

Determinants of Customers' Behavior for the Adoption of Green Banking Products and Services: UTAUT Model-Based Explanation

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Abstract

Increasing environmental concerns worldwide have spurred individuals and firms to emphasize eco-friendly practices in every walk of life. This study investigates the implication of the UTAUT model in the adoption of green banking products and services by customers in Pakistan. This study also explores behavioral intention as a mediator between explanatory variables and customers' behavior for the adoption of green banking practices. This quantitative study used convenience sampling and structured self-administered questionnaires for data collection. Structural Equation Modelling (SEM) was employed on the data collected from 305 customers of commercial banks and the results revealed a significant impact of performance expectancy, effort expectancy, enabling situation, conditional values, and emotional values on customers' intention and behavior toward green banking practices. Moreover, facilitating conditions and social influence positively affect customers' adoption of green banking products and services. Behavioral intention also fully mediates the link between performance expectancy, conditional values, emotional values, and usage behavior. Thus, bank management should consider these factors when creating green banking products and services. The current study focused on the customer perspective only, undoubtedly, it is very pivotal to understand the behavior of customers about green banking. But for a holistic coverage of the factors influencing the adoption of green banking, future research might focus on varied perspectives including bank management, bank employees, and SBP by using both quantitative and qualitative methods.

Keywords: Green Banking, Customer Behavior, UTAUT Model, Environmental Values, Emotional Values, Conditional Values

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1. Introduction

The core of "go green" is preserving nature and its resources to maintain ecological balance. The financial sector as part of the economy may safeguard the environment by adopting green practices and developing green financing goods and services (Bahl, 2012). Central banks in numerous countries are developing green banking regulations and standards (Iqbal et al., 2018; Rifat et al., 2018). To protect the environment, financial institutions should encourage ecologically friendly activities (Hossen et al., 2014). According to Shakil et al. (2014), financial institution employees and clients prioritize sustainable energy technology to reduce carbon emissions. Innovative green banking practices save resources and operational costs (Ahmad et al., 2013; Aslam et al., 2023). The US government established the first green bank in 2011, the UK government established the UK Green Investment Bank in 2012 to preserve the environment, and the Australian government formed the Clean Energy Finance Corporation in 2012 to finance energy-efficient and low-emission technologies. Japan, Malaysia, and Canada are also investing heavily in green banking (Elahi et al., 2023). However, public ignorance and budget constraints have hindered green banking prioritization in developing nations like Pakistan (Nisha et al., 2020). A few private banks have shown interest in green banking and have begun researching eco-friendly goods and services in developing countries. According to the World Global Climate Risk Index 2019, climate change damaged Pakistan from 1988 to 2017.

The SBP announced the Green Banking Guidelines (GBG) in October 2017. The GBGs help banks to achieve their environmental obligations to address environmental issues. The GBGs also require bank management to educate employees and customers on environmental issues and eco-friendly financial products and services (Khan et al., 2023). These recommendations require green banking (GB) offices with a full-time GB manager, GB liaison officers, and GB-savvy staff. Top management must report on bank ecological measures. Green banking will mature in Pakistan's banking industry in a few years. This means banks will need time to modify their processes and develop new products that comply with SBP GBGs (Bukhari et al., 2020).

In developing countries like Pakistan, the implementation of green banking practices is challenging and requires a strong commitment from banks and the Government (Niazi et al., 2023). Further, there is a need to highlight the factors that are important for green banking adoption and success (Aslam et al., 2023). A review of existing literature reveals a few studies on green banking. For instance, Islam et al. (2015), Rifat et al. (2016), and Hoque et al. (2019) focused on commercial banks and their green banking practice; Bhardwaj and Malhotra (2013) focused on commercial banks' green banking strategies and sustainability; Bose et al. (2018) highlighted the influencing factors on green banking disclosure; Nisha et al. (2020) examined customers' perception of green banking; Alalwan (2018) emphasized on the use of internet banking; Boonsiritomachai (2019) examined the use of mobile banking; Dikau, and Vltz (2018) studied the role of central banking, climate change, and green finance in Singapore; and Fashli, et al., (2019) studied the application of green banking on financing infrastructure projects. This study is set in a unique context by Pakistan's environmental threats (pollution, depletion, and dearth of natural resources, improper disposal of industrial and medical waste, etc.),

Federal Government initiatives (Ministry of Climate Change (MOCC)), SBP green banking guidelines, NGO awareness campaigns, and financial institutions' eco-friendly financial products and services. Eco-friendly activities by Pakistani banks demonstrate their dedication to environmental dangers. Green technology is the foundation of green banking, so research on client acceptance and uptake is essential. Thus, this study aims to investigate the significant factors that should be focused on to motivate bank clients to adopt green banking practices.

Previous research has used several theoretical models to study technology and system adoption. Davis (1989) used the Technology acceptability Model to evaluate computer technology acceptability and use. Venkatesh et al. (2003) examined various technology models. They developed a comprehensive and enhanced UTAUT model through research. This was done by comparing eight models using longitudinal research. The UTAUT model (Venkatesh et al., 2012) predicted user behavior and intention using four elements. The goal of this research is to replicate the UTAUT model to identify the elements that influence Pakistani clients' green banking preferences. This research builds on the UTAUT model by adding environmental, conditional, and emotional components to provide a research model and theoretical framework. Limited research has examined Pakistan's green banking implementation aspects. The current study examines Pakistan's green banking adoption behavior of customers to fill the research gap.

This study has two goals: First, to investigate commercial bank clients' green banking uptake. The unified theory of acceptance and use of technology (UTAUT) was used in this study. The UTAUT model provides a complete set of multivariate characteristics for analyzing customers' intentions and behavior in the researched situation (Malik et al., 2020). Second, to assess bank employees' green banking practices by investigating how consumers' environmental, conditional, and emotional values affect their green banking product and service adoption. The current study makes two major contributions: First, it provides a comprehensive set of multi-variate / determinants for commercial bank customers to adopt green banking products and services. In the study, researchers examined and demonstrated the relationship between the UTAUT model and customers' environmental and emotional values. Second, the study also explored behavioral intention as a mediator in exogenous-endogenous variable interactions to promote sustainable usage of green banking products and services in emerging economies for environmental preservation. This study's empirical findings will increase policymakers' and commercial banks' understanding of green banking clients and their shifting dynamics.

After describing the motivation for this study in the introduction, a brief account of existing literature and hypotheses are provided in the second section. Methods used for data collection and analysis are briefed in the third section. In the fourth part, the results of the analysis are portrayed. In the last section, the results are discussed and concluded.

2. Literature Review and Hypotheses Development

2.1. Performance Expectancy

Performance expectancy is a person's conceptual framework or technological adoption that improves outcomes (Algharibi & Arvanitis, 2011). Venkatesh et al. (2003) define this as consumers' perceptions of technology adoption's utility. Nisha et al. (2015), Afshan and Sharif (2016), Chaouali et al. (2016), and Malaquias and Hwang (2016) found that clients are more willing to adopt green banking when they see its benefits. Performance expectancy is the most powerful component of behavioral intention to adopt because technology services improve individual performance. Ho and Ko (2008) also found that perceived usefulness increases customer value of self-service banking technology. Nisha, Iqbal, and Riffat (2020) examined performance expectancy and green banking use in Bangladesh. The following hypotheses are proposed:

H1: Performance expectancy significantly affects customers' intention to use green banking products and services.

H2: Performance expectancy significantly affects customers' behavior to use green banking products and services.

2.2 Effort Expectancy

Another key aspect influencing user behavior is effort expectancy. Venkatesh et al. (2003) defined effort expectancy as how easily a user adopts a system or technology. Researchers have shown that effort expectancy affects system adoption (Riffai et al., 2012). User effort expectancy shows that they will adapt or learn new technology/systems readily (Alalwan et al., 2016; Kesharwani & Bisht, 2012). Similarly, Nisha et al. (2015) found that effort expectancy influenced green banking uptake. Afshan and Sharif (2016) found that effort expectation strongly affects Internet banking usage. In their investigations, Alwahaishi and Snasel (2013), Chaouali et al. (2016), and Malaquias and Hwang (2016) found that effort expectancy strongly influences green banking uptake and use. Venkatesh et al. (2012) found that effort expectancy affects behavioral intention and usage behavior. The study demonstrated a link between effort expectancy and green banking use (Nisha et al., 2020). From these researchers' findings, this paper hypothesizes:

H3: Effort expectancy significantly affects the customers' intention to use green banking products and services.

H4: Effort expectancy significantly affects customers' behavior for using green banking products and services.

2.3 Social Influence

Social influence is a user's sense of how important it is for connected people to adopt that technology (Venkatesh et al., 2003). Zhou (2011) defined social influence as the impact of related persons on user behavior. Soroa-Koury and Yang (2010) found a positive association between social influence and intention to utilize mobile apps for hotel booking tables. Yu (2012), Slade et al. (2015), and others have found a link between social effects and green banking. Steininger and Stiglbauer (2015) found that social influence strongly affects behavioral intention. An empirical study on green banking uptake among bankers by Rifat et al. (2016) found no significant association between social impact and behavioral intention. Thus, this study proposes the following hypotheses:

H5: Social influence significantly affects customers' intention to use green banking products and services.

H6: Social influence significantly affects customers' adoption behavior of green banking products and services.

2.4 Facilitating Conditions

Enabling conditions include technological infrastructure and organizational assistance to help staff and users accept technology or configuration, according to Venkatesh et al. (2003). According to Zhou (2011), implementing a new technical process without proper guidance and intervention can fail. Yu (2012) found a positive link between enabling conditions and the use of new technology. The Alwahaishi and Snasel (2013) and Shaikh and Karjaluo (2015) studies show a link between favorable conditions and green banking. In their model, Venkatesh et al. (2012) linked enabling factors to behavioral intention. According to Nisha et al. (2015), conducive factors determine green banking practitioners' purpose and conduct. These hypotheses are proposed:

H7: Facilitating conditions significantly affect customers' intention to use green banking products and services.

H8: Facilitating conditions significantly affect customers' adopting behavior of green banking products and services.

2.5 Environmental Values

Environmental values are how much an individual values environmental protection and safety. Environmental values are linked to nature psychology, according to Kranz and Picot (2011). Scholtz, Govender, and Gomez (2016) observed a positive correlation between both factors. Rifat (2016) found that most consumers favor sustainable business practices and expect businesses to prioritize the environment. The growing literature on green banking in diverse nations reveals that environmental values influence green banking adoption (Iqbal et al., 2018). People who value price more often have lower environmental values (Maheshwari & Malhotra, 2011). Hypotheses from this investigation were:

H9: Environmental values significantly affect customers' intention to use green banking products and services.

H10: Environmental values significantly affect customers' adopting behavior of green banking products and services.

2.6 Conditional Values

Qasim et al. (2019) state that government subsidies and other perks may be given to people when buying goods or services. Green banks offer conditional values as green products and services. Green items are discounted and some governments subsidize green initiatives and products to promote green banking. Portuguese researchers Gonçalves et al. (2016) related conditional values to usage behavior. It is empirically shown that cost and discounts do not affect green banking uptake in Bangladesh. This research suggests the following hypotheses:

H11: Conditional values significantly affect customers' intention to use green banking products and services.

H12: Conditional values significantly affect customers' adopting behavior of green banking products and services.

2.7 Emotional Values

Emotional values refer to the subjective experiences, sentiments, and attachments that users associate with perceived usefulness, as determined by various evaluative criteria (Sheth et al., 1991). Recently, some researchers explain four types of emotional values: proud emotional values, admiring emotional values, guilty emotional values, and disdainful emotional values (Wang, Bao, Wang, & Wu, 2017). Nowadays, shareholder tries to invest in an organization that is involved in environmental activities, so they emotionally attach, and that leads to buying. Hence, this study that advised the next hypotheses:

H13: Emotional values significantly affect customers' intention to use green banking products and services.

H14: Emotional values significantly affect customers' adopting behavior of green banking products and services.

2.8 Mediating Effects of Behavioral Intention

Ajzen (1991) defined intention as a factor that motivates and influences user behavior. Sheppard et al. (1988) argued intention is most important in tech adoption. Other theories use this idea: TPA and TRA. Other information technology research showed a strong correlation between these two traits (Venkatesh et al., 2012). In green mobile banking, researchers show how behavioral intention affects technology use (Gu, Lee, & Suh, 2009). Other research link green banking service consumption to behavioral intention (Nisha et al., 2020). This study analyses how behavioral intention mediates the relationship between exogenous variables (performance expectancy, effort expectancy, social influence, enabling conditions, environmental values, conditional values, and emotional values) and usage behavior. The study hypothesized the following:

H14-H21: Mediating effects of behavioral intention between the associations of exogenous variables and endogenous variable relating to customers' adopting behavior of green banking products and services.

2.9 Theoretical Framework

This study uses Venkatesh et al. (2003)'s unified theory of technology acceptance and application along with environmental values, conditional values, and emotional values. In the UTAUT model the constructs are added as per the context of technology, therefore three variables, which are already used in the banking industry, are linked to the UTAUT model to capture the right picture of the adoption of green banking by clients. Rifat et al., (2016) found that today's public is more aware of globalization and they care about environmental concerns. It is a significant predictor to examine the behavior of clients. Another construct is conditional values which is also is significant predictor as the client always influenced by the discounts and promotion activities. The last construct is emotional values, which also have a positive role in the acceptance of technology as the person feels morally good by using eco-friendly products (Mohd Suki, 2016).

In this model, the first four exogenous variables are adopted from the UTAUT model suggested by Venkatesh et al., (2003). To extend the explanatory power of the theoretical framework, three more exogenous variables (environmental values, conditional values, and emotional values) are added to the UTAUT model, which affects the sustainable behavior of customers (Mohd Suki 2016; Khan and Mohsin 2017; Kadic-

Maglajlic et al., 2019). In addition, the aforementioned context variables are hypothesized and their relationship with each other is discussed in the next part. Hence, the scholars proposed the following theoretical framework.

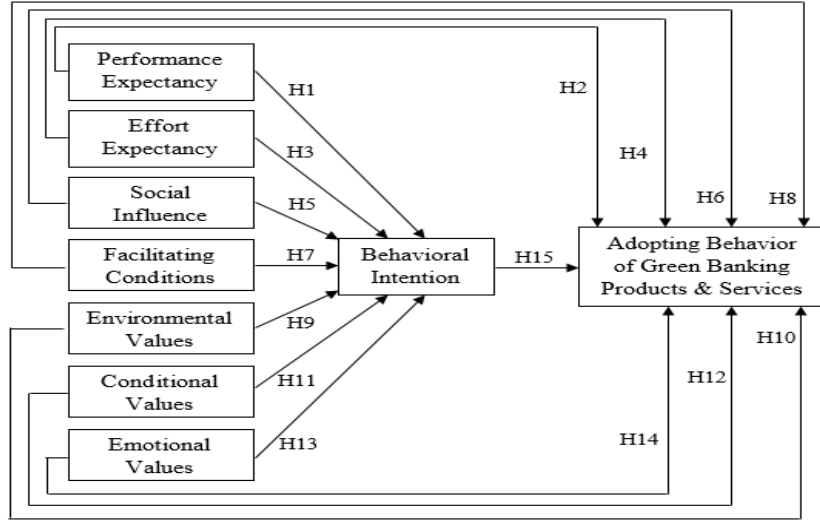


Figure 1: Research Model of the Study

3. Method

3.1 Participants and Procedure

The study targets commercial banks customers located in Lahore, district of Punjab, Pakistan. For data collection, a convenience sampling technique and a standardized self-administered questionnaire was used. To collect data, respondents were intercepted after completing their transactions at different commercial banks. Most customers filled out the hard copy of the questionnaire, however some did not do due to time constraints and were asked to provide their contact information to send the soft copy (google form). Researchers contacted them individually and offered a link via email and WhatsApp to complete the questionnaire from March to April 2023. According to Hair et al. (2010), and Ahmad and Halim (2017), and (Roscoe 1975), an appropriate sample size is 30-500. Thus, 400 copies of questionnaire were distributed to customers by visiting different branches of commercial banks and google form link of questionnaire was shared to 200 bank customers via WhatsApp and email. Total 456 responses were received from customers. After screening, 305 questionnaires were found appropriately filled and were utilized for analysis. Thus, response rate was remained approximately 50 %. Natural environment research makes the study setting non-contrived. This study is cross-sectional since data was obtained once.

3.2 Questionnaire Development and Measures

A thorough research of the relevant scholarly literature selected the study's measures. A pre-test with 55 commercial bank clients analyzed the questionnaire's understandability. Certain changes were made to improve clarity. The questionnaire has two parts. The first section includes gender, age, education, occupation, and average

monthly income. Green banking perception characteristics are measured in the second half of the questionnaire with 33 items. A multi-item scale on UTAUT construct measured performance expectancy, effort expectancy, social influence, enabling condition, and behavioral intention (Venkatesh et al., 2003). Four items from Ahmed et al. (2013), Nisha et al. (2015), and Rifat (2016) measured environmental values.

Previous research by Mohd Suki (2016) measured conditional and emotional values. For measuring the behavior of customers for adopting green banking products and services, three measures proposed by Yadav and Pathak (2017) were analyzed. All measurements were evaluated using five-point Likert scales, as established by Rensis Likert in 1932. To assess variables, participants are given five options to indicate their degree of agreement with the assertions: 1 for considerable disagreement, 2 for disagreement, 3 for neutrality, 4 for agreement and 5 for strong agreement.

3.3 Analytical Method

This study analyzes data using SPSS 25 and AMOS 22. Model measurement and fitness (outer model) were assessed by using Confirmatory Factor Analysis (CFA). The researchers consistently used the two-stage structural equation modelling (SEM) method recommended by Anderson and Gerbing 1988 to test the theoretical model (inner model) and postulated context variable correlations. The present study also analyzes how behavioral intention mediates the relationship between exogenous factors and endogenous variable in the specific situation under examination. This study uses bootstrapping method suggested by Horowitz (2019), and MacKinnon (2009). To establish model consistency, accurately address measurement error, and analyze exogenous constructions' simultaneous impact on outcome variables, the researchers performed multiple regression analyses.

4. Results

4.1 Demographic Profile of Respondents and Sample Distribution

Table 1 shows that 70.2% of respondents were male and 29.8% female. Participants (34.7%) were mostly 31–40 years old, followed by responders (30.8%) aged 41–50.

Table 1: Demographic Information and Sample Distribution

Variables	Frequencies	Percentages	Variables	Frequencies	Percentages
<i>Gender</i>					
Male	214	70.2%	<i>Occupation</i>		
Female	91	29.8%	Students	20	6.5%
<i>Age (years)</i>			Jobholder	119	39%
Under 20-30	66	21.6%	Businessman	74	24.2%
31-40	106	34.7%	Retired	34	11.1
41-50	94	30.8%	Professionals	58	19%
51-above	39	12.7%	<i>Education</i>		
<i>Avg. Monthly Income</i>			Graduation (14y)	81	26.6%
20,000-40,000	51	16.7%	Master (16 years)	147	48.2%
41,000-60,000	133	43.6%	M.PHIL	64	20.9%
61,000-80,000	74	24.6%	PhD	13	4.2%
81,000-above	47	15.4%			

Most respondents (43.6%) earned 41,000–60,000 PKRs per month, followed by 24.6%) who earned 61,000–80,000. Most respondents (39%) were employed, followed by businesspeople (24.2%). Nearly half (48.2%) had 16 years of education.

4.2 Descriptive and Correlation Analysis

Study factors have skewness values between 0.105 and 0.198, ideally within ± 2 , and kurtosis values between 0.532 and 1.560, ideally within ± 10 (refer to Table 2). The results show that data were regularly distributed and bell-shaped. All contextual variables had mean values from 3.758 to 4.373 on a five-point Likert scale, where 1 means "strongly disagree" and 5 means "strongly agree." Most participants were willing to use green banking.

Table 2: Descriptive Statistics and Correlation Matrix

Variables	1	2	3	4	5	6	7	8	9
Performance	0.899								
Expectancy									
Effort Expectancy	0.699**	0.893							
Social Influence	0.495**	0.485**	0.865						
Facilitating Conditions	0.608**	0.666**	0.543**	0.875					
Environmental Values	0.337**	0.350**	0.483**	0.461**	0.862				
Conditional Values	0.590**	0.581**	0.522**	0.600**	0.539**	0.860			
Emotional Values	0.351**	0.337**	0.476**	0.444**	0.683**	0.609**	0.891		
Behavioral Intention	0.691**	0.659**	0.491**	0.650**	0.546**	0.666**	0.613**	0.879	
Usage Behavior	0.411**	0.440**	0.544**	0.537**	0.407**	0.368**	0.401**	0.539**	0.874
Mean	4.373	4.219	3.758	4.049	4.303	4.128	4.163	4.347	3.897
Standard Deviation	0.616	0.652	0.745	0.712	0.636	0.704	0.779	0.702	0.899
Skewness	0.136	0.105	0.184	0.198	0.132	0.110	0.128	0.136	0.138
Kurtosis	1.124	1.138	1.234	1.560	0.603	0.532	0.613	0.872	1.123

Note: ** Correlation is significant at the 0.01 level (2-tailed) | Bold diagonal elements are square root of AVE.

4.3 Reliability and Validity Analysis

The study analyzed context measure reliability using composite reliability (CR) and Cronbach's Alpha. Table 3 shows that Composite Reliability and Cronbach's Alpha are over 0.70 (Hair et al., 2010). Next, the study met all three Fornell and Larcker (1981) convergent validity requirements. A) The standardized factor loadings should be above 0.60 (Bagozzi and Yi, 2012), It is between 0.811 and 0.953 (Table 3). B). The context variables' AVE values, 0.740 to 0.808 (Table 3), should be more than 0.5 (Fornell & Larcker, 1981; Hair et al., 2010). C) Values top out at 0.70. This shows convergent validity is adequate because the data met all three criteria.

According to Fornell and Larcker (1981) and Sussman and Siegal (2003), discriminant validity of studied measures is acceptable. The square root of AVE (bold diagonal elements) exceeds the study measures' average shared variance. Discriminant validity is further shown by factor correlations < 0.70 (Table 2). Model fitness was assessed using confirmatory factors analysis.

Model measurement goodness of fit indices suggest acceptable fit: Table 4 shows CMIN/DF = 1.853, RMR = 0.039, GFI = 0.962, AGFI = 0.851, CFI = 0.918, RMSEA = 0.061, and PCLOSE = 0.904. The fit indices exceed Bagozzi and Yi, (2012), thresholds. This indicates model fits structured questionnaire data well.

Table 3: Results of Reliability and Validity Analysis

Variables	Items	Factor Loading	Composite Reliability	AVE	Cronbach's Alpha
Performance Expectancy	4	0.846-0.926	0.789	0.808	0.810
Effort Expectancy	4	0.811-0.953	0.777	0.797	0.759
Social Influence	4	0.826-0.868	0.715	0.748	0.774
Facilitating Conditions	4	0.815-0.915	0.738	0.766	0.792
Environmental Values	4	0.814-0.867	0.708	0.743	0.810
Conditional Values	4	0.781-0.901	0.705	0.740	0.815
Emotional Values	3	0.826-0.912	0.773	0.795	0.791
Behavioral Intention	3	0.844-0.902	0.747	0.774	0.754
Usage Behavior	3	0.839-0.891	0.735	0.764	0.840

Table 4: Goodness of Fit Indices for Measurement and Structural Model

Models	CMIN/DF	RMR	GFI	AGFI	CFI	RMSEA	PCLOSE
Threshold	<3 or <5	<0.09	>0.95	>0.80	>0.90	0.05-0.10	>0.05
Measurement Model	1.853	0.039	0.962	0.851	0.918	0.061	0.904
Structural Model	0.795	0.007	0.995	0.966	1.000	0.000	0.825

4.4 Structural Model Analysis

To test hypotheses, structural equation model analysis was performed. The structural model fits well: CMIN/DF = .795, RMR = 0.007, GFI = 0.995, AGFI = 0.966, CFI = 1.000, and PCLOSE = 0.825 (Table 4). This shows that the hypothesized model fits and that the factors tested have meaningful influence. The structural model explains 64.5% of behavioral intention variants and 43.3% of adoption behavior differences. Table 5 shows that empirical evidence supports nine hypotheses (H_1 , H_3 , H_6 , H_7 , H_8 , H_{11} , H_{12} , H_{13} , and H_{15}). Performance anticipation, effort expectancy, enabling condition, conditional values, and emotional values significantly influenced the behavioral intention. Hypotheses H_1 , H_3 , H_7 , H_{11} , and H_{13} are accepted.

Table 5: Structural Model

	Direct paths		Estimates	S.E.	C.R.	<i>p</i>	Decisions
H_1	Performance expectancy	→ Behavioral Intention	0.356	0.060	5.884	***	Accepted
H_3	Effort Expectancy	→ Behavioral Intention	0.201	0.061	3.294	***	Accepted
H_6	Social Influence	→ Usage Behavior	0.338	0.074	4.535	***	Accepted
H_7	Facilitating Condition	→ Behavioral Intention	0.117	0.056	2.074	**	Accepted
H_8	Facilitating Condition	→ Usage Behavior	0.398	0.088	4.515	***	Accepted
H_{11}	Conditional Values	→ Behavioral Intention	0.121	0.056	2.178	**	Accepted
H_{12}	Conditional Values	→ Usage Behavior	-0.261	0.084	-3.116	***	Accepted
H_{13}	Emotional Values	→ Behavioral Intention	0.257	0.047	5.415	***	Accepted
H_{15}	Behavioral Intention	→ Usage Behavior	0.411	0.089	4.625	***	Accepted

Note: *** Significant at. 0.01, **Significant at. 0.05, * Significant at. 0.10

Study found positive correlations between performance expectancy ($H_1: \beta=.356, p<0.05$), effort expectancy ($H_3: \beta=.201, p<0.05$), facilitating condition ($H_7: \beta=.117, p<0.05$), conditional values ($H_{11}: \beta=.121, p<0.05$), and emotional values ($H_{13}: \beta=.257, p<0.05$) and behavioral intention. Further, social impact, enabling situations, and conditional values significantly affected the adoption behavior. Hypotheses H_6, H_8, H_{12} , and H_{15} were also accepted. The study found a favorable correlation between social influence ($H_6: \beta=.338, p<0.05$), enabling condition ($H_8: \beta=.398, p<0.05$), and behavioral intention ($H_{15}: \beta=.411, p<0.05$) and adoption behavior. However, conditional values had a significant detrimental impact on adoption behavior ($H_{12}: \beta= -.261, p<0.05$).

4.5 Mediating Effect of Behavioral Intention

This study examined how behavior intention (BI) mediates the relationship between UTAUT idea, consumer values, and adoption behavior. The mediation study used MacKinnon (2009)'s bootstrapping technique in AMOS version 22. The study found that business intelligence (BI) fully mediates the relationship between performance expectancy, conditional values, emotional values, and adoption behavior. Additionally, BI partially mediates the link between effort expectancy, social influence, enabling condition, and adoption behavior. As seen in Table 6, BI does not moderate the environmental values-adoption behavior link. Mediating variable statistical results were most reliable and robust (Williams & MacKinnon, 2008). Hypothesis 16: PE's direct effect on AB does not cause BI. The indirect effect of PE on AB is significant with BI ($H_{16}: \beta=.279, p<0.05$). Thus, BI fully mediates PE-AB. Hypothesis 21: CV has no direct effect on AB with BI. The indirect effect of CV on AB is significant with BI ($H_{21}: \beta=.329, p<0.05$). Thus, BI fully mediates CV-AB. Hypothesis 22: EMOV has no direct effect on AB through BI. In the presence of BI, EMOV has a substantial indirect influence on AB ($H_{22}: \beta=.295, p<0.05$). Therefore, BI fully mediates the EMOV-AB relationship.

Table 6: Mediating Effect of Behavioral Intention*

Hypotheses	Direct beta without mediation	Direct beta with mediation	Indirect beta	Mediation type observed
H_{16} PE $\rightarrow$ BI $\rightarrow$ AB	0.626***	0.150 ($p=.066$)	0.279 ($p=.010$)	full mediation
H_{17} EE $\rightarrow$ BI $\rightarrow$ AB	0.640***	0.234 ($p=.004$)	0.233 ($p=.009$)	partial mediation
H_{18} SI $\rightarrow$ BI $\rightarrow$ AB	0.610***	0.348 ($p=.015$)	0.162 ($p=.005$)	partial mediation
H_{19} FC $\rightarrow$ BI $\rightarrow$ AB	0.702***	0.388 ($p=.007$)	0.172 ($p=.010$)	partial mediation
H_{20} ENV $\rightarrow$ BI $\rightarrow$ AB	0.597***	0.389 ($p=.007$)	0.035 ($p=.598$)	no mediation
H_{21} CV $\rightarrow$ BI $\rightarrow$ AB	0.373***	-0.033 ($p=.616$)	0.329 ($p=.009$)	full mediation
H_{22} EMOV $\rightarrow$ BI $\rightarrow$ AB	0.425***	0.073 ($p=.285$)	0.295 ($p=.005$)	full mediation

Note: Abbreviations: PE= Performance Expectancy, EE= Performance Expectancy, SI= Social Influence, FC= Facilitating Condition, ENV= Environmental Values, CV= Conditional Values, EMOV= Emotional Values, Behavioral Intention, AB= Adoption Behavior *** Significant at .001, **Significant at .01, * Significant at .05.

Consistently, the direct effect of EE on AB is significant in causing BI ($H_{17}: \beta=.234, p<0.05$). The indirect effect of EE on AB is significant with BI ($H_{17}: \beta=.233, p<0.05$). Thus, BI partially mediates EE-AB. Hypothesis 18: SI significantly affects AB in the presence of BI ($H_{18}: \beta=.348, p<0.05$). Significant indirect influence of SI on AB is mediated by BI ($H_{18}: \beta=.162, p<0.05$). Thus, BI partially mediates SI-AB. Hypothesis 19: FC's direct impact on

AB is substantial for BI (H_{19} : $\beta = .388$, $p < 0.05$). In the presence of BI, FC has a substantial indirect influence on AB (H_{19} : $\beta = .172$, $p < 0.05$). Thus, BI partially mediates FC-AB.

5. Discussion

The results of the study reveal that performance anticipation is the main predictor of behavioral intention of customers to use green banking. It implies that customers are more likely to adopt green banking if they expect higher performance. This study agrees with Nisha et al. (2015), Chaouali et al. (2016), Malaquias and Hwang (2016) and Rifat et al. (2018). Effort expectancy predicts behavioral intention but not customer green banking adoption. This study finds that clients who expect less effort to use green banking services are more inclined to do so. Since mobile online banking requires few taps, clients have to work less. This study agrees with Alwahaishi and Snasel (2013), and Malaquias and Hwang (2016). Thus, banks should prioritize fast, convenient services. Good IT structure helps make digital services more user-friendly. It saves time and makes green banking like mobile banking easy. Alwahaishi and Snasel (2013) and Malaquias and Hwang (2016) found similar results. This is reinforced by recent investigations by Nisha et al. (2019).

The study indicated that social influence had a considerable impact on consumers' adoption of green banking, but had no significant impact on behavioral intention. Yu (2012), Slade et al. (2015), and Malaquias and Hwang (2016) reported similar results. So, banks must construct their marketing so that customers influence others to use green banking. Rifat et al. (2018) support the results, however Iqbal et al. (2018) does not. Facilitating conditions can speed up green banking service uptake because any new technology or service needs support. The findings of this study match with the findings of Iqbal et al. (2018) and Afshan and Sharif (2016) but contradict the Rifat et al. (2016).

According to this study, environmental considerations do not influence green banking. Environmental values are also essential, but green banking knowledge is still low, and most users consider the banking industry is not vulnerable to the environment, so it does not need green efforts. This differs from Hossain et al. (2015) and Scholtz and Gomez (2016). The results showed that conditional values positively influence behavioral intention and negatively influence the green banking adoption. Conditional values are important today because firm promotions and government subsidies have increased service and product use. Banks offer green loans and other environmentally friendly financial products at lower interest rates. Most banks provide food and clothes discounts to attract digital consumers. Khan & Mohsin. (2017) found conditional values affect customer green product behavior. Qasim et al. (2019) also found that conditional values affect Pakistani organic food consumption.

The study indicated that emotional values positively affect behavioral intention but not green banking adoption. Sustainable/green consumption is often linked to consumer emotions, attachment, or values. Users' sentiments and emotions affect their green product usage (Holbrook, 2006). Positive, joyful, responsive emotions contribute to green banking, while negative, unpleasant, deceptive emotions negatively influence consumer buying behavior (Rex & Baumann, 2007). Thus, if banks help customers feel more connected to the environment, they may attract more customers. These findings match Qasim et al. (2019). The study found that behavioral intention is the strongest predictor of green banking adoption. Intentions determine behavior and often impact

user decisions. To encourage people to use green banking services, budgetary allocation and increased investment for green banking projects are needed. This is backed by many studies, including Iqbal et al. (2019) and Rifat (2018). However, the findings of current study contradict with the findings of some earlier studies (e.g., Suki & Suki, 2015; Suki & Suki, 2017 in Malaysia, and Khan, & Mohsin, 2017 in Pakistan). These studies found no significant relationship between emotional values and green product use.

This study evaluated seven mediation connections related to behavioral intention. Performance expectancy affects behavior intention but not usage behavior, hence, there is full mediation because the client wants to utilize green banking to improve their performance. Social impact partially mediates usage behavior. Social influence on behavioral intention includes friends, family, and coworkers influencing green banking services like internet banking. Users use trending services others use. Due to partial mediation between facilitating conditions and usage behavior, facilitating conditions affect usage behavior through behavioral intention. Facilitating conditions including supporting mobile apps, enhanced internet access, and green banking seminars help users use green banking services. Environment parameters do not affect behavioral intention or usage. Despite using some green banking services, Pakistani people are unaware of green banking but assume it is safe for the environment. Conditional values fully mediate usage behavior. Discounts and promotions from banks encourage people to utilize green banking services. Telenor Microfinance and other banks attract online customers with food and clothing discounts. Due to full mediation between emotional values and usage behavior. Emotional values do not affect user behavior, but behavioral purpose does. Users' emotions usually determine their aim. Pakistan is heavily affected by global warming, so users are more aware. Emotions about green banking led to user intention and green banking services.

6. Conclusion and Implication

The findings of the study conclude that client behavioral intentions are crucial because intentions become behaviors. As this study illustrates the elements that motivate customers to utilize green banking, the majority of factors are relevant. All considerations except environmental values drove green banking adoption. The practitioners must design green bank goods and services considering these important considerations. Banks should offer easy-to-use mobile banking apps with no security issues to improve user convenience. Government and regulatory agencies should fund and rebate green products. Financial organizations can promote green banking by offering discounts and promotions. Public policy makers and financial organizations should launch environmental awareness campaigns to evoke emotional responses and urge active participation in nature and environment preservation.

7. Future Research Direction

Current study is cross sectional and ignores the temporal developments like regulatory changes, learning behavior of customers, and various incentives offered by banks over time. Thus, there is need of a longitudinal study on green banking adoption to compare findings and get a clearer picture. Future study can include SBP recommendations, cost, and modifiers including age, education, and income. This study evaluates financial institution clients and suggests investigating Pakistani bank

employees. This study used the UTAUT model, although green banking adoption can be assessed using other technology acceptance models or a mix of them. Qualitative research can interview bank senior executives, who drive green banking adoption. Green banking variables can be better understood with more research.

Ethical Consideration

The authors declare that this submission follows the policies of AJSS as outlined in the Guide for Authors and in the Ethical Statement. Full consent was obtained from the participants prior to the study and all procedures were carried out in accordance with approved ethical standards.

Informed Consent

A fully informed, considered, and freely given decision about whether or not to participate in the study, without the exercise of any pressure or coercion was taken from the respondents.

Declaration of Interest Statement

The authors declare that we have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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8. References

- Afshan, S., & Sharif, A. (2016). Acceptance of mobile banking framework in Pakistan. *Telematics and Informatics*, 33(2), 370-387.
- Ahmad, H., & Halim, H. (2017). Determining sample size for research activities. *Selangor Business Review*, 20-34.
- Ahmad, F., Zayed, N. M., & Harun, M. A. (2013). Factors behind the adoption of green banking by Bangladeshi commercial banks. *ASA University Review*, 7(2), 241- 255.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179-211.
- Alalwan, A. A., Dwivedi, Y. K., Rana, N. P., & Williams, M. D. (2016). Consumer adoption of mobile banking in Jordan: Examining the role of usefulness, ease of use, perceived risk and self-efficacy. *Journal of Enterprise Information Management*, 29(1), 118-139.
- Alalwan, A. A. (2018). Investigating the impact of social media advertising features on customer purchase intention. *International Journal of Information Management*, 42, 65-77.
- Algharibi, A. J., & Arvanitis, T. N. (2011). Adapting the Unified Theory of Acceptance and Use of Technology (UTAUT) as a tool for validating user needs on the implementation of e-Trial software systems. In *Proceedings of HCI 2011 The 25th BCS Conference on Human-Computer Interaction* 25 (pp. 526-530).

- Alwahaishi, S., & Snásel, V. (2013). Acceptance and use of information and communications technology: a UTAUT and flow based theoretical model. *Journal of Technology Management & Innovation*, 8(2), 61-73.
- Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*, 103(3), 411-423.
- Aslam, W., & Jawaid, S. T. (2023). A systematic review of green banking adoption: following PRISMA protocols. *IIM Kozhikode Society & Management Review*, 12(2), 213-233.
- Bagozzi, R. P., & Yi, Y. (2012). Specification, evaluation, and interpretation of structural equation models. *Journal of the academy of marketing science*, 40, 8-34.
- Bahl, S. (2012). Green banking-The new strategic imperative. *Asian Journal of Research in Business Economics and Management*, 2(2), 176-185.
- Bhardwaj, B. R., & Malhotra, A. (2013). Green banking strategies: sustainability through corporate entrepreneurship. *Greener Journal of Business and Management Studies*, 3(4), 180-193.
- Boonsiritomachai, W., & Pitchayadejanant, K. (2019). Determinants affecting mobile banking adoption by generation Y based on the Unified Theory of Acceptance and Use of Technology Model modified by the Technology Acceptance Model concept. *Kasetsart Journal of Social Sciences*, 40(2), 349-358.
- Bose, S., Khan, H. Z., Rashid, A., & Islam, S. (2018). What drives green banking disclosure? An institutional and corporate governance perspective. *Asia Pacific Journal of Management*, 35, 501-527.
- Bukhari, S. A. A., Hashim, F., & Amran, A. (2020). The journey of Pakistan's banking industry towards green banking adoption. *South Asian Journal of Business and Management Cases*, 9(2), 208-218.
- Chaouali, W., Yahia, I. B., & Souiden, N. (2016). The interplay of counter-conformity motivation, social influence, and trust in customers' intention to adopt Internet banking services: The case of an emerging country. *Journal of Retailing and Consumer Services*, 28, 209-218.
- Davis, F. D. (1986) A technology acceptance model for empirically testing new end-user information systems: Theory and results. (Doctoral dissertation, Sloan School of Management, Massachusetts Institute of Technology).
- Dikau, S., & Volz, U. (2018). Central banking, climate change, and green finance. Asian Development Bank Institute working paper series No. 867 September 2018.
- Ellahi, A., Jillani, H., & Zahid, H. (2023). Customer awareness on green banking practices. *Journal of Sustainable Finance & Investment*, 13(3), 1377-1393.
- Fashli, A., Herdiansyah, H., & Handayani, R. D. (2019, March). Application of green banking on financing infrastructure project industry: an environmental perspective. *Journal of Physics: Conference Series* (Vol. 1175, No. 1, p. 012027). IOP Publishing.
- Fornell, C., & Larcker, D. F. (1981). Structural equation models with unobservable variables and measurement error: Algebra and Statistics.

- Gonçalves, H. M., Lourenço, T. F., & Silva, G. M. (2016). Green buying behavior and the theory of consumption values: A fuzzy-set approach. *Journal of Business Research*, 69(4), 1484-1491.
- Gu, J.-C., Lee, S.-C., & Suh, Y.-H. (2009). Determinants of behavioral intention to mobile banking. *Expert Systems with Applications*, 36(9), 11605-11616.
- Hair, J.F., Black, W.C., Babin, B.J., & Anderson, R.E. (2010). *Multivariate data analysis* (7th ed.). New York: Pearson.
- Holbrook, M. B. (2006). Consumption experience, customer value, and subjective personal introspection: An illustrative photographic essay. *Journal of Business Research*, 59(6), 714-725.
- Ho, S. H., & Ko, Y. Y. (2008). Effects of self-service technology on customer value and customer readiness: The case of internet banking. *Internet Research*, 18(4), 427-446.
- Hoque, N., Mowla, M., Uddin, M. S., Mamun, A., & Uddin, M. R. (2019). Green banking practices in Bangladesh: a critical investigation. *International Journal of Economics and Finance*, 11(3), 58-68.
- Horowitz, J. L. (2019). Bootstrap methods in econometrics. *Annual Review of Economics*, 11, 193-224.
- Hossen, M. M., Uddin, M. N., & Hossain, A. (2014). E-commerce: A scrutiny about upgrading environmental commerce through securing environmental sustainability. *Bup Journal*, 1(2), 83-103.
- Hossain, E., & Hasan, M. (2015). 5G cellular: key enabling technologies and research challenges. *IEEE Instrumentation & Measurement Magazine*, 18(3), 11-21.
- Kranz, J. and Picot, A. (2011) 'Why are consumers going green? The role of environmental concerns in private green-IS adoption', ECIS 2011 Proceedings, 9-11 June, Helsinki, Finland, Paper 104.
- Kesharwani, A., & Singh Bisht, S. (2012). The impact of trust and perceived risk on internet banking adoption in India: An extension of technology acceptance model. *International Journal of Bank Marketing*, 30(4), 303-322.
- Iqbal, M., Nisha, N., & Raza, S. A. (2019). Customers' perceptions of green banking: examining service quality dimensions in Bangladesh *Green Business: Concepts, Methodologies, Tools, and Applications* (pp. 1071-1090): IGI Global.
- Iqbal, M., Nisha, N., Rifat, A., & Panda, P. (2018). Exploring client perceptions and intentions in emerging economies: The case of green banking technology. *International Journal of Asian Business and Information Management (IJABIM)*, 9(3), 14-34.
- Islam, S., & Hasan, M. (2015). Reasons behind the practices of green banking by Commercial Banks: A case study on Bangladesh. *European Journal of Business and Management*, 7(22), 51-60.
- Kadic-Maglajlic, S., Arslanagic-Kalajdzic, M., Micevski, M., Dlacic, J., & Zabkar, V. (2019). Being engaged is a good thing: Understanding sustainable consumption behavior among young adults. *Journal of Business Research*, 104, 644-654.
- Khan, I. U., Hameed, Z., Khan, S. U., & Khan, M. A. (2023). Green banking practices, bank reputation, and environmental awareness: evidence from Islamic banks in a developing economy. *Environment, Development and Sustainability*, 1-21.

- Khan, S. N., & Mohsin, M. (2017). The power of emotional value: Exploring the effects of values on green product consumer choice behavior. *Journal of Cleaner Production*, 150, 65-74.
- Likert, R. (1932). A technique for the measurement of attitudes. *Archives of Psychology*.
- MacKinnon, J. G. (2009). Bootstrap hypothesis testing. *Handbook of Computational Econometrics*, 183-213.
- Maheshwari, A., & Malhotra, G. (2011). Green marketing: a study on Indian youth. *International Journal of Management and Strategy*, 2(3), 1-15.
- Malaquias, R. F., & Hwang, Y. (2016). An empirical study on trust in mobile banking: A developing country perspective. *Computers in Human Behavior*, 54, 453-461.
- Malik, M. (2020). A Review of empirical research on Internet and mobile banking in developing countries using UTAUT Model during the period 2015 to April 2020. *Journal of Internet Banking and Commerce*, 25(2), 1-22.
- Mohd Suki, N. (2016). Green product purchase intention: impact of green brands, attitude, and knowledge. *British Food Journal*, 118(12), 2893-2910.
- Niazi, A. A. K., Qazi, T. F., Butt, H. T., Niazi, I. A. K., & Basit, A. (2023). A structural analysis of barriers being faced by green banking initiatives in Pakistan. *Journal of Policy Research*, 9(2), 182-199.
- Nisha, N., Idrish, S., & Hossain, M. Z. (2015). Consumer acceptance and use of mobile banking services in Bangladesh. *Green Banking in Bangladesh and Beyond*, 155-182.
- Nisha, N., Iqbal, M., & Rifat, A. (2019). The changing paradigm of health and mobile phones: An innovation in the health care system. *Journal of Global Information Management (JGIM)*, 27(1), 19-46.
- Nisha, N., Iqbal, M., & Rifat, A. (2020). Green banking adoption: An examination of state-owned banks of Bangladesh. *International Journal of Technology and Human Interaction (IJTHI)*, 16(2), 69-89.
- Qasim, H., Yan, L., Guo, R., Saeed, A., & Ashraf, B. N. (2019). The Defining Role of Environmental Self-Identity among Consumption Values and Behavioral Intention to Consume Organic Food. *International Journal of Environmental Research and Public Health*, 16(7), 1-22. 1106.
- Rex, E., & Baumann, H. (2007). Beyond ecolabels: what green marketing can learn from conventional marketing. *Journal of Cleaner Production*, 15(6), 567-576.
- Rifat, A., Nisha, N., Iqbal, M., & Suvittawat, A. (2016). The role of commercial banks in green banking adoption: A Bangladesh perspective. *International Journal of Green Economics*, 10(3/4), 226-251.
- Rifat, A. A., Haider, F., Ahmed, R., Mahdiraji, G. A., Adikan, F. M., & Miroshnichenko, A. E. (2018). Highly sensitive selectively coated photonic crystal fiber-based plasmonic sensor. *Optics Letters*, 43(4), 891-894.
- Roscoe, J.T. (1975) *Fundamental Research Statistics for the Behavioral Sciences*, 2nd edition. New York: Holt Rinehart & Winston.
- Scholtz, B., Govender, J., & Gomez, J. M. (2016). Technical and environmental factors affecting cloud computing adoption in the South African public sector.
- Shakil, M. H., Azam, M. K. G., & Raju, M. S. H. (2014). An evaluation of green banking practices in Bangladesh. *European Journal of Business and Management*, 6(31), 8-16.

- Shaikh, A. A., & Karjaluoto, H. (2015). Mobile banking adoption: A literature review. *Telematics and informatics*, 32(1), 129-142.
- Sheppard, B.H., Hartwick, J. and Warshaw, P.R. (1988). The theory of reasoned action: a Meta-Analysis of past research with recommendations for modifications and future research', *Journal of Consumer Research*, 15(3), 325-343.
- Sheth, J. N., Newman, B. I., & Gross, B. L. (1991). Why we buy what we buy: A theory of consumption values. *Journal of Business Research*, 22(2), 159-170.
- Slade, E.L., Dwivedi, Y.K., Piercy, N.C. and Williams, M.D. (2015). Modeling consumers' adoption intentions of remote mobile payments in the United Kingdom: extending UTAUT with innovativeness, risk and trust. *Psychology & Marketing*, 32(8). 860-873.
- Soroa-Koury, S., & Yang, K. C. (2010). Factors affecting consumers' responses to mobile advertising from a social norm theoretical perspective. *Telematics and Informatics*, 27(1), 103-113.
- Sreenivasan, J., & Noor, M. N. M. (2010). A conceptual framework on mobile commerce acceptance and usage among Malaysian consumers: the influence of location, privacy, trust and purchasing power. *WSEAS Transactions on Information Science and Applications*, 7(5), 661-670.
- Steininger, K., & Stiglbauer, B. (2015). EHR acceptance among Austrian resident doctors. *Health Policy and Technology*, 4(2), 121-130.
- Suki, N. M., & Suki, N. M. (2015). Does religion influence consumers' green food consumption? Some insights from Malaysia. *Journal of Consumer Marketing*, 32(7), 551-563.
- Suki, N. M., & Suki, N. M. (2017). Determining students' behavioral intention to use animation and storytelling applying the UTAUT model: The moderating roles of gender and experience level. *The International Journal of Management Education*, 15(3), 528-538.
- Sussman, S. W., & Siegal, W. S. (2003). Informational influence in organizations: An integrated approach to knowledge adoption. *Information Systems Research*, 14(1), 47-65.
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 425-478.
- Venkatesh, V., Thong, J. Y., & Xu, X. (2012). Consumer acceptance and use of information technology: extending the unified theory of acceptance and use of technology. *MIS Quarterly*, 157-178.
- Wang, J., Bao, J., Wang, C., & Wu, L. (2017). The impact of different emotional appeals on the purchase intention for green products: The moderating effects of green involvement and Confucian cultures. *Sustainable Cities and Society*, 34, 32-42.
- Williams, J., & MacKinnon, D. P. (2008). Resampling and distribution of the product methods for testing indirect effects in complex models. *Structural Equation Modeling: A Multidisciplinary Journal*, 15(1), 23-51.
- Yadav, R., & Pathak, G. S. (2017). Determinants of consumers' green purchase behavior in a developing nation: Applying and extending the theory of planned behavior. *Ecological Economics*, 134, 114-122.

- Yu, C. S. (2012). Factors affecting individuals to adopt mobile banking: Empirical evidence from the UTAUT model. *Journal of Electronic Commerce Research*, 13(2), 104.
- Zhou, T. (2011). Understanding online community user participation: a social influence perspective. *Internet Research*, 21(1), 67-81.