart PLS 4, we evaluated the structural model to put our conceptual research model's research hypothesis to test. We require some indices in PLS to approve or reject these study hypotheses. In Smart PLS, we do boots trapping, which produces indices like R2 for exogenous to endogenous correlations and path coefficients for regression analysis that explain the values. These results are advised because of their high quality and capacity to describe data efficiency and precision (Fornell & Larcker, 1981). The outcome of our proposed hypothesis is shown in Table 6. Path coefficients, t-values, confidence interval, and p-values provided indisputable proof of the hypotheses' acceptance or rejection.

In Table 6, association between Awareness and IEB reveals these results ($\beta=-0.274$, $t=3.534$, $p=0$, $LL=-0.133$, $UL=-0.435$), Awareness and P&S ($\beta=0.731$, $t=14.128$, $p=0$, $LL=0.631$, $UL=0.835$), Effort Expectancy and IEB ($\beta=0.045$, $t=1.737$, $p=0.082$, $LL=0.004$, $UL=0.106$), Effort Expectancy and P&S ($\beta=0.12$, $t=2.278$, $p=0.023$, $LL=0.014$, $UL=0.222$), Habit and IEB ($\beta=0.011$, $t=1.733$, $p=0.655$, $LL=0.053$, $UL=0.054$), Habit and P&S ($\beta=-0.031$, $t=2.65$, $p=0.663$, $LL=0.167$, $UL=0.109$), Hedonic Motivation and IEB ($\beta=0.073$, $t=1.953$, $p=0.051$, $LL=-0.006$, $UL=0.15$), Hedonic Motivation and P&S ($\beta=0.194$, $t=2.112$, $p=0.035$, $LL=-0.015$, $UL=0.375$), Performance Expectancy and IEB ($\beta=-0.027$, $t=1.968$, $p=0.333$, $LL=0.092$, $UL=0.018$), Performance Expectancy and P&S ($\beta=-0.072$, $t=1.695$, $p=0.273$, $LL=-0.204$, $UL=0.053$), Price Value and IEB ($\beta=-0.01$, $t=2.335$, $p=0.737$, $LL=-0.063$, $UL=-0.053$), Price Value and P&S ($\beta=-0.026$, $t=3.344$, $p=0.731$, $LL=0.172$, $UL=0.125$), P&S and IEB ($\beta=0.375$, $t=3.489$, $p=0$, $LL=-0.18$, $UL=0.593$), Social Influence and IEB ($\beta=-0.009$, $t=5.379$, $p=0.705$, $LL=-0.062$, $UL=0.038$), Social Influence and P&S ($\beta=-0.025$, $t=2.399$, $p=0.69$, $LL=-0.147$, $UL=-0.098$), showed as important factors and these hypothesis are accepted.

Table 6: Direct Relationships

	Beta	SD	T value	P values	LL	UL
Awareness -> Intention To Use E-Banking	0.274	0.078	3.534	0.000	0.133	0.435
Awareness -> Privacy & Security	0.731	0.052	14.128	0.000	0.631	0.835
Effort Expectancy -> Intention To Use E-Banking	0.045	0.026	1.737	0.082	0.004	0.106
Effort Expectancy -> Privacy & Security	0.12	0.053	2.278	0.023	0.014	0.222
Habit -> Intention To Use E-Banking	-0.011	0.026	1.733	0.665	-0.053	-0.054
Habit -> Privacy & Security	-0.031	0.07	2.65	0.663	0.167	0.109
Hedonic Motivation -> Intention To Use E-Banking	0.073	0.037	1.953	0.051	0.006	0.150
Hedonic Motivation -> Privacy & Security	0.194	0.092	2.112	0.035	0.015	0.375
Performance Expectancy -> Intention To Use E-Banking	-0.027	0.028	1.968	0.333	0.092	0.018
Performance Expectancy -> Privacy & Security	-0.072	0.066	1.695	0.273	0.204	0.053
Price Value -> Intention To Use E-Banking	-0.01	0.029	2.335	0.737	-0.063	-0.053
Price Value -> Privacy & Security	-0.026	0.074	3.344	0.731	0.172	0.125
Privacy & Security -> Intention To Use E-Banking	0.375	0.108	3.489	0.000	0.18	0.593
Social Influence -> Intention To Use E-Banking	-0.009	0.025	5.379	0.705	0.062	0.038
Social Influence -> Privacy & Security	-0.025	0.062	2.399	0.690	-0.147	-0.098

The study's second goal includes determining the mediating role of privacy and security (P&S) and how it contributes to the final results. Smart PLS helps us analyze complicated models and generates accurate mediation analysis and indirect effect results. The conclusion of the mediation hypothesis is given in Table 7, where the mediation role of P&S between EE and IEB shows the following conclusions ($\beta=0.045$, $t=1.737$, $p=0.082$, $LL=-0.004$, $UL=0.106$). In addition, mediation of P&S between Habit and IEB ($\beta=-0.011$, $t=2.433$, $p=0.665$, $LL=0.053$, $UL=0.054$). The mediation of P&S between PV and IEB exhibits these conclusions ($\beta=-0.01$, $t=2.335$, $p=0.737$, $LL=-0.063$, $UL=-0.053$), mediation of P&S between SI and IEB ($\beta=-0.009$, $t=3.379$, $p=0.705$, $LL=-0.062$, $UL=-0.038$), mediation of P&S between HM and IEB ($\beta=0.073$, $t=1.953$, $p=0.051$, $LL=0.006$, $UL=0.015$), mediation of P&S between Awareness and IEB ($\beta=0.274$, $t=3.534$, $p=0$, $LL=0.133$, $UL=0.435$), and last mediation role of P&S between PE and IEB have following values ($\beta=-0.027$, $t=1.968$, $p=0.333$, $LL=0.092$, $UL=0.018$). Results are verified as important contributors, and these hypotheses are accepted.

Table 7: Mediation Analysis

	Beta	SD	T value	P values	LL	UL
Effort Expectancy -> Privacy & Security -> Intention To Use E-Banking	0.045	0.026	1.737	0.082	0.004	0.106
Habit -> Privacy & Security -> Intention To Use	-0.011	0.026	2.433	0.665	0.053	0.054

E-Banking							
Price Value -> Privacy & security -> Intention To Use E-Banking	-0.01	0.029	2.335	0.737	-0.063	-0.053	
Social Influence -> Privacy & Security -> Intention To Use E-Banking	-0.009	0.025	3.379	0.705	-0.062	-0.038	
Hedonic Motivation -> Privacy & Security -> Intention To Use E-Banking	0.073	0.037	1.953	0.051	0.006	0.150	
Awareness -> Privacy & Security -> Intention To Use E-Banking	0.274	0.078	3.534	0.000	0.133	0.435	
Performance Expectancy -> Privacy & Security -> Intention To Use E-Banking	-0.027	0.028	1.968	0.333	0.092	0.018	

Table 8: Moderation Analysis

	Beta	SD	T value	P values	LL	UL
Trust x Privacy and security -> Intention To Use E-Banking	-0.079	0.06	1.651	0.19	0.192	-0.039

The result of the moderation analysis is presented in Table 8. The results indicate the moderating role of Trust, P&S and BI with the values ($\beta = -0.079$, $t = 1.651$, $p = 0.19$, $LL = -0.192$, $UL = -0.039$). Hence, based on the above, the hypothesis is accepted.

6. Discussion

This study examines factors that influence customers' adoption of electronic banking services in Pakistan, utilizing the UTAUT2 model. Additionally, this study incorporates additional variables, including awareness, trust, and availability of privacy and security. Findings indicate that there is support for the hypothesis that both H1 and H2, which postulate that (PE) and (EE) have a positive impact on behavioral intention (BI). These findings are supported by previous studies like (Ali Abdallah Alalwan et al., 2018; Ananda, Devesh, & Al Lawati, 2020; Tan & Leby Lau, 2016). Further, H3 and H6 are supported, and the study demonstrates a significant impact of SI, PV, and habit on the intention to use electronic banking. The findings also support previous studies like (Ali Abdallah Alalwan et al., 2018; Ali A Alalwan, Dwivedi, Rana, Lal, & Williams, 2015; Sharif & Raza, 2017). H4 hedonic motivation was a significant predictor of intention to use electronic banking which is consistent with (Ali A Alalwan et al., 2015; Gupta & Arora, 2020; Sharif & Raza, 2017; Yadav, Chauhan, & Pathak, 2015). Moreover, H7 awareness significantly and positively impacts the intention to use E-banking. Creating consumer awareness about the service is important for the intention to use (Alnsour, 2013; Alnsour & Al-Hyari, 2011; Sathye, 1999). The hypothesis that H8 privacy and security positively affect behavioral intention is supported. Establishing a sense of security during online transactions is widely acknowledged as crucial in alleviating client apprehensions associated with online purchases (Salisbury et al., 2001). According to Cheng et al. (2006) customers tend to enhance the utilization of e-services solely when they perceive a sense of security in transactions.

The favorable influence of PE, EE, HAB, PV, SI, HM, and Awareness on P&S is substantiated by H9, H11, H13, H15, H17, H19, and H21. Findings about P&S demonstrate that perception of security risks significantly influences the adoption of e-banking and aligns with other study discoveries. The study supports the relationship between P&S and variables PE, EE, HAB, PV, SI, HM, AWA, and BI. The significant associations for H10, H12, H14, H16, H18, H20, and H22 evidence this support. The current study's findings support all of the proposed hypotheses. Results indicate that the construct of P&S serves as a mediator in the interaction between PE, EE, HAB, PV, SI, HM, AWA, and customer Intention to use E-banking services. It is worth mentioning that P&S plays a sequential mediating role in the association between EE, Habit, PV, SI, HM, AWA, PE, and customer's Behavioral intention and findings support previous studies (Sathye, 1999). The finding that trust has a moderating role in the relationship between P&S and BI is verified by H23. According to a study by Alsajjan and Dennis (2006), Internet banking is distinct from conventional as it does not entail direct bank engagement. Trust plays a significant role in e-banking, as clients express concerns regarding potential involvements.

7. Conclusion

E-banking offers significant advantages in meeting contemporary financial requirements by providing a convenient and streamlined approach. According to Masrek,

Halim, Khan, and Ramli (2018), monitoring of one's account has been significantly influenced by the implementation of e-banking, contributing to its advancement in Pakistan. It has strong potential to provide customers and banks rewards and is the tool to reduce time and costs. However, study results show that most people in Pakistan know about electronic banking but need to be satisfied with electronic banking services provided by Pakistani banks. They need improvement in insecurity levels and Services of e-banking. Moreover, people do not trust the banking sectors as they think that by internet banking (IB), the management of banks pays their amount as taxes. There is negative WOM about E-banking; if someone says it is bad, people trust them without confirmation from other sources. That is the reason they trust more employees than electronic banking.

7.1. Recommendations/Managerial Implications

Pakistan's banking industry needs to improve and tailor services to match customer preferences. Banks should adopt cutting-edge technologies while keeping safety precautions in e-banking to match traditional banking's security and dependability to reduce risks. It's crucial to create secure software solutions to safeguard customer accounts. Internet banking (IB) introduction can draw customers, but instructional programs like seminars are crucial to educating them about cutting-edge technology, privacy and security. To participate in e-banking activities, one must be proficient with computers, especially in foundational abilities. According to Page and Luding (2003), bankers can use advertising strategies to shape consumer's perceptions and attitudes toward electronic bank services. So, the Banking industry must engage in marketing efforts to raise awareness and foster consumer understanding. Consequently, this influence on consumer attitudes directly impacts their inclination to utilize e-banking services. Word-of-mouth (WOM) is another way customer views can be influenced, occurring in telephone conversations or online chat groups (Kasper, van Helsdingen, & De Vries, 1999). Marketing communications emphasize the advantages of e-banking, highlighting its essential role in modern society for secure financial management. Advertising and word-of-mouth are vital for overcoming service intangibility and credibility challenges (Bayus, 1985).

7.2. Limitation and Scope for Future Research

Utilizing a non-probability sampling methodology can undermine the Research's impartiality Poon (2008) due to self-selection biases. Individuals with a more cheerful disposition towards e-banking may be more inclined to volunteer their participation. This could lead to over-representing individuals with such characteristics in the sample (Hage, Söderholm, & Berglund, 2009). As a result, future research projects might consider using a probability sampling methodology. The study focuses solely on determining consumers' intentions to use electronic banking services. It excludes the measurement of actual usage or e-banking-related behavioral tendencies. It is advised that academics conduct additional research to evaluate core usage patterns within the unique context of Pakistan. The earlier research emphasizes how important intention is in influencing subsequent action. Future studies with a diversified dataset and broader demographics are called for because of the limitations of our study's sample size and web-based technique. Though our research concentrated on e-banking technology, there is room for expansion to other technologies and populations. It would be more rigorous to examine the adoption of information systems (IS) and information and communication technologies (ICTs) across industries if findings were replicated across contexts and nations.

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