

Factors Influencing the Adoption of Green Banking Services Among Higher Learning Students in Tanzania: The Moderating role of Customer Perception

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Abstract

This study examined factors influencing the adoption of green banking services among higher learning students in Morogoro, Tanzania. The study was governed by the Unified Theory of Acceptance and Use of Technology (UTAUT) and Stimulus–Organism–Response (S-O-R) frameworks. The study used cross-sectional research design. Data were collected from 287 students across four universities using questionnaire and analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM). The study found that awareness ($\beta = 0.023$, $t = 2.826$, $p < .05$) and environmental attitude ($\beta = 0.040$, $t = 2.950$, $p < .05$) significantly influenced green banking service adoption through perceived effectiveness, supporting H1 and H2. This indicates that individuals with higher awareness and stronger environmental values are more likely to adopt green banking. However, social influence showed no significant indirect effect ($\beta = 0.011$, $t = 0.936$, $p = 0.349$), leading to the rejection of H3. Based on the findings, this study concludes that internal cognitive factors and environmental values play a more influential role than social cues do in shaping pro-environmental financial decisions. It is therefore recommended that banks and universities should focus on value-driven awareness strategies to effectively encourage green banking behaviours among higher learning students, Tanzania.

Keywords: Sustainable Banking Services, Higher Learning Students, Sustainable

1.1 Introduction

Many corporations have embraced the "go green" concept as part of their social responsibility to society. In a similar vein, banks are adopting green banking initiatives to fulfil their social commitment. Green banking involves implementing environmentally friendly banking practices such as reducing carbon footprints, promoting energy efficiency, and supporting environmentally friendly projects. The aim is to make banking practices and regulations economically, socially, and environmentally sustainable while improving efficiency and effectiveness through the use of technology and physical infrastructure with minimal environmental impact (Chandran et al., 2024).

Despite the numerous benefits of Green Banking initiatives to individual consumers, banks, industries, and the economy, going green remains a challenging task, and customers and private financial institutions are still in the early stages of adoption (García-Salirrosas et al., 2024; Chandran et al., 2024) with the adoption rate remaining low in developing countries including Tanzania. The question is whether

customers are aware of the green banking products and their benefits. However, few studies reported that the adoption of green banking products is influenced by awareness, social interaction, and environmental factors through perception. There are many reasons that of negatively adoption of green banking products, but one of the key challenges including customers' unfamiliarity of green banking services (Mmari, 2023; Chan et al., 2008; Bryson et al., 2016; Ajzen, 2020; Miah et al., 2020).

To address this challenge, the study integrated the Unified Theory of Acceptance and Use of Technology (UTAUT) and the Stimulus-Organism-Response (S-O-R) paradigm to assess three key factors influencing green banking services adoption among Higher Learning Students in Tanzania, with perception as a moderating factor. In this model, awareness, social influence, and environmental factors act as stimuli that influence students' perceptions, the "organism", which then drives the response, that is, the adoption of green banking services (Mehrabian & Russell, 1974; Chan et al., 2008; Bryson et al., 2016). Perception is critical because even when external factors are favourable, the adoption will not occur unless students interpret these factors positively viewing green banking as trustworthy, useful, and aligned with personal values. This interpretation is further supported by the Unified Theory of Acceptance and Use of Technology (UTAUT), which posits that performance expectancy, effort expectancy, social influence, and facilitating conditions must align with users' perceptions to drive technology adoption (Venkatesh, et al., 2003).

In this context, perception serves as a bridge between external stimuli and behavioural response, echoing UTAUT's emphasis on internal evaluations as necessary precursors to action. Unfortunately, the mediating role of perception in this context remains understudied in Tanzania. Most prior research has either addressed general banking behaviour or focused on corporate sustainability practices (Ahmad et al., 2024; Miah et al., 2020; Dhingra, & Gupta, 2020), overlooking the unique behavioural patterns of youth in higher learning institutions. To address this gap, the current study aims to (i) assess how the adoption of green banking services is influenced by awareness, social influence, and environmental factors, with perception serving as a mediating variable. The findings are expected to inform targeted strategies for banks, educators, and policymakers to effectively promote green banking among Tanzanian youth.

1.2 Study Hypotheses

In this study, the study's hypotheses was grounded by the Stimulus–Organism–Response (S-O-R) paradigm, (Mehrabian & Russell, 1974), which posits that external stimuli, such as awareness, social influence, and environmental factors, affect internal cognitive and emotional states (perception), which in turn influence behavioural outcomes (Green Banking Services Adoption). This perspective aligns with the Unified Theory of Acceptance and Use of Technology (UTAUT), which emphasizes that factors such as performance expectancy, social influence, and facilitating conditions shape users' internal evaluations and ultimately influence behavioural intention and use behaviour (Venkatesh et al., 2003). The hypotheses aim to examine both the direct and mediated effects of these factors on green banking service adoption. Hence, H: Perception significantly mediates the relationship between awareness, social influence, environmental factors, and the adoption of green banking services among higher learning students in Tanzania.

2. Literature Review

2.1 Theoretical Underpinning

2.1.2 The Stimulus-Organism-Response (S-O-R) Theory

This study is guided by the Stimulus-Organism-Response (S-O-R) paradigm, originally developed by

Mehrabian and Russell (1974). The model posits that external environmental stimuli influence an individual's internal state, which then leads to a behavioural response. Widely applied in environmental psychology and extended to consumer behaviour and organizational research (Parkinson & Turner Schenk, 1980), the S-O-R framework provides a robust lens to understand how individuals process information and make decisions in response to external factors (Mehrabian & Russell, 1974). Its relevance to this study lies in its ability to explain how students interpret and respond to green-driven financial services.

In this context, the stimuli are defined as awareness, social influence, and environmental factors (Mehrabian & Russell, 1974; Hochreiter et al., 2023). Awareness reflects students' knowledge and understanding of green banking practices and benefits. Social influence encompasses peer, family, and institutional pressure or encouragement that can shape financial behaviours. Environmental factors represent the availability of green banking infrastructure, institutional support, and regulatory frameworks. These external factors are theorized to trigger an internal evaluative process in students, which the S-O-R model identifies as the organism.

The organism, in this study, refers to students' perception of green banking—how they interpret, emotionally respond to, and evaluate the stimuli. Perception serves as a mediating variable that translates external inputs into behavioural outcomes. The response is the students' actual adoption of green banking services. The S-O-R framework as per Mehrabian and Russell (1974; Hochreiter et al., 2023) suggests that when stimuli are favourable and the organism (perception) is positive, a corresponding behavioural response (adoption) is likely. Therefore, this theory underpins the study by linking external influences to internal cognitive processes, ultimately leading to the adoption behaviour. It supports the proposed model examining both direct and indirect effects on green banking service adoption among higher learning students in Tanzania.

2.1.2 The Unified Theory of Acceptance and Use of Technology (UTAUT)

The Unified Theory of Acceptance and Use of Technology (UTAUT) theory was developed by Venkatesh, et al. (2003) to understand the main factors that influence individual intention and behaviour in adopting new technology. This theory is the result of integrating eight existing technology adoption frameworks, including the Technology Acceptance Model (TAM) and the Theory of Reasoned Action (TRA), and produces four main constructs: performance expectations, social influence, effort expectations, and facilitating conditions, as well as four moderators: age, experience, gender, and voluntary use (Dendrinis & Spais, 2024). The advantage of UTAUT lies in its broader coverage of behavioural constructs and its ability to explain both users' intentions and the actual behaviour. Compared to TAM and TPB, UTAUT is more comprehensive as it incorporates dimensions such as facilitating conditions and effort expectancy, which are relevant to the digital context (Lutfiyanah et al., 2025). UTAUT provides a very effective model for understanding how technology is accepted, by both individuals and organizations, thus becoming a widely used theoretical framework (Williams et al., 2015). In this study, the UTAUT framework is expanded by adding additional variables such as awareness, social influence, perception, and environmental factors.

In this study, the theory offers a robust framework for analysing the adoption of green banking services, especially among students in higher learning institutions who are generally technological literate and environmentally conscious. This theory identifies four core determinants of behavioural intention and technology use: performance expectancy, effort expectancy, social influence, and facilitating conditions. In this study, therefore, sustainable banking (such as paperless transactions, green loans, and digital eco-

financial tools) is viewed as a technological innovation within the financial sector.

The model express that, performance expectancy relates to the perceived benefits of green banking, such as promoting environmental sustainability and increasing banking efficiency. Students who perceive these benefits are more inclined to adopt the services. Effort expectancy concerns the ease of use; students are more likely to engage with user-friendly and accessible banking platforms that align with their digital habits. Social influence, including peer encouragement and institutional advocacy, plays a critical role in shaping students' behavioural intentions especially within communal cultures such as those found in Tanzanian universities. Lastly, facilitating conditions (such as access to technology, institutional support, and awareness initiatives) can either enable or hinder the actual adoption (Venkatesh et al. 2003). In contexts where infrastructure and information gaps persist, these factors become particularly significant. By applying UTAUT, this study explores how these constructs interact with the socio-cultural and institutional landscape in Tanzania to shape students' adoption of green banking. The theory thus supports a deeper understanding of the technological, social, and structural factors influencing environmentally responsible financial behaviour among young populations.

2.2 Conceptual Framework

The conceptual framework (Fig.1) for this study is guided by the Stimulus–Organism–Response (S-O-R) theory developed by Mehrabian and Russell (1974), and is strengthened through the integration of the Unified Theory of Acceptance and Use of Technology (UTAUT) developed by Venkatesh et al. (2003). The Unified Theory of Acceptance and Use of Technology (UTAUT), when integrated with the Stimulus–Organism–Response (S-O-R) model, offers a robust theoretical foundation for examining green banking services adoption among university students in Tanzania.

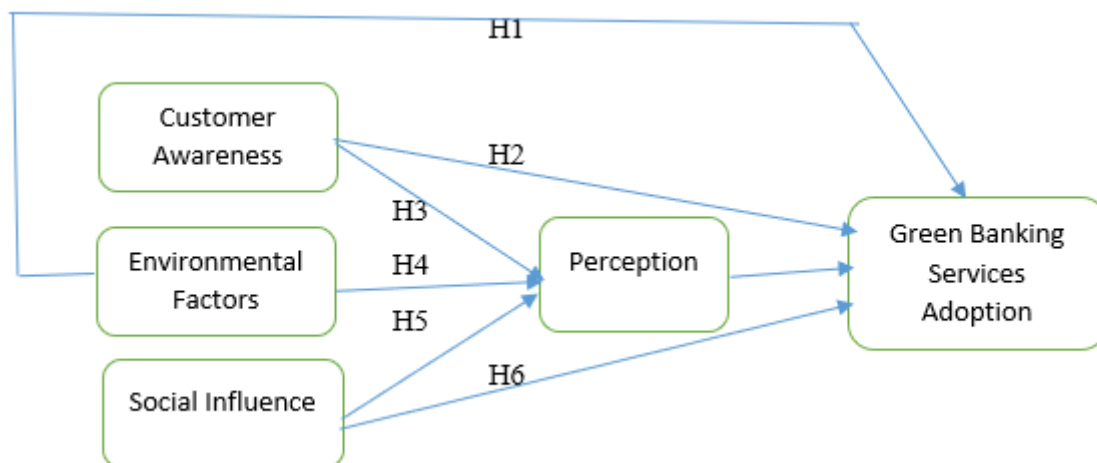


Figure-1: Conceptual Framework

In this framework (Figure 1), awareness, social influence, and environmental factors serve as external stimuli that shape students' internal perceptions specifically their perceived effectiveness of green banking. As Bandura et al. (1977) and Bandura (1991) argue, awareness acts as a cognitive trigger, informing students of the environmental and financial benefits of green banking. However, as Chan and Lau (2000) and Venkatesh et al. (2003) note, awareness must lead to performance expectancy, the belief

that green banking is effective and useful, for it to influence adoption behaviour. Hence, H1: Customer (student) perception mediates the relationship between awareness and green banking services adoption. Environmental factors such as green policies, institutional support, and eco-friendly innovations represent UTAUT's facilitating conditions, which affect behavioural intention by enhancing perceived enabling environments (Venkatesh et al., 2003; Gharaibeh et al., 2018). These environmental cues, when internalized, shape the student's perception of value and feasibility of green banking, ultimately guiding adoption. Accordingly, H2: Customer (student) perception mediates the relationship between environmental factors and green banking services adoption.

Similarly, social influence aligns with UTAUT's social influence construct and acts as a normative stimulus (Bandura, 1991). Observing peers adopting green banking fosters trust and perceived credibility, encouraging students to do the same. Thus, H3: Customer (student) perception mediates the relationship between social influence and green banking services adoption.

The S-O-R model emphasizes the role of internal cognitive and emotional processes (organism) in mediating the effect of external stimuli on behavioural responses. In this context, customer perception (reflecting perceived usefulness, trust, and personal relevance) becomes the central psychological mechanism translating stimuli into the adoption behaviour (Mehrabian & Russell, 1974; Hochreiter et al., 2023). This complements UTAUT's focus on behavioural intention as a precursor to technology use. Therefore, H4: Customer (student) perception significantly influences green banking services adoption. Collectively, this integrated model posits that the adoption of green banking services emerges not directly from external factors, but through internal evaluations of effectiveness and value. This comprehensive framework is particularly relevant for understanding environmentally conscious decision-making among students in higher learning institutions.

3. Methodology

3.1. Study Design and Context

The study was conducted in Morogoro Region, Tanzania, a major academic hub hosting several higher learning institutions. Its diverse and tech-aware student population provides an ideal context for examining the adoption of green banking services. A cross-sectional survey design was employed to capture data at a single point in time, allowing for the examination of relationships among key constructs: awareness, perception, environmental factors, social influence, and the adoption of green banking services (Kothari, 2004; Adams & Patel, 2023).

3.2. Sampling

The target population included students from Mzumbe University, Sokoine University of Agriculture (SUA), Jordan University College, and the Muslim University of Morogoro, reflecting a broad representation of young, educated individuals likely to engage with green-oriented financial services. A total of 287 students participated, a sample size was determined using guidelines for Partial Least Squares Structural Equation Modelling (PLS-SEM). Considering the model's 25 observable items, this falls within the recommended 250–300 range for reliable estimation (Hair et al., 2017), satisfies the “10-times rule” (Barclay & Thompson, 1995), and meets the threshold for 0.80 statistical power at a 0.05 significance level (Cohen, 1992). The study adopted a convenience sampling technique due to logistical constraints, which, although limiting generalizability, is suitable for exploratory research (Ms. Aayesha et al. 2024; Nguyen, et al., 2023).

3.3 Data Collection and Analysis

Data for this study were collected using structured, self-administered questionnaires targeting students from selected higher learning institutions in Morogoro Region. To ensure effective coordination, the researcher appointed a focal person who is an academic staff from each of the four selected universities. These were responsible for organizing, distributing, and collecting the completed questionnaires within their respective campuses. This collaborative approach facilitated a smooth and timely data collection process, enabling the researcher to gather responses from all four institutions efficiently. It also helped ensure wider participation, minimized logistical challenges, and maintained consistency in the administration of the research instrument.

Data collected were analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM) through SmartPLS version 4.0. This analytical method was chosen for its suitability in handling complex models with multiple latent constructs and its robustness in exploratory research (Hair et al., 2021; Bentler & Bonett, 1980). Additionally, descriptive statistics were also performed to analyse profiles of the respondents, while exploratory factor analysis was conducted to validate and refine the measurement model before structural testing.

4. RESULTS AND DISCUSSION

4.1 Descriptive Statistics

The descriptive statistics offer insight into the influence of awareness, social influence, and environmental factors on green banking services adoption and demographic determinants among university students in Tanzania. Results in Table 4 show that, the mean age of respondents is 24.67 with a standard deviation of 3.69, which signifies that a large group of a sample is the youth reflecting typical university students' demographics. The relatively small standard deviation suggests that most participants fall within a narrow age range, which supports targeting this age group for green banking initiatives, as they are more likely to adopt new technologies when socially influenced. The gender mean of 1.439, implies a fairly balanced distribution between male and female respondents, with a slight female majority. Additionally, this balance allows for gender-sensitive analysis of social influences on green banking adoption, as both male and female perspectives are well represented. The education level mean is 1.059, indicating that, the majority of the respondents are at or near the same educational level, that is, undergraduate students. The low variation reflects a relatively homogenous academic population, which is ideal for studying peer and institutional influences on sustainable financial behaviour. The occupation status mean is 1.240, suggesting that most of the respondents are unemployed or students, with limited income, making them contingent on digital and low-cost banking solutions. Bank account ownership mean is 1.101, which is slightly at a low level, implying that many students do not have a bank account. This highlights the potential barrier to green banking adoption, as such services basically require to have a bank account. Finally, the awareness mean is 1.519, which reflects moderate levels of awareness regarding financial or green banking services, suggesting that targeted awareness campaigns could significantly influence adoption levels.

Table 4: Descriptive Statics (n=287)

Variable	Mean	Std. Dev.	Min	Max
Age	26.6655	3.69364	19	56
Gender	1.4390	.49713	1	2

Education Level	1.0592	.23647	1	2
Occupation Status	1.2404	.73478	1	5
Bank Account Ownership	1.1010	.30192	1	2
Awareness	1.5192	.57221	1	3

4.2 Measurement Model

The reliability and validity of our measurement model for quality guarantee was first assessed. In particular, the indicator's reliability was observed, whereby outer loadings surpassed the minimum threshold of 0.708 (see Table 2). Complying with the required minimum threshold of above 0.708 revealed in composite reliability (Rho_a) values and Cronbach's alpha results (Hair et al., 2019) (see Table 2), confirms the internal consistency of our model.

Average Variance Extracted (AVE) was observed to assess convergent validity (Hair et al., 2019). The AVE results ranged from 0.588 to 0.660 hence meeting the accepted threshold of above 0.500 (see Table 2).

Table 3: Validity and Reliability

Construct Items	Loadings
Awareness (AW): (Cronbach Alpha= 0.777 , CR (rho-a)= 0.777 , and AVE= 0.600)	
I know about eco-friendly banking products.	0.751
I know about digital banking options that help the environment.	0.792
I know how banks are trying to be more sustainable.	0.805
I know that some banks offer eco-friendly investment options.	0.748
Social Influence (SI): (Cronbach Alpha= 0.651 , CR (rho-a)= 0.652 , and AVE= 0.588)	
My family encourages me to live sustainably.	0.760
I follow what society does when it comes to sustainability.	0.794
The sustainability culture at my university influences how I act environmentally.	0.746
Perception (PE): (Cronbach Alpha= 0.790 , CR (rho-a)= 0.793 , and AVE= 0.615)	
I think sustainable banking helps the environment.	0.744
I believe banks should be responsible and support the environment.	0.842
I trust banks that make efforts to be more sustainable.	0.802
I believe that banks that focus on sustainability are more ethical.	0.746
Environmental Factors(EF): (Cronbach Alpha= 0.871 , CR (rho-a)=0.874 , and AVE= 0.660)	
I care about the environment.	0.831
I feel responsible for helping to protect the environment.	0.848
I support green values and environmental causes.	0.768
I try to be sustainable in my daily life.	0.810
I believe my actions can make a positive difference for the environment.	0.803
Green Banking Services Adoption (GBSA): (Cronbach Alpha=0.771 , CR (rho-a)=0.775 , and AVE= 0.593)	
I prefer using paperless banking options to help the environment.	0.739
I choose to bank with companies that focus on sustainability.	0.811
I would consider changing banks if a different bank is more sustainable.	0.797

I make banking decisions based on how eco-friendly the bank is.	0.729
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Further, this study assessed the Heterotrait-Monotrait ratio (HTMT) to ascertain discriminant validity (Hair et al., 2019). HTMT values ranged from 0.514 to 0.859, thus, complying with the maximum acceptable value of HTMT 0.900. Hence, verifying constructs' distinctiveness from one another (see Table 3). This study did not consider the Fornell-Larcker criterion for evaluating discriminant validity due to the effectiveness of HTMT compared to the Fornell-Larcker criterion especially when evaluating complex models (Hair et al., 2019; John, et al., 2025).

Table 3. HTMT Values

	AW	EA	PE	GBSA	SI
AW					
EA	0.525				
PE	0.723	0.859			
GBSA	0.540	0.607	0.667		
SI	0.514	0.591	0.574	0.733	

4.3 Structural Model Results

Model explanation power (R^2) indicated that the studied model explains a substantial variance in key constructs, with Perception ($R^2 = 0.597$) and Green Banking Services Adoption (GBSA) ($R^2 = 0.411$), suggesting a strong explanatory power for both mediating and outcome variables (see Table 4). The model's predictive relevance (Q^2) was also confirmed, with values of 0.584 for Perception and 0.372 for GBSA, where all values were above 0 (see Table 4), which supports the model's capability to predict endogenous constructs effectively. Further, a standardized root mean square residual (SRMR) value, which was obtained, was 0.069, lower than the threshold value of 0.080. This indicates that the difference between the observed and predicted association patterns is insignificant, thus, the model satisfactorily represents the data (see Table 4). Together, these indicators suggest that the structural model not only has substantial explanatory power (Bagozzi & Yi, 1988) but also possesses strong predictive accuracy and acceptable overall model fit.

Table 4. Testing the Structural Model by Bootstrap Method

The relationship between constructs (Hypothesis)	Coefficient	t-Statistics	P values	Decision
H1: AW -> PE -> GBSA	0.023	2.826	0.005	Supported
H2: EA -> PE -> GBSA	0.040	2.950	0.003	Supported
H3: SI -> PE -> GBSA	0.011	0.936	0.349	Rejected

Relationships are significant at $p < .05$, β : Beta Coefficient; Q^2 : PE (0.584); GBSA (0.372), R^2 : PE (0.597); GBSA (0.411). Model fit: SRMR = 0.069.

In this study, hypotheses were tested with 10,000 subsamples, and a significance level of 0.05 was considered to evaluate all model paths. Awareness (AW) was found to positively and significantly influenced green banking service adoption (GBSA) through perceived effectiveness (PE) ($\beta = 0.023$, $t =$

2.826, $p < .05$), thus, supporting H1. This finding indicates that individuals with greater awareness are more likely to perceive green banking as effective, which, in turn, increases their likelihood of adoption. Similarly, environmental attitude (EA) positively and significantly influenced GBSA through PE ($\beta = 0.040$, $t = 2.950$, $p < .05$), thus, supporting H2. This finding implies that individuals with stronger environmental attitudes tend to view green banking as more effective, which enhances their adoption behaviour. However, the indirect effect of social influence (SI) on GBSA through PE was not statistically significant ($\beta = 0.011$, $t = 0.936$, $p = 0.349$), hence rejecting H3. This indicates that social influence does not positively and significantly influence GBSA through perceived effectiveness in this model.

4.4 Discussions

The findings of this study align with the Stimulus–Organism–Response (S-O-R) theory, which posits that external environmental stimuli (S) influence internal cognitive and affective states (O), subsequently shaping behavioural responses (R) (Hochreiter et al., 2023; Mehrabian & Russell, 1974). In this context, awareness and environmental attitude serve as external stimuli that trigger internal cognitive evaluations (perceived effectiveness), which then lead to the behavioural outcome of green banking service adoption (GBSA). These findings are also supported by the Unified Theory of Acceptance and Use of Technology (UTAUT), particularly the construct of performance expectancy, which asserts that individuals are more likely to adopt a technology when they believe it will yield beneficial outcomes (Venkatesh, et al., 2003). The findings imply that awareness positively and significantly influences GBSA through perception among higher learning students. This means that students who are more informed about green banking are more likely to perceive such services as effective, (Bihari & Pandey, 2015; Aizawa & Yang, 2010), which in turn strengthens their adoption intent. This finding is consistent with UTAUT's performance expectancy dimension and prior research suggesting that awareness enhances cognitive evaluations and encourages pro-environmental behaviour (Venkatesh, et al., 2003). Within the S-O-R model, awareness functions as a stimulus that activates a favourable organismic response (perceived effectiveness) ultimately leading to behavioural change (Mehrabian & Russell, 1974; Hochreiter et al., 2023).

Similarly, environmental attitude was found to influence significantly and positively GBSA through perception. This suggests that students with strong environmental values are more inclined to perceive green banking as effective, thereby reinforcing their adoption behaviour. This aligns with both S-O-R theory and UTAUT, where facilitating conditions and effort expectancy (including alignment with personal values) impact usage behaviour (Venkatesh, et al., 2003; Gharaibeh et al., 2018). Prior studies (Nguyen et al., 2023) also support the role of environmental values as precursors to green decisions.

However, the indirect effect of social influence on GBSA through perception was not statistically significant. This suggests that social cues, although important, may not sufficiently shape internal perceptions of effectiveness in this domain. While UTAUT identifies social influence as a critical determinant of behavioural intention, this finding suggests that in the context of banking decisions (especially among the informed, value-driven students), internal cognitive evaluations may hold more weight than social pressure. This is consistent with findings in a study by Gharaibeh et al., (2018) who revealed that in high-involvement or ideologically driven decisions, individual cognition often overrides conformity-based influences.

5 Conclusion and Recommendations

5.1 Conclusions

This study concludes that the adoption of green banking services among higher learning students is sign-

ificantly influenced by individual awareness and environmental attitudes, primarily through the mediating role of perceived effectiveness. The findings strongly support the Stimulus–Organism–Response (S-O-R) theory as a valuable framework for understanding how external stimuli translate into behavioural outcomes through internal cognitive processes. Specifically, awareness and environmental attitudes act as external stimuli that positively shape students' internal perceptions of effectiveness, ultimately leading to the adoption of green banking practices. This conclusion is further reinforced by the Unified Theory of Acceptance and Use of Technology (UTAUT), particularly their constructs of performance expectancy and facilitating conditions. Students are more likely to adopt green banking when they perceive it as beneficial, easy to use, and aligned with their values; factors that correspond closely to perceived effectiveness in this context. These findings emphasize the critical role of both knowledge and environmental values in driving responsible financial behaviour. In contrast, the study finds that social influence does not significantly affect adoption through perceived effectiveness, suggesting that students' decisions are more autonomously driven. This aligns with UTAUT's recognition that social influence may have varying impact depending on the user context. In value-driven settings such as green, internal cognition and moral alignment often balance external social pressures in shaping behaviours.

5.2 Recommendations

Based on these findings, it is recommended that the banks, universities, and policymakers invest in targeted awareness initiatives that clearly communicate personal and environmental benefits of green banking. Integrating green education into academic curricula can help foster deeper environmental attitudes among students. Additionally, communication strategies should focus on enhancing students' perception of effectiveness by providing tangible impact of green banking choices. Rather than relying heavily on social influence or peer-driven campaigns, efforts should prioritize informative, value-based messaging that resonates with students' personal beliefs and ecological values, ultimately promoting more meaningful and lasting adoption of sustainable banking services.

6. Contribution of the Study

6.1 Theoretical Contribution

This study makes a significant theoretical contribution by extending the application of the Stimulus–Organism–Response (S-O-R) theory to the context of green banking among students in higher learning institutions. By conceptualizing awareness and environmental attitude as external stimuli, perceived effectiveness as the internal organismic state, and green banking service adoption as the behavioural response, the study offers a nuanced understanding of how environmental and cognitive factors interact to influence pro-environmental financial behaviours. This advances the theoretical relevance of the S-O-R framework in green-related financial decision-making. Moreover, the study strengthens its theoretical foundation by integrating constructs from the Unified Theory of Acceptance and Use of Technology (UTAUT) (specifically performance expectancy and facilitating conditions) into the interpretation of perceived effectiveness. By aligning perceived effectiveness with the expected utility and support mechanisms emphasized in the UTAUT, the study bridges psychological perception with technology acceptance. This integration provides a more comprehensive model for understanding how students assess and adopt green banking services, offering theoretical insights applicable to both environmental behaviour and technology adoption domains.

6.2 Empirical Contribution

Empirically, the study contributes new evidence on the indirect effects of key predictors on green banking

adoption in the context of a developing country. The finding that awareness and environmental attitude significantly influence the adoption through perceived effectiveness provides actionable insights for both academic and practical stakeholders. Additionally, the non-significant role of social influence challenges commonly held assumptions about peer effects in green behaviour, suggesting that personal cognition may outweigh social cues in financial decisions among students. These findings offer a valuable foundation for future research and policy design focused on promoting green financial practices within younger and environmentally conscious populations.

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